Institut für Höhere Studien (IHS), Wien
Institute for Advanced Studies, Vienna

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Abstract

Different speed and aftermath of the transition of twenty post-communist Central and Eastern European countries to free-market economy has posed a question about political and economical reasons led only some countries being successful in their transformation. The attempt was done in this paper to analyse five-year history of three stabilisation programmes undertaken in Ukraine where eventually economy seems to reach "low output - high inflation" equilibrium. The first chapter of the paper was devoted to the peculiar characteristics of monetary policy with special attention to inflation trend correlation with different monetary aggregates. The regression analysis showed that broad money with three-months lag and banking credits to the state sector of economy were mainly responsible for inflation hikes. Second part of the paper concentrates on reasons of steep output fall registered in the economy. As the Ukrainian government being faced with "inflation-unemployment (output)" trade-off has steadily tried to minimise output losses for the account of accommodative high-inflationary policy, output began to shrink and move to shadow economy in spite of persistent flow of direct government financial support to the economy. Any attempts to conduct contractionary monetary policy led on impact to worsening of arrears problem. The arrears chain appeared in the economy since 1993, and inter-enterprise arrears fast growth has caused severe financial crisis through whole economy resulted in the appearance with three-year lag socially dangerous tax arrears, wage arrears, and pension arrears. The cross-section regression analysis clarified that arrears can be mainly linked to the presence of the bulk of ineffective state-owned loss-making enterprises existed under soft budget constraints.

Keywords

Inflation, stabilisation, credits, arrears, output, bank

JEL-Classifications

E31, P22

Comments
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Introduction

Economy transformation process in Ukraine as in other neighbouring post-communist countries faced initially with a necessity to achieve few main aims for being successful on the long run: 1) adjustment of inherited industrial structure to the existence under so-called world price conditions; 2) fight against high inflation on the stage of macroeconomic stabilisation; 3) introducing of new institutional infrastructure, that is - three-tier banking system, private property rights system, mass privatisation of the bulk of economy, and the social safety net.

Since having achieved independence in December 1991, the Ukrainian government has implemented three attempts to reform the economy in a rather gradual manner. Two of them were unsuccessful resulting in hyperinflation, and the last one is conducted now in cooperation with international financial organizations. Each of these attempts began from the partial price liberalisation on retail and wholesale levels followed by wage indexation, prices freezing, and massive credit inflow to state-owned industry and agriculture. Government mainly concentrated own efforts on postponing the process of economy adjustment to relative world prices on raw materials trying to minimise output losses. So, the idea of macroeconomic stabilisation through budget balancing, elimination of monetary overhang, and imposing hard budget constraints on state-owned enterprises has been continually rejected during 1992-1993 years period.

After three years of transition the economy seems to reach stable "low output - high inflation" equilibrium. This equilibrium was predetermined by the impact of the combination of both external and internal factors. One of the possible reason for the large output fall is the reaction of the economy on price shock discrepancy when prices rise is too high, so real variables fall more than it was expected initially (see M. Bruno, 1994). The next set of reasons connects either with the excessively tight monetary policy depressed output (Calvo and Coricelli, 1993), or with high real interest rates (World Bank, 1991). Very important channel of high inflation and low output can be linked with lasting during few years process of energy resources prices rise and supply dislocations. Interenterprise arrears can be treated as one more additional factor pushing economy into "bad" equilibrium. High volume of arrears can minimise government attempts to impose hard budget constraints on economic agents, so effect of relative prices changes is weakened (Clifton and Khan, 1992). As a result, structural adjustment of economy is postponed, and the impact of the tight credit-monetary policy on inflation and balance of payments is not so strong as it can be expected.

In the first part of this paper the attempt will be done to observe inflation dynamics resulted from three stabilisation programmes, and to evaluate the relative impact of the National Bank and commercial banks loan activity on inflation trend.

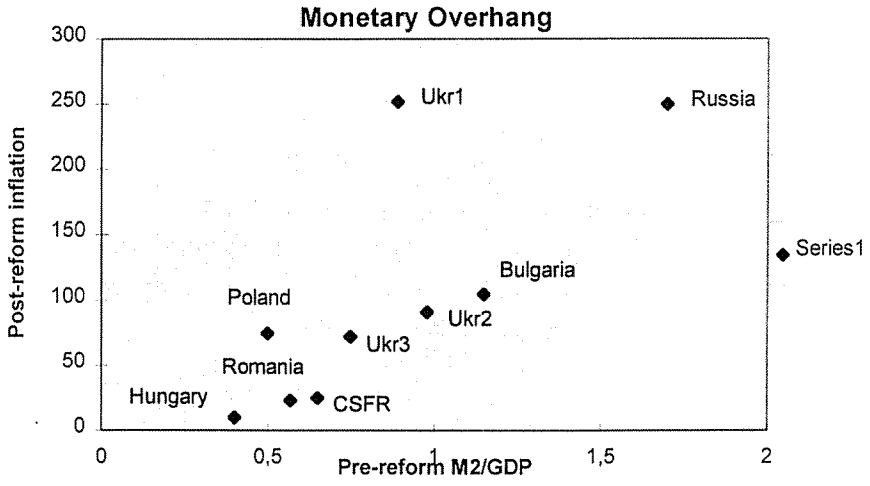
The second part will concentrate on GDP and industrial production behaviour. The degree by which money-credit policy and interest rate policy affected output will be investigated. The dynamics of arrears chain with the CIS countries and among Ukrainian enterprises will be discussed.

1. Monetary Aspects of Inflation Phenomenon.

Immediately after beginning of price liberalisation process high open inflation has became a common characteristic of all transition economies. The most successful in the economy transformation countries of the Central Europe (Czech Republic, Poland, Hungary) decided a problem of the short-run trade-off "inflation-unemployment (output)" in such a manner that at the beginning of stabilisation reforms it was allowed for industry output to fall and unemployment to rise under condition of inflation rates oscillations to be minimised when hard budget constraints were put on the economy. Usually prices on retail and wholesale levels jumped significantly on the stage of the one-moment price liberalisation, and the size of price jump was predetermined by pre-reform monetary overhang. However, M. Bruno (1994) mentioned that, in addition to monetary overhang, the monopolistic behaviour of enterprises can lead to the enormous price hikes if there are some indicators for enterprises about government intention to implement price freezing in the nearest future.

After price liberalisation followed by inflation jump, the tight macroeconomic stabilisation measures were successfully implemented in most countries, and inflation rates fell sufficiently, however by western standards its were still high. Using data of Calvo and Coricelli (1993), it is possible to observe positive correlation between size of monetary overhang (crude estimation of which is calculated using ratio M2 to GDP) before reform implementation and initial CPI hike within first month of reform in transition economies. Different points for Ukraine (Ukr1, Ukr2, and Ukr3) indicate three different attempts to begin macroeconomic stabilisation. The Ukr1 point describes price liberalisation process in January of 1992 when Ukraine had to repeat on the same scale all actions done in Russia that period. The next point Ukr2 illustrates the situation present in November of 1993 when the National Bank trying to eliminate hyperinflation began to introduce drastic contraction measures. The last point Ukr3 indicates the moment in October of 1994 when shock therapy program co-ordinated with IMF began to be introduced.

Graph 1:



Sources: Calvo and Coricelli (1993); "Monetary Review of the National Bank of Ukraine" (1993, 1994).

