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Some aspects of inflation in the 1990s of XX century in Russia

The problem of inflation was a key problem of economic development of Russia in 90-th. And the matter is not only in inflation on itself. The matter of fact is that outstripping in relation to growth of the incomes the rise in prices was, maybe, the main reason of industrial recession in 1992-1996 years.

From our point of view as modelers that means that understanding of processes of inflation is the important moment for construction of Russian IO model (RIM).

Concerning inflation in Russia during the first years of reforms the supporters of the monetary approach adhere to the standard opinion that the inflation was caused by excessive demand being a consequence of superfluous money supply in economy, by excessive nominal incomes and by the state budget deficit. Such opinion, apparently, based on neoclassical theoretical foundation and mostly derives from western experience of economic development.

However comparative analysis of dynamics of money supply, nominal money incomes of the population and consumer price index does not confirm this hypothesis (look at table 1). The analysis of the monthly data does not give any bases for such statement, but in the separate periods (1995) shows the opposite relation between inflation and policy of restraint money supply.

Table 1

CPI, private nominal income and money supply dynamics (times to 1990 bases)

	1990	**1992**	**1994**	**1996**	**1998**	**2000**
CPI	1	30	1306	5408	7331	13826
Private nominal income	1	24	1182	4378	5486	11723
Money supply (M2)	1	10	150	476	730	1865
M2 and CPI dynamics ratio (%)	100%	33%	12%	9%	10%	13%
M2 and pop. incomes dynamics ratio (%)	100%	42%	13%	11%	13%	16%

At the same time M2/GDP ratio has fallen from 79 % in 1990 up to a extremely low level of 6 % in 1994 and then practically remained at a level of 10 % for the period till 2000 (table 2).

Table 2

M2/GDP ratio (%)

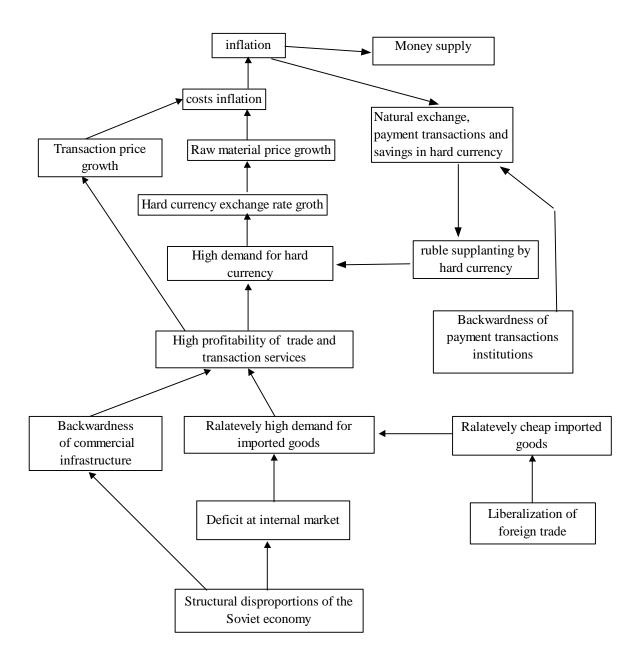|	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**
M2/GDP (%)	79	18	5.4	10	14	10

That fact, that the rise in prices essentially outstripped changes of any of money measures, testifies, at least, that existed enough significant factors different from monetary ones increasing inflation comparing to changes of money measures. The attempt to explain the gap between prices and money measures dynamics with the help of increasing of velocity of money does not maintain criticism. Such real acceleration assumes increase of transaction speed in unit of time, essential improvement of work of payment transactions institutions, that in a reality was not true and could not be due to backwardness and crisis condition of bank system. All this means, that actually character of cause-and-effect relations in the economy was opposite to that the representatives of the monetary approach consider. Namely, it means, that exactly the inflation set the certain requirements to dynamics of money supply (rather the reverse), which, naturally, were not maintained and could not be sustained, as the increase of money supply adjusted in such conditions to rates of inflation could even more untwist inflation. Thus, the restrictive money policy to some extent constrained a rise in prices, but it (money policy) by no means was the reason of inflation. Fact that inflation rates were much above than dynamics of money supply, on condition of impossibility of increase of money velocity, already is the proof of essential independence of inflation in Russia in 1992-1997 from money supply dynamics. At the same time it proves basic dependence of money supply from inflation rate. Though, both it is completely obviously and nobody challenges that certain dependence of inflation on money supply changes always exists and, thus, always there is a certain opportunity of reduction of inflation for the account restriction of monetary policy. The problem, however, is, that this tool of macroeconomic policy is extremely inefficient and even harmful from the point of view of maintenance of conditions for economic growth in those conditions, when the reasons of inflation have mainly nonmonetary character.

