The estimation of multiplicative effects in Russian economy

Tokyo, 2010

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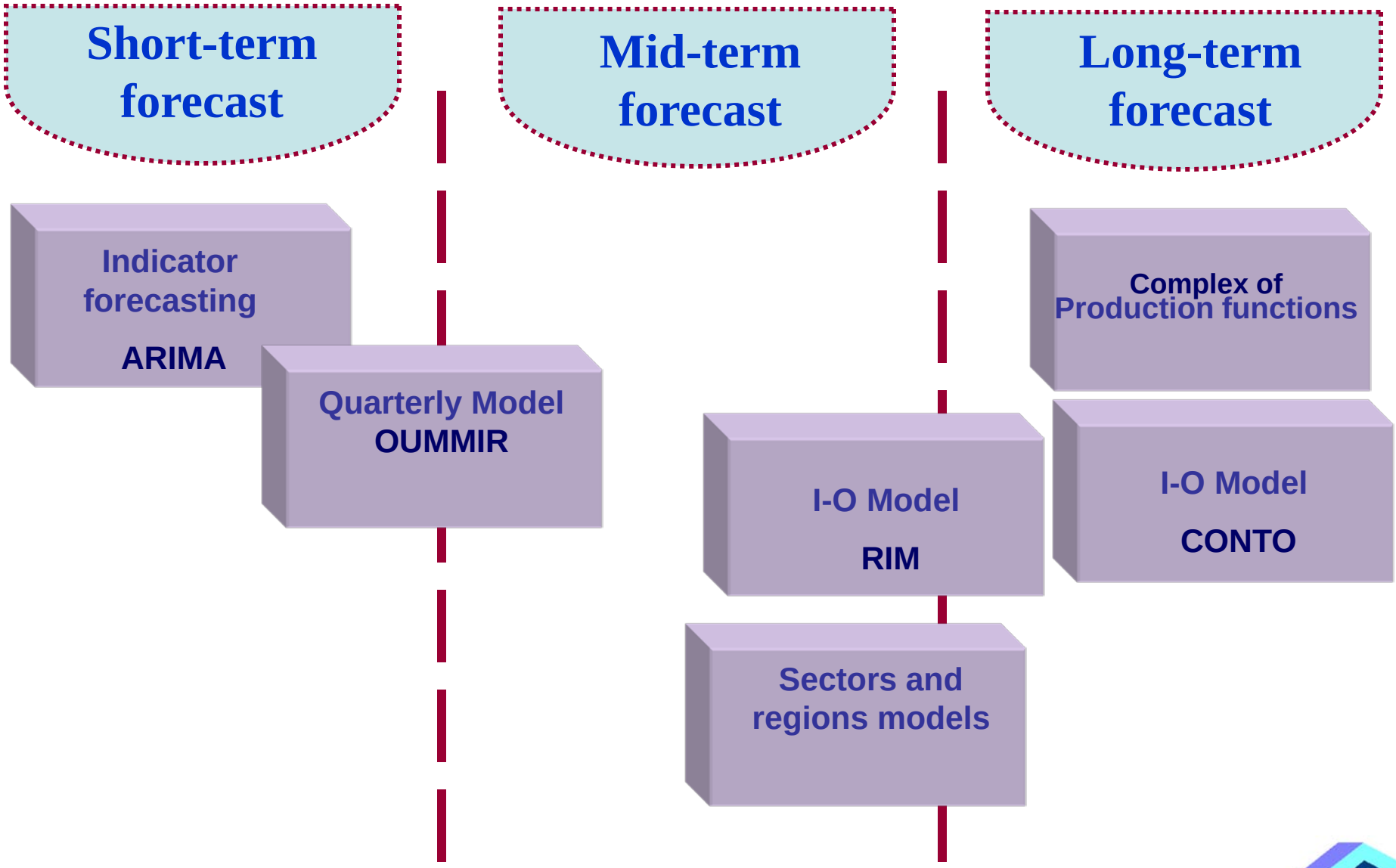
System of models using in IEF RAS



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Autumn 2008

They learned that Russian economy goes to the crisis

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The analysis of multiplicative effects in different sector of economy should consider at least three basic chains of interactions:

•**Direct links:** effects from increase of industrial and investment activity in oil sector;

•**Interindustry links :** expansion of output and change of incomes in sectors connected with oil industry (metallurgy, the chemical industry, power generation, transport etc.);

•**Effects from value added:** distribution of additional incomes in favor of the households, the government and fixed capital investments.