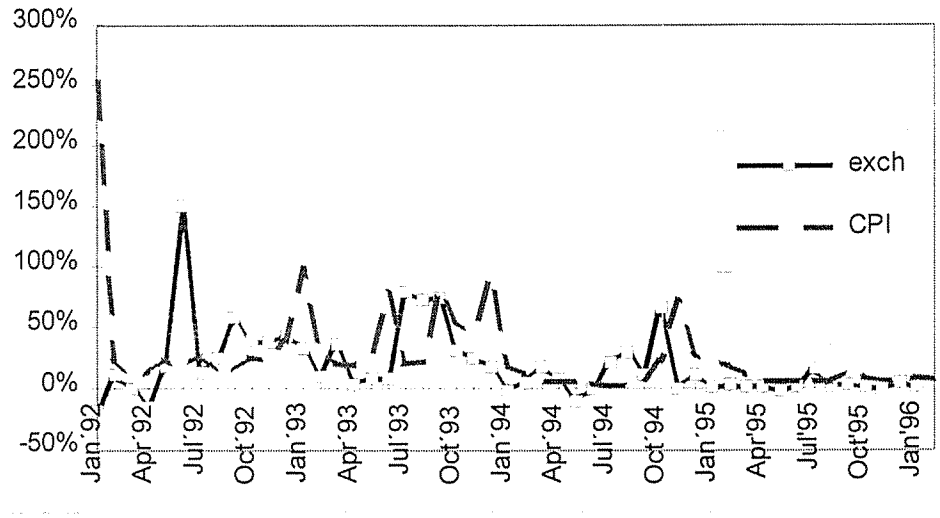
In spite of rather positive results of shock therapy in many countries, in some cases the initial price shock was high enough to provoke persistent inflation. Thus, comparing the datum for Ukraine in January of 1992 with behaviour of economic variables in other countries, it is possible to conclude that enormous price overshooting was present that moment in Ukraine. Probably, the same was correct for Poland in 1989 where inflation jump was also too high (however by smaller amplitude than in Ukraine) for existed before the beginning of reform implementation ex-ante monetary overhang. This excessive price jump meant for Ukrainian economy deep fall of all real economic parameters (real money balances, real banking credit for economy, and real interest rate in particular) which, in turn, immediately provoked deep contraction of GDP.

Though within half of the year of stabilisation program implementation other more successful in their transformation countries managed to cut inflation to one digital number per month, but in Ukraine the situation with inflation was not checked in completely. Thus, quarterly percentage changes of consumer prices in 1992 were fixed on the level of 360%, 58%, 75%, and 87% respectively. This outcome resulted partially from specific initial conditions taken place in Ukraine that period. However open inflation rates were only 161% in 1991, but repressed inflation had to be much more higher because of observed that time widespread shortages in retail trade and high degree of the control over pricing in the pre-reform period. During ten months after reaching the independent status Ukraine used the same currency as Russia and was able to receive unlimited credit flow from the Central Bank of Russia. So, unexpectedly high price shock just repeated Russian one, but then government in his attempt

to minimise negative consequences of deep fall in real values on the activity of economic agents chose wrong tactics of accommodation. First, strict government control over prices, exchange rates and foreign trade regime was introduced within one month after beginning the "reforming of economy". Second, the National Bank began to monetize, initially by the Russian credit and then by the financial resources of own banking system, budget deficit originated from growing budget expenditures on economy. Persistent galloping inflation shown on Graph 2 was the unavoidable result of this policy. The situation was worsen because of step-by-step increase of prices on imported oil and gas which reached world level only at the end of 1993. Thus, during 1992-1993 enterprises formed strict system of expectations that input prices must continue to rise in the future, so each moment economic agents tried to set excessively high prices on output.

Graph 2.

CPI and Market Exchange Rate Dynamics



Sources: IMF materials, Ministry of Statistics.

Discussing relative impact of monetary policy on inflation, some comments should be made about expectation mechanism being in work. It seems relevant to assume that adaptive expectation theory can be more helpful in explaining behaviour of nominal variables in economy that period (1992-1993). Perhaps, at the beginning of transformation the economic uncertainty was too high and knowledge about interrelations of various parameters was too insufficient for economic agents to be able to form their expectations of any variable trend using whole set of other relevant for forecasting variables, as takes place under rational expectations mechanism. Taking into account that economic agents form adaptive

(autoregressive) expectations in accordance with the simple expression where any expected variable (e.g., inflation) is equal to a distributed lag of past expression of this variable, it is possible to apply Friedman's (1958) accelerationist principle for Ukraine. Obviously, that the whole set of supply shocks hit the economy since 1991 had to result in lower natural level of output. As Blanchard (1993) described, for keeping output higher than its natural rate a government has to produce higher than expected inflation which will in turn correct expectations of economic agents so that actual inflation rate will rise. In addition, the stronger is the impact of supply shock on behaviour of variables, the higher should be inflation rates jump for being able to offset the output effects of this shock. Even if output level is treated by government as a nominal target, eventually the cumulative effect of this accelerationist principle is the total disappearance of the government control over the trend of nominal variables which took place till end of 1993.

It is relevant to assume that during 1994 -1995 rational expectation mechanism could be considered for explanation economic agents' behaviour. After two years of high-inflationary experience agents were able to incorporate both publicly available and insider (e.g., from private sources in government or the National Bank) information into their pattern of expectations. As indirect confirmation of this conclusion it is possible to use comparison between cash market exchange rate and inflation hikes shown on the Graph. 2. It is obvious that periods of depreciation of exchange rates in 1994 and 1995 was followed by inflation hikes, that is, all information about credit emission was incorporated immediately by agents (first of all, by banks who are main dealers on the foreign exchange market) into their expectations concerning future dynamics of all macroeconomic variables, so foreign exchange market responded faster than goods market.

The data from Table 1 (all Tables are in Annex) can serve as a good confirmation of the losing control over behaviour of monetary and credit aggregates during the period of accommodative policy (January of 1992 -3-rd quarter of 1993). During the first half of 1992 government tried to put wage in the state sector of economy under control and so keep inflation low. However, it is obvious that explosion of such variables as net claims on government, claims on rest of the economy, broad money, and demand deposits in Q2'92 directly led to the disappearance of control over inflation rates. Under so soft monetary policy inflation received all characteristics of unstable process and reached level over 100% in January of 1993. Accumulated inflationary potential combined with continued soft monetary policy resulted in four hyperinflation jumps taking place in 1993.

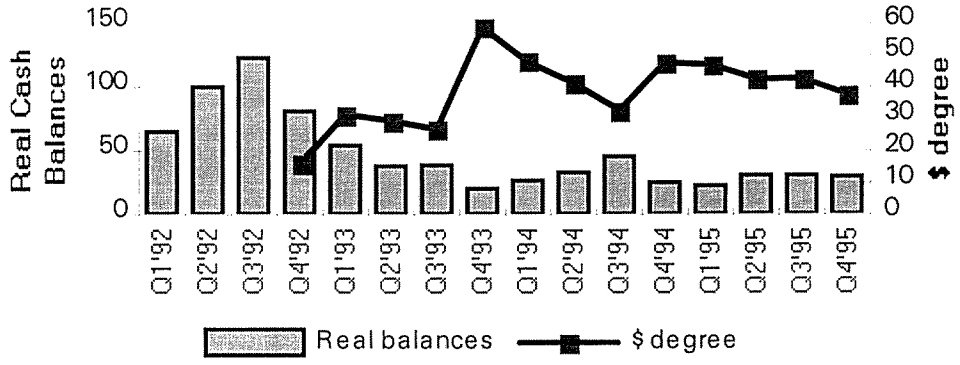
In accordance with IMF estimations general government balance as a % of GDP reached (-13.6%) in 1991, (-29.3%) in 1992, and (-13.3%) in 1993 when inflation rates were highest (however, different sources provided rather different estimation of these values). This persistent budget disbalance was rooted in excessively high budget direct expenditures on economy covered through banking credit for government which was relatively high even in low inflationary 1991 (this is the reason for shown in Table 1 relatively small jump of the

component "Net Claims on Government" at the beginning of price liberalisation). Table 2 illustrates the situation with consolidated budget.

As high inflation diminishes the purchasing value of money holdings, public will need more money and government would be able to reach higher seigniorage level. Loss of public confidence in domestic currency immediately leads to the substitution of domestic currency by foreign currency because depreciating domestic currency can not be used for saving purposes at all and can hardly be used as a medium of exchange. The process of fall of the value of real money balances during inflation combined with the rise of the impact of dollarization phenomenon in economy is shown on Graph 3. We can see that inflation hike in Q4'93 was coincided with the steep rise of dollarization ratio (measured as the relation of deposits in foreign currency to the sum of all deposits), and the same situation was present at the end of 1994. So, economic agents responded on any government attempts to collect inflation tax by fighting from domestic currency. The next conclusion of Williamson (1994) is a good fit for situation: "Make the inflation tax high enough, and agents will economise on money balances to the point where much faster inflation is needed to yield the same seigniorage".

