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INFLATION IN THE USSR

1991

CONTENTS.

	page
INTRODUCTION.	1
BACKGROUND.	3
1. MECHANISMS AND SOURCES OF INFLATION.	7
1.1. The instruments of monetary control	7
1.2. Price formation.	12
1.3. The failure of incomes policy.	15
2. DEVELOPMENT OF INFLATION AFTER REFORMS OF 1991	19
2.1. Economic and political factors of reforms of 1991	19
2.2. Price reforms in 1990-1991.	20
2.3. Tax reforms of 1991.	26
2.4. Redistribution of financial flows in 1991	30
2.5. Estimates of forced savings after the reforms.	35
2.6. Changes of basic indicators of Soviet economy.	36
3. INFLATION PERSPECTIVES AND POSSIBILITIES FOR STABILIZATION	41
3.1. Political factors influencing the macroeconomic stabilization policy.	41
3.2. Instruments of macroeconomic regulation.	42
3.3. Stabilization: possible scenarios	44
CONCLUSION	51
REFERENCES	52
ANNEX 1.	54
ANNEX 2.	56
ANNEX 3.	58
ANNEX 4.	60

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## INFLATION IN THE USSR.

### INTRODUCTION.

Attempts to transform the soviet economic system, made during the years of perestrojka, have delivered a heavy blow to the stability of financial-credit and monetary circulation in the USSR. In five years, starting from 1986, comparative stability has been replaced by the threat of hyperinflation. At first, inflation growth sprang up from the comprehensive destruction of the basis of administratively-command economy, and later - from the state system of macroeconomic regulation. Destructive processes have freed inflationary mechanisms initially inherent in soviet economic system. At the same time, the constructive processes of building market economy and the needed changes in macroeconomic policy on an all-union scale were carried out spontaneously and with a delay. Moreover, they were restrained by the central government, and at present are blocked by acute political problems arising from the process of redistribution of powers among the former subjects of the Union of SSR.

Because of this, we have considered to confine ourselves to the following succession when discussing the problem of inflation in the USSR in this paper:

In our first part we try to describe the main inflationary mechanisms, which has existed in administratively ruled economy and still remained in transitional period of 1986-1990. Moreover, the influence of certain items of this mechanism has been sharply strengthened by inconsequent, erroneous innovations in the area of economic mechanism.

In 1991 the new stage of inflation began, where stabilization reforms of Pavlov's government speeded up the disintegration of a single state system of macroeconomic regulation. In the second part we show that the maintenance of the former mechanisms inherited from paternalist state economy, has brought to nothing the results of the drastic measures of this government aimed at stabilization of financial situation. The economic and political contradictions between the republics practically blocked any attempts to bring about financial stabilization within a single currency system.

In the third part variants of the further development of inflation are considered under various political and economic conditions, resulting from possible agreements between the republics. We present the estimates of inflation rate under the implementation of stabilization programme within the frameworks of an agreement on maintenance of a single currency system and a single macroeconomic policy. We also give estimates for the situation in which the republics

will conduct independent macroeconomic policy within the existing monetary system. Lastly, we analyse the ways of introduction of national currencies and conditions for their stability.

Combined balances of incomes and expenditure for the state, enterprises and population are the methodical basis for our analysis of inflation. In the third part we use the model from (Dornbush, 1990) and our own model (Annex 4) for the estimating of inflation parameters

## BACKGROUND.

The tendency to inflation has always existed in the Soviet economy. Its causes lie in the way of functioning of a centrally planned economy, in the structure of its budgetary and banking systems and in the price mechanism, which will be analyzed in the first part of this paper.

Though nominally the budget deficit had been minimal until the middle of 1980s, in reality redundant money liquidity had been financed by the credits to inefficient enterprises. In the dynamics, the growth process, generating redundant liquidity, has always been regular. Under the state control over the prices elimination of redundant liquidity has always been carried out by once-only methods, which have reduced redundant stock, but have not eliminate the source of disequilibrium in flows.

Mechanisms of liquidation of redundant money were effective enough to restrain inflation.

The expenses of all state enterprises (and they made up an overwhelming majority in soviet economy), were subject to the control of the higher administrative bodies. Departure from the planned rise in wages was especially severely punished. Unspent money was confiscated to the budget at the end of the year. However, wages and other incomes paid to the population and not spent for current expenditure could not be regularly confiscated to the budget by the state. Finally, prices were regularly raised, thus the money of the population was depreciated and its redundant liquidity was reduced. In 1933 and 1948, restrictive monetary reforms were carried out, and in the 1950s compulsory loans by subscription were applied. Though sometimes such mechanisms of maintaining balance gave an opportunity to reach provisional equilibrium, they suffered from grave shortcomings:

- 1) - annual withdrawals of balances of enterprises assets to the budget stimulated the will to spend all money before the end of the year, regardless of the efficiency of spending.
- 2) - balance improved only for a short time after the centralized rise in prices, but in the long run shortages were regularly observed;
- 3) - rises in fixed prices, being carried out, provided for inflationary expectations, which promoted increases in the redundant liquidity of money;

The reforms of 1987-1988 eliminated the major instrument for maintaining macroeconomic equilibrium in a centrally planned economy: administrative control over the enterprises expenditure and the withdrawal of the balance of enterprises assets to the budget. Right away after these reforms, it became evident that the existing price system and the tax, budgetary and

banking policies suffered from grave shortcomings. They proved to be unadapted to economic liberalization

Under new circumstances the budget began to lose the tax revenues as a result of diversification of taxation rates for enterprises. These revenues were being accumulated on the enterprises accounts. As open inflation was strengthening in 1991, the budget revenues began to be subject to Tanzi effect. The irrational distribution of tax receipts among the different levels of the budgets (local, republican and union) promoted the increase in budget deficit. During the disintegration of the budgetary system the local budgets have gained certain advantage, because of the more reliable sources of their revenues.

Paternalism of the ministries blocked the implementation of the state revenues policies. The ministries strived to provide their enterprises with larger wage fund in order to enhance their branches' prestige. The normative method for forming the wage fund and the economic stimulus fund guaranteed these possibilities (see section 1.3.). In spite of the energetic efforts of the Ryzhkov's government, the rise in incomes of the population has got out of its control.

Besides the paternalism deep-rooted in the minds of the leaders of the economy, the effective implementation of the monetary policy was prevented by the price system. The coexistence of the large sectors where prices were really fixed with the sectors where prices were increasing without state control, resulted in the permanent need for state subsidies. The implementation of the price reform was prevented by the social and economic situation which arose in the country after 1985.

Under these circumstances, attempts to start the banking reform also did not promoted the stabilization of financial situation. The transmission of the rights to the distribution of credit among the enterprises from the ministries and departments to the specially established branch banks, weakened the state control over the credit emission. The ministries were well informed about the position of their enterprises and so they effectively solved the problem of spending credits for the latent support of inefficient enterprises. The special banks solved this problem less effectively. Therefore, the pressure of subsidies on the budget increased.

Enumerated factors practically blocked the former instruments of maintaining macroeconomic equilibrium and promoted accumulation of the stocks of redundant liquidity, the scale of which exceeded that existed in the previous years by an order. The further transition to market economy was seriously complicated by the existence of this stock. The need to implement special stabilization policies which threatened with giving the market orientation up, has led to power the government, whose only goal was the overcoming of the crisis.

Within the growing process of economic and political disintegration, the government too the vicious way of gradualness in macroeconomic policy. The macroeconomic and price concep

assumed by the V.S.Pavlov's government included nothing new and practically legalized and strengthened built-in inflationary mechanisms which existed before. After corrective price rise principles of free pricing were introduced in a number of multiproduct industries. At the same time, prices for main foodstuffs, agricultural products, fuel and raw materials remained fixed, subject to the state control. There were now effective mechanisms for the limitation of the budgetary and credit emission. In this situation, already in the middle of 1991 the rise in free prices led to the need to restore the larger than the pre-reform scales of subsidies for the economic spheres with fixed prices and tariffs. The situation at the consumer market was worsened by the failure of the restrictive incomes policy planned by the government and by the fall in output and imports. About 60% of the retail turnover of the state trade were to be sold at free and regulated prices, but the hopes for their balancing role were not justified. The rights to establish free prices were never passed to the independent shops, but were concentrated in the hands of trade bureaucracies. The latter are not interested in negotiating the prices of equilibrium.

The further strengthening of financial destabilization, the maintenance of fixed prices have finally destroyed the objective basis for the forming of equivalent economic exchange between the republics. The country began to gradually transit from the "war of laws" to the economic war between the republics. Instead of carrying out salutary policies of liberalization in their own economies, the republics' governments strive to bilaterally improve their trade balances through manipulating fixed prices and commodity flows. It is evident that before they understand the viciousness of this way, the collapse of the economic space will push on the republics towards the collapse of their economies. Possible scenarios are described in part 3. The development of inflation in autumn of 1991 permits to talk about its monthly estimation.

BOX 1. INFLATION ESTIMATING

Under existing conditions, when the rise in wholesale and retail prices takes place along with the redundancy of financial assets it is impossible in the main to measure the full inflationary dynamics on the basis of sale price observations and trade deals observations. At fixed prices the commodities are sold irregularly, and the strive for the barter is observed or different money substitutes are introduced. In this situation, the methods of inflation estimating are debatable. Soviet economists suggest to measure its components: increases in prices and increases in forced savings, considered as a monetary equivalent, which economic agents are ready, but have no opportunity, to spend for goods and services under given conditions. Taking into account the debatable character of the raised question, we will describe our approaches to the estimate of inflation in the consumer sector (given in table 1.) with more details. In our second part we will turn to this question once again. The conditional character of these estimates (though they reflect the real tendencies) results from attempts to apply exclusively monetary term to a half-monetary economy with inferior money circulation, where the exchange process is not always based on the leading role of money.

Table 1.

Estimates of inflation in consumer sector.  
(rates, in % to the same period of the previous year)

	1986	1987	1988	1989	1990	1991		1991	
						1)	2)	3)	4)
Inflation in consumer sector, total including	5.0	5.5	7.5	12.3	14.9	39.7	76.2	94.9	104.0
-open inflation (the rise in prices and tariffs)	2.3	2.1	2.5	4.0	5.0	26.3	55.5	61.4	65.2
-repressed inflation	2.6	3.3	4.9	8.0	9.4	10.6	13.3	20.7	23.5

1) January-March; 2) January-June; 3) January-July; 4) January-August.

Source: Reports of the Goskomstat of the USSR "On the functioning of national economy", Statistical yearbooks of the Goskomstat of the USSR: "USSR in terms of figures in 1990", "National economy in 1989".

The inflation rate is calculated with the formula:

$$i = p * \frac{1 - \bar{s}}{1 - s},$$

where  $P$  - aggregate index of prices and tariffs,  $S$  - actual norm of savings in the current period,  $\bar{s}$  - "normal" norm of savings. Really, if  $C$  - real volume of consumed goods and services,  $I$  - income, than the increase in inflationary potential will make up  $(p-1)*C + (s-\bar{s})*I$ , and the inflation rate will be equal to:

$$1 + \frac{(p-1)*C + (s-\bar{s})*I}{C} = p * \frac{1 - \bar{s}}{1 - s},$$

because  $p*C = (1-s)*I$ .

Different approaches to the estimation of  $\bar{s}$  exist. The simplest method is based on the analysis of the long-term dynamics of the norm of savings during period, when a comparative equilibrium was observed (Volkonskiy, Vjugin, 1990). The more complicated techniques are based on the system of regression equations, containing the unobserved variable which describes the forced savings. When estimating, this variable is eliminated by algebraic transformations (Vjugin, 1986; Belousov, Polyakov, 1990). For the calculation of table 1. the simplest approach was used (Volkonskiy, Vjugin, 1990).

## 1. MECHANISMS AND SOURCES OF INFLATION.

### 1.1. The instruments of monetary control.

The process of money creation in the Soviet economy is maintained by the existing system of interrelations between the budget and the banks and the budget and the enterprises, and also by the very existence of the banking system.

The main institutional lack of the state budget and of the banking system is the subordinate status of the State Bank of the USSR vis-a vis the Ministry of Finance, which represents the interests of the budget. Despite the parliament's decision of November 1990 to grant the Central Bank with an independent status, the real state of affairs has not undergone significant changes up to now. Within this structure the financing of the budget deficit is not carried out on a voluntary basis through the purchase of securities by investors and banks, but by administrative redistribution of the means of the national loan fund. On the one hand, the inability of the Soviet economy to satisfy money demand of consumers (the reasons: fixed prices,

rigidity of production) creates forced money savings, which have no real discharge in goods; on the other hand, excessive government expenditure for maintaining ineffective industries (including the arms industry) and for social purposes makes it unavoidable to draw these forced savings of the population for the discharge of state debt. A vicious circle is created, providing for the growth of the state debt and of hidden inflation. This shortcoming of the existing system of interrelations between the budget and the banks is the direct sequel of its advantages when operating within the centrally planned system of regulation. Within this structure it performs its direct functions on redistribution of financial means in favour of ineffective zones of economy which are equal in rights objects of planning side-by-side with highly effective ones. However, under the conditions of weakening of administrative control over the spending of financial resources of enterprises, the former, to some extent, logical policy of excessive centralization of distribution of financial resources in the budget resulted in a rapid growth of the deficit in the state assets of the population (see the table). Seigniorage became the main instrument of centralization. Starting from 1986 the scales of crediting national economy began to steadily decrease, the banking credit resources began to be used for the support of the budget expenditure. By 1990 the share of credits to union and republican budgets in the assets of the Soviet banks reached 61 %, while in 1986 it made up only 24 %. The state became the main debtor of the Central Bank.