Significant part of Russian economists, as opposed to the supporters of the monetary approach, adheres to that point of view that the inflation in Russia developed as inflation of costs. Such statement seems to be fair only in the sense that it characterizes processes of inflation laying on a surface, by not opening its true deep reasons. The true and basic reason of inflation consists in structural disproportion of former Soviet economy [M. Uzyakov. Transformation of the Russian economy and opportunities of economic growth. Moscow: 2000.]. It is necessary to add to this, that in the certain measure the inflation was imported. That means a high degree of so called dollarization of economy that took place in the first years of reforms in Russia. Till 1996

American dollar, being a legal payment means, superseded ruble from currency and thus stimulated ruble inflation. According to the experts' estimations volume of cash dollars in Russia in 1995 exceeded a ruble cash, and non-cash dollars and rubles there was of an approximately identical amount [A. Velichenko. New religion of times of financial stabilization. // Moscow. Scientific park, 1996, # 10].

The third reason of inflation consists of institutional factors. Just first and partly second reason of inflation created visibility of inflation of demand on a background of external monetary effect. Though money restrictions allowed in the certain degree to constrain inflation, it means only that the money policy played the role of some kind of the mechanism allowing to the potential inflation of costs to become apparent at greater or lesser extent. But this inflation of costs in these years was of the suppressed type. There is one more opinion that the reasons of inflation derived from the necessity for the manufacturers to increase financial resources necessary for reproduction that caused the phenomenon that in Russian literature were called inflationary potential. However, not denying the importance of the reproduction requirements, structural disproportion seemed to be more significant reason for inflation than reproduction requirements were. For the benefit of this sentence the lowest investments in sectors having available resources for normal reproduction testify. Mentioned structural disproportion had two aspects. First, it was disproportion of production structure by kinds of goods, i.e. goods for consumer and industrial purposes. The consumer production part of economy was less developed than the part for industrial purposes in soviet period. Secondly, it was disproportion between structure of internal prices and world prices [Yaryomenko Y. Economic conversations. Moscow: 1999, p. 177]. Picture 1 illustrates the action of these two factors.

Picture 1

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              ┌──────────┐                    ┌──────────────┐
              │ inflation│ ──────────────────►│ Money supply │
              └──────────┘                    └──────────────┘
                  ▲
          ┌───────────────┐
          │ costs inflation│
          └───────────────┘                   ┌─────────────────────┐
           ▲          ▲                        │ Natural exchange,   │
  ┌────────────────┐  ┌──────────────────────┐ │ payment transactions│
  │ Transaction    │  │ Raw material price   │ │ and savings in      │
  │ price growth   │  │ growth               │ │ hard currency       │
  └────────────────┘  └──────────────────────┘ └─────────────────────┘
                           ▲                      │             ▲
                 ┌──────────────────────────┐     ▼             │
                 │ Hard currency exchange   │  ┌──────────────────┐
                 │ rate groth               │  │ ruble supplanting│
                 └──────────────────────────┘  │ by hard currency │
                           ▲                    └──────────────────┘
                 ┌──────────────────────────┐       │
                 │ High demand for hard     │◄──────┘
                 │ currency                 │
                 └──────────────────────────┘   ┌─────────────────────┐
                           ▲                     │ Backwardness of     │
                 ┌──────────────────────────┐    │ payment transactions│
                 │ High profitability of    │    │ institutions        │
                 │ trade and transaction    │    └─────────────────────┘
                 │ services                 │
                 └──────────────────────────┘
            ▲              ▲
 ┌──────────────┐  ┌──────────────────────┐  ┌──────────────────────┐
 │ Backwardness │  │ Ralatevely high      │◄─│ Ralatevely cheap     │
 │ of commercial│  │ demand for imported  │  │ imported goods       │
 │ infrastructure│ │ goods                │  └──────────────────────┘
 └──────────────┘  └──────────────────────┘            ▲
        ▲                   ▲              ┌──────────────────────┐
                  ┌──────────────────────┐ │ Liberalization of    │
                  │ Deficit at internal  │ │ foreign trade        │
                  │ market               │ └──────────────────────┘
                  └──────────────────────┘
                            ▲
        ┌────────────────────────────────┐
        │ Structural disproportions of   │
        │ the Soviet economy             │
        └────────────────────────────────┘
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Since real incomes in economy went down both consumer and industrial demand were reduced, as resulted in recession of manufacture. The rise in prices on import goods was a result of increase of dollar exchange rate. The rise in prices on production of a manufacturing industry basically occurred owing to rise in price of expenses on raw materials (inflation of costs). The initial impulse to costs inflation was given by exporting sectors and by monopolies such were transport and electricity sectors. Prices for these sectors grew by outstripping rates (look at table 2 of the appendix). Price indexes in 1992 (1990 is the base year) for these sectors were:

Petroleum extracting - 253 times, oil refining - 124 times, gas industry - 118 times, coal industry - 90 times, nonferrous metallurgy - 100 times, at the average in economy - 50 times).

The explanation was simple. The manufacturers of that production, which was exported or could be exported, aspired to establish the internal prices for such production at a world price level adjusting to a constantly falling ruble exchange rate. Such kinds of goods were primary raw materials such were petroleum, gas and nonferrous metals. The growth of exchange rate of foreign currencies occurred owing to, on the one hand, depreciation of ruble, i.e. inflation, and on the other hand, excessive demand for currency on the part of the agents. The great demand on foreign currency basically was caused by the unreasonably increased profitability of trade by the imported goods, that was a consequence, on the one hand, deficit property of the domestic market, and with another - liberalization of foreign trade. High rates of inflation also stimulated interest of business to trade and commerce sphere as far as it had short time production cycle. Besides, the inflation resulted in expansion of barter 9natural exchange) and internal accounts in foreign currency, and in growth of the currency savings of the population, and, in the final account - to replacement of ruble by dollar as payment means. In those sectors, where ruble remained a payment means, there was a relative ruble glut that also stimulates inflation of national currency. All this in turn again increased demand by currency and conducted to growth of its exchange rate. The rise in price of material inputs and high power-consuming backward technologies, absence of the import duties and real taxation promoted relative cheapness of import. The deficit property of the domestic market was determined by structural disproportion of the Soviet economy. The main contradiction in the given context was the contradiction of production structure of the Soviet economy and final demand structure. Besides, in the country during the Soviet period has developed the technological structure, isolated from the external world that resulted in the appropriate price and costs incompatible with the global one. The opportunities of fast adaptation to new conditions were limited also due to structural disproportion, but in a little bit other sense - technological. By the beginning of market reforms the Soviet economy was characterized by a high degree of technological heterogeneity, i.e. essential differentiation of a technical level of technologies used in various parts of technological space [Uzyakov M. Transformation of the Russian economy and opportunities of economic growth. Moscow: 2000, p.15]. The technological space in this case can be understood as in horizontal and vertical sector economic measurement, and in geographical as well.

One more item of growing costs was the growth transaction expenses [A.A. Blohin. Institutional conditions and factors of modernization of the Russian economy. Moscow: 2000]. The price index for trade and supply services sector in 1992 was 155 times to 1990 base level (look at table 2 of the appendix). The reason was opposite to monopolies. This sector has been an exclusive state monopoly during the soviet period. The old system of wholesale trade and logistics hardly could serve to requirement of the economic agents in for market conditions because of backwardness of a commercial infrastructure. The monopoly was simply destroyed after reform. However it did not result automatically and immediately into high quality of services in the sphere. Even worse. For example they even lost the suppliers and customers database. So the reasons of such situation in many respects also derived from a heritage of the Soviet system and on the other hand from inadequate institutional policies.

The balance in the Soviet economy was supported mainly due to long-term actions of administrative - command system. It was a building with many supports. The reform of 1991 liquidated soviet administrative - command system and all supports. In this extremely unstable condition the economy should find a new point of equilibrium. To proceed in this new point of equilibrium the time, resources for transformation and mechanism for transition were necessary. Nothing from listed was available. Mechanism here is meant as set institutional measures and conditions ensuring efficiency of functioning (i.e. connection of will and resources) of system in new conditions. Task of the present research does not include consideration of a question about what should be these institutional changes. The history of economic development in early 90-s has shown that the mechanism ensuring working abilities for economy was not produced. And, if the former system had been more or less stable, the transition economy has appeared vulnerable to deregulative influences.