Graph 3.

Dollarization Ratio (%) and Real Cash Balances (index 1992=100)



Sources: "Ukrainian Economic Trends", January 1996.

Money demand function was tried to be calculated using common expression fit the behaviour of variables in other transitional economies (IMF, 1991). It was possible to calculate coefficients for the next regression covered period from October of 1993 till April of 1995 shown in Scheme 1:

(1) $$\mathbf{M/P} = \alpha + \beta*(\mathbf{M/P})_{LAG} + \gamma*\mathbf{i} + \rho*\mathbf{GDP} + \varepsilon,$$

where independent variable $(\mathbf{M/P})_{LAG}$ means rates of growth of real money balances with two month lag, **GDP** means rates of growth of GDP, and **i** means credit interest rate. We can see that this usual regression for money demand fits economic situation rather well.

Scheme 1: Ordinary Least Squares

Dependent Variable	LNMP	Number of Observations	19
Durbin Watson statistic	2.09	Std. Error of Regr.	.13628
R - squared	.687	Adjusted R - squared	.6145

Variable	Coefficient	Std. Error	T-ratio	Prob |t|>X
ONE	-.006623	.035052	-.189	.8531
I	-,416513	.182179	-.3638	.0397
GDP	1.478353	.336766	.70762	.0007
$(M/P)_{LAG}$	,198995	.159726	.20552	.2348

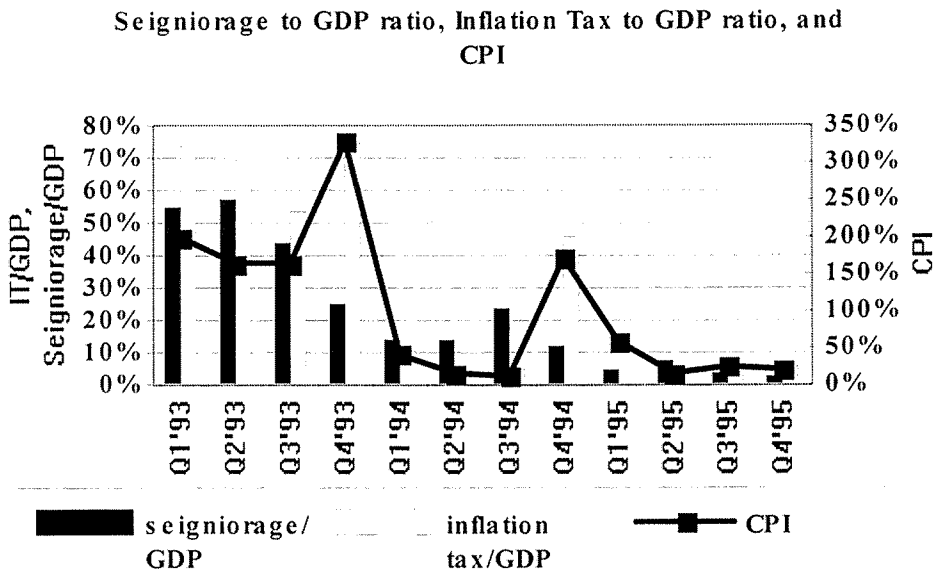
The dynamics of seigniorage and inflation tax is shown in Table 3 where methodics of Havrilyshin (1993) is used. Data set in Table 1 indicates few tendencies specific for reform implementation in Ukraine. The initial price jump in Q1'1992 eliminated monetary overhang was not followed by continuous fall of inflation rates (as government immediately began to monetize budget deficit. The tendency is observed from Graph 4 that each time when the level of seigniorage/GDP ratio began to rise comparing to previous quarter (Q3'93, and Q3'94), the inflation tax/GDP ratio jumped next quarter. Moreover, the proportion of inflation tax/GDP jump to seigniorage/GDP hike three months before was near 1.5 times in 1992 and 1993, but it was over 2.3 times in 1994. It can be interpreted as indirect confirmation of the presence of three months lag in the monetary policy impact on the inflation rates in 1992-1993, however in 1994 this lag was definitely smaller.

The fact that in 1992-1995 CPI hikes were fixed at the end of the year and in summer may serve as a good confirmation of the seasonal character of inflation behaviour in Ukraine rooted in extremely high share of agriculture in economy and in lobbying power of this sector. So, as agriculture sector was in need of credit inflow in spring and summer budget expenditures rose sufficiently which led to inflation hikes. At the end of the year government usually conducted partial price liberalization trying to collect enough inflation tax to cover accumulated budget deficit.

As it can be seen from all previous material, accommodative monetary policy during the period after beginning of price liberalisation till October-November of 1993 led to three hyperinflation jumps in 1993 (see Graph 2). The whole 1993 year period of compression was

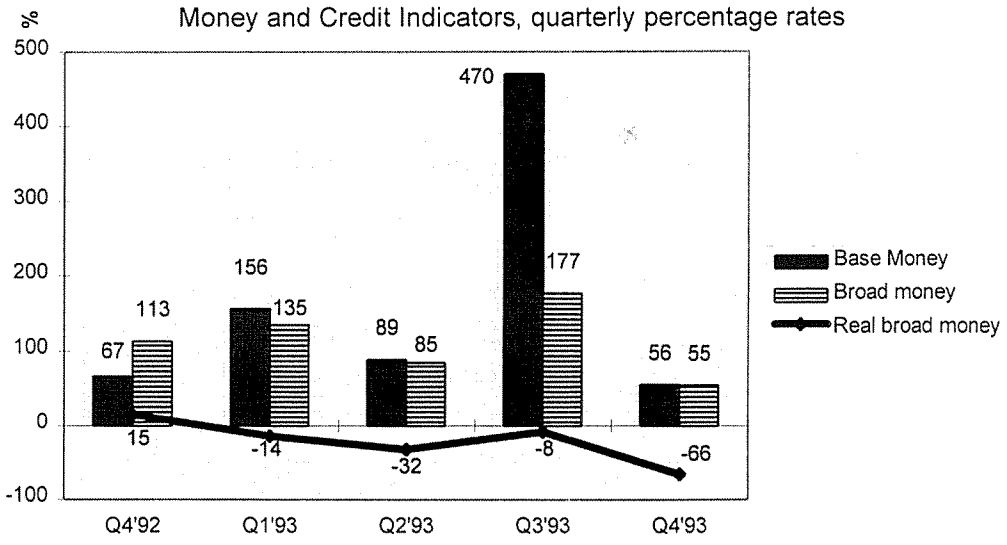
followed by a period of nominal variables explosion. Government was able to keep domestic prices on food and production inputs unchanged some periods, despite exogenously determined rise of production costs, due to covering the price differentials through subsidising of domestic economic agents which caused inefficiency of resources allocation in the economy. Then, however, steep rise of financial deficit forced government to collect inflation tax by rising prices. In Ukrainian economic slang it was named as the "scaling" of prices because during last few years majority of prices were under administrative government control and time by time government just set higher benchmarks for that prices.

Graph 4:



It is very easy from Graph 5 to observe contraction and expansion phases for broad money and base money in 1993. Data indicating real broad money dynamics give the opportunity to see that fall of real variable due to monetary explosion was extremely high in the next periods of nominal variables contraction (Q2'93 and Q4'93), so cyclical "stop-go" behaviour of money and credit variables is evident from this Graph.

Graph 5.



Source: National Bank of Ukraine and IMF Report data.

