A Methodology for Constructing Time Series of Input-Output Accounts based on the Uniform Classification (Russian Experience)

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Abstract

Time series of input-output (IO) accounts at current and constant prices are widely applied to study the dynamics and structure of economic activity in many countries. For these purposes, IO accounts have to adhere to a uniform nomenclature of products and economic activities in accordance with international standards.

After 2004, there was a break in the annual construction of Russian IO accounts. This break was due to the transition of national statistics to the OKVED (All-Russian Classifier of Activities) and the OKPD (All-Russian Classifier of Products by Activity) classifications that are harmonized with the CPA and NACE rev. 1. Construction of benchmark IO accounts based on the new classifications for 2011 will be completed at the end of 2015.

We have the opportunity to reconstruct a time series of comparable IO accounts based on the new classifications as a result of the development of national accounts, improvements in information, accumulation of methodological developments and experience in formulating expert assessments of IO Accounts.

Work on the reconstruction of the time series of IO accounts has been underway at the National Research University Higher School of Economics (NRU HSE) since 2010. The starting point selected for this analysis and the last year for which there is required information for this procedure is 2003.

Our methodology is based on the international System of National Accounting (SNA) including IO accounts, as well as mathematical modeling of inter-industry research. As part of the work for 2010-2013, we developed a methodology to transform the IO accounts for 2003 from the Soviet classifications into the new classifications. We also construct the use table of domestic goods and services at basic prices, the use table of imports at basic prices, the table of transport margins, the table of trade margins, and the table of net taxes on products. In addition, we calculate the use table at purchasers' prices on the NACE rev.1/OKPD basis as the sum of all listed tables.

When constructing these IO accounts, we identified a lack of numerical values for the correspondence tables and a lack of agreement between the national account totals and the column and row totals of the transformed IO accounts for 2003. An iterative method of reconstructing the IO accounts from Soviet classifications to the OKVED and OKPD classifications has been developed and applied.

To date, we have developed an algorithm for constructing time series of IO accounts based on the new classifications for 2004 and subsequent years based on the transformed IO accounts for 2003. A time series of IO accounts (consisting of the tables listed above) at current prices, as well as a use table of goods and services at basic prices and previous years' prices, has been developed.

This research provides the basis for the refinement of the methodology for constructing IO accounts, and the retrospective restatement of these time series to allow more detailed nomenclature of economic activities and types of goods and services after the official publication of the benchmark IO accounts for 2011.

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Introduction

Input-Output (IO) accounts have broad statistical and analytical applications. As an inherent part of the SNA, IO accounts allow for the integration and harmonization of the measures in terms of their economic content, product, and industry classifications, and as a consequence, improve the quality of the SNA's measures and dynamics. In addition, the statistical values of the IO accounts are an essential tool for economic analysis and forecasting[5].

In accordance with the methodology of the SNA, IO accounts include the following tables: the supply table, the use table of domestically produced goods at basic prices, the use table of imports at basic prices and the symmetric input-output table. In addition, IO accounts include valuation matrices such as trade and transport margin matrices, as well as matrices for taxes and subsidies on products.

There are benchmark and annual IO accounts. Benchmark IO accounts are usually constructed once every five years for detailed economic activities, products and services based on surveys of establishments from different industries. For the intermediate years between the developments of the benchmark IO accounts, annual accounts are constructed in a more aggregated nomenclature.

Thus, time series of IO accounts for a relatively long period are formed. These series must comply with the uniform format of the industry and product classifications, the format of tables, and the methodology of constructing them at current and constant prices, and so forth.

Statistical agencies and research organizations within the USSR have gathered considerable experience in constructing IO accounts (inter-industry balances) and using them for planning and forecasting activities. This experience has served as a precondition for the continued construction of IO accounts in the Russian Federation in the post-Soviet period. The Russian Federal State Statistical Service (Rosstat) developed benchmark IO accounts for 1995, and annual IO accounts for the period from 1996 to 2003 at current prices in accordance with the methodology for the SNA, adopted by the UNO. IO accounts for 1996-2003 were built by extrapolating the cost structure of products and services for 1995 based on the SNA measures for Russia. However, these time series of IO accounts were constructed based on classifications of products and industries inherited from the Soviet period, namely, the All-Union Classifier of Economy Branches (OKONH) and the All-Union Product Nomenclature (OKP).