Within the Soviet banking system the repayment of banking loans by the enterprises is not strict, on the contrary, the forgiveness of overdue debts of the state enterprises and kolхозes is practiced. Until recently, the interest rate for the majority of loans was very low and played an exclusively symbolic role. So, as far as the inflation development is concerned, there was no significant difference between the two sources, providing for the growth of the monetary mass: credits to the budget and cheap credits to the national economy. Besides this, in 1986-1989 the 70% of the decrease in the volumes of credits to the national economy resulted from the change in the system of settlements for the final construction production, and the remaining 30% of the decrease - from the reduction in the credited stocks of goods and material resources. To settle for the final construction production enterprises had to use their own financial resources and to transfer them in advance to special accounts. This was caused by the reduction in banking credits to construction organizations. But this method of settlements did not promote the tension in enterprises finances, because with the introduction of the normative models of self-financing the enterprises gained an opportunity to reduce their payments to the budget. At the same time sufficient volumes of financial resources remained at their disposal (on this point see section 1.3.). This promoted the replacement of the direct crediting to the economy by the crediting to the budget and also led to the increase in the budget deficit.

Changes in financial flows between the state,  
enterprises and households

Table 2.

(bln.rbl.)

	State	Enterprises	Households	Balance of payments
<b>1. Increase in deposits (including money in settlements) (1=2+3)</b>				
1987	2.0	- 2.3	32.0	
1988	6.9	22.8	41.9	
1989	2.1	19.7	61.8	
1990	7.0	91.3	80.0	
1991*	31.0	109.3	25.0	
1987-1991, total**	49.0	240.8	240.7	
<b>2. Gross increase of liabilities to the State Bank</b>				
1987	60.1	- 21.7	0.7	
1988	97.3	- 26.3	2.7	
1989	92.1	- 13.5	1.6	
1990	191.0	- 26.7	4.2	
1991	99.7	70.6	-	
1987-1991, total	540.2	-17.6	9.2	
Debt forgiveness in 1990	104.0	-104.0		
Net increase of liabilities to the State Bank in 1990	87.0	78.0		
<b>3. Change in net assets:</b>				
1987	-58.1 (7.0)***	19.4 (2.4)	31.3 (3.8)	7.4
1988	-90.4 (10.3)	49.1 (5.6)	39.2 (4.0)	2.1
1989	-90.0 (9.7)	33.2 (3.6)	60.2 (6.5)	-3.4
1990	-80.0 (8.6)	14.0 (1.5)	76.0 (8.2)	-10.0
1991	-68.7	38.7	25.0	5.0
Total 1987-1991	-387.2	154.4	231.7	1.1
*) January-April; **) For 1991 - January-April; ***) In brackets - percentage to GNP.				
Note: The sum of net savings of the state, enterprises and households is equal to the balance of payments with back sign. Increase of deposits minus gross increase of the debt to the banks is equal to the increase of net assets (1=2+3)				
Source: Statistical Yearbook of 1989; "Dengi i credit", N 3, 1991; Economic review of the Goskomstat of the USSR "Soviet Economy in January-April of 1991"..				

In 1991 the disintegration of the budgetary system of the country took place. Because of the imperfection of the tax system and the government's mistakes the more reliable sources of revenues remained at the disposal of the local budgets (city's, regional,...). Their revenues were filled up more successfully than the revenues of the union and the republics' budgets. According to the data of the Ministry of Economy of the USSR for the first four months of 1991, the balance of means of the local budgets has increased by 31 bln.rbl. The union budget has lost approximately the same sum. Total deficit of the union budget for January-April of 1991 made up 32.2 bln.rbl., and only 26% of revenues planned for the 1st half-year were transferred to it. After the laws on the local self-government were approved, the union budget lost the levers of income mobilization. The redistribution of a number of the state expenditure points among the levels of the budgets turned to be the only possibility to soften the defects of the revenues of the budgets at different levels. As a result, the republican budgets also have large deficits (see part three of this paper).

The lack of a clear criteria for the distribution of the budget revenues and expenditure among the local, republican and union budgets leads to a budget deficit at some levels (basically, at the union level) and to a surplus of means at other levels.

Along the bank-enterprises interrelations an inflation mechanism of redistribution of financial resources, providing for the support of unprofitable and low profitable enterprises, is also operating. The lack of a clear instrumental criteria of efficiency and expediency (excluding the expediency, followed by the ministries and departments) when forming the volume and distributing credit resources, underlies their mechanism. In accordance with this, the banking system in centralized planned economy made up in fact a single bank with a number of branches. The rate of credits, paid by one bank, did not depend on the volume of funds drawn, but was determined by a centralized credit plan. Credit resources were not distributed among the branches, but were planned in the general credit plan of the State Bank.

The reform in 1987, which created the branch banks, changed little the operating principles of the banking system, only having made it easier for this banks to "create" money. It was assumed, that the branch banks and their local departments, but not the ministries, were to define the expedience of crediting. But no criteria of expediency was created. As previously, the government interfered in the crediting process, influencing the distribution of the Central Bank crediting limits. After the central banks were established in republics, the republican governments began to follow the same tactics. The springing up of the new banks was followed by the establishment of the special settlement centers, which were to discount mutual orders of these banks. In connection with this the so-called method of interbranch settlements emerged, which was implemented by this centers. This method became an additional source of money creation

within the banking system. The final discount of mutual orders is carried out with a large delay. As a result the financial resources are added to the liabilities of a one bank without being written off from the assets of another bank in time. In 1987-1990 there one could observe the extension of the terms of settlements on mutual banking orders, carried out by special system of settlement centers. As a result, about 75 bln.rbl. were additionally created on bank accounts during this period.

In 1991 the law on banks and banking activities and the law on State Bank of the USSR were implemented. Implementation of these laws carried out the transition toward a two-tier banking system. All the branches of specialized banks were transformed into independent commercial banks. Formally, the right of emission belongs to the State Bank only. But in fact, the volumes of emission (the so-called crediting limits) are distributed among republican central banks (former republican branches of the State Bank of the USSR), which have an opportunity to expand emission through political mechanisms.

Under the pressure of the republican government, subordinate to it central bank might exceed the established crediting limits. In theory, this could lead to the lack of cash in the republic. However in practices, the regions are supplied with cash in accordance with their demands. During the last months, in some regions deficits of cash money were observed, but only owing to the low capacities of the Goznak of the USSR for printing banknotes. Thus, after the "banking war" of 1990, the Central Bank of the USSR (Gosbank of the USSR) has lost the former tough levers for regulation of crediting emission.

The existed assets and liabilities of the branches of the former specialized banks have been distributed among the new commercial banks. The major part of accumulated bad debts has been distributed among small provincial commercial banks, which do not have enough credit resources. Thus they are compelled to use credit support of the central bank. A part of bad debts was written off in 1990 (see table 2), this being an additional source of inflation.

Thus, the situation under which accumulated stocks of bad debts were inherited by a new banking system, built in accordance with new principles, does not permit use of all the instruments of banking regulation. An increase in interest rates on interbank credits faces the opposition of the banks which hold large amounts of bad debts. There is no mechanism of recovering debts (first of all, the procedure of bankruptcy and developed markets of investment goods - realty, equipment, etc.). Reserve levels for commercial banks are sharply differentiated, this permitting to maintain inefficient redistribution of credit. For the banking system to operate effectively, would be necessary to carry out on a large scale a write off of hopeless debts: only under this condition would an effective monetary policy be possible.

## 1.2. Price formation .

In the pre-reform period prices could change for two reasons. The first was centralized rises in prices by state authorities. Changes in listed prices are registered in official statistics. The second was uncontrolled rise in prices in multi-product industries.

Centralized control over the prices is effective only in single-product industries. As a rule these are raw materials industries (for example, electric power engineering, oil and gas, coal industries, metallurgy, timber purchasing, etc.). In other industries, producing multi-nomenclature output, centralized control is not very effective in practice. These are, as a rule, manufacturing industries, and also industries, producing final products. Price rises in these branches are being put into effect by substitution of expensive goods for inexpensive ones. This phenomenon called "hollowing out of a cheap range of goods", was widely spread in the Soviet economy. Price dynamics of this kind were not measured and were not reflected in the price indices published by Goskomstat (the Statistical Office). However, a number of researchers estimated this dynamics (Hanin, 1981, 1988; Faltsman, 1980, 1984; Volkonskiy and others, 1986). For example, the annual increase in the building cost of industrial units for 1970-82 was estimated by Faltsman to be 5-6%. In the 1975-1982 period the cost of 1 sq.m. of dwelling space was increased by 3.4% annually.

During the period of centralized price rises prices for fuel, raw materials and foodstuff were therefore stable, and prices for other goods were increasing. As a result, disproportion were arising: the relative prices of raw materials were being understated and for manufactured goods they were overstated. Periodic centralized mass price revisions were correcting these disproportions, but later they were appearing again. This can be illustrated, for example, by the ratio of price indices in 1949, 1967 and 1981. Price indices for the branches are adduced in table 3. The same table shows profitability of these branches before and after price revision.

As is obvious from the table, the profitability of manufacturing multiproduct industries was fluctuating and in practice was changing little. At the same time profitability in raw material single-product industries was steadily falling between price revisions, and was re-established only after a centralized rise in prices for their production.

Thus, centralized price revisions temporarily reduced excessively high inflation financing of ineffective single-product industries with fixed prices. However, because of invariability of retail prices for basic foodstuffs and other goods, the main load of financial support of inefficient industries was gradually shifted off in the form of expenses for subsidies, resulting in a disastrous increase of the state debt.

The concept of establishing wholesale and procurement prices accepted during the reforms of 1991, was not essentially changed. Moreover, the decisions on maintenance of fixed wholesale prices for fuel and raw materials and of fixed procurement prices for the main agricultural products were passed simultaneously with the introduction of free prices for the output of multi-nomenclature industries. Under the ineffective monetary control this has sharply speeded up inflationary processes in the economy. The maintenance of stable fixed prices in some branches when in the other branches free prices are increasing, requires speedy growth of the state subsidies.

The retail price reform of the 2nd April, 1991 provisioned three types of prices: fixed, regulated and free (contractual) prices.

The main foodstuffs are sold at fixed state prices (meat products, dairy produce, eggs, bread, fish products, sugar, tea, soil, etc.). Ordinary kinds of textile, clothes, footwear, child goods, some household and cultural goods. Prices for these kinds of goods are raised within the limits, established by the government. They are defined in the price lists of the State Pricing Committee (Goskomtsen of the USSR) and of the regional pricing bodies. For the present, prices for the following goods are maintained stable without any change: medicines; coffee; synthetic textiles, knitted wear, clothes, furs, hosiery, footwear and toys; fuel for the population; vodka. According to the calculations based on the figures of the Goskomstat, in 1991 the increase in fixed prices was to be equal to 200%, the share of the goods sold at these prices in the retail turnover was to make up 40%. This figure includes 12% of the turnover sold at unchanged prices, and 28% sold at fixed prices raised about 2.5 times.

About 40-45% of goods are sold to the population at free (contractual) prices. This group includes vegetables, fruits and potatoes, free prices for which were introduced on November 15, 1990, confectionery, ice-cream, soft drinks and mineral water, imported tobacco products, natural textiles and textile goods, fashioned and imported clothes and footwear of high quality, carpets, sports goods, clocks and watches, some kinds of the radio and electrical apparatus, etc.

These prices are based on the free sales prices negotiated between the producers and the state trade organizations, which regulate the deliveries for subordinate shops. The retail price is strictly linked with the selling price - the difference between these two prices, which makes up the trade discount, could not exceed 20% (in some regions - 30%) of the selling price. Free prices for the imported goods, purchased with centralized currency resources, are established by the Pricing Committees of the USSR and of the republics. The remaining part of goods (15-20%) is sold at regulated prices. These prices assume that the pricing bodies define the key parameters, determining the level of these prices. These parameters could be the following:

a) The maximum level of retail prices (for example, 5 kopecks for a box of matches containing 50 ones);

b) The norm of profitability, the sales tax rate and the trade discount. (In this case the producer defines the selling price proceeding from the well-grounded productional expenses and from the level of profitability, not exceeding the normative. And this selling price is the base for the regulated price);

c) Maximum increases and coefficients for the fixed listed prices (for example, the maximum coefficient for the light industry production is 20%, for the liqueur production - 30%)

Within the existing system of free retail pricing the state shops in fact do not participate in the process of passing decisions on retail prices. This right is granted to the Goskomtsen of the USSR, or to local authorities and to old trade bureaucratic structures, which have no economic interest in establishing the prices of equilibrium.

Table 3.

Price index and profitability before and after centralized price rises.

Branches	1949	1967		1982-1984			
	I	P-1966	I	P-1968	P-1981	I	P-1983-1985
1. Metallurgy.	2.75	9.2	1.47	19.2	7.1	1.22	11.0
2. Coal.	3.1	-18.0	1.81	8.2	-9.4	1.42	-4.5
3. Oil & gas industry	1.2	11.1	1.08	25.5	14.3	1.67	19.0
including:							
oil production	...	...	...	...	6.8	2.2	23.5
oil processing	...	...	...	...	23.2	1.57	14.5
gas	...	...	...	...	14.4	1.38	20.9
4. Energy	1.53	4.3	1.16	10.6	5.9	1.38	6.7
5. Construction materials	2.23	6.6	1.19	14.2	3.2	1.12	7.9
6. Machine building	1.3	19.3	1.0	21.2	15.3	1.0	11.6
7. Chemicals	1.71	17.5	1.0	19.2	14.6	1.0	9.4
8. Forestry and paper	3.27	6.1	1.21	20.1	5.8	1.16	12.3
9. Light industry	1.05	31.4	1.0	39.6	24.7	1.09	25.3
10. Food industry	0.92	19.2	1.0	22.4	18.4	1.03	18.5
11. Other industries	1.17	13.3	1.08	20.1	11.5	...	12.4
12. Agriculture	...	...	1.0	...	...	1.11	...
13. Construction	...	6.7	1.11	6.8	11.4	1.1	10.2
14. Transport and communications	...	14.5	1.0	18.9	10.8	1.1	12.3
I - price index (ratio of post-reform to pre-reform price)							
P - profitability (ratio of profit to capital), in percentage.							
Source: Statistical Yearbooks for 1968 & 1984.							

