Abstract to the report

**Small DSGE - model of the Russian economy with heterogeneous adaptive learning**

The study is devoted to the construction of its own DSGE model taking into account the heterogeneous adaptive training of economic agents. The paper attempts to determine the optimal monetary policy and obtain forecasts. The relevance of the research topic is due to the realities of the modern Russian economy, as well as the importance of taking into account the fact that agents form their expectations about future events in different ways and not rationally.

The object of the study is the economy of the Russian Federation and the dynamics of the main macroeconomic indicators in the period from 2015 to 2020. The subject of the study is the influence of heterogeneous adaptive expectations of economic agents on the dynamics of the macroeconomic system and macroeconomic indicators of Russia.

In the first part of the report, the main fundamental and modern scientific works of domestic and foreign researchers on DSGE models are considered and the analysis of publication activity is carried out. As a result, at the time of the study, no publications were found where a DSGE model with adaptive learning (moreover, heterogeneous) was analyzed for Russia.

In the second part, the constructed theoretical DSGE model is described, the tasks of each agent are considered separately, and the approach of heterogeneous adaptive learning is presented.

In the third part, the parameters of the constructed model are evaluated, the optimal monetary policy is determined, a model with heterogeneous adaptive learning and models with rational expectations or homogeneous adaptive learning are compared, forecasts for two years ahead are made.

The novelty of the study is that the inclusion of expectations of economic agents using heterogeneous adaptive learning in the construction of models will be used for the first time in Russia.

The significance of the study lies in the fact that the constructed model contributes to research concerning dynamic stochastic models of general economic equilibrium, showing various ways of taking into account the instruments of fiscal and monetary policies in the construction of such models. Also, such a model is applicable to the Russian economy, and the resulting conclusions about the optimal policy can be used in the formation of the economic policy of the state.

According to the results obtained during the study, the following key conclusions can be drawn:

1. A model with heterogeneous adaptive training of economic agents corresponds to the data better than a model with rational or homogeneous adaptive expectations. This is shown when comparing the obtained estimates of model parameters, impulse response functions and retrospective forecasts. Therefore, this area of research is very relevant in the framework of economic analysis using DSGE models.

2. The constructed and evaluated DSGE model in this paper can be used for further research on the Russian economy, as it reflects the realities of the Russian economy quite well. This was shown, among other things, when constructing a retrospective forecast for various indicators.

3. The best rule of monetary policy turned out to be one in which the Central Bank takes into account the smoothing of the interest rate, and also reacts to inflation, the exchange rate, the output of non-oil companies and the domestic price of oil.

4. For the indicators of inflation and GDP on an annualized basis, the forecast for 2021, obtained using the DSGE model, taking into account heterogeneous adaptive learning, turned out to be better than the official forecasts of the Government of the Russian Federation and the Central Bank, and for the indicator of the average annual USD exchange rate, it was quite close to the official one.

5. The forecast for 2022 for the main macroeconomic indicators suggests that, if the assumptions are made, the inflation rate at the end of the year will be 15.2%, GDP will decrease by 4.1%, and the average annual USD exchange rate will be about 76.6 rubles per 1 dollar. Even taking into account the fact that these forecasts are not subject to expert adjustment (as is done in the Central Bank), they can be considered adequate and reflect the real situation quite well, as far as possible in modern conditions.