During last three years all credit emissions were implemented by government as a response on either payment crisis or financing of agriculture sector needs in spring or fall. In addition, end of the first quarter of 1993 was characterised by the cleaning-up of inter-enterprise arrears, so ratio of seigniorage to GDP and money velocity values increased (see Table 5), hike of the claims of banking system on the rest of economy (except government) and high-powered money jump was present (see Table 1). As a result of this credit inflow average commercial banks credit interest rate began to rise steeply (see Table 4), and CPI rates jumped by four times with two-month lag. After excessive rise of money supply in March, the National Bank in his attempt to sterilise this increase in M2 implemented few next steps. First, from Table 4 it is obvious that nominal annual interest rate was increased from 100% in March-April to 240% in May, actual NBU credits interest rate began to rise from 32.3% in March to 72.8% in April and 238% in May (trying to achieve positive real interest rates). Second, in April and May of 1993 the rates of money supply growth were decreased sufficiently comparing with the second quarter (see Table 3), and money multiplier value either. Third, the lag between official exchange rate, auction and market exchange rate almost disappeared as a result of 110% devaluation of the official exchange rate.

Thus, in spite of 79% CPI hike in June'1993 provoked by credit emission in March, the followed fall of CPI rates in July-August could be linked with active NBU policy mentioned in the previous passage. The next relaxation of monetary policy of NBU resulted in the CPI hike in September was caused by financing of coal mining industry and agriculture. In June and

July currency in circulation rates of growth exceeded 50%, and for July number of total money supply rate of growth was over 60% due to fast rise of demand deposits and time deposits to enterprises. Total volume of credits for government was not increased, so refinancing credits were the main source of money supply growth. In September of 1993 when inflation rate jumped over 80% per month it became obvious for government that character of monetary policy should be changed drastically, otherwise economy would collapse. So, the first real stabilisation program was tried to be imposed on the Ukrainian economy.

Government began to tighten monetary policy in the fourth quarter of 1993 in attempt to neutralise the inflationary impact of very high credit inflow issued in the third quarter of 1993 (see also data in Table 1). This moment was marked as point Ukr2 on Graph 1. It is possible to see that comparing with situation in January of 1992 the correction (rising) of price level in the fourth quarter of 1993 was not excessive relatively to monetary overhang accumulated earlier. Probably this had some effect on the inflation trend which was achieved within next nine months. This stabilisation had two main results: steep fall of inflation rates and the deepest output contraction ever registered in the Ukrainian economy.

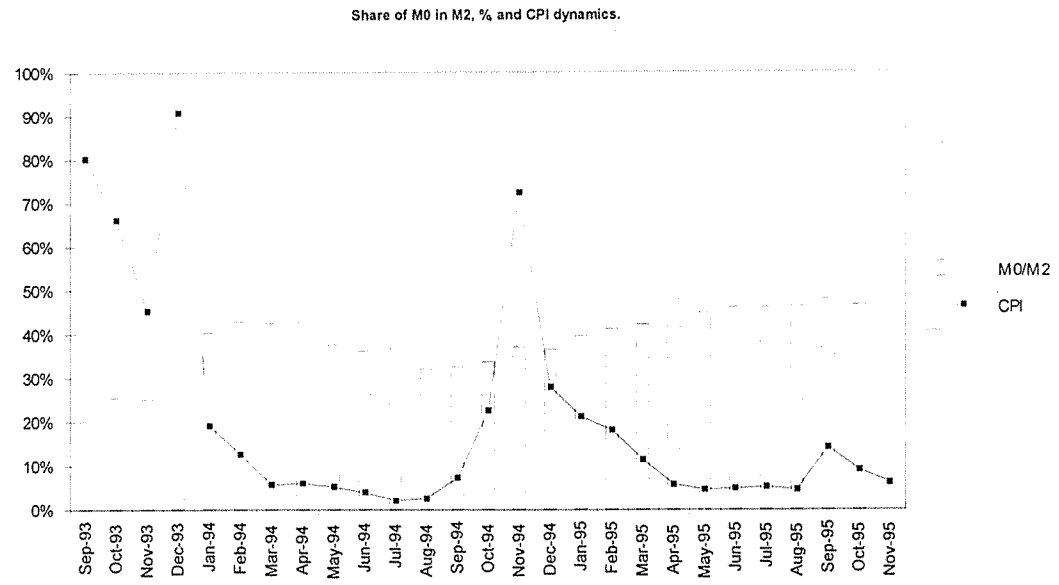
It was decided to begin stabilisation attempt that period because of two main reasons. First, external price shock stopped to play important role because prices for imported oil and gas reached world level that period. Second, as it was mentioned earlier, the summer strikes of coal mining workers and high lobbying power of agriculture sector forced government to issue credits for economy under artificially low interest rates. As a result, inflation jumped, and the National Bank expected that process of further development of hyperinflation tendencies can be stopped only after unusually tight monetary policy. So, at the spike of hyperinflation the rates of growth of all money aggregates were decreased, and in November'93 the National Bank introduced one-month ban for all commercial banks to provide economy with loans. From Table 5 it is possible to observe behaviour of currency in circulation, refinancing credits of National Bank to commercial banks, total value of commercial banks reserves, and base money in the period when stabilisation measures were undertaken, while data for second quarter of 1993 are given as indicators of situation under soft monetary policy.

Successful stabilisation, in principle, does not mean achieving zero inflation at any cost. Cost-benefit analysis application for the case of struggle with inflation implies that costs of disinflation in terms of output loss can be excessive comparing with expected benefits. Very high costs of disinflation were evident immediately at the initial stage of stabilisation program which is a common place for all stabilisation programs based on money supply regulation (see Calvo, 1992). In theory, high degree of dollarization and inflation inertia, as it was in Ukraine, implies the optimality of such choice of stabilisation strategy when exchange rate, but not the money supply, is used as nominal anchor. Ukraine in the fourth quarter of 1993 had to use money supply as a nominal anchor because the total lack of net foreign assets led

to impossibility to maintain fixed exchange rate (on auction and cash market levels). Usually stabilisation based on money supply nominal anchor has few characteristics (Calvo, 1992): slow inflation convergence, real exchange rate rise, improving of balance-of-payments and current account conditions, initial deep contraction, and high real interest rates. In addition to choice of money-credit aggregate as nominal anchor, the government used other nominal anchors to provide achieving of short-run results. These nominal anchors were price level and wage bill. At the same time lag between official exchange rate and market one began to rise steeply since July of 1993 because it was decided to fix official exchange rate (foreign exchange office was closed from October 1993, when auction exchange rate jumped by 2 times, till September of 1994), so no attempts to liberalize economy were made that period. On the Graph 2 the jump of market exchange rate in the third quarter is shown, but official exchange rate was frozen and was adjusted partially only in December of 1993, however difference with market one removed high (almost 300% in December). It is seen that market exchange rate rose in March'94 and during period July-August'94 despite continual fall of CPI rates and fixed exchange rate (the possible explanation of this was given earlier when rational expectation mechanism probably being in work that period was discussed). In spite of fixing almost all macroeconomic parameters that period, situation was not improved and inflation rates exceeded 50% benchmark in November of 1994 as a result of some subsidies cancellation. The whole story of the reasons of the lack of success in economic reforms implementation in Ukraine can be expressed by one phrase of Dornbush (1992): "Without fiscal austerity stabilisation cannot last; without incomes policy it cannot start". Indeed, monetary policy tightening alone can not solve the problem with inflation if fiscal expansion continues to last and economy is kept under strict government control as it was in Ukraine. The tendency of persistent rise of budget expenditures on economy resulted in consolidated budget deficit increase from the first quarter of 1994 is evident from Table 2. It is relevant to mention briefly few other negative tendencies led to fail of chosen that moment (November'93- October'94) economic strategy.

In spite of contractionary monetary policy since December'93 the demand for cash has begun to rise (see Graph 6). This can be explained using next argument. Sufficient share of economy began to move to shadow sector of economy because of the rising burden of administrative control. Probably, the relative fall of the share of tax revenues in total revenues since the beginning of 1994 can be discussed as one of the possible indirect confirmation of the growing share of shadow (untaxed) economy. Other confirmation is the growing value of barter operations in total exports-imports operations (in 1994 they reached 60% of the total volume). In addition to inflation pressing and direct government limitations on exports, extremely high tax burden was one of the reason of the switch of economy to shadow activity.