### 1.3. The failure of incomes policy.

In 1988-1990 the incomes of the population increased by 44%, of enterprises - by 35%, and state budget revenues increased only by 13.5%. These sharp differentials were caused by a partial liberalization of the former principles of economic activities. Two aspects of the liberalization of economic regulation at the microeconomic level exerted a major influence on the

distribution of incomes, having provided ample opportunities for their redistribution in favour of enterprises, and from them - into wage funds.

Firstly, tough centralized regulation of earning and spending of enterprises own financial means was abolished for state enterprises fully running on self-supporting basis. Instead of this forming of the sums of payment to the budget, of economic stimulus funds and wage funds became dependent on the indices of commodity output by norms. Secondly, co-operatives and other enterprises and organizations, which were not subject to direct centralized control, began to spring up.

The Law on State Enterprise (1987) indirectly proposed that the standards, in accordance with which enterprises had to operate, were to be established or approved by higher ministries and departments. However, socialist branch ministries were, in fact, lobbyists for the interests of state enterprises. So, the rights for establishing norms of payments to the budget, to economic stimulus funds and especially to economic incentive fund were used by them in the interests of state enterprises. Even at the first stage of economic reform, norms mentioned above were formed "upwards", from ministries and departments, as a rule, supported, upheld interests of their enterprises. This resulted in a nearly uncontrolled channel of transferring profits and depreciation means into economic stimulus funds, and from there - into wage funds. In 1988 40% of enterprises were converted to new operating conditions on a self-supporting basis. And already in same year the ratio of the rates of increase of wage funds to the volume of industrial output made up 1.6 instead of 0.68 in 1987.

In an effort to overcome these negative tendencies, state governing bodies tried to rely on incomes policy. In particular, they tried to limit increases of the average wage by linking it to increases in productivity. Not fully trusting the ministries, the government instructed the banks to control the corresponding normative ratio. However, ministries and departments also overcame this limitation through preferential normative ratios for enterprises. For many enterprises, norms were established according to which a 1% increase in labor productivity led to more than a 1% increase in wages. The mentioned procedure was not applied at all to a number of enterprises and branches. For example, in first quarter of 1989, 32% of the enterprises controlled by Promstroybank, had a normative ratio exceeding 1. In 1989 the increase of the wage fund in industry exceeded the increase in output by 5.8 times.

At the end of 1989, the Law on progressive taxation of the increases of wage funds exceeding 3% was adopted. However its influence was essentially weakened by the existence of a large number of preferences and exceptions. Such exceptions were approved in practically all industries.

The distribution of financial resources of cooperatives and other types of quasi-private enterprises was not controlled. The increase of money in the economy and especially at the

disposal of enterprises provided the basis for a large-scale spreading of cooperatives attached to state enterprises, which were carrying out a part of their work and paying additional wages. At the same time, the wage funds of enterprises did not decrease. This created an additional channel for transferring money into the incomes of the population. Creation of cooperatives attached to enterprises (cooperatives of this kind make up now about 70% of the whole number) permits, first, to increase the volume of output and to enlist additional workers through cooperatives; and, second, - to reduce the number of workers directly attached to the enterprise and to redistribute the wage fund among a smaller number of employees. A decision of the Council of Ministers of the USSR providing for a corresponding decrease in wage funds of enterprises, drawing in cooperatives was not really implemented.

A sharp speeding-up in the growth of incomes in the self-financing sector has rapidly spread to the other incomes of the population, including the part, formed by the state budget. A considerable increase in pensions, grants and wages in budget organizations became practically unavoidable. If at the beginning of the 1980-s 2-3 bln. roubles were spent for these measures, or 0,5% of the total volume of incomes. than in 1990 - 13.5 bln. rbls., or 2% of the volume of incomes, and in 1991 about 65 bln.rbls were outlined, or 9% of the volume of the money incomes of the population forecast by the former Gosplan of the USSR (before price reform).

In 1991 the tax on the increase of the money of enterprises spent for consumption was introduced (The wage fund plus money expenditure for social needs). Its rate is equal to the sum exceeding the untaxed volume of these means. The untaxed level is calculated as the multiplication of the consumption fund of 1990 (increased by 4%) and of the output growth rate in comparable prices. Besides this, the decreasing coefficient is applied to the basic fund (this coefficient vary from 0.4 to 0.9 depending on the branch in which it is applied). The difficulty of the calculation of this tax, constant changes owing to the price reform, and the abolishment of this tax in Ukraine, Belorussia, Baltic republics and partially in Russia, led to the impossibility of any reasonable incomes policy in 1991. The decision of the Pavlov's government on the maximum wage rate of 700 rbl. for all kinds of enterprises is the only barrier for the growth of high incomes. In other words, the monthly wage fund is limited with the sum: 700rbl.multiplied by the number of employees. But the majority of enterprises have not yet reached such a high level of average wages.

#### Conclusions to part 1:

During the first period of perestroyka (before the middle of 1990) the strengthening of inflation resulted from the liberalization in the economy which have undergone only cosmetic changes since all the institutional features of the centrally planned system were preserved. These include paternalism inherent in this system and mechanisms of macroeconomic regulation.

Even now the existing in the USSR budgetary and banking systems can not withstand inflation without using administrative control over the spending of enterprises financial resources and wages, and without withdrawals of the balances into the budget. The existing price system stimulates the permanent need for the increase in subsidies to the enterprises prices for the production of which are fixed. Centralized price revisions are periodically needed to correct the levels of profitability and the price correlations.

The reforms of 1991 have not changed the fundamental principles of macroeconomic regulation. As a result, in 1987 - 1991 the processes of the redistribution of the budget financial resources in favour of enterprises and population sharply strengthened. This resulted in a large-scale stocks of redundant liquidity at the disposal of enterprises population and in a multiple increase in an unformed state debt.

After the middle of 1990 the unity in the macroeconomic policy was lost owing to the beginning of the disintegration of the budgetary and banking systems. The republican banks got a potential opportunity to create money without any control of the Central Bank of the USSR. The second stage of perestroyka began.

## 2. DEVELOPMENT OF INFLATION AFTER REFORMS OF 1991.

### 2.1. Economic and political factors of reforms of 1991.

Beginning 1991 the authorities had the following alternatives:

1. To restore a centralized control and to confiscate excess monetary holding through monetary reform. To postpone the transition to a market economy until better times. Political forces, supporting this choice, did exist in the Soviet Union, but, from our point of view, the possibility of this happening was limited.

2. To quickly liberalize the conditions of economic activity in conjunction with as tough as possible a stabilization policy (of the shock therapy type). Realization of this alternative was also unlikely, because there were no conditions for its realization.

3. A gradual mixed policy, aimed at both stabilization of the situation and liberalization of economic conditions.

This third variant of economic policy was implemented. But the majority of decisions were taken under the pressure of circumstances, but not in accordance with a considered plan. The initiator of liberalization was the movement from below, with improvements are going on under the pressure of economic agents (entrepreneurs, directors of state enterprises, bankers, cooperative workers and so on). Without giving detailed analysis, we can refer to several examples: commercial banks sprang up in 1988 but the Law on these banks was adopted in 1990; commodity exchanges sprang up in the middle of 1990 and there is no legislation concerning them up to now; the currency-rouble exchange has been already existing for more than two years (auctions, currency transfer and so on) while the currency exchange of the State Bank of the USSR is operating only for several months (less than half a year) and its work can not be called successful yet (the exchange rate of the rouble has dropped from 28 roubles to the US dollar in March to 60 roubles to the dollar in July). The central government had not and has not now a plan for the consecutive liberalization of economic conditions and the creation of a market infrastructure.

The main aim of the activities of the central government was the stabilization of the economic situation. Until 1991 these activities were aimed at stabilization, considered as maintaining existing commodity flows, established by administrative methods. Maintaining these flows was also achieved by administrative methods. In 1991 (after Prime Minister V.S.Pavlov had held a position) besides the former understanding of stabilization, some measures, aimed at

achieving macroeconomic equilibrium are observed. From our point of view, the main aim of central government at the time is stabilization, but not implementation of reforms having special purposes.

Within the frameworks of the task set, the government has implemented a number of mixed measures aimed at elimination of redundant liquidity and achieving macroeconomic equilibrium:

1. Confiscation of a part of money savings. Confiscation monetary reform is a good means for solving the problem of stocks, especially before the beginning of a quick transition to a market economy. But too gentle conditions of its implementing reduced its results to a minimum (only 3.5% of  $M_0$  was confiscated).

2. Partial freezing of deposits of the people - the measure, combined with monetary reform, had also easy conditions and did not influence greatly monetary circulation.

3. Price reform. This was the main measure aimed at stabilizing of the situation. While analysis of results of this reform is given below, it should be noted, that this reform has partially liberalized prices, but partially has kept them fixed.

### 2.2. Price reforms in 1990-1991.

Prime Minister N.Ryzhkov's government had planned to carry out reforms of wholesale, retail and procurement prices simultaneously starting from January, 1, 1991. However, owing to social and political circumstances, the price reform was carried out in three stages:

1. In July 1990 procurement prices for grain and some other foodstuffs were raised. This was to stimulate supply of grain, and the government was planning to compensate the budgetary consequences of this rise by raising retail prices for bread and grain products. The latter was however not carried out because of the resistance of the parliament and the public. In the autumn, under pressure of kholhozes lobby the government had to raise prices for animal produce because they had become understated in comparison with prices for forage. As a result the rise in procurement prices in 1990 had a budgetary cost of 22 bln.rbl. (2.4% of GNP) in additional subsidies for full year from the budget.

2-nd stage. On January, 1, 1991 wholesale prices and tariffs for services were raised. In summer of 1990 Ryzhkov's government had planned to introduce basically fixed prices, but in October of 1990 President's Decree declared that contractual wholesale prices were to be established for about 40% of production. Liberalization of these prices was carried out in accordance with product principle. This means that free prices are established for the groups of

goods, that is, any seller can establish free price for this commodity. But if the price is fixed, then all the sellers must sell it commodities at this very price. Theoretically fixed prices for total output were to be established in the same way. But in reality prices are fixed for production, delivered by state order, and the remaining part is being sold at free prices. Fixed prices are established basically for monoproductions: fuel, agricultural products, the greater part of foodstuff purchased by population. As a result indices of wholesale and procurement prices (by gross product) increased in January by 1.66 times while initially planned to increase by 1.53, for the 6 first months on 1991 price index made up 1.87 (to the same period of previous year), by GNP - 1.8.

In reality free prices change very slowly. Quick changes can be observed only at the exchanges, but the volume of exchange trade is too small to be taken into consideration - only a few per cent of the total volume. The greater part of commodities is being sold by contracts. Changes in prices require changes in terms of contracts or could be possible only after the end of the period of operation of the previous contract. This takes from several weeks to several months. At the same time, the monetary mass and demand are increasing fairly rapidly, this resulting in a paradoxical situation where the price revision mechanism do not keep up with the rise in demand. Thus, the deficit is maintained. Besides this, the price rise is restrained by the profitability limitations.

At first the correction of prices for production of industries, producing fuel and raw materials (for which basically fixed prices are established) and the production of manufacturing industries (with free and contractual prices) changed in favour of the former. However later on this correlation became close to the level of the previous year once more. This can be seen from table 4. Thus, the task of price reform to improve the correlation of prices has not been fulfilled, and this required additional financing of fuel and raw material industries from the union budget (about 20 bln.rbl - 1,3% of GNP) and of kholhozes from the republican budgets (about 25-30 bln.rbl. - 1.6-1.9% of GNP).

1991 changes in wholesale prices

Branches.	Plan		I - 3*		I - 6*	
	I	II	I	II	I	II
1.Metallurgy	1.71	1.12	1.68	0.95	1.75	0.94
2.Fuels and energy	1.82	1.19	1.99	1.13	2.01	1.07
3.Machine building	1.25	0.82	1.73	0.98	1.79	0.96
4.Chemicals	1.58	1.03	1.82	1.04	1.85	0.99
5.Forestry and paper	1.83	1.20	2.11	1.20	2.17	1.16
6.Construction materials	1.68	1.1	2.13	1.21	2.18	1.17
7.Light industry	1.28	0.84	1.9	1.08	2.2	1.18
8.Food industry	1.98	1.29	1.79	1.02	2.1	1.12
9.Agriculture	1.2	0.78	1.6	0.9	1.61	0.86
10.Construction	1.4	0.92	1.8	1.02	1.8	0.96
11.Transport and communication	1.15	0.75	1.22	0.69	1.22	0.65
Total	1.53	1.0	1.76	1.0	1.87	1.0

\*) - numbers of the months.

I - price index relative to the corresponding period in 1990.

II - change in relative prices (with respect to branches) - comparative index.

Source: Report of the Council of Ministers of the USSR "On the economic condition of the country and the transition to regulated market economy", Moscow, 1990.