As is known, the prices are formed as a result of structure of expenses of materialized labour and new labour, i.e. as the result of ratio of material inputs costs and value added. If any average sector price changes in n times all other prices will change at the same n times on condition that mentioned above ratio stay constant. Thus we will have just price scale change for the whole economy. Something similar occurred to be in economy in the first years of reforms. The initial inflationary impulse was pushed set mainly by exporting and monopoly sectors. Just the price policy in these sectors was the major factor, which has influenced the decrease of potential of system stability of the Russian economy. And the main exporters in Russia are the raw materials sectors. After foreign trade and price liberalization the relation with global

economy has become closer. This connection worked by means of foreign trade and currency rate. Due to export and floating currency exchange rate and also due to monopoly the opportunity to establish prices regardless to the ratio of costs and incomes has appeared. Thus it was possible to cut the gap between the internal and world prices. This is the natural requirement of opened economy. Raw materials have appeared to be nearly the single most competitive domestic kinds of production at the world market. All other sectors were compelled to arrange under price dictation of monopolies and exporters. So far as the economy could not instantly react to price changes, i.e. it kept former structure of expenses and incomes, it produce an increase of price scale.

During the high inflation process there is large redistribution of the income from the agents (manufacturers) with a long time production cycle to the agents (basically, intermediaries) with a short time cycle. Long time production cycle producers decrease their income shares, including wages, in the production value. The accelerated rise in prices caused reduction of the real incomes of the population. Since the serious long-term investment in technology in conditions of high inflation was unprofitable, the compelled adaptation of firms to inflation was not constructive, but destructive. There were bankruptcies, recession of manufacture, reduction and changing of assortment of output without technological improvement. The incomes of at the intermediaries were withdrawn from an economic turnover in such conditions, were withdrawn from the taxation, and finally were taken out abroad.

As a result of such kind destructive adaptation and due to imports the contradiction between manufacturing structure and demand structure has been overcome. Apparently, it has reached the bottom point (some kinds manufacturing has absolutely disappeared), and when a bit later after financial crisis of 1998 the opportunities for import substitution by domestic goods and some financial resources have appeared, the adaptation has become constructive.

The nominal changes in economy of this period influenced changes in real manufacturing; however, the return influence of manufacturing on nominal processes was absent. The common nominal anchor, which money supply is, did not work. The role of a nominal anchor in economy of Russia has become to carry out the exchange rate of foreign currency. High inflation became lower after the government has become regulate hard currency exchange rate dynamics.

Thus, the reason for inflation was not the excessive GDP in nominal terms, but it was the absence of the appropriate reaction of economy to changing to conditions, that was explained by impossibility of fast adaptation of real production sphere.

Today the source of a described type of inflation also exists, that is at some extent reflected by exchange rate and purchasing-power parity ratio that is about 2. Though the contradiction between the internal and world prices still in work, the rates of inflation are much lower due to reduced gap between the internal and world prices. Of course the stabilization of a currency exchange rate can not eliminate inflation at all, however, it may promote lowering super high inflation rates. As some other reasons for inflation besides the exchange rate dynamics still play role the policy of exchange rate restraining has to smoothly adjust in its turn to inflation. The crisis of 1998 showed this fact.

One of the conclusion from Russian history of inflation fighting is that the low developed countries with a high degree of technological heterogeneity, and besides having natural resources, in case of a complete economic openness are doomed to inflation on the account of exporters. It will go until they will level their technological space in comparison with average world standard. The required adaptation may be constructive (modernization of backward manufactures) and destructive (from reduction of backward manufactures up to complete liquidation). Obviously that, the progressive adaptation is impossible in conditions hyperinflation.

As it was told above, the price changes in energy sectors at large extent define the inflation in With the help of RIM model we tried to estimate the consequences of acceptance the price rising proposals put by the leaders of electric power monopoly.

It is necessary to explain that at present time government adjusts the prices for production and services of natural monopolies.

Growth of industrial manufacture in Russian Federation in 1999-2000 not in last turn was obliged to relative delay of price changes in electric power industry at the end of 1998 and in 1999.

In this connection one of urgent questions for the Russian economy, is the question on an accessibility and expediency of increase of the tariffs on the electric power. Solving of the problem requires the account of set of straight and feedback linkages in economy and, practically, it is impossible to do this without use IO model. At the same time, using such rather complex tool, it is necessary to accept certain hypotheses concerning mechanisms of adaptation of sectors to new prices. It means, that the results of model accounts are not absolute exact and unconditional. At the same time they show a basic direction and order of probable economic changes.

