**Experience in calculating estimates of the dynamics of Russian GDP by the double deflation method**

**Staritsyna Elena**

The estimates of GDP and GVA at constant price are calculated by three approaches or their combination, depending on the initial data: extrapolation, simple and double deflation.

When extrapolating, the dynamics of GVA is determined by an estimate of the dynamics of output, calculated mainly on the basis of quantities. In the case of simple deflation, the dynamics of GVA in nominal terms is recalculated into constant prices using the output deflator.

At the same time, the accuracy of estimates obtained by extrapolation and simple deflation may be low when the volume index of intermediate consumption does not differ much from the volume index of gross output, or when the deflator of intermediate consumption is close to the deflator of output.

The accuracy of estimates of GDP and GVA can be improved if double deflation is used to obtain estimates of GDP and GVA. With double deflation, the value of value added at constant prices is obtained as the difference between the value of output and the value of intermediate consumption, estimated at constant prices. For recalculation, independent price deflators are used for intermediate consumption and for gross output.

At the same time, the transition to double deflation is a very non-trivial task. This is due to the fact that, unlike the two other techniques, double deflation can be carried out only with the participation of the supply and use tables and deflators by products and industries corresponding to the level of detail of these tables.

With the beginning of the publication, in 2017, of Russian input-output tables in classifications harmonised with international ones, it became possible to calculate estimates of GVA and GDP by double deflation for Russia. However, today, Rosstat (the Russian Federal State Statistics Service), due to a number of still unresolved measurement problems, still calculates the official indicators of GVA and GDP at constant prices using the extrapolation and simple deflation methods.

At the same time, using the series of input-output tables, it is possible to produce alternative indicators of GDP and GVA at constant prices using the technique of double deflation. This allows us to analyse the impact of double deflation on the dynamics of GDP and its components, and to investigate the measurement problems faced by the implementation of double deflation in modern Russian conditions. In this paper, an attempt is made to calculate the estimates of GVA and GDP by double deflation. There is a technical possibility of producing indicators for the period from 2011 to 2016, since, for this period, the series of official-use tables are presented in the classifications of OKVED1 / OKPD1. For the next period, 2016-2018, the tables are published in OKVED2 / OKPD2 classifications, which contain significant changes in comparison with the previous classifications. 2011 was selected as the base year. To recalculate the tables, we used the industrial producer price indices (PPI) calculated on the basis of monthly data, as well as the average import price indices of goods and services.

By recalculating the current year use-tables to a constant price, the volume indices of intermediate inputs at purchasers' prices were calculated. Then, using the official indices of the volume indices of output by industry and calculated volume indices of intermediate consumption at purchasers’ prices, the volume indices of the GDP and GVA, by industry, were produced.

Further, the obtained estimates of the volume index of the intermediate consumption, the GVA and GDP were compared with the official counterparts. Alternative estimates differ from the official ones only in the technique of calculating the volume index of intermediate inputs at purchasers’ prices. Therefore, the difference in the dynamics of the two types of assessments is solely due to the dynamics of the volume index of intermediate consumption at purchasers’ prices.

Throughout the observation period, with the exception of 2015, alternative estimates of GDP showed slower growth rates than the official ones. At the same time, the alternative and official estimates of intermediate consumption at constant prices grew at a faster rate than output at constant prices. The result was an increase in the share of intermediate consumption at purchasers’ prices to the output.

The growth of this indicator can be interpreted in two ways. On the one hand, it may indicate the activation of outsourcing processes and the formation of vertically integrated structures aimed at increasing the competitiveness of end products in Russia and on the world market. On the other hand, we can talk about a decrease in the efficiency of using intermediate consumption. Additional research is required to reach a final verdict.

In turn, the higher growth rates of output deflators, in comparison with the growth rates of deflators of alternative intermediate consumption, indicates that over the entire observation period, producers received more for their products than they spent on intermediate consumption.

In contrast to the official volume index, an alternative volume index of the intermediate consumption at purchasers' prices can be decomposed into its constituent elements: intermediate consumption of domestic products at basic prices; intermediate consumption of imports and net taxes on products.

Since 2014, the volume index of domestic intermediate consumption has grown at a higher rate compared to the volume index of the intermediate consumption at purchasers’ prices. At the same time, there has been a decrease in the volume index of intermediate consumption of imported products and volume index of the net taxes on imports. The latter is due to the high share of taxes on imported products. The current state of affairs is partly due to the effect of import substitution for certain types of products: the dynamics of the volumes of intermediate consumption at purchasers’ prices is determined primarily by the state of affairs in industries that consume intermediate products of domestic production.

In an attempt to understand the reasons for the excess of the growth rates of official estimates of GDP, in comparison with alternative estimates, we compared the output deflators of the SNA with the average annual producer price indices. The possible reasons for the discrepancy between the two types of deflators are considered.

Another significant measurement problem is related to the calculation of deflators for imported and domestic production services, the role of which, in intermediate consumption, in certain industries is very high. In the absence of monthly data to construct average annual prices, we were forced to use the SNA output deflators to recalculate the services of domestic production, from current prices to constant prices, and use rough assumptions when calculating the deflators of imports of services, in accordance with which, the growth rates of these deflators correspond to the inflation rates in the European Union, the main exporter of services for Russia.

Recommendations for improving statistics are formulated.