Quarter and half-yearly reports of Goskomstat of the USSR.

"On the functioning of the national economy in the first half (first quarter) of 1991.

RSFSR government tried to cut subsidies for foodstuffs, having permitted agricultural enterprises to sell up to 30 % of their output at free prices (and not to pay subsidies for this). But the production of processing industries is sold at fixed prices and so it isn't profitable for these industries to buy stuff at free prices. Instead of ceasing to paying subsidies to unprofitable agricultural enterprises, all the subsidies were proportionally reduced. This led to c

in volumes of production of meat and milk products (for which the main subsidies are paid) by 12-14 % in the first half of 1991.

The introduction of contractual wholesale prices and gradual increasing of their share resulted in a higher dynamics of the wholesale price index as compared with the previous years. In July-August of 1991 wholesale prices increased by 8-10% per month.

Table 5.

Changes in wholesale prices in 1991.

%% to the same period of the previous year

	1st quoter	April	May	June	July	August August	January-
Industry - total	183	212	218	222	239	254	212
including:							
productional and							
technical goods	185	200	211	214	219	221	---
consumer goods	180	223	235	236	258	286	---

Source: The report of Goskomstat of the USSR "On the functioning of national economy in January - August of 1991".

Preliminary analysis leads to the following conclusions:

- the very fact of liberalization of prices for a considerable part of production is positive;
- reform of wholesale and procurement prices has practically legalized and sharply speeded up the pre-reform dynamics, in which prices for raw materials were fixed and were being considerably raised after certain periods of time. Within the periods between rises, prices for manufactured products were steadily increasing and this was leading to comparative understating of the level of prices for raw materials.
- the underpricing of raw materials leads to the need for financial support of all enterprises producing these products, even the most unprofitable ones. Fixed prices and the lack of market estimate of the level of necessary expenditure allow to demands for financial support of any expenditure. Such a situation requires enormous financial infusions for unprofitable enterprises and does not permit to solve the problems of balance in flows without large scale distributions through very high taxes and regular confiscation of finances of enterprises.

3-d stage. Retail price reform. From April, 2, 1991 new principles for retail prices were nominally introduced: prices for a part of goods, basically for foodstuffs, were raised and stayed fixed, prices for other goods were declared unfixed, subject to regulation by republican and local authorities.

In the first quarter of 1991 retail prices increased by 26 %, as compared with the same period of 1990. From 1st January wholesale prices increased, this strengthened the pressure on the retail prices especially over those ones which were declared unfixed on November of 1990. After retail price reform in April the index made up 195 % (to April of 1990). During the next months prices were increasing by 1-2 % monthly and from July the prices were not raising anymore. (See table 6.)

Table 6.

## Changes in retail prices in 1991

	%% to the same period of the previous year					
	1st half- year	2nd quoter	May	June	July	August
State and cooperative trade	156.9	195.5	195.0	197.0	198.3	202.1
Gorkooptorg*	183.9	215.3	215.9	212.0	212.0	212.0
Total	157.5	196.0	195.5	197.3	198.6	202.1
Kolkhozes' market	184.4	191.8	195.2	187.8	200.2	218.0
Aggregate price index	157.9	195.3	195.5	195.3	198.7	202.9
Index of tariffs for paid services	139.5	157.6	164.0	166.8	175.6	177.5
	%% to the previous period					
	May	June	July	August		
State and cooperative trade	102.3	101.0	100.2	100.5		
Gorkooptorg	98.0	98.2	94.7	96.1		
Total	102.2	100.9	100.05	100.4		
Kolkhoze market	94.9	86.6	89.8	87.8		
Aggregate price index	102.0	99.9	99.6	99.9		
Index of tariffs for paid services	108.0	102.0	105.0	101.6		
* - a special form of trade in the USSR.						
Source: Report of Goskomstat of the USSR "On the functioning of national economy in January - August of 1991".						

Reduction in the real volumes of sales and paid services for population took place simultaneously with the rise in retail prices. Recession and price dynamics corresponded to the effect of stabilization shock. Really, in April retail prices and tariffs for services twice increased, but the cash monetary mass remained the same: on 1st June cash of population accounted for 133.1 bln.rbl., and on 1st January, 1991 - 132.7 bln.rbl.

Table 7

## Real volumes of retail turnover and paid services.

	January- March	January- June	January- July	January- August	June	July	August
Retail turnover	+1.4	-12.7	-12.8	-12.9	-19.8	-13.3	-13.1
Paid services	+0.4	-15.0	-16.5	-17.1	-24.8	-24.7	-19.8

Source: Report of Goskomstat of the USSR "On the functioning of national economy in January - August of 1991".

## 2.3. Tax reforms of 1991.

Multistage realization of price reform had led to many wholesale prices exceeding retail prices. With stable level of taxation withdrawals such a disproportion could provoke a state budget deficit of more than 20 % of GNP. To avoid this, the government suggested to introduce additional taxes. Some taxes had been in existence for some time, and only their rates increased and some new taxes were also introduced.

On January 1, 1991 the following changes took place in taxation:

- a profits tax was introduced with a 45 % rate (previously the share of payments from profits was about 55 %). In Russia a 38 % rate of profits tax was introduced;

- rates of social insurance payment, paid by enterprises, were raised from 7 % - 14 % (rates differentiated by industries) to 26 % of the wage fund. The law on pensions originally assumed that this rate would be 37 %, but as a result of political pressure it was brought down to 26 %. Besides that, obligatory payments of 1 % are deducted directly from wages;

- a stabilization fund has been formed. 11 % of the wage fund are paid to it as a tax together with 20 % of the enterprises depreciation payments. Some other deductions from incomes are also paid to this Fund;

- a 5% sales tax has been introduced.

- rent payments were introduced in industries producing fuel and raw materials, but the rate of these payments is small;

- a tax on profitability exceeding a maximum level was introduced. This was done to limit price growth.

Detailed analysis of taxation innovations needs special research, here we can express only short observations.

1. The sharp strengthening of taxation pressure from January 1, 1991 was caused by the necessity to bridge the financial gap in the state budget caused by the time lag between the introduction of new wholesale and retail prices. Later on it became necessary to ease the pressure, especially after the introduction of new retail prices. The share of taxation withdrawals is given in table 8.

Table 8.

The share of taxes .

(%)

	1990	1991 plan from 1.01.91	1991 (estimate)	
			Var.1	Var.2
T/I	21	39	29	24
T/(I-W)	44	68	57	47
W - wage fund. I - gross income of enterprises (including wage fund). T - tax payments to the budget and non-budgetary funds. Variant 1 - payments to Stabilization Fund are equal to the planned volume (about 80 bln.rbl.). Variant 2 - payments to Stabilization Fund are equal to the real volume (about 6 bln.rbl.).				
Source: authors' estimates on the data of the Annex 1.				

As is seen from the table the share of taxation withdrawals was sharply raised (from 4% to 68 %) and then reduced to a level higher than in 1990 (47% - 57%). Proceeding from these results some success was achieved regarding the budget balance, but the same can hardly be said in respect of budget expenditure, the increase of which has played a decisive role in increasing the budget deficit.

2. The introduction of new taxes was badly prepared, taxation rates and their base were being continually corrected and this played a negative role in the stability of budget revenues. The main goal of the government - balancing of budget revenues and expenditure in the short run, was being carried out without analysis and without taking into account the very short term consequences. But it is quite possible that this was the only feasible way from a political point of view. During the first half-year the taxation system existed under the so-called "budget agreement" of the republics. In fact there was no agreement at all. There was a project of the union government, in which fixed figures of payments to the union budget were established. Their size was determined with 3 % growth of GNP assumed. Republics signed it with terms of possible decrease in rates of payments. In reality GNP decreased by 10 %, the republics could not pay the sums required and as a result the revenues of the union budget dropped sharply. The lack of clear rules for distribution of budget revenues had led to a situation in which the republics paid to the budget as much as they considered possible for them. As a result revenues of the state union budget in the 1st semi-annual are equal to 20% of revenues planned for a full year.

3. During 1991 the introduction and transformation of taxes was not being carried out in the best way:

- the profit tax rate was initially 45%; but it was reduced by the republics to 38 %, and after retail price reform by 3 more points to 35%. Payment of this tax was carried out through advance payments once or twice a month, proceeding from actual expected profits, the sum of which was estimated independently. Of course, with the quick growth of prices the sums of expected profits and advanced payments are understated. At the end of the quarter, the underestimate is compensated, but additional payments are depreciated by inflation. The Tanzi effect (Tanzi, 1977) can be observed - the sum of the social insurance payments are increasing in proportion to wages. For them the lag between the origin of income and payment of tax is a minimum. Compensation payments are also imposed by this tax and this practically indexes the tax with the same rate as incomes of population. Here the Tanzi effect was minimal;

- Enterprises do not pay taxes to the stabilization fund. For four months payments of the wage tax and depreciation tax were to make up about 13-15 bln.rbl., in fact 1,5 bln.rbl. were paid. This situation probably due to a lack of experience and a lack of clear rules for withdrawing payments to the stabilization fund. However the delay of these payments did not permit the expenditure planned, and required a special decision of the parliament on drawing

credits to this fund. Thus, taxes to the stabilization fund cannot be called good, but their separation from the budget permitted expenditure to be held in check;

- It was initially proposed that the sales tax would be paid from every sale. But its payment was abolished soon in industries, producing primary and intermediate production and was left only in final consumption and basically for the purchases of goods by the population. As a result the volume of receipts was reduced from 100 bln.rbl. to 25 bln.rbl. Later on many goods were also freed from payment of this tax (basically, foodstuffs) and the sum of its payment decreased to 10 bln.rbl. annually. Besides that, the rate of tax was influenced by the delay in its introduction;

- taxes on profitability exceeding the maximum level and on the increase of consumption are ineffective. Under the conflicting legislation of the Union and the republics and the abolition of these taxes in some republics, enterprises manage to successfully avoid paying these taxes and get around the limitations.

- after retail price reform the average rate of income tax for the population was reduced, basically by legislating that low incomes would not be subject to taxation and by lowering the maximum level of taxation for high incomes from 60 % to 30 %;

- revenues from turnover tax and imports tax increased as a result of retail price reform. However in a majority of cases, the turnover tax is as previously equal to the difference between fixed wholesale and retail prices, and the sum of this difference depends on the product. Its spreading as a single rate for goods sold at unfixed prices has been delayed. Such a way of raising the tax lowers the effect of indexation of budget revenues and strengthens the Tanzi effect. Import taxes are established as a percentage to the cost of commodity, this could index this type of budget revenue to the effect of depreciation of the rouble. However for the time being this does not happen, because commercial exchange rate (1.8 roubles for a dollar) is applied for settlements.

Detailed analysis of the tax revenues is given in Annexes 1 - 3.

As a result of a change in the conditions of taxation in 1991 about 30% of budget revenues and outside budget funds are indexed simultaneously with a rise in prices and money incomes of the population (basically these are social insurance payments). About 35% of revenues could be indexed with small transformations in the proper elements of taxation or change in exchange rate of the rouble (turnover tax and import tax). The rest of taxes have and will have a large lag between the origin of the income and the payment of taxes to the budget and this will depreciate them with a speeding-up of inflation.

#### 2.4. Redistribution of financial flows in 1991.

The attempt of the government to raise the tax rates and to fix the higher prices for foodstuffs and for some other goods subject to subsidies, was aimed at depreciation of stocks. At the same time it was aimed at stoppage of the redistribution of financial resources from the budget in favour of enterprises and population. But the idea was to fulfill this without carrying out full liberalization of the economy. The governing circles understood that these measures could be effective only if they are supplemented with the restrictive incomes policy. The latter should include, in particular, not very large budget subsidies for the population, compensating for the price rise. Besides this, the more effective credit policy, limiting the access of enterprises to the credit resources of the banks, was needed. The statements of the vice prime minister V. Sherbakov about the important decisions being prepared in the area of crediting, and the resistance of the cabinet to the demands of the workers for rise in wages, prove this. But the analysis of the statistical information for January-July of 1991 shows, that neither of the government's intention came true.

The interest rate policy turned out to be inefficient. Only in August of 1991, after the long negotiations with the republics, the Central Bank increased the annual payment for the centralized credit resources (given by the Central Bank of the USSR and the republican central banks) from 8% to 12%. This was made to limit credit emission. With the monthly 10-12% inflation, this interest rate could not prevent the inflationary expansion of credit emission. Credits to the national economy are increasing by 40 bln.rbls. average per month (or about 10% monthly).

The planned subsidies and incomes policy were gradually abolished. The republican authorities passed the decisions on larger subsidies for the population from the budget (see page 3). Ukraine, Belorussia, Uzbekistan, and partially Russia abolished the limitations for the rise in wages. The subsidies policy assumed, that fixed revenues paid from the budget were to be compensated with 60-65 roubles for the grown up and 40-45 roubles for a child (20-25% of the average wage rate, 70% of the average pension)\*. These subsidies total for 9 months in 1991 would require 104 bln.rbls. of budget expenditure\*\*. Subsidies to the employees of the enterprises running on a self-supporting basis were to be paid from the incomes of the enterprises, gained from their economic activities, from the rise in prices for their output and decrease in the profits tax rate. According to the calculations, total amount of subsidies due to these sources was to be equal to 225 bln.rbl., taking into account additional decisions on freeing from taxes the financial means of enterprises, spent for the reduction in prices for nourishment in the working canteens (May, 1991). According to the actually passed additional decisions on the rise

\* Izvestiya, April 24, 1991

\*\* Beginning from January, 1991 average pensions increased by 45%. In 1991 pensions increased by 2, 2 -2,5 times a compared with 1990.

in incomes of the population, the sum of subsidies will reach 270 bln.rbls., including at least 130 bln.rbls. from the budgets.