In order to make results of model accounts to be completely obvious influence of all other (except for price changes) factors of economic dynamics was eliminated. It means in particular, that all parameters of economic policy (except for electric power tariffs) were at a constant level.

The expected growth of the tariffs on the electric power is referred to a lot of macroeconomic and sector factors. Model computations were accounted for only the major factors such as a) price growth for fuel inputs of the sector; b) investment requirements on the base of sector self-funding; c) taxation in the sector.

The sense of all presented below figures is to estimate what there would be the economic consequences if to solve all problems of electric power industry only at the expense of growth of electricity tariffs, as it offers leaders of electric power sector monopoly. They proposed to increase the tariffs for the electric power in 2 times by 2005, and in 3.4 times by 2010 in comparison with a modern level in order to be able of funding their investment programs and thus to promote steady economic sector development.

Model computations have shown inevitability of significant production slump. There were made two alternative runs:

1. The alternative with two step tariff growth: in 2 times in 2001 and in 1.7 times in 2006;
2. The alternative with smooth (linear) tariff growth (1.2 annual growth rate for the first 5 years and approximately 1.3 annual growth rate for the following 5 years).

In both alternatives the reduction of GDP for 10 years was approximately 27 % (look at picture 2). At the same time in the first run total losses in a level of production for the period were a little bit higher (approximately 3.6% on). According to accounts, the households' consumption reduced even in the greater extent than GDP - 29.7% on.

The sector results according to the smooth tariff growth alternative are submitted in table 3, both in respect of price and output dynamics. The overall price index was 34%.
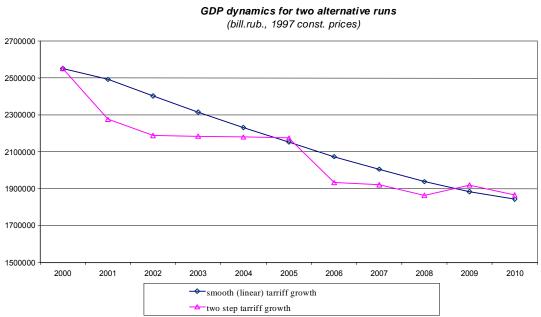
Picture 2

GDP dynamics for two alternative runs
(bill.rub., 1997 const. prices)

- smooth (linear) tarriff growth
- two step tarriff growth

Table 3

Sector price and output dynamics
(smooth tarriff growth alternative)

	Price index (times)		Output growth increment (%)	
	2001-2005	2001-2010	2001-2005	2001-2010
Electricity	**2.00**	**3.40**	-16.5	-28.5
Petroleum extraction	1.08	1.20	-3.6	-6.5
Oil refining	1.08	1.19	-14.7	-26.3
Gas industry	1.07	1.17	-5.0	-8.7
Coal	1.09	1.22	-14.6	-25.6
Other fuel	1.08	1.19	-9.7	-17.3
Ferrous metal	1.12	1.30	-11.5	-19.9
Nonferrous metal	1.11	1.26	-4.9	-7.2
Chemicals	1.16	1.40	-41.2	-52.8
Machinery	1.10	1.25	-23.0	-42.8
Wood and Paper industry	1.08	1.19	-20.8	-38.8
Construction materials	1.10	1.23	-31.0	-56.6
Light industry	1.06	1.15	-46.1	-94.5
Food processing	1.07	1.16	2.8	3.0
Other industries	1.10	1.24	-34.9	-58.4
Construction	1.06	1.15	-21.3	-37.1
Agriculture	1.05	1.12	-4.0	-5.8
Freight Transport & Ind. Communication	1.07	1.17	-13.4	-23.7
Passenger Transport & Communication	1.10	1.24	-15.9	-31.3
Trade and supply	1.06	1.14	-16.8	-30.3
Other activities	1.03	1.07	-35.3	-64.8
Education, Health care Culture	1.08	1.20	-15.2	-27.3
Housing and municipal services	1.19	1.47	-14.5	-26.3
Ymanagement, Finance, Insurance	1.12	1.28	-12.3	-21.5
Science	1.12	1.30	-18.0	-31.5

