EVALUATION OF A MULTIPLICATIVE EFFECT OF HIGH-TECHNOLOGY MACHINE-BUILDING DEVELOPMENT

There are several reasons why this topic is important. First and foremost, there has been a long-felt need to bring the economy to a new level and enhance technology development. Second, shifting from exports and feedstock-oriented approach requires an industry that, along with a potential for internal development, could become a growth point for the whole economy. Third, the country has accumulated a considerable capital that needs to be invested in businesses.

The underlying hypothesis of the IFS-led study was the following assumption: "…products recognized competitive in the international market will obviously be competitive in the domestic market…"

Internationally recognized industries include those that handled exports not only in the 1999-2007 transition period, but also during the 1992-1998 crisis. Competitiveness of such industries can be proved with new product developments from concept through to manufacture after 2010.

In compliance with the competitiveness terms, the following industries and products will be explored in the study:

- Defense industry. Perspective Multirole Frontline Aircraft (PAK FA).
- Power engineering: nuclear engineering sector. Nuclear power unit VVER (Water-Water Energetic Reactor) 1500MWt.
- Aerospace sector of the space and rocket industry. 'Angara' space launch vehicle.
- Automotive industry. New B concept (AutoVAZ and Renault), Toyota Camry (Toyota Motors), Fiat Ducato (SOLLERS and Fiat Group).
- Civil aviation. Mid-range SSJ and MS-21 aircrafts.

Modeling study was conducted in three stages:

1. A static model represented the most efficient industries. The major efficiency criterion was growth of an industry share in the industrial mix. GDP growth rates were not given prior importance.
2. A dynamic model was used for mid-term rates and economic growth structure forecasts.

The static model study revealed that the machine-building complex would lead to positive changes in the industrial mix as well as empower processing industries to develop faster.

Using the dynamic model, we obtained mid-term GDP growth rates provided exports are expanded with new goods and imports are substituted by domestically produced goods, which will be possible according to the basic hypothesis.

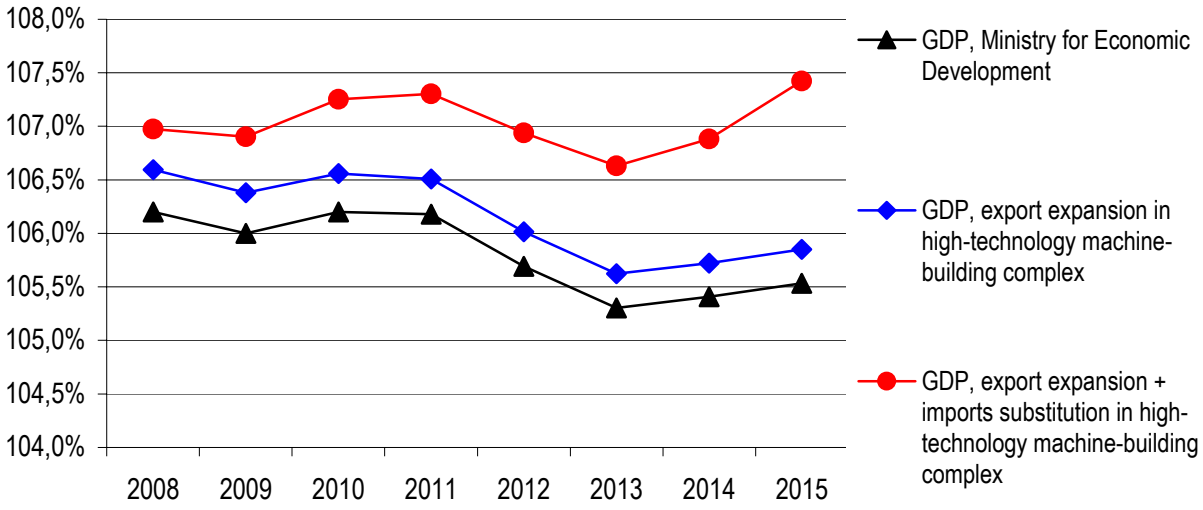

Figure 1. Mid-term GDP growth according to various scenarios

Also, interesting results have been obtained from the industrial mix research. Efficiency of high-technology machine-building is vivid. Tables show that stimulation of high-technology machine-building industries will cause chemical and petrochemical industries to grow 0.07 pct, provided imports are substituted, and 0.04 pct, provided exports are enhanced. Growth in the machine-building complex share will be 3.49 pct and 0.05 pct respectively.

Growth of industry shares in the industrial mix

Export expansion in the high-technology machine-building complex				
	Stimulated complexes			
	Energy industry	Metalworking	Chemical and Petrochemical industries	Machine-building complex
Energy industry	1.27	0.15	0.2	0.1
Metalworking	0.02	1.14	0.06	0.19
Chemical and Petrochemical industries	0.02	0.02	0.85	0.04
Machine-building complex	0.02	0.02	0.04	0.85
Export expansion + imports substitution in the high-technology machine-building complex				
	Stimulated complexes			
	Energy industry	Metalworking	Chemical and Petrochemical industries	Machine-building complex
Energy industry	1.28	0.19	0.21	0.19
Metalworking	0.02	1.32	0.06	0.38
Chemical and Petrochemical industries	0.02	0.02	0.93	0.07
Machine-building complex	0.02	0.55	0.25	3.49

Note: Energy industry includes oil and gas extraction, coal mining, petroleum refining and electrical power engineering. Metalworking includes ferrous and non-ferrous product making.

The research revealed the following:

- Overall industry advancement is only possible provided high-technology development in machine building complex is stimulated.
- Exports enhancement only has a short-run positive impact on the economy and will almost come to a zero effect by 2015.
- Substitution of imports in high-technology machine building industries (and in metallurgical conversion) leads to stable economic growth and diversified production.

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