The base, capable to make such calculations, is the I-O tables

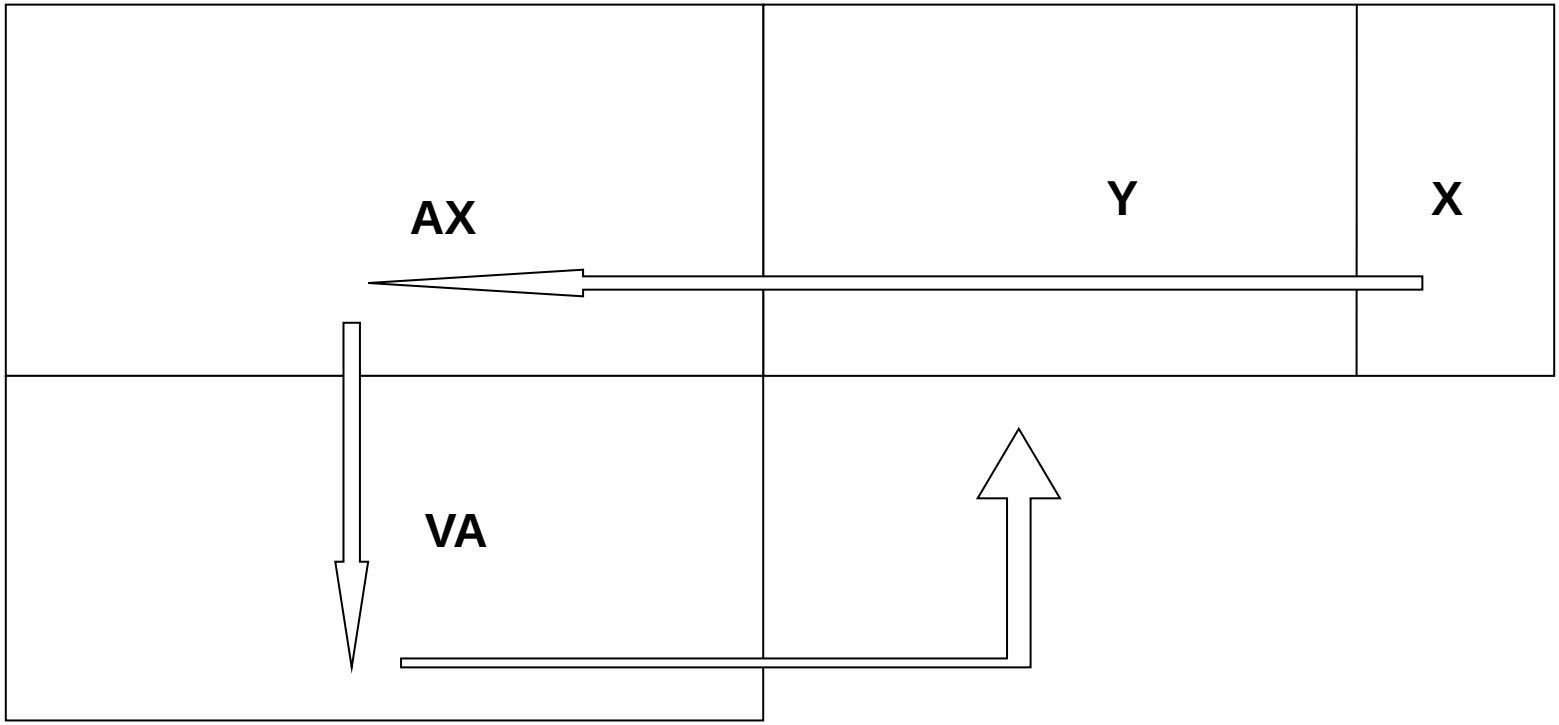
Definitions

The multiplicator (M) (in macroeconomic) – the coefficient showing, how many times will change Total output with growth of production or investments in analyzed sector

