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Experience of Uzbekistan on constructing and developing macroeconomic models for the sake of sustainable economic growth

1. The latest ten years have been witnessing complicated transformations taking place in Uzbekistan economy and related to transition towards socially oriented market economy. Serious positive changes in various fields of economy are evident. The government targeted a new phase of the reforms towards further liberalization of economy and its openness, the development of private sector and the reduction of the state interference in the economy. Under these circumstances the efficiency of the measures and the speed of the steps towards liberalization will depend on various factors. To this end the capacities of transition economy of Uzbekistan, the trends and interrelations established should seriously be taken into account. The influence of the changes in the exchange rate of soum on the dynamics of exports, inflation, budget deficit and other key macroeconomic indicators; the impact of the tax rate decrease and the reforms of tax system on the financial status of enterprises and incomes of the state; the consequences of abolishing the state order for cotton and grain and other issues are among the most topical ones.

2. To solve these problems many countries widely apply *quantitative models* for analysis of macroeconomic trends and consequences of changes in economic policy. Conceptual description of qualitative changes taking place in the economy, are becoming more documentary in case they are supported not only by calculations, but also by appropriate models. Economic-mathematical models are the tools facilitating to accumulate knowledge about the economy in adjusted and non-contradictory way. Besides, well-constructed models enabling to adequately describe the retrospective are reliable tools for making scenario and forecast calculations.

The central idea of applying economic-mathematical models in Uzbekistan is to raise the efficiency of various basic blocks of national economy on the basis of the principle of maximal speeding up of the economic growth.

Two main directions in the development and application of the macroeconomic models can be traced here. The **first one** proceeds from the necessity to adapt well-known model tools to concrete conditions of the. Within this direction Uzbekistan have obtained positive results related to the application of SAM [1] and RMSM-X [2] models, DSM model of RMSM-X [3] . The **second** direction actively being developed in major countries of the world, is designed to develop new model complexes, deeper reflecting the specifics of the national economy, the goals and the tasks of its development. In this direction Center for economic research have

been researching the development of “*Small sized macroeconomic model of Uzbekistan with the elements of market equilibrium*”.

The development and adapting of SAM based model was gradually carried out:

* 3 – sector macroeconomic model of Uzbekistan has been developed and tested; methods of collecting information and its initial processing have been worked out and SAM based matrix has been formed; the system of equations and its coefficient base, and exogenous variables have been developed; the consequences have been simulated; the sensitivity of impact of certain kinds of regulators of macroeconomic policy on the performance of the economy of Uzbekistan have been assessed; scenario options have been developed and model calculations made for the country development options for one year. Taking into account that SAM model makes it possible to significantly expand and supplement the methods and models of macroeconomic modeling used by the practitioner economists, the training of the specialists was held in order to teach them to apply the model and the model itself was installed at their desks.

*5-sector model of the national economy was made by means of disaggregating agriculture to sub sectors; preparing benchmark data of the matrix for 1996 and 1997 by the blocks of national accounts, public incomes and spending, foreign economic activity and investment.

*the development of the model proved the expediency of further growth in the number of sectors of the economy. The number of the sectors in the model has been increased from 5 in previous work up to 8. Sector profile is represented in the matrix by the following branches: industry, cotton growing, livestock breeding, other branches of agriculture, construction, transport and communications, trade and catering, other services. The demand in detailed elaboration of the branches and indicators of the blocks in SAM is mainly related to the necessity to reveal the impact of various production factors on the stability of macroeconomic parameters, as well as to the necessity to determine the effect of the measures undertaken in order to develop the sectors of the economy. Besides, the detailed elaboration of the sector structure of the model will increase the homogeneity of the data.

We would like to express gratitude to the ESCAP staff members and personally to Mr. H.Sarkar, E.Gherman, H.Ardelaba, and also to Mr.Sh.Bhide for their support in the development of SAM model. Their recommendations and suggestions made it possible to significantly improve the quality of the benchmark matrix, to clarify the sources of information, the schemes of calculating the model's parameters, the interrelation between the tables and operating system of statistics.

4. Another model for adapting to the concrete conditions of the country as an adjusted minimal standard model RMSM-X developed by the World bank and being an efficient tool for the analysis, formation and coordination of the options of macroeconomic policy and for the assessment of possible consequences of the policy pursued on the functioning of the economy having limited statistical data

available. Proceeding from this in 1997 the Center for economic research with the support of the specialists from the World bank started to adapt RMSM-X model to the conditions of Uzbekistan. In the course of adapting the experts from the World Bank and the IMF rendered technical assistance. Multiple meetings with such specialists as A.Anderson, Y.Dikhanov, G.Taube, E.Jorgensen and others were devoted to the discussion of the following issues: the establishment of the information base for the model, the development of scenario conditions of the functioning of the economy and economic interpretation of the results obtained. Practical application of RMSM-X model is based on minimal number of macroeconomic indicators contained in the statistics of national accounts, balance of payments and the indicators of monetary and credit system and those of public sector.