Appendix

Table 1. Output dynamics, % (1990 =100%)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1 Electricity	100,0	102,1	96,3	92,2	84,7	81,6	80,1	78,2	76,2	76,4	77,7
2 Petroleum extraction	100,0	91,7	87,3	78,6	77,0	72,0	70,4	70,9	70,2	70,4	74,6
3 Oil refining	100,0	98,6	88,7	75,6	60,7	58,2	56,2	56,2	52,1	53,6	55,2
4 Gas	100,0	120,2	121,9	112,9	108,9	111,9	113,6	109,9	110,8	115,3	120,8
5 Coal	100,0	85,2	93,8	84,2	72,4	71,9	73,9	70,5	66,9	72,8	75,7
6 Other fuel	100,0	93,2	89,1	79,5	73,4	73,3	74,0	73,4	46,7	70,7	74,3
7 Ferrous metals	100,0	94,3	78,6	66,2	54,0	58,1	55,6	56,9	52,3	59,8	69,1
8 Nonferrous metals	100,0	91,6	69,4	59,7	50,9	51,0	48,1	50,2	47,7	51,7	57,6
9 Chemicals	100,0	94,2	60,5	44,6	28,6	28,1	23,6	24,0	22,2	26,8	30,7
10 Machinery	100,0	91,2	72,0	60,1	44,4	39,4	33,1	34,4	31,8	36,3	41,9
11 Forestry, wood, paper	100,0	91,3	72,9	60,0	42,3	40,5	33,3	33,1	32,9	38,6	42,3
12 Construction materials	100,0	98,7	79,1	66,6	49,5	45,8	39,0	37,4	35,2	38,1	41,1
13 Light industry	100,0	91,7	65,0	52,0	30,7	22,7	18,0	18,0	16,0	19,2	23,4
14 Food industry	100,0	90,8	78,2	71,3	59,2	56,3	52,5	53,2	52,2	56,1	60,0
15 Other industry	100,0	103,3	89,8	75,5	65,2	61,6	58,2	61,0	58,0	62,3	64,6
16 Construction	100,0	88,1	58,9	54,1	44,8	40,1	34,6	32,3	29,9	31,5	33,2
17 Agriculture	100,0	107,9	101,6	100,8	96,2	92,0	91,9	92,8	80,5	82,4	84,4
18 Freight transport and communication services	100,0	96,0	81,2	65,8	56,7	54,0	50,2	52,9	51,1	53,8	56,7
19 Passenger transport and communication	100,0	94,4	84,1	80,2	71,1	64,8	62,0	59,3	53,8	51,4	57,0
20 Trade and other commercial activities	100,0	98,1	93,5	88,2	88,5	84,9	66,5	69,2	64,5	67,8	73,2
21 Other material production	100,0	102,6	85,9	72,4	57,4	51,6	41,4	41,6	41,2	43,2	45,4
22 Health care, education, culture	100,0	99,7	97,5	95,0	94,3	89,0	88,2	89,8	87,6	88,1	92,3
23 Housing and municipal services	100,0	97,8	87,8	83,1	78,6	75,0	72,6	74,1	71,3	74,2	78,0
24 Finance, insurance, management	100,0	97,5	67,9	60,5	53,2	43,4	43,0	44,3	42,8	44,3	47,2
25 Science	100,0	89,2	62,7	57,2	49,2	45,1	48,2	48,9	44,3	42,1	43,8
Total	100,0	95,2	78,1	69,2	59,3	55,6	50,8	51,2	48,4	51,2	54,9

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1 Electricity	100,0	102,1	96,3	92,2	84,7	81,6	80,1	78,2	76,2	76,4	77,7
2 Fuel industry	100,0	99,6	94,4	83,3	73,8	71,8	70,8	70,1	67,6	69,7	72,8
3 Metallurgy	100,0	93,0	74,3	63,1	52,5	54,7	52,0	53,7	50,1	56,0	63,7
4 Construction materials industries	100,0	94,6	67,7	53,3	36,6	35,1	29,4	29,2	27,7	32,2	35,8
5 Manufacturing industries	100,0	92,2	74,1	63,3	48,0	43,2	37,9	38,9	36,9	40,9	45,5
6 Transport and communication	100,0	95,7	81,8	68,7	59,5	56,1	52,5	54,1	51,7	53,4	56,8
7 Construction	100,0	88,1	58,9	54,1	44,8	40,1	34,6	32,3	29,9	31,5	33,2
8 Agriculture	100,0	107,9	101,6	100,8	96,2	92,0	91,9	92,8	80,5	82,4	84,4
9 Nonmaterial production sphere	100,0	97,3	78,5	73,0	67,7	60,8	60,1	61,5	59,3	60,6	63,9
10 Trade and other commercial activities	100,0	98,1	93,5	88,2	88,5	84,9	66,5	69,2	64,5	67,8	73,2
Total	100,0	95,2	78,1	69,2	59,3	55,6	50,8	51,2	48,4	51,2	54,9