The multiplicative effect (ME) - product of the multiplicator and change of output or investments. Reflects effect from increase output in an analyzed sector taking into account its impotence in structure of economy

It is obviously important to use the given definitions accurately. The matter is that high value of the multiplicator to completely not means high multiplicative effect.

SCHEME OF CALCULATIONS



$$ME = (X' - X - \Delta X_0) + ((X' - X) - (A * X' - A * X)) * (HC * \text{wages} + \text{GC} * \text{tax} + IC * profits)$$

$$M = \frac{ME}{\Delta X_0}$$

Turnover of capital (in days)

1	AGRICULTURAL	118
2	OIL EXTRACTION	184
3	MINING	202
4	FOOD	98
5	TEXTILE	185
6	WOOD PRODUCTS	171
7	PAPERS AND POLYGRAPHY	229
8	CHEMICAL INDUSTRY	125
9	NONMETALLIC AND MINERAL PRODUCTS	214
10	METALLURGY	175
11	MASHINERY AND EQUIPMENT	204
12	ELECTRIC EQUIPMENT AND COMPUTERS	181
13	CARS AND OTHER VEHICLES	145
15	AVIATION, RAILWAY AND SEA EQUIPMENT	567
16	POWER INDUSTRY	174
17	CONSTRUCTION	172
18	TRANSPORTATIONS	257
19	FINANCE AND ENSURANSE	76
	AVERAGE	**148**

The problem of import

Cars industry	
Multiplicator (without import)	**1,66**
Multiplicator (taking import into account)	**1,06**
Effect from output growth on 100 RUB. (with current import share)	
Metallurgy	15,9
Trade	14,5
Transportation	5,2
Power energy	4,9
Machinery and equipment	4,5
Growth of Total output	**105,6**
Growth of GDP	**61,2**
Growth of budget income	**23,2**

Calculations results

	without import matrix	with import matrix		without import matrix	with import matrix
Agriculture	1,06	0,75	**Fabricated metal products**	**2,22**	1,41
Petroleum extraction	1,35	1,05	**Machinery**	**1,87**	1,21
Natural gas extraction	1,31	1,01	**Computers, office machinery**	**1,80**	1,11
Coal mining	1,39	0,92	**Radio, television, communication equipment**	**1,79**	1,15
Food, beverages, tobacco	1,40	1,02	**Automobiles, highway transport equipment**	**1,66**	1,06
Textiles, apparel, leather	1,01	0,65	**Sea transport equipment and its repair**	**2,20**	1,34
Wood and wood products	1,41	0,96	**Airplanes, rockets, and repair**	**2,11**	1,32
Petroleum refining	**1,88**	**1,58**	**Railroad equipment and its repair**	**2,57**	**1,53**
Chemicals	1,44	1,03	**Electric, gas, and water utilities**	**1,52**	1,14
Pharmaceuticals	**1,78**	1,05	**Construction**	**2,05**	1,29
Ferrous metals	**1,65**	1,18	**Transport and storage**	**1,75**	1,24
Non-ferrous metals	1,23	0,90	**Communication**	1,34	1,00