Graph 6:



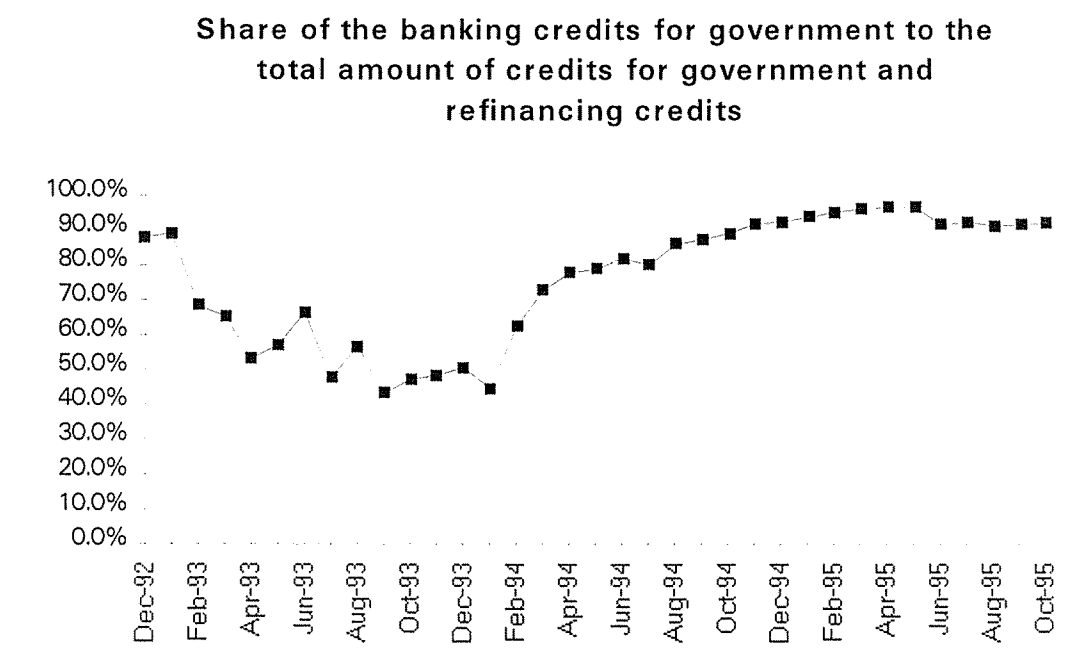
Sources: National Bank of Ukraine statistics.

It seems reasonable to assume that after two years of the economy inflationary overheating the drastic change of monetary policy character in terms of credits available to state enterprises was treated by enterprises as strong negative shock. This credit crunch led on impact to deep output fall and problems with liquidity for banks and enterprises. Hyperinflation was stopped in short-run however it is possible to observe occurred extreme fall of real money balances from Graph 4, rise of money velocity (Table 3 and 7) in combination with two-times December jump in the value of time deposits denominated in foreign currency (Table 6). All this means lack of population confidence in government ability to shift to tight monetary policy from its usual commitment to solve all problems through monetazing the economy.

Inherited from the last months of 1993 problems with liquidity and payment crisis forced National Bank to issue new credit flow for government in February. Then, till September of 1994, rates of growth of this component were the highest among other money-credit aggregates. From Graph 7 the tendency is obvious that during 1993 the periods with higher inflation coincided with hikes of credits for government comparing with refinancing credits values. Then, since January of 1994 share of credits for government have begun to rise steeply, however inflation rates were depressed. It is possible to suggest that in 1993 inflation impact of the credits for government component was much stronger than in 1994 when government was able to keep inflation under control in spite of high deficit of state finance

covered by credit flow. Perhaps, relative fall of refinancing credits volume in 1994 as one of the factors responsible for banking activity can influence inflation rates. In addition, credits of National bank for government did not affect inflation rates as they did not reach state enterprises and commercial banks as it was during 1992-1993 but were directed by the National Bank on the special accounts of Ministry of Finance, and first half of year no more than 40% of accumulated costs were used by Ministry of Finance for covering deficit and supporting economy. This, in turn, can be one of the reason of the government ability to diminish inflation. The fall of banking activity is evident from the behaviour of money multiplier shown in Table 7. The reason for so high volume of credits for government is the necessity to cover budget deficit and clean-up of accumulated interenterprise arrears.

Graph 7:



Sources: " Ukrainian Economic Trends ", National Bank statistics.

Comparing Tables 5 and 6 leads to observation that activity of the National Bank exceeded commercial activity of commercial banks system because rates of base money growth were much higher than rates of broad money supply growth. The fall of lending activity of commercial banks can be explained by difficult financial conditions of state-owned sector of economy (main client of banking system that period) resulted in the decrease of credit demand. From Table 6 we can see that for period October'93 - May'94 rates of growth of

enterprise deposits were lesser than for households which means worsening of financial conditions of enterprises. From Graph 8 the tendency is observed that despite fall of real households income the share of households deposits rose. The reason of this is high real interest rate and shift of sufficient share of economy into informal sector of economy which caused higher than official estimations values of real households income. On Graph 9 the continued rise of credits to private sector since the middle of 1993 is observed. It can mean that privately owned economy was not hit so strong by the imposing of hard budget constraints as state-owned economy was because private sector was not recepient of massive credit inflow in 1992-1993.

From all previous material it is possible to conclude that stopping hyperinflation in 1994 could not be other thing than a temporal phenomenon. Government was not able to conduct persistently tight macroeconomic policy during the period more than one quarter. The strict intention to continue subsidising of enterprises of enterprises and households led to growing deficit of state finance which was fully monetized. Multiple exchange rate system when official exchange rate was overvalued led to capital outflow. In addition, overvalued official exchange rate allowed enterprises to receive imported oil and gas by low prices, and this price differential was covered through budget. The paybles for those energy resources rose continually, and inflation potential was accumulated during nine months of 1994. In addition, fixed prices for grain bought by state in 1993 were not maintained in 1994 when there was a price hike for grain in autumn of 1994 followed by the hike of consumer price index.

In November of 1994 government in co-operation with IMF began to implement shock therapy. Coming back to Graph 1, we can see point " Ukr 3 " characterised the situation before conducting of IMF program. The prereform ratio of broad money supply to GDP was the lowest comparing with the value fixed in Jan'92 and November'93. The reform package consists of few main steps: 1) beginning of step-by-step elimination of the economy subsidising; 2) unification of exchange rates; 3) shift from monetazing of budget deficit to covering by state bonds; 4) mass privatisation.

However, it is too early to make some conclusions about results of the third attempt to reform the economy, but it is possible to make some comments concerning behaviour of main economic variables since November of 1994. Inflation jumped in November by 72%, and then began to fall rather gradually till next hike fixed in September. In the fourth quarter of 1994 inflation tax ratio to GDP increased 10-fold comparing with the third quarter, however seigniorage ratio to GDP increased insufficiently (see Table 3). Contrary, in Q4'93 seigniorage ratio to GDP fell sufficiently, and inflation tax ratio to GDP rose by 80%

comparing to previous quarter of that year. From the one side, this difference can be explained by the fact that government in 1994 was able to collect more inflation tax and seigniorage after 9 months of relatively low inflation, while this was impossible in hyperinflationary 1993. From the other side, government at the end of 1994 implemented lesser contractionary measures than it was in 1993. The wrong approach of imposing the credit crunch on economy in combination with the freezing of prices, official exchange rates, and wages was seemed to be rejected by government since autumn of 1994.

Immediately after beginning of tight monetary policy implementation in autumn of 1994 money velocity began to rise (see Table 12). As it was mentioned below, after three years of high inflation experience economic agents lost confidence in domestic currency, and public did not want more to pay inflation tax. Economy began to shift into shadow sector, and degree of dollarization rose (see in Table 6 jumps of both credits and deposits denominated in hard currency immediately after this third stabilization attempt). The regression was run where Ln of degree of dollarization is independent variable, and Ln of money velocity is dependent variable. Results for two-year period are written in Scheme 2.