Table 2. Price indexes, in times (1990 is the basic year)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1 Electricity	1,0	1,9	49,3	518,3	2536,4	6449,0	11387,8	12598,3	14003,1	16710,4	27433,7
2 Petroleum extraction	1,0	2,3	247,7	1282,7	2732,4	7735,3	12387,2	15785,7	21326,2	44975,2	69047,8
3 Oil refining	1,0	2,4	122,8	934,4	4060,8	11544,6	15954,4	20900,8	23756,2	35735,7	58961,3
4 Gas	1,0	1,5	118,4	802,5	2109,3	5433,3	9918,3	11220,8	14284,7	30854,8	48376,0
5 Coal	1,0	2,0	88,6	634,3	2551,7	5427,1	7555,9	8679,2	8917,0	10525,4	20147,3
6 Other fuel	1,0	1,9	27,7	243,3	921,1	3257,2	5421,0	6619,2	9623,8	13756,9	16909,4
7 Ferrous metals	1,0	2,2	82,0	637,6	2503,7	6153,7	8283,4	8589,0	10644,2	20420,3	24300,6
8 Nonferrous metals	1,0	2,6	102,7	666,8	2201,8	5857,4	7428,5	7811,2	11323,5	28016,4	28180,5
9 Chemicals	1,0	2,3	68,8	561,7	3062,8	8081,7	12163,6	14101,1	16585,1	25660,7	33532,9
10 Machinery	1,0	2,1	34,2	283,0	1183,2	3133,9	5177,5	5439,7	5351,0	9026,7	11887,8
11 Forestry, wood, paper	1,0	2,8	59,5	391,2	1816,5	5982,2	7984,6	8676,4	10651,3	22338,0	26060,8
12 Construction materials	1,0	2,2	40,2	383,5	1760,3	5775,7	9028,4	9993,2	11271,5	14807,7	20561,3
13 Light industry	1,0	3,3	33,7	223,4	724,8	2652,7	3983,9	4216,7	4052,5	6784,1	8275,8
14 Food industry	1,0	2,4	28,7	258,5	939,5	3408,8	4984,2	5025,9	5409,3	9446,4	11393,2
15 Other industry	1,0	2,5	26,0	174,3	587,6	2282,3	4054,4	3963,9	4844,2	7668,1	9119,7
16 Construction	1,0	3,0	41,4	475,5	2335,4	6880,2	9247,9	12063,7	11454,1	17703,4	25112,3
17 Agriculture	1,0	1,9	17,1	144,4	506,6	1512,1	2269,6	2491,2	3115,7	5605,0	6566,2
18 Freight transport and communication services	1,0	1,9	45,7	555,5	2424,4	6205,7	11017,2	11571,0	12740,8	17163,0	28840,1
19 Passenger transport and communication	1,0	1,7	22,2	204,4	757,2	4523,3	6358,2	7167,8	7590,8	11909,4	14369,1
20 Trade and other commercial activities	1,0	4,4	152,8	1069,3	3484,1	9004,6	14466,2	15821,2	19230,0	35250,7	41310,6
21 Other material production	1,0	3,1	71,1	235,2	1213,9	2707,6	5687,7	5797,6	6276,8	8334,8	11134,5
22 Health care, education, culture	1,0	2,0	21,3	259,1	1086,0	2823,9	3846,0	5028,7	4861,4	6857,8	9461,1
23 Housing and municipal services	1,0	1,7	25,2	552,2	1966,0	5721,6	11853,8	16263,5	17041,6	21665,1	32192,0
24 Finance, insurance, management	1,0	2,0	41,4	489,4	2433,1	5912,6	8381,8	9631,6	11522,1	15455,7	21442,7
25 Science	1,0	2,3	22,2	221,6	881,0	2452,8	4057,5	4525,5	5083,5	8339,4	11528,7
Average on economy	1,0	2,4	49,5	410,8	1614,5	4517,3	6932,3	7902,3	8944,1	14791,4	19883,5