As a result of inefficient incomes policy, in spite of the fall in output, in January-August of 1991 the wage fund increased by 34%. The introduction of subsidies led to a 14% increase. The measures for assuring social protection of the workers of public health, education, culture and of the workers of the basic industries resulted in a 9% increase. And the remaining 10% were due to redistribution of enterprises incomes in favour of wages.

The sharp increase in the expenditure of the budgets at all levels for the payment of money directly to the population serves the source for a rapid growth of incomes. More than 50% of the future revenues of the consolidated budget of the USSR is supposed to be paid to the population in the form of incomes (social payments, wages, subsidies). In 1990 the same share was only 34%. This is the main reason for the sharp rise of the budget deficit. The other sources for the rise in incomes of the population are: the rapid growth of profits (1.8 times for January-August) and banking credits. The price reform has strengthened the disposition of enterprises to quickly pay their assets in the form of wages. Cheap credits of the banks provided for the deposits needed for this by enterprises (see table 9.). It is evident from the table that in 1991 the strengthening of negative tendency to inflationary redistribution of financial resources is provided not only by the expansion of crediting limits, but also by a rise in direct bank crediting of enterprises.

As a result of a weak monetary policy, the price rise insignificantly depreciated financial flows, and the stocks are being gradually restored. The retail price reform provisioned the 40% increase in the deposits of the population and in the cost of securities as a compensation measure. About 25% of this sum could be used by the population after 1st July, 1991, and the remaining part is frozen on special accounts up to 1994. These measures also promoted the reestablishment of the real volume of stocks.

Change in financial flows in 1991.

	January-March				April-July			
	1	2	3	4	1	2	3	4
1. Increase in liabilities to the banks	86	29	-	115	151	133	-	284
including:								
2. Debt forgiveness	-	-	-	-	63	-63	-	-
3. Increase in net liabilities	86	29	-	115	88	196	-	284
4. Change in deposits	23	73	16	112	8	173	101	282
5. Change in assets	-63	44	16	-3	-80	-23	101	-2
	August-December				January-December			
	1	2	3	4	1	2	3	4
1. Increase in liabilities to the banks	111	214	-	325	348	376	-	724
including:								
2. Debt forgiveness	-	-	-	-	63	-63	-	-
3. Increase in net liabilities	111	214	-	325	285	439	-	724
4. Change in deposits	-	207	123	330	31	453	240	724
5. Change in assets	-111	-7	123	5	-254	14	240	-
1 - state, 2 - enterprises, 3 - population, 4 - total								
<b>Source:</b> For January-July - on the data of the Ministry of Economy of the USSR on the state and use of monetary mass on May 1, 1991. For August-December -our extrapolatory simulation, based on the assumption, that no new changes in pricing, budgetary and credit sphere will take place. Monthly statistical reports of the Goskomstat of the USSR "On the social and economic development of the functioning of national economy" were also used.								

Table 10.

## Changes in flows and stocks.

. (in per cent)

		January-May		January-July	
		nominal	real	nominal	real
Flows (change within a period)	Enterprises (profits in industry)	189	96	202	95
	Population (money incomes)	134	93	159	99
Stocks (change for the end of the period)	Enterprises	137	69	154	73
	Population: -without compensations for savings frozen until 1994	107	55	122	61
	-with compensations for savings frozen until 1994	107	55	146	73

Source: Monthly statistical reports of the Goskomstat of the USSR "On the functioning of national economy".

Changes in the incomes of the state, enterprises and population are given in Table 11. Detailed changes in the flows of three sectors (as incomes and expenditures balance) are given in Annexes 1-3. Changes in net assets in 1990 are given in line 1.

Table 11.

## Changes in income distribution in 1991

(bln.rbl.)

	State	Enterprises	Households	Balance of payments
1. Changes in net assets	-80	14	76	-10
2. Effect of wholesale price increase and tax reform				
- wholesale price increase-	290	290	0	-
- legislated tax reform	275	- 265	- 10	-
3. Effect of retail price reform				
- changes in retail price and tariffs	130	240	- 370 1)	-
- changes in tax legislation 2)	- 35	20	15	-
- compensation payments	- 130	- 150	- 280	-
- compensation payments to household accounts and bonds to be paid in 1991	- 40	-	40	-
Subtotal effect (2+3)	- 90	135	- 45	-
4. Changes in macroeconomic conditions				
- social programme in 1991	- 65	-34	99	-
- wage increase	- 20	- 100	120	-
Subtotal effect (2+3+4)	- 175	1	174	-
Changes in net assets	- 255	15	240	-
5. Full year theoretical effect of retail price reform 3)				
- changes in retail prices	195	290	-485	
- changes in tax legislation	-85	70	15	
- compensation payments	-140	-200	340	
Full year total effect (2+5)	-45	185	-140	
Subtotal effect with changes in macroeconomic conditions (2+4+5)	-130	51	79	

Source: authors' simulations

1) The difference between the nominal volumes of 1990 and 1991. This figure includes both the increase in prices and the decrease in real volumes.  
2) Only the decrease in taxes on incomes of the population and on the profits of enterprises is taken into account (with taking into account the increase in the profits mass).  
3) The effect of the price reform application for a full 1991 year.

In dynamics enterprises do not strive for a rise in their profits, but as quickly as possible redistribute their incomes through wage increases. It can be seen from Table 2.5 that reforms of prices and taxation raised the profits of enterprises by 135 bln.rbls., increased deficit of the budget by 90 bln.rbls., decreased incomes of the population by 145 bln.rbls. However macroeconomic changes reduced the profit of enterprises practically to zero, increased income of the population to 175 bln.rbls. with increasing the budget deficit by 175 bln.rbls. Besides that, compensation for the savings of the population was paid (40 bln.rbls.) which we referred to the current deficit of state budget.

#### 2.5. Estimates of forced savings after the reforms.

The size of forced savings was estimated by economists using different methods. A range of estimates - from 115 bln.rbls. (20% of the total sum of financial assets of population) at the end of 1990 (CEC, 1991) to 260 bln.rbls (45.6% - Belousov,1990) emerged.

The influence of price reform upon the size of forced savings was also estimated differently. For example, according to Belousov's method, the nominal size of these savings will slightly increase. If estimating the increase of the demand for normal savings in proportion to price growth, then the size of forced savings should be equal to zero. The increase in nominal demand for money (normal savings) can be estimated in proportion to the growth of the nominal income of the population. Different estimates of changes in normal and forced savings are given in Table 12.

Table 12.

Demand for money (normal savings)  
and monetary overhang (forced savings).

(bln.rbl.)

	CEC	IMF, WBRD, EBRD,OECD	Belousov, Polyakov
1. Monetary overhang at the end of 1990	115	160 - 180	260
2. Normal savings at the end of 1990	425	360 - 380	280
3. Volume of savings at the end of 1991 (forecast)	715	715	715
4. Normal savings at the end of 1991			
- variant 1 *	895	755 - 800	590
- variant 2	765	650 - 685	505
5. Monetary overhang at the end of 1991 (5=3-4)			
- variant 1	- 180	(-40) - (-80)	125
- variant 2	- 50	30 - 65	210
*) In the variant 1 increasing of the normal saving is proportional to price increase (2 times), in the variant 2 - proportional to the nominal income growth (1,8 times).			
Source: Reports of the CEC and IMF,WBRD,EBRD,OECD .			

As it is seen from Table 12. different estimates of forced savings after price reform, gotten with different methods, give results from -180 bln.rbls to 210 bln.rbls. Negative value means that either initial estimate was understated or some other methods are needed.

From our point of view, real estimates are close to 60-120 bln.rbl. (8-17% of accumulated financial assets of population). This size returns economy to the state of 1983-85, when forced savings were approximately of the same size. Depreciation of forced stocks can be put down to positive results of reform, for with liberalization of all prices their sudden change will not be so great as it could be without reform of April 2, 1991.

## 2.6. Changes in basic indicators of Soviet economy.

The reforms of prices and taxes were carried out in the first half-year of 1991. As it is shown in section 2.4., they led to a certain stabilization effect. In the second half-year redistribution from the budget to the population through enterprises resumed and went on even more rapidly than during the previous years. If incomes increase with the rate of July-September of 1991, than at the end of 1991 soviet economy will be characterized by the indices given in table 13. For first seven months figures of Goskomstat of the USSR are given, for the end of 1991 - our extrapolative forecast based on the growth rates of July-August (April-August) of 1991.

Ratio of real internal state debt to GNP increased by 5 points (from 55 to 60%), current deficit of state debt increased from 8% to 13% of GNP. Increase of state debt was influenced by three factors:

- Reforms of prices and taxes, carried out with preserving of wide circle of fixed prices, brought gains to the budget, which were reduced to zero by enterprises owing to increase in free prices.

- Attempts to intensify taxation pressure upon enterprises in reality were not a success. This has led to essential losses of budget revenues. In fact, taxes to stabilization fund were not paid, sales tax is abolished and so on. Level of taxation withdrawals stayed practically stable. Simultaneous increase in social expenditure led to increase in current deficit.

- In 1991 hopeless debts were going to be written off with their referring to state debt. To some extent this turned out to be necessary in order to prevent bankruptcy of small commercial banks, formed on the base of branches of large specialized banks, previously having attended to unprofitable clients. Transformation of banking system, division of loan fund, increase of interest rates required clearing of their balances.

- After retail price reform the government charged extra compensation for deposits, securities and insurance policies of population with referring the source of compensation to the state debt. Total savings were increased by 40%. The sum of compensation not exceeding 200 rbl. can be received just after the extra charge, the remaining sum - only after 1st March, 1994. Thus, 30.8 bln.rbl. from total 156 bln. rbl. can be used right away and remaining 125.2 bln. rbl. can be used in 1994. Besides this, the cost of the state bonds at the disposal of the population was increased by 8 bln.rbl.

Soviet economy: basic indicators.

Table 13.

(bln.rbl.)

	1990	1991 7months	1991 estimate	1991/1990 (% %)
1.GNP	1000		1700	170
2.Internal debt	550	925	1020	185
	(35.0) <sup>1</sup>		(60.0)	(109)
3.Increase of the internal debt	184	375	470	255
including:	(18.4)		(27.6)	(150)
-current deficit of the budget	80	130	215	270
	(8.0) <sup>2</sup>		(12.6)	(151)
-enterprise debt forgiveness	104	63	63	61
-compensation to accounts, bonds & insurances	-	182	182	-
4.Net debt to the Central Bank	520	880	970	187
	(52.0)		(57.1)	(110)
5.Money (M0)	136	167	240	176 (97) <sup>3</sup>
6.Money (M1),	534	715	865	162 (105) <sup>3</sup>
7.Money (M2),	946	1231	1492	158 (108) <sup>3</sup>
including compensation frozen until 1994	946	1351	1612	170 (100) <sup>3</sup>
8.Househods' money assets:				
-total (bln.rbl.),	570	825	920	161 (95) <sup>4</sup>
excluding compensation frozen until 1994	570	690	765	134 (79) <sup>4</sup>
- in % to GNP,	57.0	48.5	54.1	95
excluding compensation frozen until 1994	57.0	40.6	46.0	79
Including:				
a) Money (M1),	365	460	505	138 (81) <sup>4</sup>
b) Money (M2)	520	635	675	130 (76) <sup>4</sup>
excluding compensation frozen until 1994	520	755	795	153 (90) <sup>4</sup>
9. Net savings of households	82	117	240	293
- in % to income	12.6	20.5	20.3	161
- in % to GNP	8.2	11.8	14.1	172
10.Enterprise money assets: <sup>5</sup>				
- Money (M1),	383	522	722	189
excluding money in settlement	170	255	360	212
- Money (M2), (including money in settlement)	427 (42.7)	596	817 (48.0)	191 (113)

Source: National Economy in 1989;  
Reports of Goskomstat of the USSR,  
"Dengi i credit", No.3, 1991.

<sup>1</sup> Here and below - in brackets - per cent of GNP.

<sup>2</sup> Including quasi-fiscal deficit of central bank for payment of subsidies.

<sup>3</sup> Speeding up of circulation.

$$V/V^{-1} = (P \cdot Y / (P^{-1} \cdot Y^{-1})) / (M/M^{-1}),$$

V - velocity circulation.

<sup>4</sup> Depreciation of money assets,

$$(A/A^{-1}) / (P \cdot Y / (P^{-1} \cdot Y^{-1})), \quad A - \text{assets}, \quad Y - \text{GNP}.$$

<sup>5</sup> Our estimates on the data of the Gosbank and the Goskomstat

It follows from Table 13. that the growth rate of nominal money mass (M1) for seven months is less than the growth rate of nominal GNP. With the same growth rates, the situation will not change at the end of the year. Formally this means speeding-up of the circulation and this can be evidence of strengthening of the process of a flight from money (indication of economy entering hyperinflation). But in fact this speeding-up took place owing to depreciation of money assets of the population, including forced savings. Speeding up of circulation of money assets of population by 20-25% (or by 10-12% if take into account frozen compensations of savings) means not only sharp decrease in forced savings and reapproachement of demand for money and supply (estimates of changes in forced savings see 2.5). This fact is indirectly confirmed by high rates of growth of money assets of enterprises in comparison with growth rates of nominal GNP. According to our estimates rate of circulation for enterprises will not increase, but even decrease a little.

This means that practically rate of circulation of money, used for normal circulation, (that is minus forced savings) did not change. A conclusion can be drawn that economy is not yet in the state of Hyperinflation.