Scheme 2. Ordinary Least Squares.

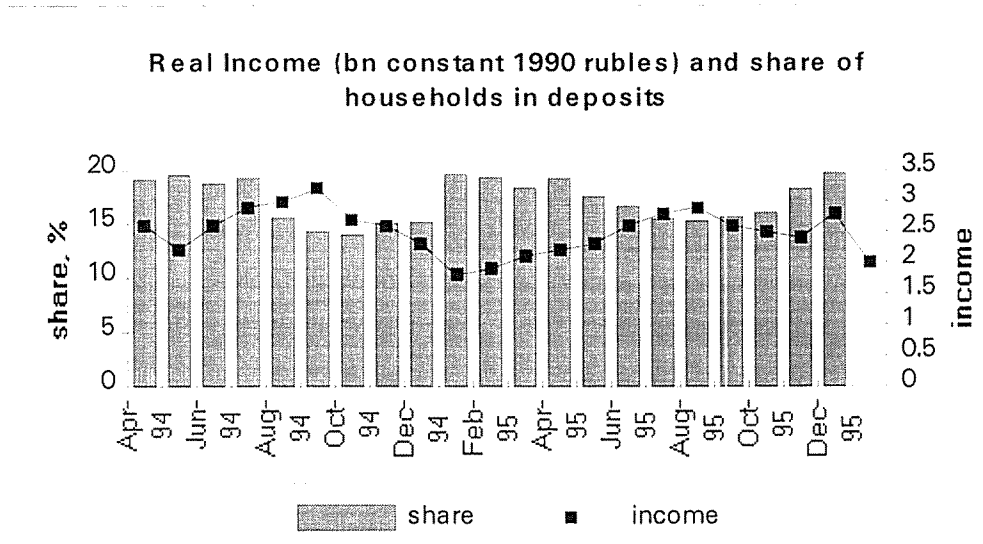
Dependent Variable	VEL	Number of Observations	24
Mean of Dep. Variable	2.2293	Std. Dev. of Dep. Var.	.25179
Durbin Watson statistic	1.1968	Estimated Autocorrelation	.40160
Std. Error of Regr.	.1581	Sum of Squared Residuals	.55016
R - squared	.6227	Adjusted R - squared	.60557

Variable	Coefficient	Std. Error	T-ratio	Prob |t|>X	Mean of X	Std.Dev. of X
ONE	2.85423	.1086	26.279	.00000	1.00000	.00000
DOL	.58411	.9693E-01	6.026	.00000	-1.06986	.34017

It is evident from comparing monetary aggregates trends shown in Tables 5, 6, and 7 that the government did not manage to keep behaviour of monetary aggregates under control which caused continual problems in relations of Ukraine and IMF taken place during 1995. As it was mentioned above one of the reason of achieving 2-3% CPI in summer of 1994 was fall of refinancing credits. Unfortunately, this tendency was changed in summer 1995 when in response on crisis of private banking system ("bad" loans, inability of largest banks to make profit in low-inflationary situations) the National bank had to implement function of the lender-of-last-resort trying to save banks-bankrupts which were "too-large-to-fail". Additional confirmation of banking crisis is the steep fall of reserves beginning from summer of 1995. Simultaneously significant amount of credits for government was issued in summer. Such soft monetary policy resulted in increasing amount of injected money into economy (see data for money multiplier and banking credits to economy)

Achieving of fiscal balance in combination with conducting of the moderately tight monetary policy had to be treated as main government strategy since November of 1994 but lack of political will did not allow government to keep his commitment to this target. Some tightening of fiscal policy comparing with the third quarter can be observed from Table 2. Thus, ratio of total expenditures on economy to GDP fell from 30% in Q3'94 to 7% in Q1'95 and than increased, but at the same time the ratio of expenditures on social security to GDP almost did not change. In the fourth quarter of 1993 the situation was just the opposite. It is possible to explain this fact by the presence of government intention to diminish budget expenditures on economy because of their obvious inflationary effect. In spite of high inflation jump in November of 1994, wages and social payments from budget sources were not increased so much as it was at the end of 1993 because it was tried to keep income policy under control. However, real household income did not fall so strong as it was in the fourth quarter of 1993 (see Graph 8). As a result of drastic fall of the ratios of total expenditures to GDP and the total revenues to GDP, it was possible to diminish sufficiently budget deficit ratio to GDP in Q4'94. In Q1'95 budget deficit to GDP ratio rose but was still within limits agreed with IMF. The situation was worsened sufficiently during course of the year when total revenues were not so high as in 1994 (because of alleviation of tax burden on economy) but expenditures rose continually. Situation was worsened by appeared necessity to repay accumulated foreign debt. All this lead to 10% budget deficit at the end of 1995, and IMF postponed financial support till Ukraine will be able to maintain agreed targets.

Graph 8.



Sources: " Ukrainian Economic Trends ", Dec'94.

Regression analysis shown in Schemes 3, 4, and 5 helps to clarify situation with the impact of different monetary aggregates on inflation rates. From Scheme 3 it is evident that rates of growth of price index were mainly affected by rates of growth of broad money supply with three months lag, and the negative correlation between high powered money rates of growth and price index rates of growth was present. It can be interpreted as a sign of the attempt of the National Bank to diminish loan activity of private banks (private banks reserves fell) in the high-inflationary periods trying to minimize negative consequences of injecting money into economy. Any attempts to look for impact of lagged components of high-powered money on CPI did not give satisfactory results. Based on results of Scheme 3, many regressions were run where different components of broad money supply served as independent variables. Good results were received only for case shown on Scheme 4. So, it is reasonable to expect rise of inflation rates in 1996 as a reaction on the acceleration of broad money supply rates of growth taken place at the end of 1995 (see Table 5).

Scheme 3: Ordinary Least Squares

Dependent Variable	CPI	Number of Observations	19
Durbin Watson statistic	2.023	Sum of Squar. Resid.	.1072
R - squared	.5853	Adjusted R - squared	.4817

Variable	Coefficient	Std. Error	T-ratio	Prob |t|>X
ONE	-.0359	.0564	- .638	.5354
M2NLAG3	.6642	.3388	1.961	.0736
CPILAG1	.4447	.1395	2.972	.0117
HPMONEY	-.4628	.1573	-2.942	.0123

* here **M2NLAG3** means rates of growth of broad money supply with three months lag, **CPILAG1** means price index rates of growth with one month lag, **HPMONEY** means rates of growth of high-powered money.

It is obvious that rates of growth of enterprise deposits (sum of time and demand deposits) positively affected rates of growth of price index with three months lag, while rates of growth of households deposits negatively affected rates of growth of price index with one months lag. So, rise of households deposits will not lead on impact to acceleration of inflation tendencies. Indeed, from Graph 8 it is seen that in the times of low inflation the share of households deposits rose.

Scheme 4. Ordinary Least Squares

Dependent Variable	CPI	Number of Observations	19
Durbin Watson statistic	2.1728	Sum of Squar. Resid.	.1126
R - squared	.5644	Adjusted R - squared	.4555

Variable	Coefficient	Std. Error	T-ratio	Prob |t|>X
ONE	.1242	.0546	2.276	.0420
ENTDEPL3	.2781	.1939	1.435	.1769
CPILAG1	.4499	.1508	2.984	.0114
HHDEPL1	-.5742	.2534	-2.266	.0427

* here **ENTDEPL3** means enterprise deposits rates of growth with three months lag, **HHDEPL1** means households deposits rates of growth with 1 month lag.

Scheme 5 allows to analyse impact of loan activity of private banks. It is seen that the acceleration of the rates of growth of credits in foreign currency and credits for state enterprises will lead immediately to acceleration of rates of growth of price index.