Since 2004, the transition of Russian statistics to the All-Russian Classification System of Economic Production (OKVED) harmonized with the NACE rev. 1 classification and the All-

[5] See (Eurostat, 2008, ch. 15), (Miller and Blair, 2009).

Russian Classifier of Products by Activity (OKPD) harmonized with the CPA classification[6] has led to a break in the construction of IO accounts.

It was only decided in 2009 to organize the work on the construction of the benchmark IO accounts based on NACE rev.1/CPA for 2011, and the IO accounts have to be published in late 2015.

Since the post-Soviet period, Rosstat did not carry out the construction of IO accounts at constant prices because of measurement problems due to the transitioning economy as well as a lack of resources.

This long hiatus in the construction of IO accounts based on the NACE rev.1/CPA now causes serious difficulties for scientific and applied investigation, and hinders Russia's full participation in international projects.

Due to these circumstances, researchers specializing in macroeconomic analysis and forecasting are forced to build their own estimates of IO accounts based on the Soviet classifications, the OKONH/OKP, for the period after 2003[7]. However, after economic departments and agencies transferred to the new classifications, it became difficult to compare the estimated macroeconomic measures based on the OKONH/OKP with the officially published measures based on the NACE rev.1/CPA.

The gap in the time series of Russian IO accounts has addressed by international projects designed to develop a worldwide database using national inter-industry statistics.

An international project to develop the World Input-Output Database (WIOD), was carried out by a consortium of international organizations and leading European universities. The WIOD project focused on designing a unified database connecting national supply and use tables with the statistics of international trade and satellite accounts. The database was developed to analyze the effects of globalization on socio-economic development and the environment across a wide set of countries[8].

As part of the WIOD project, an approach to constructing the time series of IO accounts based on the NACE rev. 1/CPA classifications was proposed[9]. The time series of IO accounts include supply and use tables at current and previous year prices for 35 industries and 59 types of products, as well as symmetric input-output tables at current prices for 35 industries in the Russian Federation for the period from 1995 to 2011. To create a time series of supply and use

[6] Russian equivalent of CPA is OKPD (All-Russian classifier of Products by Activity), introduced in the practice of Russian statistics only since 2009. In the following discussion, we will use "NACE rev. 1/CPA" rather than "OKVED/OKPD".

[7] See, for example, forecasts, built by the Institute of Economic Forecasting of the Russian Academy of Sciences, IEF RAS. Reference: http://www.macroforecast.ru/doc/i_o_1980_2006_c.xls.

[8] See (http://www.wiod.org/database/nat_suts.htm).

[9] See (Timmer (eds.), 2012).

tables for Russia, developers used detailed benchmark IO accounts for 1995 recalculated from the OKONH classification to the NACE rev. 1/CPA classification using the officially published correspondence table between the OKONH classification and the OKVED harmonized with the NACE rev. 1 classification[10]. Then, on the basis of transformed IO accounts, they constructed a time series of supply and use tables using modern methods of balancing and constructing time series, SUT-RAS[11].

Compliance with methodological uniformity in terms of harmonization and standardization, as well as in the procedures for constructing a time series of national IO accounts, not only guarantees the compatibility of the WIOD database among different countries but also expands its analytical capacity[12].

However, such methodological unification does not always consider the measurement specifics of a particular country such as large-scale structural changes in the economy, and higher inflation relative to developed countries (the GDP deflator for this period in Russia was 2164%), caused by the peculiarities of Russia's transitioning economy. Measurement problems inherent in a transformational economy are added to purely statistical difficulties including a lack of totals from the SNA based on the NACE rev. 1/CPA classifications for supply and use tables for the period before 2002, as well as frequent methodological changes and other statistical innovations.

In contrast with the WIOD project, in which developers take the initiative in forming the database, participation in another project, the Global Trade Analysis Project (GTAP), provides fulfillment of certain requirements in terms of statistical data from the participating countries themselves.

The coordinator of the GTAP is Purdue University[13] and the project is aimed at developing a database that combines detailed information on bilateral trade, transport and protection data. The GTAP characterizes economic linkages among regions, together with individual country input-output databases that account for inter-sectoral linkages within regions. The database is designed to analyze the potential impact of global trade liberalization under a future WTO round, regional trade agreements, economic consequences of attempts to reduce carbon dioxide emissions via carbon taxes, and domestic impacts of economic shocks in other regions[14].