On the other hand, the so-called "free prices" have no time to respond to the changes in demand and to the increase in incomes. This provides for not only overhang but for inflationary expectations as well. In the 4th quarter the system of incomes indexation is supposed to be introduced. Quantitative accumulation of factors providing for acceleration of inflation can undergo qualitative changes, this leading to hyperinflation (or providing for the situation of total shortage, as it was at the end of 1990).

## Conclusions to part II.

1. Reforms of prices and taxes have not solved the problem of flows and have changed little the financial situation in the economy: the real current budget deficit has increased by 1.0 times, the real state debt - by 10%, the norm of savings accounted for 20%.

2. Simultaneous introduction of free and fixed prices has not brought much profit to the state, and promoted the rise in its deficit. The enterprises cancelled it out by rises in free price and by the immediate payment of increases of assets in the form of wages, and thus promoted the quick restoration of the real purchasing capacity of the incomes of the population. Process of redistribution of incomes, which had begun in 1988, in 1991 has sharply speeded up.

3. Tax reforms, which had proposed a sharp strengthening of tax pressure over enterprises, have practically failed, and the share of taxation withdrawals has been left nearly at the level of 1990.

4. Depreciation of money savings of the population by 20-25% have sharply reduced the real size of forced savings and this allows price liberalization without fear of great sudden changes in prices caused by this reason.

5. The principle of price regulation, chosen by the central government, maintains the policy, implemented in the centralized planned economy. Fixed prices are established for fuel and raw material resources and for foodstuffs. Between periodical revisions of fixed prices manufacturing industries are proceeding with price rises for their production. Liberalization of prices for this production has sharply speeded up price growth, and this has required more frequent revisions of fixed prices. Understatement of prices for fuel and raw materials in comparison with the structure of world prices has persisted and this has required additional subsidies to unprofitable enterprises and to agriculture.

6. If we exclude the influence of forced savings, we can speak about the stability of the money circulation rate, this being evidence of the lack of a flight from money (or of its very small occurrence).

### 3. INFLATION PERSPECTIVES AND POSSIBILITIES FOR STABILIZATION.

Uncontrolled disintegration of the budgetary and banking systems became the main problem in the area of macroeconomic regulation. Attempts of the Union government to bring about stabilization measures failed, and only deepened the fall in output and consumption, resulted in the threat of high inflation and hyperinflation. Besides traditional problems of macroeconomic regulation typical for the countries with high inflation (Dornbush, 1990) spontaneous process of redistribution of powers between the republics became the most important factor, restricting the possibilities of stabilization.

#### 3.1. Political factors, influencing the macroeconomic stabilization policy.

The main feature of the current political and economic situation in the Soviet Union is the "sovereignization" of the republics. It is exactly the way in which the destruction of totalitarian state is taking place. However to fulfil all the functions of sovereign states in economic sphere as well as in all other spheres the republics have to have certain institutions and administrative bodies with certain habits, experience and working mechanisms.

The process in which republics accept all the functions of the state can be described as a game in which the players (republics) strive to gain more advantages over each other both in the distribution of current consumption flows and in the division of debts and assets accumulated by the former union.

Before the coupe the center was an object for the republics to shift off their debts and liabilities. This restricted the disintegration process, because the center could respond by emission and control over the receipts and distribution of hard currency. After the coupe disintegration process sharply accelerated, because only Russia can play the role of the center but it doesn't have any political and economic reasons to do this.

Within the republics perceptions about their future economic organization and ways to achieve it differ essentially. Baltic republics are at one pole, ready for Western-type liberal reforms, at the other are Asian republics, where traditions of a feudal way of life are still strong. These differences in perceptions about the economic system generate - in some of the republics - attempts to find a "specific way" in economic reforms and unwillingness to use international experience of economic transformations.

#### 3.2. Instruments of macroeconomic regulation in 1991.

In the existing economic situation macroeconomic policy in republics is not synchronized. In 1991 the republics had different approaches to fiscal policy, pricing, income policy and monetary policy.

As far as the budgetary policy is concerned, one may distinguish three types of it:

1) An inflationary financing of the budget deficit on the basis of credit expansion of the republic's Central Bank. Higher budgetary expenditures are mainly due to financing of additional social programmes, payment of subsidies for foodstuffs and support for unprofitable enterprises. The republics, relying on these kinds of policies, experience an especially rapid growth of monetary mass and forced savings. This strategy is used, for example, by Russia and Asian republics.

The so-called "extraordinary budget" of Russia for the second half of 1991 envisaged about 3 bln.rbl. additional expenditure, more than a half of which being defrayed by the credit of the central bank. During the first half of 1991 budget deficit in Russia (with taking into account quasi-fiscal deficit of the central bank for the subsidies to the producers of foodstuffs) accounted for about 37 bln.rbl. (about 8% of republic's GNP). In 1991 we forecast the current deficit of Russian budget at minimum 6%-7% of republic's GNP (without taking into account the deficit of the Union budget, which will make up about 7%-8% of all-union GNP).

This strategy is completely similar to the policy of the former central government. High budget expenditure provides for the investment needs of the state structures of economic regulation and for populist measures aimed at increase in nominal incomes of the population.

2) The second approach is similar to 1), in addition the authorities also use various monetary surrogates - for example - coupons in Ukraine. This measure is used to defend the regional market from the demand of consumers of neighboring republics and from the excessive demand of its own consumers. The use of coupons in Ukraine resulted in a comparatively high level of equilibrium at the consumer market (coupons covered only 70% of nominal incomes of population). Excessive monetary savings, not covered by coupons, form the demand to be satisfied outside the republic. This measure cannot result in a long-term equilibrium, because it will inevitably lead to interrepublican conflicts and to the closing of frontiers.

3) The third strategy, adopted by the Baltic republics, means liquidation of the deficit of the republic's budget. In Latvia this aim was achieved by restriction of expenditure while maintaining the system of fixed prices, in Lithuania and Estonia - by price liberalization and abolition of subsidies.

Deficits of republican budgets are given in table 14.

Table 14.

## Deficits of republican budgets in the 1st half of 1991.

Budgets	Current deficit		Debt forgiveness	
	bln.rbl.	% to GNP	bln.rbl.	% to GNP
Russia	37	8.2	57	13
Ukraine	15	11.5		
Belorussia	0	0		
Baltic republics	0	0		
Asian and Transcaucasian republics	11	9.2		
Total deficit of republican budgets	63	8.0	63	4.0
Central budget	61	7.8	63	4.0
Total deficit of consolidated budget	124	15.8	63	4.0

Source: Ministry of Finance of the USSR, Ministry of Finance of Russia, (Orlov, 1991).

Incomes policy in republics also differed. The all-union norm of subsidies was approved at 60 roubles per month for employees and 65 roubles per month for pensioners. In Ukraine, Latvia and Estonia these subsidies were raised to 85-90 roubles. In Ukraine, Belorussia, Baltic republics, Turkmenia subsidies for the children were raised (as compared with the all-union rate).

All-union minimum wage rate being fixed at 160 roubles per month, in Russia it is equal to 220 roubles per month. According to the project of the law of Russia on indexation, minimum wage rate determines the rate of indexation of incomes: for incomes not exceeding two minimum wage rates the rate of indexation is equal to 100%, for incomes accounting for 2-4 minimum wage rates it is 50% (for the part exceeding two minimums), for incomes exceeding four minimum wage rates indexation is not envisaged (for the part exceeding 4 minimums). In the middle of the year average wage rate in Russia made up 360 roubles per month, average income - 320-330 roubles per month. Assuming that the distribution of incomes around the average level is stable, one may easily calculate that the indexation coefficient for gross incomes will make up about 0.75.

In Belorussia and Ukraine all the limitations for the increase in wages were abolished and in RSFSR these limitations were partially abolished. In this situation, in 1991 trend increase in gross incomes (without taking into account subsidies for the price rise) will make up 25-30%.

Incomes policy being based on these principles, increase in gross incomes with subsidies will account for 1.0 of the price index (before the indexation of incomes).

Differences in price policy lead to different price levels in republics. The lists of goods sold at fixed prices in the republics differ. Besides this the level of fixed prices for the same goods differ also. Because of this price levels in republics are different: average all-union price index being equal to 1.95 (April of 1991 to April of 1990), in Uzbekistan prices increased by 1.83 times, Kirgizstan -1.72, in Belorussia - by 1.9, in Ukraine - by 1.92. In Estonia prices for foodstuffs were raised at the end of 1990, and in summer of 1991 all these prices were liberalized. As a result prices for foodstuffs in Estonia twice exceed all-union level, average wage rate exceed the all-union average by 90% (Goskomstat of the USSR).

In these circumstances monetary policy is not an exogenous parameter in respect of other elements of macroeconomic regulation. It provides for the needs of the budgets to expand their expenditure. The lack of the mechanism of bankruptcy results in the necessity to write off hopeless debts with their referring to the state debt. Money creation functions of the central bank (limits on credit expansion) are in fact distributed among the republics. Through political mechanisms the republics maintain the scale of emission necessary for covering their budget deficits.

Under these circumstances coordinated anti-inflationary policy is blocked.

### 3.3. Stabilization: possible scenarios.

The possibility and success of stabilization policy depend on the principles of economic union which will be contracted by the republics. One may assume three possible scenarios of the forthcoming events:

1) Economic union will be contracted with all the rights to implement macroeconomic policy being passed to central governing bodies. The set of instruments of stabilization shock which can be used within the union is given below supplied with estimates of parameters. But from our point of view, the possibility that this scenario comes true is slim.

2) Economic union will be contracted, but the republics will not observe the agreement. In this case the only scenario is possible: acceleration of inflation, hyperinflation with separate uncoordinated introduction of republican currencies.

3) Not an economic union will be concluded, but an agreement on coordinated division of economic space and introduction of republican currencies. In this case the introduction of republican currencies will provide the basis for stabilization programmes in republics.

The set of necessary stabilization measures and the estimate of the results of their implementation, dependent on initial parameters, is given below.

1. The scenario of stabilization and market reforms within an economic union could be the following:

1) Price liberalization is the necessary pre-condition for the development of market relations and stabilization. The lack of an agreement on this problem will finally lead to price liberalization in all the republics, or to frequent revisions of fixed prices. Because of this coordinated price policy is one of the main conditions for successful stabilization and market reforms.

Price liberalization will inevitably be followed by equalization of the structure of internal and external prices. The gap between these two structures is so wide, that transition to world prices will lead to strongest shock in economy. This is one of the main reasons for the republics to be interested in reaching an agreement on price policy and contracting an economic union (in a short run). Regulation of the process of transition to the structure of world prices is possible only by coordinated customs policy. Unfortunately, the republics tend to use non-market instruments to regulate external trade (quotas, licences), which does not permit effective external competition to be stimulated. In our view, this will be the most difficult barrier on the way to price liberalization and market reform. This could be softened with massive stabilization financial help, but its allotment is extremely problematic.

Forced savings will, obviously, still be a very important factor at the time of price liberalization, but their influence will not be as strong as it was at the end of 1990 (if stabilization is not postponed for a year or two). An inflationary inflow of money from savings can be avoided, if internal convertibility of the rouble is introduced with a sufficiently high exchange rate, but successful implementation of this measure depends on the size of financial support from the West.

2) Budget policy will be implemented when the republican budgets are independent. In this case successful macroeconomic policy could be carried out in two ways:

- Republics implement independent monetary and budget policies, in spite of the other republics' behavior. In this case the success can be provided only by the introduction of republican currencies.

- Coordination in implementing the budget policies is rather close, The comparatively developed system of financial transfers exists.

Though the possibility of this variant is not very strong, it still exists. In this case the success can be provided only by close coordination similar to the rules, worked out in European Community. But the countries of European Community already have sufficiently effective budgetary systems. Working out of the rules assumes basically the coordination of actions in different situations. This process takes much time - at least several years.

In the Soviet Union the situation is different. After the disorganization of the union budget, republican budget systems are working ineffectively: plural tax system, hardly controlled system of collecting taxes, and the main thing - big budget deficits exist in most of the republics. Besides this, under existing situation in the Soviet Union there is no time to work out the rules for coordination of the budgets, operating according to different principles - if not to undertake radical measures, the situation will sharply deteriorate. So, if the republics are ready to implement coordinated budgetary and macroeconomic policies, the best solution would be the building of republics' budgets in accordance with similar rules, sufficiently simple and easily implemented. To our opinion, these rules could be the following:

- All the taxes on incomes are substituted by a single value added tax with a sufficiently high single rate (up to 35-40%).

- A part of this tax is transferred to the central budget. This must be a single ratio fixed for all the republics.

- Single customs policy is carried out towards third countries. Customs incomes are transferred to the central budget.

All the subsidies for foodstuffs and for the majority of unprofitable enterprises are abolished (at the same time prices being liberalized).

3) Single monetary policy is one of the main-conditions for successful implementation of macroeconomic policy. Besides the problem of passing the rights of monetary mass regulation to the center, the task of building an effective double-levelled banking system exists. As it was mentioned above, there is the barrier on the way to instant introduction of real positive rates - the necessity to previously clean the balances of the banks, which credited unprofitable enterprises. Raising of interest rates up to the real positive level can take place only simultaneously with the debts of unprofitable enterprises being written off or sold. In this case it is obviously necessary to maintain for some time administrative measures for limiting credit expansion. Successful implementation of this policies requires centralization of the banking system, subordination of republican central banks to the union central bank, which will determine the crediting strategy through the rates of intrabank credits, reserving and crediting limits.