Scheme 5. Ordinary Least Squares

Dependent Variable	**CPI**	Number of Observations	19
Durbin Watson statistic	1.3218	Sum of Squar. Resid.	.054
R - squared	.7886	Adjusted R - squared	.7358

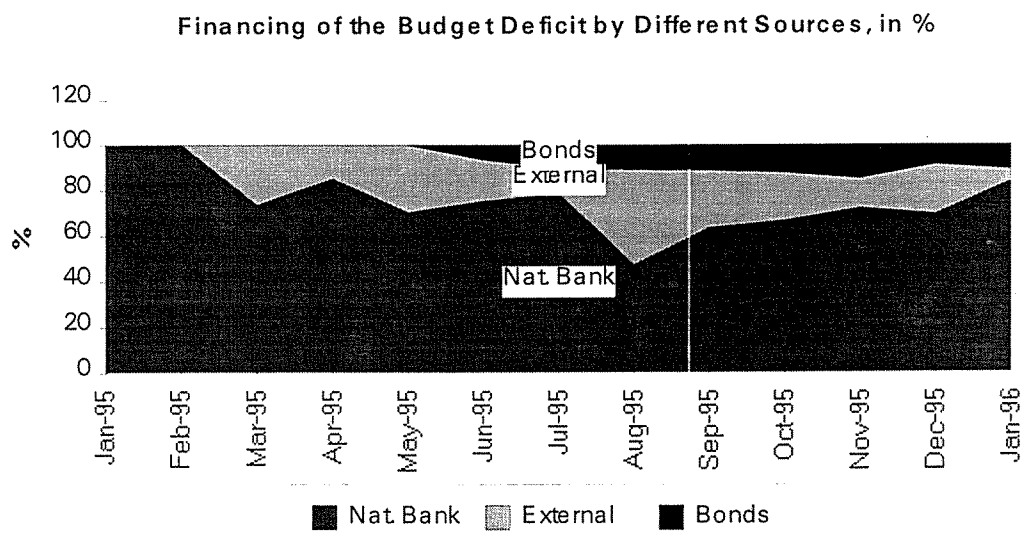
Variable	Coefficient	Std. Error	T-ratio	Prob |t|>X
ONE	-.0781	.0487	-1.604	.1346
CRED$	.5904	.1085	5.442	.0001
CPILAG1	.4699	.1049	4.476	.0008
STENTCR	.4302	.2856	1.506	.1578

* here **CRED$** means rates of growth of credits in foreign currency, **STENTCR** means rates of growth of credits for state enterprises.

From comparing results of Schemes 4 and 5 with Table 6 it is possible to conclude that in spite of observed at the end of 1995 fall of credits in foreign currency and moderate rise of credits to state economy (which should lead to CPI falling trend in accordance with regressions) CPI will tend to rise if budget deficit and broad money supply will not be kept under control. Fall of credit components can be easily explained by: 1) occurred crisis in banking system when few largest banks were declared as bankrupts and 2) credits in foreign currency lost their popularity because the National Bank maintained rather stable exchange rate in spite of growing inflation.

It is possible to make some preliminary conclusions and suggestions concerning macroeconomic implementation during last three years. It is evident from Graph. 2 that amplitude of changes of macroeconomic variables (especially inflation) was decreased significantly in 1994 and 1995 comparing with 1992-1993 period. Government almost finished price liberalization including communal services for population, so burden of subsidies on budget was curtailed in 1995. In 1995 Ukraine received first opportunity to cover budget deficit using loans of international financial organizations and issue of domestic bonds (see Graph. 9). Obviously that it was possible to issue bonds only because economic agents' confidence in government policy was raised after international financial organizations began to finance transformation process. Unfortunately, in spite of all these rather positive external factors government again allowed to weaken control over monetary aggregates and budgteary targets. If in 1994 it was possible to diminish inflation to 2% in summer (inflation hike in Q4'94 was mainly rooted in conducted that period price liberalization) under condition of tight monetary policy and without external support, the experience of 1995 showed that government again began to practicize soft macro policy and liberalized (already) economy immediately reacted in predictable manner (high inflation in summer). This behaviour of the government could be explained only by invoking political factors, such as economic populism of the legislative power (parliament), unwillingness to impose hard budget constraint on enterprises, lobbying power of different branches of economy, absence of land privatization, and naive belief that all fails in macroeconomic implementation will be easily corrected later using unlimited inflow of sources from IMF. Weakening of budgetary policy and growing amplitude of monetary aggregates at the end of 1995 combined with problems appeared in negotiations with IMF could lead to rather gloomy path of inflation in 1996 (it will be rather problematic to achieve planned target in 35%). In addition government approved budget draft for 1996 where budget deficit is planned to be higher that it was agreed with IMF while it is supposed to cover this deficit using agin foreign financing (which seems be problematic) , bond issuing (which will not be ppossible if inflation will rise again) and money financing of the National Bank (which perhaps will be the only one source of deficit covering).

Graph 9:



Sources: "Ukrainian Economic Trends", Jan-96.

Inflationary experience showed that high inflation is mainly a fiscal phenomenon which means that high budget deficit originated from combination of external shocks with internal economic mismanagement is covered using money creation. However, the direct correlation between size of budget deficit and inflation rates is usually absent. Dornbush (1992) explained this fact using next long-run relation between the money-financed budget deficit and the rate of inflation, where π is the rate of inflation, y is the growth rate of real GDP, g is the deficit ratio, α is the noninflationary level of velocity, β is the responsiveness of velocity to the rate of inflation.

(2) $$\pi = (\alpha g - y)/(1 - \beta g), \quad 1 > \beta g$$

So, different in the various countries impact of deficit on inflation rates is predetermined by different growth rate of output and financial parameters α and β. Obviously that sizes of budget deficits in different countries reflect different expectations of money growth in the future. Having faced with high budget as it is present in Ukraine now (21.8% deficit in Dec'95 and 10.5% in Jan'95) economic agents can expect conducting of two scenarious. First, government will be in need to introduce drastic fiscal reform. Second, government will have no choice but to rise its use of seigniorage. The implementation of the first scenario does not seem to be probable taking into account five-years history of economy transformation in Ukraine. So, it is relevant to assume that economic agents will expect monetary financing of deficit (especially taking into account problems with IMF). Rational expectations of higher

inflation in the future will lead enterprises to set higher bench-marks in terms of prices on their products and labour force to insist on higher wages, so under such pessimistic perspective inflation will receive again all features of unstable process and debt will rise without bounds (only expectations of change in policy can tie down the dynamics of inflation).

Even if government again will try to tighten monetary policy while expectations of his discretion from commitments to keep budget deficit and inflation low will be in place among economic agents, the so-called Sargent case can appear. The government can try to decrease the share of the deficit financed by money creation which will push down inflation (as it was in Ukraine in the first half of 1995). But if agents form strict system of expectations that government will shift to full money financing at the moment T (as it could be in the first part of 1996), lower money creation means faster accumulation of debt prior to T and higher money creation after T, thus anticipation of higher money growth in the future will imply higher inflation today. So, lower rates of money growth under such conditions will lead to inflation rise.

Dynamics of macroeconomic parameters leads to the conclusion that only drastic change of government tactics in terms of budget deficit and ways of its financing, attitudes toward land privatization and structural reforms of industry combined with strict commitment to agreed with IMF targets can lead on impact to achieving inflation rate in 1996 not exceeding 100% (it seems not realistic to expect 35% of annual inflation taken into account present huge numbers of budget deficit).

2. Output Trend Analysis

The steep output contraction at the beginning of transition was an inevitable outcome in all post-communist countries of the Central and Eastern Europe. The higher was the degree of pre-reform macroeconomic disbalance in the particular country, the deeper was the fall of production activity. Some common for all post-communist countries reasons, such as collapse of the CMEA (Council for Mutual Economic Agreement), rise of production costs due to the adjustment process to world prices on labour force and raw materials, weakening of demand conditions resulted from the fall in real income of population, overshooting of interest rate, and introducing new rules of game for managers of state-owned enterprises (SOE) were mainly responsible for GDP depression.