For Russia's participation in the GTAP, the Center for Economic and Financial Research (CEFIR) prepared a database of IO accounts based on the ISIC rev.3/CPC classifications for

[10] For more information, see (Ministry of Economic Development of the Russian Federation, 2002).
[11] See (Temurshoev, Timmer, 2011).
[12] See (Timmer (eds.), 2012), (Timmer et al., 2007, p. 19).
[13] See (http://www.gtap.agecon.purdue.edu).
[14] See (Narayanan, Hertel, Walmsley, 2012, chapter 1).

Russia. For this purpose, they converted and disaggregated officially published symmetric (product by product) input-output tables for 2003 from 22 to 59 types of goods and services from NACE rev.1, and subsequently adjusted to the GTAP format. Recalculation and disaggregation of the symmetric table were performed using the same official correspondence table and symmetric (product by product) input-output table for 1995 as in the WIOD projec[15]t.

However, in these investigations the authors use the officially published correspondence table, which can only be employed for situations where one NACE rev. 1 activity corresponds to one or more industries based on the Soviet classification. In cases where an OKONH industry is distributed among several NACE rev. 1 activities, there is a need to identify the quantitative proportions of the distribution between variables within these classifications. However, the NACE rev. 1 information necessary for carrying out this procedure for 1995 is missing. Therefore, we can assume that in order to use the correspondence table, our foreign and Russian colleagues would inevitably have been forced to derive such quantitative proportions using a priori considerations.

As is evident from the published tables on the Russian Federation, they likely considered in all cases that an industry based on the OKONH classification corresponded to only one type of activity based on the NACE rev. 1[16] classification.

Another problem in the database construction for Russia is that information constraints forced developers to use simplistic assumptions in the construction of measures.

Russian experts handled the construction of the IO account based on the NACE rev.1/CPA for Russia.

The Institute of Macroeconomic Analysis under the Ministry of Economic Development[17] of the Russian Federation, IMA, built a time series of IO accounts based on the NACE rev.1/CPA classifications for the period from 2007 to 2012 without using the Rosstat tables based on the old classifications. The time series of IMA's tables is quite short. Furthermore, due to the lack of benchmark tables based on NACE rev.1 /CPA, it is difficult to estimate the validity of the results.

However, the development of the SNA in Russia, including the construction of detailed production accounts based on the NACE rev.1 by Rosstat, and the accumulation of other administrative data, created the prerequisites necessary to derive IO accounts based on NACE rev.1/CPA for 2003-2010.

[15] See (Tourdyeva, Shrebela, 2008).
[16] See (http://www.wiod.org/database/nat_suts.htm), (Erumban et al., 2012).
[17] See (http://www.macroeconomics.ru).

This study was initiated at the National Research University Higher School of Economics (NRU HSE) in 2010. We selected 2003 as the starting point for the construction of the time series for the following reasons:

• Rosstat constructed the last IO accounts based on the Soviet Classifications for 2003. Moreover, there are detailed administrative data on the OKONH/OKP basis for the use table at purchasers' prices that facilitate the transformation from the OKONH/OKP to the NACE rev.1/CPA.

• For 2003 there are detailed data for production accounts based on the NACE rev.1/CPA, including a measure of output at basic prices, gross value added, intermediate consumption at purchasers' prices for 79 economic activities, as well as revised data on elements of GDP based on the expenditure approach. These measures are the control column totals of Quadrants I, II and III of the use table at purchasers' prices.

• For 2003 and subsequent years, Rosstat constructed the detailed production matrix (transposed make matrix), which has the same row structure defined by categories of products as the supply table[18].

The degree of detailed administrative data on the OKONH basis and detailed data on the production account allow us to obtain IO accounts on the NACE rev.1/CPA basis for 42 types of commodities and 42 types of economic activity.

In 2012-2013 the research was conducted in conjunction with the IMA.

In Baranov et al., (2011, 2012, 2013) the methodology for converting IO accounts that were published based on Soviet classifications into the newer NACE rev. 1/CPA classifications[19] is detailed.