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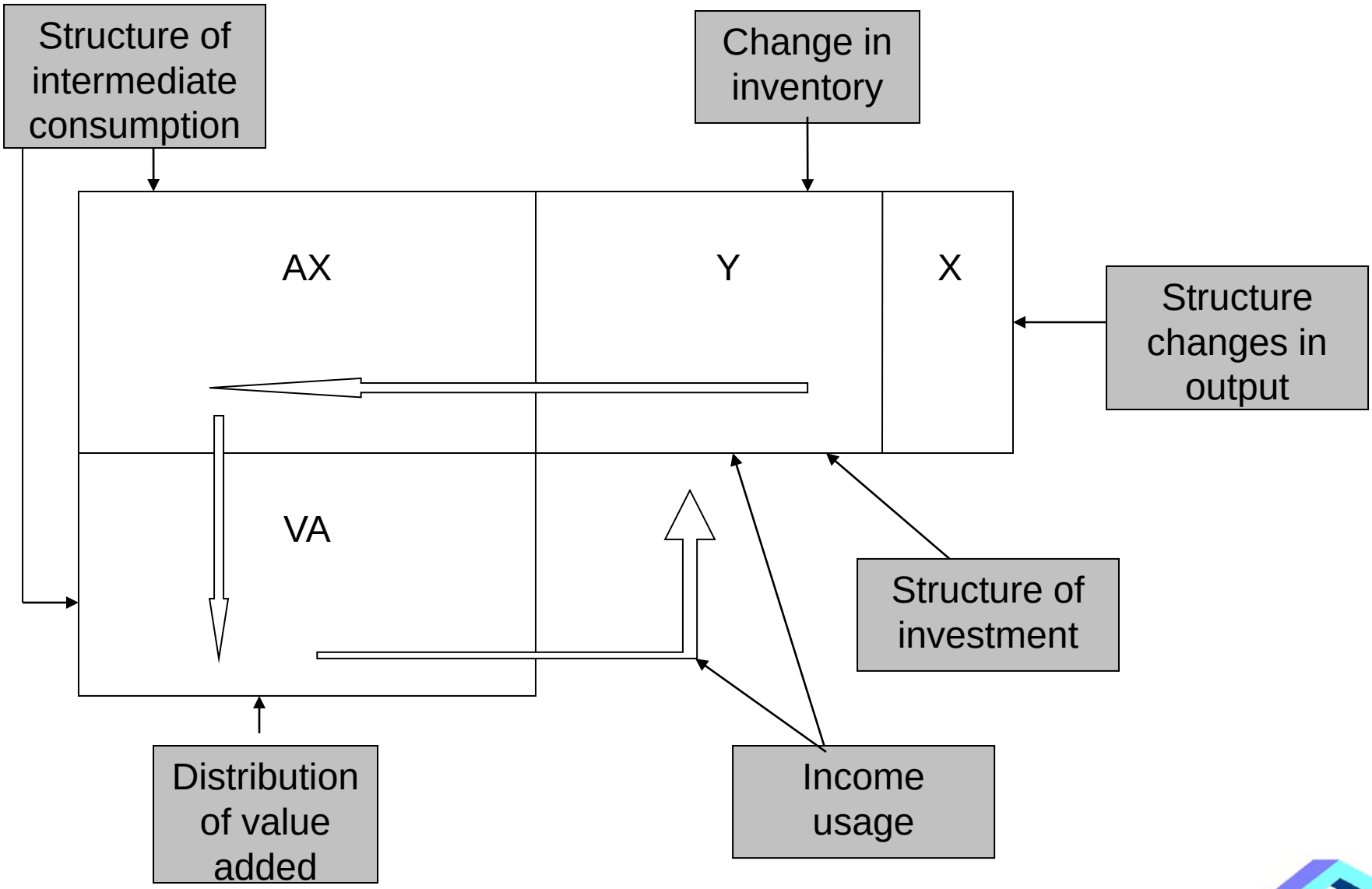
HYPOTHESES AND RESTRICTIONS