4) The lack of coordination in incomes policies might become the reason for speedy hyperinflation. It is quite necessary to come to an agreement on the restriction of indexation rates. Its maximum level should not exceed 0.5. In this case the coefficient of increase in incomes related to the increase in prices could make up 0.8-0.9 (with trend increase in incomes is equal to 0.3-0.4).

The model for the estimation of parameters of stabilization shock is given in annex 4. The implementation of this shock is possible only under the conditions described for the optimistic variant of inflationary policies. The model includes standard equation of supply and demand for the model of economy consisting of three sectors. Supply involves domestic goods and imports

Imports depends on exchange rate, and internal output is connected with increase in wages, defined by the Phillips curve. This connection is based on the coefficient of financial pressure, which means the elasticity of output on wages. Its magnitude corresponds to the definite level of budget deficit and real interest rates. The demand depends on the indices of prices and incomes. Besides this, initial prerequisite assume the existence of imbalance (initial unsatisfied demand).

Results of the estimation are given in table 15.

Table 15.

Indices of prices and real consumption under stabilization shock.

Variants	Price index	Index of real consumption
1. Indexation coefficient I=0.75 Coefficient of financial pressure T=1.1 Coefficient of initial imbalance W=1	2.0	0.96
1. Indexation coefficient I=0.95 Coefficient of financial pressure T=1.1 Coefficient of initial imbalance W=0.86	5.2	0.90
Source: authors' simulation (Annex 4).		

In the first variant an ideal situation with the lack of imbalance and sufficiently tough coefficient of increase in incomes on the increase in prices is assumed. The second variant assumes soft indexation coefficient and high level of initial imbalance (the rate of equilibrium is 85%). Coefficient of financial pressure remains the same (real interest rates are stable and revenues of the budget are not depreciated, or depreciation of the revenues is compensated by the increase in real interest rates).

2. Variant of acceleration of inflation is quite possible, because one can hardly believe that the effectiveness of an economic union with a single center for carrying out macroeconomic

policies will be high. Most likely, even if the union is contracted its terms would not be observed. At the time republics' budgets are separated, transfers from one to another and to the central budget are limited. Budgetary policies is defined by republican parliaments and governments. In this case republics are objectively interested in price liberalization and expansion of the budget expenditure in the short run. Quicker this is done, more material resources will be transferred to republican market from the republics with low fixed prices. If the republics follow these short term interests, inflation is unavoidable.

The factors determining inflation rates, and their quantitative estimate are given below:

- Incomes indexation. Assuming that the supply and velocity of monetary circulation are stable, inflation rate is determined by indexation coefficient ( $\nu$ ) and initial price jump ( $\rho_0$ ). So inflation can be estimated as:

$$P = \prod_{i=1}^k P_i, \quad P_i = 1 + \nu * (P_{i-1} - 1), \quad (1)$$

where the number of multipliers is determined by the periodicity of indexation.

Estimated initial price jump [Vavilov, Vjugin, 1991; CEC, 1990.] with overhang level, (our forecast for the end of 1991 (see p.2.6.)), can make up to  $\rho_0 = 1.5$ , indexation coefficient will be close to  $\nu = 1$ . If indexation interval is 3 months, then in 1992 prices would increase by

$$P = (1.5)^4 = 5.06 \quad (2)$$

owing to indexation factor only.

- Acceleration of monetary circulation and depreciation of the budget revenues. To estimate in addition these factors we use the approach from [Dornbush, 1990]. Firstly, this approach permits to estimate increase in prices depending on the real budget deficit ( $\theta$ ) and parameters describing the velocity of circulation ( $\alpha, \beta$ ) with the formula:

$$\pi = \alpha + \theta / (1 - \beta + \theta), \quad (3)$$

where  $\pi$  - rate of inflation. Parameter  $\alpha$  we define for the conditions of 1991 with  $\beta = \pi / \theta = 1.5 / 0.15 = 10$ . Let us assume the devaluation parameter for 1992  $\beta = 0.05$ . Secondly, according to Dornbush's approach, the budget deficit increases because of the depreciation of revenues (Tanzi effect):

$$\theta = g - \nu / (1 + s + \pi), \quad (4)$$

where  $g$  - budget expenditure,  $V$  - tax revenues, related to GNP,  $S$  - coefficient of depreciation of incomes. For 1992 expert values are fixed:  $S = 0.1$ ,  $g = 0.71$ ,  $V = 0.27$ .

Aggregating (3) and (4) we get the equation for  $\pi$ . Solving this equation we get the following figures for our parameters:  $\pi = 5.5$ .

Thus, according to our scenarios, in 1992 inflation can account from 500% to 650%, or from 50% to 60% per quoter.

3. Division of economic space - is a quite possible variant of the further development. Peculiar status of Russia gives an opportunity to suppose that it will accept the rights of the former union. In this case the agreements will be reached and the process of division of economic space will begin, but not the contracting of economic union and stabilization within it. All the aspects of such division are the subject of a special analysis, which can not be given within the frameworks of this research. We shall give only a variant of stabilization.

In this case stabilization programme will be associated with the introduction of national currency. The tax and budgetary policy could be similar to the variant given for stabilization within the union. Incomes indexation should be abolished on the day of introduction of national currency. The question on price liberalization is the subject for political choice. If prices are liberalized before the introduction of national currency (6-12 months before) simultaneously with the abolition of all the subsidies for foodstuffs, this could reduce to some extent the real budget deficit. On the contrary, limitation and freezing of prices require financial infusions to the enterprises selling their output at fixed prices, and this strengthens repressed inflation and increases the volume of forced savings. This in turn will increase price jump within the period of introduction of national currency. Certainly, this could be neutralized by restrictive monetary reform, but after it the pressure of external price structure over the internal prices arises (correcting inflation).

On the other hand, price liberalization threatens with acceleration of high inflation and transition to hyperinflation. Besides the erosion of tax revenues and inertia of indexation mechanisms, the question on the firmness of political power arise.

The main financial problem in Russia is the all union programmes, financed from the union budget (military, space, energetic and other programmes). These expenses can not be covered only by taxes on revenues, collected in Russia. The problem could be solved with republics' fees for the case Russia's balance of payment with other republics is negative.

In this case the subject for negotiations would be the methods of interrepublican settlements and participation in the all-union programmes. Here the following variants are possible:

a) Bilateral settlements on the clearing basis. This is the most simple and easily implemented method. Its shortcomings are: the lack of possibility to quickly transfers into the currency of other republic, probability of using quotas, licensing and high customs taxes in case

large negative balances of payment are accumulated. They may be partially taken into account while implementing the former all union programmes.

b) Contracting of the payment union with creating special currency for settlement convertible to hard currency, or with settlements in hard currency (US dollars). But the use of hard currency requires large reserves of it, which is very problematic for the republics. The way could be found through creation of a special bank for settlements, which could be established with participation of international financial organizations.

c) If Russia successfully carries out stabilization and introduce convertibility of its own currency, it could be used for interrepublican settlements. This would be the simplest way out.

## CONCLUSION

In 1991 the Union Government made several attempts to stabilize economic situation. This was done in the context of deepening recession, growing political tensions between the center and the republics, which has led to the fragmentation of the fiscal (budgetary) system and to the differentiated price and income policies.

Populist decisions, passed by the Union and republican parliaments (approvals of new social programs) resulted in a 1.5 times increase of the state budget deficit in real terms.

The price reform has led to devaluation of internal state debt, financial assets and flows, but the existing tendencies prove, that by the year-end the real volumes of these assets and flows will be restored and even somehow increased. It is only the household savings, which are really devaluated by 20 to 35 per cent. This helped to restrict accumulated unsatisfied demand - which is, perhaps, the only positive result of the price reform.

The fiscal reform, aimed at state budget deficit reduction and, correspondingly, restriction of excessive growth of enterprise revenues and household incomes, actually failed. The tax burden on enterprise incomes grew unessentially. On the other hand, indecisiveness in price liberalization, decrease of the fixed price area and growth of free prices demands additional subsidies for the industries, producing fixed-price goods. The existence fixed prices for fuel, energy and foodstuffs in combination with liberalized prices for manufactured goods help to keep relatively low prices for the former and relatively high - for the latter (in comparison with the structure of international prices).

The lack of unity and distrust to the idea of a single economic policy makes strict stabilization measures, based on an agreed set of macro-economic policy instruments, virtually impossible. Under this circumstances acceleration of inflation at the end of 1991 and in 1992 is practically inevitable. The starting conditions (the level of imbalances of the flows and accumulated excessive liquidity) will definitely cause - in the nearest future - a rather high (two-digit) monthly inflation rates.

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## INCOMES AND EXPENDITURE OF ENTERPRISES SECTOR.

Table A.1.1.

1	2	3	4	5	6	7=5-2	8=6-2
1.Incomes - total	780	741	1050	1050	1295	+270	+515
including:							
2.Profit *	241	181	286	278	343	+37	+102
	(290)	(252)	(327)	(300)	(500)	(+10)	(+210)
3.Depreciation	95	100	100	100	100	+5	+5
4.Expenditure - total	766	764	1055	1088	1279	+322	+513
including:							
5.Labour compensation	404	419	419	526	670	+122	+266
including:							
6.Bonuses							
paid from profits	49	71	41	22	122	-27	+73
7.Payroll tax	40	41	105	130	166	+90	+126
8.Contribution to			40	6	6	+6	+6
stabilization fund	-	-	100	10	10	+10	+10
9.Sales tax							
10.Profit tax (pay-	127	110	121	111	122	-16	-5
ments from profits)			20	-	-	-	-
11.Depreciation tax**	-	-	30	18	18	+18	+18
12.Rent							
13.Investment	145	155	165	232	232	+87	+87
14.Other expenses	50	39	55	55	55	+5	+5
15.Changes in net							
assets	+14	-23	-5	-38	+16	-52	+2

Source: Report of the Council of Ministers of the USSR "On the project of all union forecast on the functioning of economy in 1991 by the Council of Ministers of the USSR", Moscow, 1990; monthly reports of Goskomstat of the USSR; information of the Ministry of Economy of the USSR; information of the Ministry of Finance of the USSR; authors' estimates.

2 - 1990, actual;

3 - 1991, planned without tax and price reform;

4 - 1991, planned with wholesale price and tax reform;

5 - 1991, forecast with wholesale price and tax reform;

6 - 1991, forecast with retail & wholesale price and tax reform.

\* - In brackets the estimate of profit given by the USSR Ministry of Economy and Forecasting, is given. (For 1990 real figure is given). The difference includes wages and compensations paid from the economic stimulus funds (the source of which is gross profit). In the table these payments are included in line 5. Thus in the line 2. "profit" net profit of enterprises is given.

\*\* - Payment to Stabilization Fund in equivalent of 20% of depreciation.

## Notes to table A.1.1.

1. Incomes in 1990 are calculated as the sum of profit, depreciation and wages.

2. Planned alteration of wholesale prices was to be equal to 37.2%. In January the increase in wholesale and procurement prices (for the economy as a whole) accounted for 65.7%. Later on we had the following growth of prices:

INDICES OF WHOLESALE, PROCUREMENT AND MIXED PRICES AND TARIFFS.  
(period of 1991 to the same period of 1990)

Table A.1.2.

						Var.1	Var.2
1*	1-2	1-3	1-4	1-5	1-12		
1.657	1.715	1.761	1.805	1.84	2.01	1.91	
Index of real volume					0.825	0.88	
Index of prices					1.65	1.67	
Incomes of enterprises					1290	1300	

Source: Goskomstat, Ministry of Economy.

\* - Numbers of the months of the year.

Variant 1 - forecast of the Ministry of Economy and Goskomstat.

Variant 2 - our forecast.

Average estimate of 1295 bln.rbl. is assumed in the forecast.

3. Net profit is estimated as the difference between incomes and other expenses:  $2=1-3-5-7-8-9-12$

4. Payroll tax is estimated as 26% of the wage fund.  $7=0.26*5$

5. Payments to the stabilization fund (line 8) are equal to 11% of the wage fund minus payments from wages in agriculture (about 5 bln.rbl.):  $8=0.11*5*(1-b)$  (b - the share of the wage fund of the agricultural sector free from payments to the stabilization fund). In fact enterprises don't pay this tax and we estimate the revenue of the stabilization fund about 6 bln.rbl.

6. For the sales tax, profit and depreciation taxes, estimates given by the Ministry of Economy and Forecasting are added.

7. In 1990 budget and enterprise investments total 210 bln.rbl. (53 - from the budget, 145 - from enterprises, 12 - from other sources). While estimating enterprises investments the following hypothesis were assumed: a reduction in aggregate investment of 16% (0% - in the plan), a price rise - of 80%, investments from the budget in new prices total 80 bln.rbl. (80 bln.rbl) , investments from the stabilization fund make up 6 bln.rbl. (60 - in planned calculations). Thus, investments of enterprises will make up:

forecast in 1991:  $210*0.84*1.8-80-6=232$  (bln.rbl.)

according to the plan:  $210*1.45-80-60=165$  (bln.rbl.)

## Annex 2.

Table A.2.1.