This report is a continuation of a series of these papers. The methodology and procedure for converting the use tables at purchasers' prices for 2003 to the NACE rev.1/CPA is further improved in light of additional available information and consultations with Rosstat's experts about the change in the methodology for evaluating trade and transport margins as well as net taxes. In addition, a methodology for constructing the time series of IO accounts for 2004 and subsequent years, based on the tables for 2003 is developed. The present work addresses the construction of time series of IO Accounts for 2004 and subsequent years at current and constant prices on the basis of IO Accounts for 2003. The second part of this report presents the initial data on construction of time series. The third and fourth parts describe algorithms for

[18] Production matrix differs from the supply table by the sum of import matrix and the valuation adjustment matrix. See (Eurostat, 2008, p. 69).

[19] We built the use tables at basic and purchasers' prices, domestic and imported use tables at basic prices, transport and trade margins tables, and net taxes on products tables. The question of derivation of symmetric input-output tables from supply and use tables is beyond the scope of this paper.

constructing tables at current and previous year prices. In conclusion, we summarize and suggest the main directions for further research.

2. The initial data used in the construction of the IOA at current prices

As in the case of construction of IO Accounts for 2003, it is necessary to ensure consistency with the SNA measures developed by Rosstat for 2004 and subsequent years.

The SNA measures include: detailed production accounts with output, intermediate consumption and value added, as well as expenditure approach GDP.

In addition, Rosstat's unpublished administrative data are used, particularly the production matrix for 2004 and subsequent years at disaggregated nomenclatures based on NACE rev.1 classifications, as well as an earlier version of the supply table at purchasers' prices for 2004 (which includes imports by product, vectors of transport and trade margins, as well as net taxes on products; in subsequent years the data for these vectors are not available).

To estimate imports by product for the Foreign Economic Activity Commodity Classification in 2004 and subsequent years, we use data on the rearrangement of customs statistics broken down into 10-digit harmonization system (HS) codes of the Foreign Economic Activity Commodity Classification in the structure of the NACE rev.1. These data were received from IMA[20].

The initial basis for the construction of the use table of domestically produced goods at basic prices and the use table of imports at basic prices, and valuations matrices (the use tables for transport and trade margins, as well as net taxes on products) for 2004 and subsequent years were the appropriate tables for 2003.

3. Sequence of procedures for the construction of the use tables at current prices for 2004 and subsequent years

When converting IO accounts for 2003 from one classification to another, we primarily used manual balancing because the conversion is between classifiers that are significantly different regarding the principles of formation[21]. Moreover, there are methodological changes in the calculation of measures. However, after the construction of IO accounts for 2003, the possibility of using automatic balancing for the construction of the time series of IO accounts for subsequent years is significantly expanded.

[20] Imports in U.S. dollars are converted into Russian rubles with the exchange rate. The latter is calculated as the quotient of foreign trade turnover in Russian rubles (GDP with the expenditure approach from the SNA) by the foreign trade turnover (the balance of payments in U.S. dollars from the data of the Central Bank of Russia).
[21] See (Baranov et al., 2013).

In the most common formulation, the mathematical model for constructing input-output matrices given the known initial matrices from the previous year – projection – involves finding the unknown interior elements of the matrix X for the target year on the basis of the initial matrix A for previous year and known totals by row and column of matrix X. In this projection task, the matrix of Quadrant I for a different period of time is usually used as the initial matrix. The challenge is in getting the resulting matrix X as close as possible to the original matrix with the totals by row and column equal to the specified new totals (see Fig. 1)[22].