Wide analytical capacities of RMSM-X model serve as a tool of macroeconomic policy analysis in the key economic bodies of Uzbekistan. This tool provides coordination of forecast macro-parameters such as the level of investments, the volume of imports and exports, the deficit of consolidated budget, GDP growth rates, as well as the size of external debt and the options of its financing.

5. The work designed to develop the debt block of RMSM-X model and its practical testing was done on the basis of various scenario calculations of the country's indebtedness. These calculations became possible, as necessary statistical information meeting the model's requirements has been clarified.

The aim of using this model is to review macroeconomic aspects of external debt generation, analyze a present state of foreign indebtedness and assess the consequences of the different options of macroeconomic development impact on the level of future borrowings.

6. The work has started to design new model complexes such as "Small size macroeconomic model of Uzbekistan with the elements of market equilibrium".

The aim of this research is to create the base for econometric model of transition economy of Uzbekistan using new up-to-date principles and approaches. The model should reflect the main specifics of Uzbek economy, be oriented to available statistics and designed to analyze and forecast the indicators of the macroeconomic balance level and market equilibrium. To achieve these goals the *following tasks* were set and solved:

- ~ To work out the theoretical base of the model using the world experience and the results of former researches;
- ~ To create a necessary data base in kind of time series of macroeconomic indicators, regulators and indicators of the level of balance in the economy during the latest 5-7 years;
- ~ To check theoretical approaches on the basis of the statistics accumulated, after having obtained a regression equations and the schemes of forecasted key macroeconomic indicators and the indicators of market distortions;

- ~ To study a number of specific issues and regularities of the economic development vital for the development of such a model. Among them are quantitative interrelations between the main macroeconomic indicators.
- ~ To find the fields and the sectors of the economy in which new market mechanism and regulators are operating (prices, exchange rate, interest rate); to create a tool for assessing the efficiency of the suggested options and strategies of macroeconomic regulation from the point of view of decreasing the distortions and disequilibria of the latest years;
- ~ To assess the sensitivity of transitional economy of Uzbekistan to new market regulations and their impact on macroeconomic dynamics;
- ~ To give concrete recommendations designed to raise the balance and macroeconomic equilibrium standards at the stage of speeding up of liberalization and economy reformation, as well to advise on more sequenced measure of macroeconomic policy.

We were not experienced in constructing equilibrium macroeconomic model for the transition economy; necessary literature wasn't available. I would like to underline an invaluable assistance rendered by international experts. Theoretical description of a model has been discussed with Mr. Sh. Bhide (National consultants Institute on applied economy, India). Consultation on the range of equations and conceptual statements rendered by Mr. R. Pomfred and Mr. P. Azhenor (World Bank) contributed to perfect the model quality.

The given research is one of pioneering researches not only for Uzbekistan, but also for all post-soviet countries, except Russia where a number of research centers of Russia started to develop econometric models of Russian economy. Thus the results obtained, the experience gained on the development of equilibrium models have been presented for open discussion at the international seminar.

The users of the model are Central Economy related institutions such as Ministry of Macroeconomics and Statistics, Ministry of Finance, the Central Bank, those directly involved in practical implementation of reforms and the development of main directions of macroeconomic policies. They will enjoy the opportunity to set the goals and guiding points for some indexes and to study the outcomes of these optional variants for the development of economy as a whole.

7. The main aims and tasks of the Group for macroeconomic modeling of the Center for Economic Research are the following:

- *to study international experience in adapting and using the models for macroeconomic analysis and forecasting and research the possibility of their application in Uzbekistan;
- *to adapt to the conditions of Uzbekistan and develop standard model complexes recommended by international financial agencies;
- *to create a data base of econometric models and analyze the dynamics of the macroeconomic parameters;
- *to study trends and macroeconomic regularities of transition period on the basis of econometric analysis of the series of macroeconomic and financial indicators;

*to make polyvariant calculations for developing of coordinated macroeconomic policy for short term, long term and medium term perspectives;

*Arranging trainings and providing the civil servants and national experts with new methods of macroeconomic modeling.

To implement these tasks we rely on further fruitful cooperation and support of ESCAP, and especially of the Department for development studies and policy analysis.