**REVENUES AND EXPENDITURE OF STATE BUDGET, PENSION AND  
STABILIZATION FUNDS.**

1	2	3	4	5	6	7=5-2	8=6-2
<b>REVENUES</b>							
1. Turnover tax	122	116	104	99	135	-21	+13
2. Profit tax	127	110	121	111	122	-16	-5
3. Rents	-	-	30	18	18	+18	+18
4. Taxes on household	47	50	50	53	38	+6	-9
5. Revenues from external economic activities	68	75	81	86	100	+18	+32
6. Sales tax	-	-	100	10	10	+10	+10
7. Payroll tax	45	46	-	-	-	-45	-45
8. Other revenues	43	32	32	32	32	-11	-11
<b>TOTAL</b>	<b>452</b>	<b>429</b>	<b>518</b>	<b>409</b>	<b>455</b>	<b>-43</b>	<b>+3</b>
<b>EXPENDITURES</b>							
1. Funding of economy	194(216)	221	341	381	281	+165	+65
- investment	42	40	80	80	80	+38	+38
- food subsidies	97(119)	115	160	200	100	+81	-29
- other subsidies	17	17	30	30	30	+13	+13
- operation expenditures	12	12	16	16	16	+5	+5
- other expenditures	26	37	55	55	55	+29	+29
2. Expenditures for external economic activities	28	30	30	30	30	+2	+2
3. Funding of science	11	11	16	16	16	+5	+5
4. Social program	162	205	110	110	110	-52	-52
5. Military expenditures	71	67	99	99	99	+28	+28
6. Debt service	15	12	12	14	14	-1	-1
7. Other expenditures	29	29	60	65	65	+36	+36
8. Compensation	-	-	-	-	63	+63	+63
<b>TOTAL</b>	<b>510(532)</b>	<b>575</b>	<b>668</b>	<b>715</b>	<b>678</b>	<b>+183</b>	<b>+146</b>
State budget deficit (net) including	-80	-146	-150	-306	-223	-226	-143
Union budget	-63	-81	-110	-126	-120	-63	-57
Republican budgets	-17	-63	-40	-180	-103	-163	-86
Revenues of pension fund	-	-	122	148	190	+148	+190
Expenditure of pension fund	-	-	130	130	177	+130	+177
Revenues of stabilization fund	-	60	6	6	+6	+6	+6
Expenditure of stabilization fund	-	60	6	6	+6	+6	+6
Deficit (-) or surplus of stabilization fund	-	-	0	0	+12	0	+12
<b>REVENUES TOTAL</b>	<b>452</b>	<b>429</b>	<b>700</b>	<b>563</b>	<b>651</b>	<b>+111</b>	<b>+199</b>
<b>EXPENDITURES TOTAL</b>	<b>532</b>	<b>575</b>	<b>858</b>	<b>851</b>	<b>861</b>	<b>+319</b>	<b>+329</b>
<b>DEFICIT TOTAL</b>	<b>-80</b>	<b>-146</b>	<b>-158</b>	<b>-288</b>	<b>-210</b>	<b>-208</b>	<b>-130</b>

Source: Report of the Council of Ministers of the USSR "On the project of all union forecast on the functioning of economy in 1991 by the Council of Ministers of the USSR", Moscow, 1990; monthly reports of Goskomstat of the USSR; information of the Ministry of Economy of the USSR; information of the Ministry of Finance of the USSR; estimates by Sergey Aleksashenko; authors' estimates.

2 - 1990, actual;

3 - 1991, planned without tax and price reform;

4 - 1991, planned with wholesale price and tax reform;

5 - 1991, forecast with wholesale price and tax reform;

6 - 1991, forecast with retail &amp; wholesale price and tax reform.

Notes to table A.2.1.

1. In 1990 expenditure for subsidies (22 bln.rbl.) was financed by State Bank credit, which was not repaid at the end of 1990. Therefore, the sum with this expenditure is added in brackets. Indices of deficit are given including this expenditure.

2. In line 8 of Expenditure compensations, paid from the Budget are shown, and in brackets total compensation payments. The rest part is paid from the Pension fund.

3. The most reliable figures in this table are shown in the first and last columns. The first column (2) contains real report figures, gotten the Ministry of Finance of the USSR. The last column (6) contains a forecast based on report figures for the first half of 1990 and on planned figures for the whole year. Intermediate variants are based on different hypothesis.

The second column - 1991 figures with prices and taxes of 1990, taking into account social programmes and other expenditure introduced from January, 1, 1991 (43 bln.rbl.), and also assuming a 5 % cut in output, which led to a decrease in incomes of 23 bln.rbl. owing to reduction of taxation base.

The third column - 1991 figures at new wholesale prices, planned by the Council of Ministers of the USSR from January, 1, 1991, and also taking into account the taxation reforms, adopted by the Supreme Soviet of the USSR, the President and the Council of Ministers of the USSR and corrected by decisions of the republics' governments.

Fourth column - 1991 figures under the same conditions as in the previous column but assuming a 10 % cut in GNP and also with a real estimate of food subsidies (200 bln.rbl. instead of 160 bln.rbl.) and sales tax (10 bln.rbl. instead of 100 bln.rbl.).

Table A.3.1.

## INCOMES AND EXPENDITURE OF HOUSEHOLDS.

1	2	3	4	5	6	7=5-2	8=6-2
<b>INCOMES</b>							
1.Wages and salaries including	447	464	464	570	730	+123	+283
2.Wages in cooperatives	28	39	39	45	-	+17	
3.Wages in budgetary funded organizations	57	61	61	70	90	+13	+33
4.Wages in collective farms	34	40	40	43	50	+9	+16
5.Other labour compensations	14	16	16	26	30	+12	+16
6.Proceeds from agricultural products sales	28	31	31	45	50	+17	+22
7.Pension, benefits, student grants	91	134	134	134	260	+43	+169
8.Payments from financial system	28	27	27	30	80	+2	+52
9.Other incomes	44	39	39	45	50	+1	+6
<b>TOTAL</b>	<b>652</b>	<b>711</b>	<b>711</b>	<b>850</b>	<b>1180</b>	<b>+198</b>	<b>+528</b>
<b>EXPENDITURES</b>							
10.Purchases of goods & services	497	472 (482)	472 (482)	447 (457)	850	-50	+418
11.Obligatory payments & voluntary contributions	75	74	74	80	90	+5	+15
12.Increase of savings	80	165 (155)	165 (155)	323 (313)	240	+243	+160
13.Net income (1+5+7+8)	580	641	641	760	1070	+180	+490
14.Disposable net income (13-11)	505	567	567	680	980	+175	+475
15.Net income from enterprises (1-3+5)	404	419	419	551	670	+147	+266
16.Disposable net income from enterprises (15-a*11)	336	352	352	481	591	+145	+255
17.Net income from the state (3+7+8)	176	222	222	234	400	+58	+224
18.Disposable income from the state (17-11*(1-a))	169	215	215	224	389	+55	+220

Source: Report of the Council of Ministers of the USSR "On the project of all union forecast on the functioning of economy in 1991 by the Council of Ministers of the USSR", Moscow, 1990; monthly reports of Goskomstat of the USSR; information of the Ministry of Economy of the USSR; information of the Ministry of Finance of the USSR; authors' estimates.

2 - 1990, actual;

3 - 1991, planned without tax and price reform;

4 - 1991, planned with wholesale price and tax reform;

5 - 1991, forecast with wholesale price and tax reform;

6 - 1991, forecast with retail & wholesale price and tax reform.

## Notes to table A.3.1.

1. Purchases of goods and services in 1991 are estimated for a planned variant with a 5 % decrease in volumes, for a forecast variant - with a 10 % decrease in volumes.

2. Separate items were forecast by the figures of Ministry of Economy and Forecasting of the USSR.

3. Net income is assumed not to include proceeds from agricultural product sales and other incomes. Disposable net income is equal to net income minus obligatory payments and voluntary contributions.

4. In line 10 (purchases of goods and services) the sum of these purchases with paid sales tax is given in brackets.

5. In line 16 and 18 a coefficient is the share of obligatory payments and voluntary contributions, which are paid from incomes, got from the enterprises.

6. Columns 4 and 5 coincide because differ only by changes in wholesale prices. They are given to correspond to the similar columns from annexes 1 and 2.

## Annex 4.

## Estimating Stabilization Shock Parameters

Here we use a three-sector model, which includes production of foodstuffs, alcohol, and non-food products. The current and previous situation is described with two equations:

$$J_{-1} + S_{-1} = D_{-1} - E_{-1}, \quad (1)$$

$$J + S = D + E_{-1}, \quad (2)$$

here J is a supply of imported goods, S - supply of domestic goods, D - internal demand, E - unsatisfied demand. Therefore, equation (1) means, that in a previous time period the supply of goods was insufficient to satisfy the demand. Equation (2) demonstrates the balance of supply and demand in a current time period, taking into account accumulated unsatisfied demand. Correlating (1) and (2), we receive

$$\gamma_{-1} \cdot J/J_{-1} + (1 - \delta_{-1}) \cdot S/S_{-1} = (1 + \omega_{-1}) \cdot D/D_{-1} + \omega_{-1}, \quad (3)$$

where  $\gamma_{-1} = J_{-1} / (J_{-1} + S_{-1})$  - is the share of imported goods,  
 $\omega_{-1} = E_{-1} / (J_{-1} + S_{-1})$  - equilibrium indicator

Changes in nominal demand are described with the function of income and comparative price index:

$$D/D_{-1} = (I/I_{-1})^\alpha (P/P_0)^\beta. \quad (4)$$

Here I is the total volume of incomes, P - individual,  $P_0$  - general price index,  $\alpha, \beta$  income and price elasticities of demand, correspondingly.

The supply functions for domestic goods is assumed to be directly proportional to sectorial nominal wage growth rates:

$$S/S_{-1} = k \cdot w/w_{-1}. \quad (5)$$

here K is interpreted as a financial burden indicator: if  $k > 1$ , then one per cent growth of wages demand bigger increase in output level. During the fiscal shock period the financial burden is increased due to restrictive tax, budget and credit policies.

The growth of wages is described by the Philips curve with flexible employment:

$$w/w_{-1} = 1 + \alpha (p_0 - 1), \quad I/I_{-1} = 1 + \gamma (p_0 - 1), \quad (6)$$

where  $\alpha, \gamma$  reflect the level of income and wage indexation.

To describe the supply of imported goods, we used (Branson Williamson, Jorge Braga de Macedo, 1987). Basing on this work:

$$J/I_{-1} = e \left( \frac{e}{P} \right)^{-m} = e (1 - \delta)^m \left( \frac{e}{P} - \delta \right)^{-m}, \quad (7)$$

where  $e$  - is devaluation,  $m$  - exchange rate elasticity of the imported goods supply.

Aggregating (3)-(7) for each sector, we get a system of three equations:

$$\delta (1 - \delta)^m e \left( \frac{e}{P} - \delta \right)^{-m} + (1 - \delta) k (1 + \alpha (p_0 - 1)) = (1 + \omega) (1 + \gamma (p_0 - 1))^\alpha \left( \frac{P}{P_0} \right)^\beta + \omega, \quad (8)$$

to which we shall add an interface equation for price indexes:

$$\frac{1}{P_0} = \sum \frac{d}{P} \quad (9)$$

where  $d$  - is a share of each consumer goods complex in the aggregate level of consumption. Solving the system for P it has to be taken into account that shares  $\gamma, d$  change if prices change. Therefore, at first the system is solved with fixed  $\gamma, d$  and is found, after that,  $\gamma, d$  are recalculated, and then the system is solved again until the iteration process stop.

Using this model we estimated stabilization shock parameters for two situations:

1. at the beginning of stabilization there was only disequilibrium of flows;
2. at the beginning of stabilization period there was the general disequilibrium included disequilibrium of flows

plus essential reserves (forced savings).

In both situations we made the following - we believe, realistic - assumptions: the income policy would not be strict, i.e. indexation level is close to 1. The upper limit of acceptable financial burden on enterprises is mainly dependent on the possibilities to diminish subsidies and to increase the nominal interest rates on credits.

The devaluation is defined proceeding from the assumption that the stabilization fund of 10 bln.dollars is created, and the West grants a partial delay of payments. In this case the currency resources would account for about 30-35 bln.US dollars (30-35 USD -export receipts +10 USD -stabilization fund - 10 USD payments of about a half of debts). The demand for imports expressed in roubles can be roughly assumed to be equal to the cost of imports in 1991 expressed in internal prices-230 bln.rbl. In this case the exchange rate will make up:  $230/30=8$  roubles for dollar, and devaluation will be equal to  $e=4$ .

Table A.4.1.

Initial parameters and results of stabilization shock.								
	Without stocks				With stocks			
	Food-stuffs	Non-food	Alcohol	Total	Food-stuffs	Non-food	Alcohol	Total
Initial parameters								
The structure of expenses	0.342	0.535	0.123	1.000	0.342	0.535	0.123	1.000
Coefficient of compensation	0.750	0.750	0.750	0.950	0.950	0.950	0.950	0.950
Initial share of import resources	0.150	0.100	0.050	-	0.150	0.100	0.050	-
The level of equilibrium								
-in flows	0.90	0.92	0.92	0.91	0.90	0.92	0.92	0.91
in stocks	0.0	0.0	0.0	0.0	0.85	0.87	0.89	0.86
Imports elasticity	-0.3	-0.4	-0.3	-	-0.3	-0.4	-0.3	-
Coefficient of financial pressure	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Demand elasticity on prices	-0.570	-0.430	-0.590	-	-0.570	-0.430	-0.590	-
Demand elasticity on income	1.030	0.918	0.830	-	1.030	0.918	0.830	-
Devaluation of exchange rate	-	-	-	3.0				4.0
Resulting parameters								
Price index (times)	2.1	1.9	1.8	2.0	6.6	4.9	3.9	5.2
Fall of output including:	0.92	0.98	1.0	0.96	0.72	0.95	1.1	0.90
internal output	0.94	0.93	0.91	0.93	0.87	0.86	0.88	0.86
The structure of expenses	0.350	0.531	0.119	-	0.347	0.531	0.122	-
The share of import resources	0.210	0.136	0.072	-	0.135	0.095	0.046	-