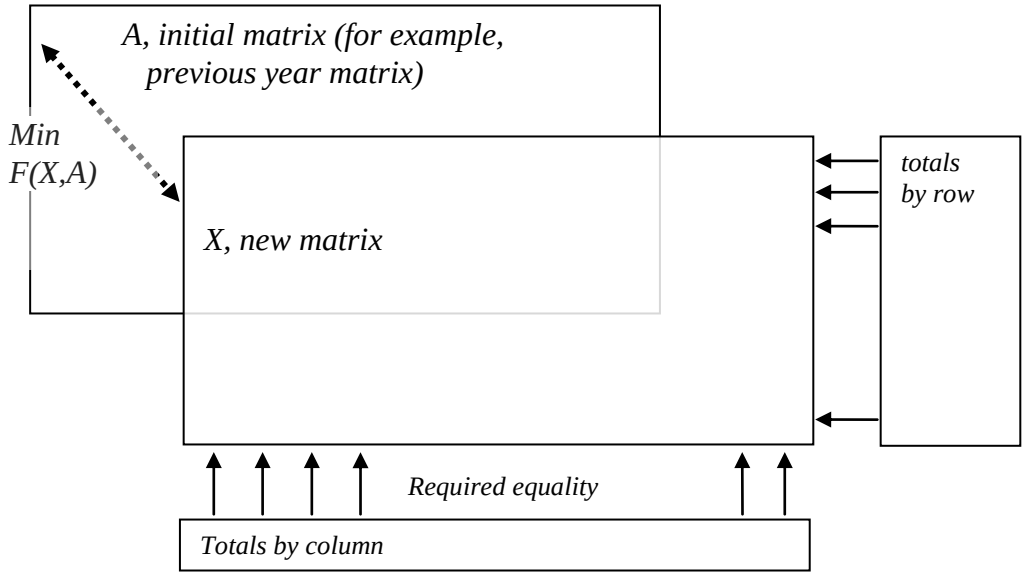

Figure 1. The scheme for construction of the new matrix X at the target year, *on the basis of the initial matrix A at year t and known output totals at the target year*

In our case, the use of this procedure was difficult because there is no information to adequately determine the totals by row for Quadrant I for 2004 and subsequent years. Therefore, in this research, taking into account the fact that for 2004 and subsequent years it may be possible to establish reliable summary totals by row for Quadrants I and II, the modified method RAS is applied to rectangular matrices, comprising Quadrants I and II. Moreover, the presence of additional exogenous information about the values of individual interior cells is postulated.

The construction of IO accounts for 2004 and subsequent years on the basis of IO accounts for 2003 requires a mandatory execution of at least three conditions:

• equality between the totals of supply and use tables and corresponding measures in the SNA,

• equality between the individual elements in the final expenditures of the use table at purchasers' prices and corresponding elements from the unpublished detailed data from Rosstat, and

[22] See (Miller and Blair, 2009, ch.7).

• equality between elements in exports of products (for most items) and the measures of exports transformed from Foreign Economic Activity Commodity Nomenclature into CPA.

In accordance with our proposed approach, we simultaneously complicate Quadrants I and II of five tables: the use table of domestic production at basic prices and the use table of imports at basic prices, as well as the tables of transport and trade margins, and net taxes on products. Calculations are carried out in several stages.

As an example, we describe the process of constructing five tables, which make up the use table at purchasers' prices, using data for 2004.

First, from the data on IO accounts for 2003, the structure of totals by column of Quadrant I (goods and services by industry used in production), of the use table of domestically produced goods at basic prices and the use table of imports at basic prices, as well as the totals by column of Quadrant I of the valuations matrices, and the totals of Quadrant II (final uses by category) for these five tables are compiled. See Fig. 2.