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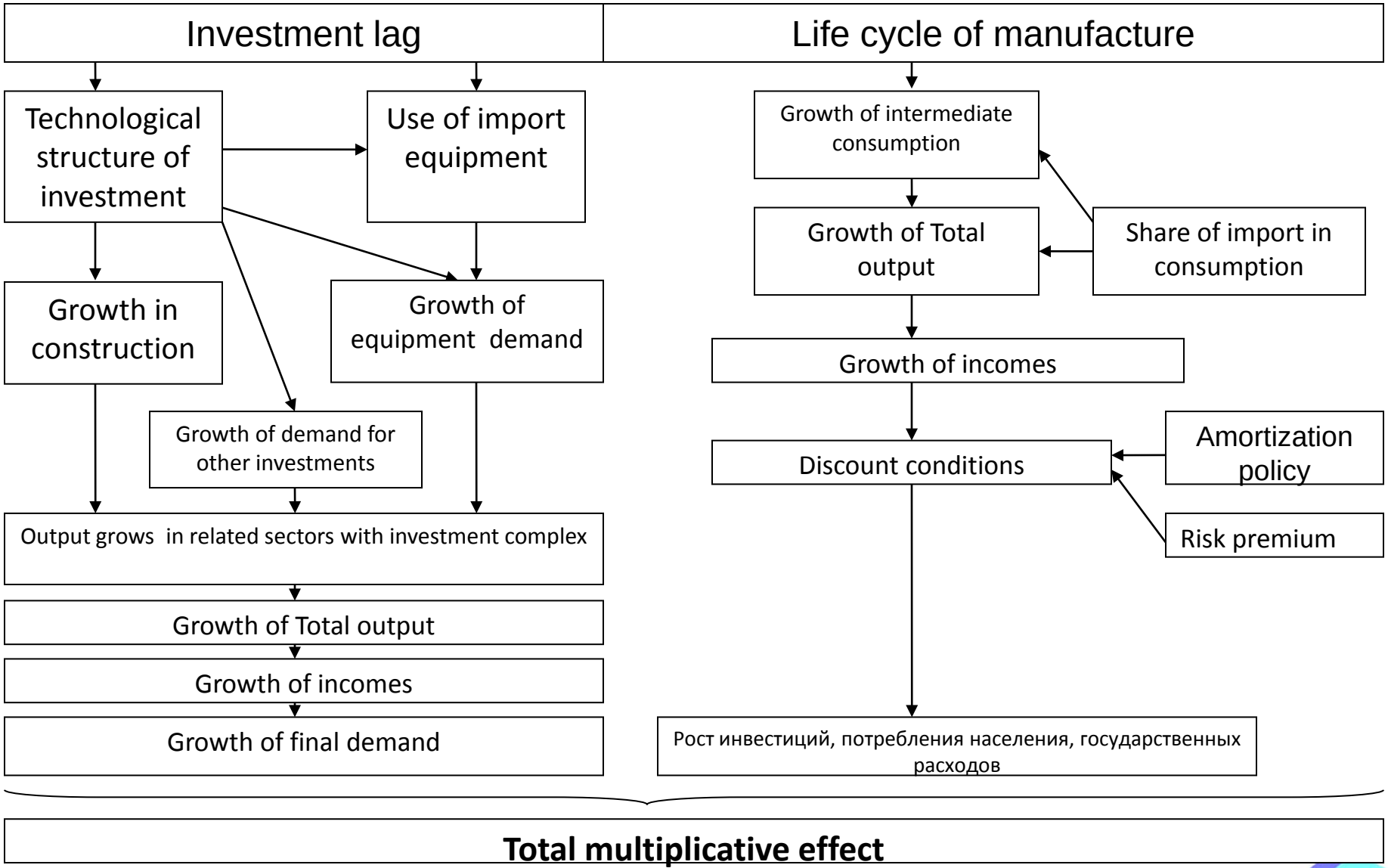
The case of investment project



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Investment sources

- If you use new financial resources then the multiplicative effect forms by adding up effects from investment and production increase (with chosen condition of discount)

- If you use financial resources by cutting another projects then the multiplicative effect forms by production increase and effect from changes in product structure of investment

PROBLEMS

- The method of multiplicator calculations is not much easier than producing ordinary interindustry forecast
- We have to use some assumptions which reduce the transparency of calculations
- We not so well understand the cycle which is described by the multiplicator
- We don’t take into account possible restrictions on internal demand

Web sights IEF RAS

www.ecfor.ru

www.macroforecast.ru

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