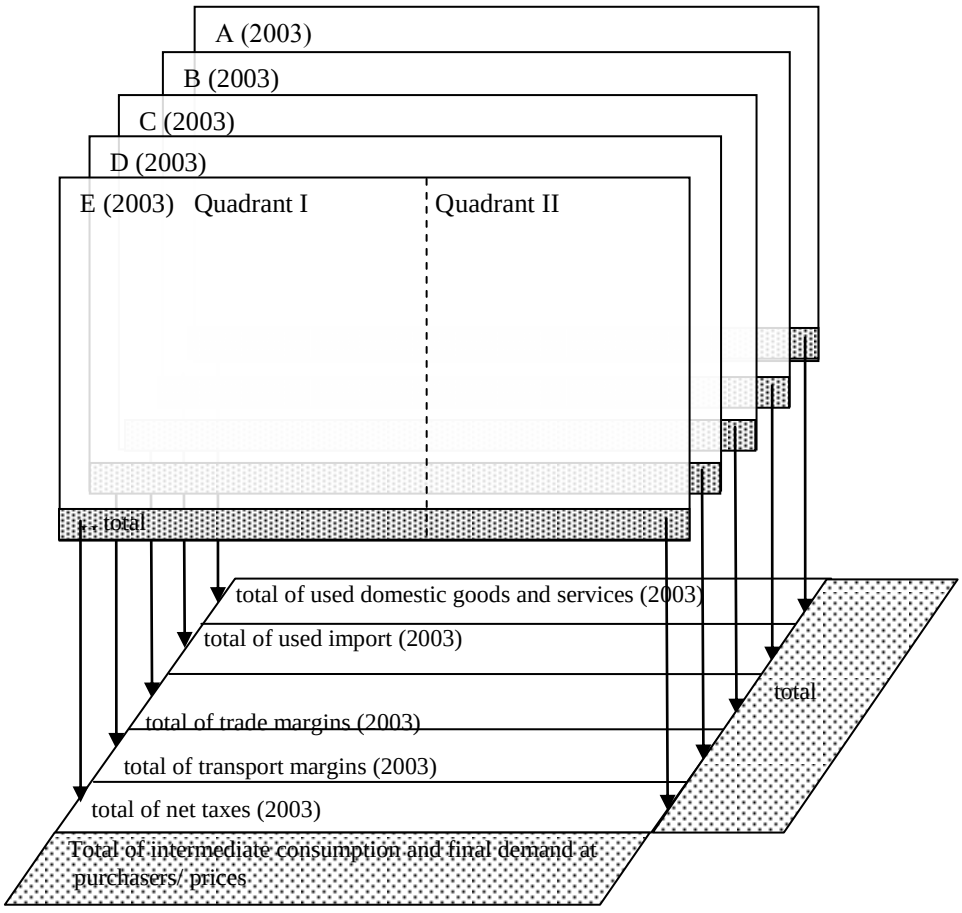

Figure 2. Compilation of a structure defined by the totals of the intermediate consumption by industry and totals of final uses by category at purchasers' prices for 2003 on the basis of the use table of domestically produced goods at basic prices, the use table of imports at basic prices and the three valuations matrices.

The compiled structure of totals by columns of Quadrants I and II of the use table of domestically produced goods at basic prices, the use table of imports at basic prices and the three valuation matrices for 2003 are considered as the initial matrix (See Table 2). The totals at purchasers' prices of intermediate consumption by industry and the final uses by category for 2004 are taken from the detailed production account and GDP obtained from the expenditure approach. Totals by product are taken from unpublished material from Rosstat (detailed supply table for 2004). Calculations are performed by applying the RAS procedure.

Table 2. Structure of totals of intermediate consumption by industry and final uses by category for 2003

	Activities				Final uses				total
	1	…	…	*n*	*n+1*	…	…	*n+k*	
Total of used domestic goods and services									
Total of used imported goods and services									
Total of trade margins									
Total of transport margins									
Total of net taxes									
Total of intermediate consumption and final use by category at purchasers' prices									

The next stage of the calculations is shown in Fig. 3.

Each of the five tables is constructed using the approach shown in Fig. 1. The use tables at basic prices and the valuation matrices for 2003 are used as prior matrices (the I and II Quadrants of each of the tables). The column totals are obtained at the previous stage, and the row totals are obtained from Rosstat's unpublished version of the supply table for 2004 in which we make some adjustments[23].

It should be noted that for 2005 and subsequent years, we no longer have Rosstat's information about the import matrix and the valuation adjustment matrix. To estimate totals by product at purchasers' prices we use the following procedure.

Imports of goods are transformed from 10-digit HS codes into the structure of the NACE rev.1 for 2004 and are multiplied by their rate of change (with expert adjustment the rate of change in light industry goods).

[23] For example, we adjust imports by product to a number of positions of imports calculated by IMA.

The growth rates of import services are calculated using detailed data collected by the Central Bank of the Russian Federation, because these statistics can be derived from data on foreign economic activities.

The growth rate of exports and imports are adjusted taking into account the change in the exchange rate of the US dollar to the Russian Federation ruble.

CIF/FOB adjustments on imports are calculated based on the assumption of stability in the dynamics of their value to value of imports of transport and insurance services.

Vectors of trade and transport margins are estimated as the ratio of margins by type of product to the total supply at basic prices for 2004. At that share of total margins in output value "Transport, storage, supporting and auxiliary transport activities; activities of travel agencies" and "Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods" are expertly controlled.

The vector of taxes less subsidies on products is calculated in a similar way.

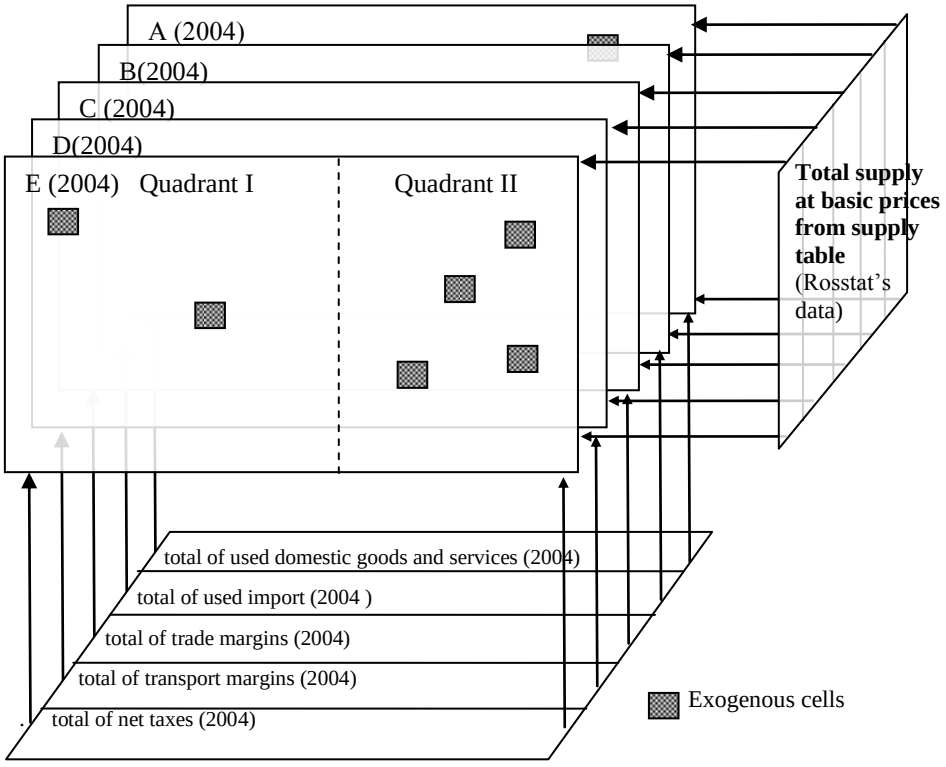

Figure 3. Construction of five tables at basic prices making up the use tables at purchasers' prices

To construct each of the tables we once more apply the standard RAS method, except for the table of net taxes. The initial table of net taxes for 2003 contains 14 negative elements and totals for the rows and columns for some types of products. Because the RAS method can only handle non-negative matrices, we apply the Paelinck & Waelbroeck (1963) approach to estimate

the time series of tables of net taxes. For this purpose, all negative elements for 2004 and subsequent years were defined exogenously (These elements are shown schematically as a gray squares in Fig. 3). Next, we incorporate additional information in a RAS setting. Then, we account for the values of known interior cells of the table of net taxes by setting the particular known cell values to zero and subtracting the known values from the corresponding row margins. Finally, after obtaining the solution by applying the RAS procedure, we place the known values back into their cells.

For the elements of Quadrant I we made a simplifying assumption that the elements vary proportionately with the change in intermediate consumption of agriculture and food production in the given years compared to 2003 (at current prices). For the final consumption of households, exogenous elements were calculated in proportion to the total change in the subsidies (given subsidies on household consumption make up the predominant share of total subsidies).

Similarly, before applying the RAS procedure we make adjustments to some other exogenous elements (the values of which were known from statistical sources or administrative data from Rosstat). These elements include the vectors of the final consumption expenditure by government on collective services and the final consumption expenditure by non-profit organizations (represented only by the measures of domestic production at basic prices).

At the final stage of the calculation, we construct the use table at current purchasers' prices (as the sum of tables A, B, C, D and E, Fig. 3) and the use table at current basic prices (as the sum of tables A and B in Fig. 3). In international practice an alternative approach is used. It implies that first the table at purchasers' prices is obtained, and then it is broken down into components at basic prices. For example, in Simpson (2007) this approach is recommended for exports. However, we did not use this approach because of the properties of the RAS method (strictly proportional updating of the transactions of each table from the previous year). In such a situation the elements of the table at purchasers' prices could not be reconciled with the sum of the corresponding elements of constituent tables.

Negative elements in the table of net taxes indicate that the subsidies (or consumption) exceed the taxes on products. In data for 2003 the negative values are associated with the processes of agricultural production (subsidies for seeds, fertilizers, etc.) and industrial consumption in food production, as well as the subsidy on household consumption in housing and public utilities and the social services. The remaining negative elements represent reductions in the inventories; these elements are very insignificant in magnitude.

4. Constructing the use tables for 2004 and subsequent years at previous year prices

From a methodological point of view, the deflators needed for constructing the use tables in the previous year prices, should be calculated from the monthly Produce Price Index (PPI) data.

However, the Rosstat data covers mostly price indices for goods (and these indexes are too aggregated), while for services only transport and communication indexes are available.

Therefore, as an alternative approach, we derive implicit deflators from the SNA, by dividing the nominal output growth rates by the real ones for the detailed range of economic activities.

Although the deflators calculated with this procedure correspond to industries, we need deflators for products. However, we believe that it is acceptable to use our calculated deflators as a first approximation, because outputs for the detailed set of industries and their products do not differ significantly (particularly for the 2004 data). In most cases, the share of primary product in an industry's output exceeds 90% and is always greater than 80%.

For the construction of import deflators, additional information was used. Particularly, for goods, we rearranged the customs statistics data in 10-digit codes from the Foreign Economic Activity Commodity Nomenclature that was regrouped to the CPA by the IMA into our own nomenclature. The data were available in USD values and in volumes; so annual import deflators in USD could be calculated by dividing the year-to-year change rates. Then, values in USD were multiplied by the average annual variation in USD/RUR exchange rate to convert them into rubles. For the import of services, we used the rates of inflation in the European Union as deflators[24], because the EU represents the largest component of the Russian service trade (approximately 40% of total volume in 2004 and 2005).

Because the nomenclature of our SUT is highly aggregated, the composition of the detailed products and services can vary significantly for different cells of one row, depending on the exact cost structure of each element. Thus, the deflators should be different for each cell instead of being uniform for the whole row. Unfortunately, we do not have enough information to implement such a differentiation and are forced to use a single deflator for each row.

The conversion of use table of domestic goods and services for 2004 and subsequent years from current prices to previous year prices was implemented by dividing all of the elements of each row of the table by the corresponding deflator. Purchases in the domestic

[24] See (https://www.ereport.ru/stat.php).

territory by non-residents were subtracted from household final consumption and converted using the household final consumption deflator from the SNA (as a first approximation).

Similarly, the conversion of the use tables for the import of goods and services for 2004 and subsequent years to previous year prices was implemented by dividing all the elements of each row of the table by the corresponding import deflator. Direct purchases abroad by residents were converted using the common import deflator from the SNA (as a first approximation).

The matrix summation of the use tables for domestic and imported goods and services gives a use table at basic prices in previous year prices. Similar procedures were used for the all following years.

5. Conclusion

As a result of this research, we proposed a logically consistent scheme of SUT projection for 2004 and subsequent years based on the SUT for 2003. The main distinctive features of our methodological approach are:

• the application of the RAS method to Quadrants I and II of the use tables (instead of only Quadrant I in the classical method), which allows us to avoid problems due to lack of information and to exogenously determine the Quadrant I row totals, and

• the use of the RAS method and basic 2003 data to calculate the Quadrant I and II column totals for 5 tables, making up the total use table at purchasers' prices, for 2004 and subsequent years.

Further research priorities include:

• the gradual removal of simplifying assumptions using new information sources,

• testing of different projection methods apart from RAS to select the most preferred in a Russian context,

• examining backward projection possibilities for the period prior to 2003 (considering the absence of official Rosstat SNA data in the NACE rev.1 for this period).

After the publication of detailed Russian SUT for 2011 by Rosstat, all our time-series need to be reconciled.

Finally, SUT time-series in NACE/CPA will provide the necessary information base to implement further research and forecasting by economic departments and research institutions and for these organizations to participate in international projects.

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