Concerning Ukraine, few additional specific reasons should be mentioned which can be concerned as mainly responsible for so deep and long period of GDP fall. First, as main trade partners of Ukraine were and still are Russia and Belarus, the collapse of Soviet Union following the CMEA demise is mainly responsible for the appeared dislocations in supply links. Second, high degree of heavy industry dependence on previously cheap imported

energy resources caused balance-of-payments deteriorating after gradual imposing of world prices on oil and gas. Growing external arrears led on impact to the compression of energy resources imports followed by the cut of non-energy imports. Third, specific government trade policy was aimed on preventing the exports outflow to countries of the CIS through imposing of trade licences for exportable goods. The rejection from unified exchange rate and introducing of the over-appreciated official exchange rate was caused by the government intention to alleviate the negative sequencing of steep rise of energy prices for enterprises financial conditions and to save more foreign exchange for centralized oil and gas purchases. These factors in combination caused steep fall of exports and capital flight from Ukraine affected total volume of production. Fourth, continued jumps of inflation rates led to uncertainty about future prospects among economic agents. Fifth, periodical tightening of monetary policy resulted in credit squeeze which influenced the production function of economy. Sixth, the inter-enterprise arrears chain contributed a lot in the fall of business activity. The relative impact of these and some other factors will be discussed in details below.

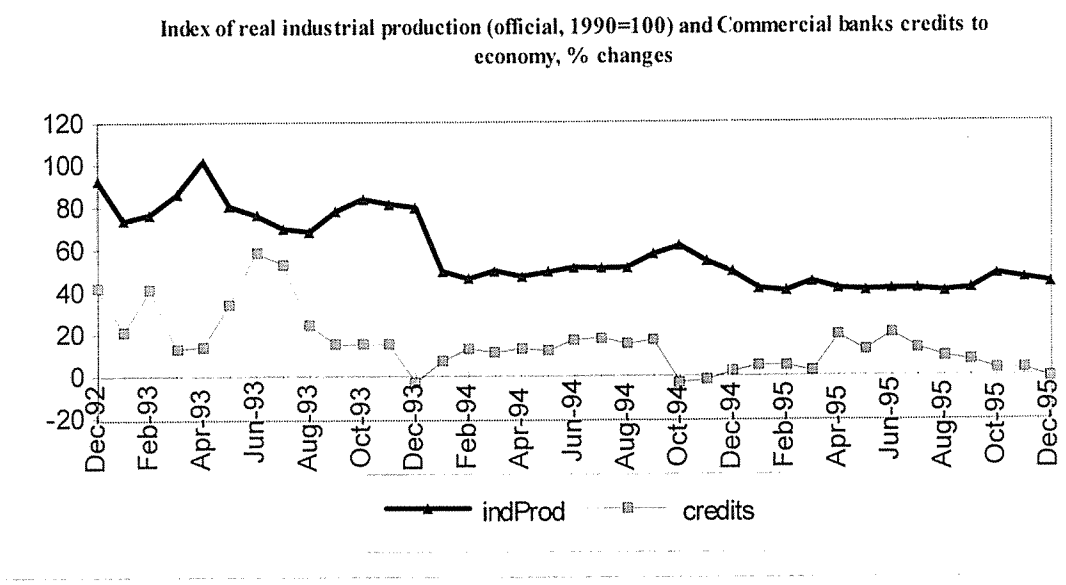
From Table 8 it is possible to compare five-year dynamics of real GDP, industrial and agricultural production level, consumer price index, average nominal wage, and balance of payments. It is seen that general fall of economic activity began in 1990 when Ukraine was still a part of the Soviet Union. The data set demonstrates a persistent tendency for GDP and industrial output to fall during the period of burning inflation rates followed by output collapse in 1994 when inflation was compressed however still was measured by three-digital number. All data below should be discussed taking into account the total lack of reliable data set concerning the behaviour of macroeconomic variables, especially GDP and industrial production trends. So, all numbers below are only not very accurate approximation of real situation in economy. It is seen from this Table that fall of industrial output and agricultural output was and still is lesser than fall of GDP, consumer goods production and output of construction industry. The only one explanation of this phenomenon is the dominant impact of credit flow on the development of any branch of economy. Indeed, changes in key relative prices taken place last three years, in theory, had to influence mainly industrial production and agriculture production. In reality, however, financial assistance from budget sources provided these branches of economy with more favourable conditions than others. In addition to all data about credits trend collected in the first part of the paper, it is relevant to add that only in the first quarter of 1993 the agricultural sector received from banking system the creidt flow amounted to 21% of the quarterly nominal GDP. Thus, depth of the fall of output in agriculture and industry was mainly predetermined by the amount of the state financial support. So, state-owned enterprises in these branches of economy were able to soften the negative impact of price shock on the level of output and employment through credit channel.

Graph 10 allows to compare trends of industrial production and private banks credits to economy since December of 1992. It is seen that cut of credits to economy taken place in December 1993 and October 1994 coincided with followed steep fall of industrial production

level. Assuming that credit inflows followed by inflation hikes was one of the factor induced industrial production rise, and collected inflation tax directed for financial assistance of the state-owned industry was the other one, it is natural to connect fall of output with credit squeeze. As few years of high inflation experience had serious impact on the behaviour of economic agents, other channels than credit squeese can be also responsible for output fall. First, hyperinflation depressed output because of the total fall of demand and inability of large bulk of managers of state-owned enterprises to find new markets for their products. Second, sufficient share of economy shifts into shadow (untaxed) sector of activity (almost 50% under some crude estimations), so official statistics is able to fix only taxable economic activity decline.

Having assumed that not only credit volume determined output trend, the relative impact of prices for energy resources was checked. From Table 9 the link between energy prices hikes and % change of industrial production level can be observed. In the previous part of work there were distinguished three points (Ukr 1, 2, and 3) which indicated start points of three different in time stabilisation programms implementations. Comparing data, it is possible to see from Graph 11 (but on Graph 11 is not shown 20% initial fall of output taken place at the beginning of 1992) that immediately after beginning of each price liberalization (in January'92, November/December'93, and October/November'94) industrial production rates began to fall. At the same time hikes of prices for energy resources were observed. However, any attempts to regress industrial production rates of fall on changes in key energy prices did not provide statistically correct results. Only regression shown in Scheme 6 where independent variables were domestically produced coal and electricity provided good fit, but it is not very clear reason of a positive sign for ELECTR variable.

Graph 10:



Sources: "Ukrainian Economic Trends", June 1994.

We can see from Table 9 that relative rise of prices on imported oil and gas was relatively low in 1994 comparing with 1993. So, it does not seem rather convinced that deepest fall of GDP and industrial production at the beginning of 1994 was connected with rise of production costs due to increase of prices on imported energy resources. Perhaps, last factor played sufficient role in decreasing of GDP and industrial production rates at the beginning of 1993, but in 1994 this moderate rise of gas and oil prices affected mainly inflation trend. So, for explaining so deep output fall other channels than energy resources prices rise should be discussed. The credit crunch was interpreted as one of main factors affected output trend in many papers (see Calvo & Coricelli, 1993 and Bruno, 1994). Earlier it was observed from Graph 10 the obvious link between output behaviour and credits volume exept period of 1995 when industrial production level seemed to be uncorrelated with credit volume which can be explained by invoking arrears phenomenon discussed later. So, for output crunch at the beginning of 1994 it seems relevant to assume mainly credit channel of impact. In addition, the materials of the Ministry of Statistics allow to conclude that at the beginning of 1994 industrial enterprises were hit by steep fall of imported oil and gas supply (by 30% comparing with January of 1993) because of accumulated payments arrears for imported oil and gas. Thus, output trend in the first half of 1994 was influenced by the combination of credit crunch and energy supply cut.

Concerning output fall in 1995 it is seen from Table 9 that prices for oil, gas, electricity, and coal for industry users jumped by 4-5 times in the fourth quarter of 1994 and jumped by

slightly lesser degree in the first quarter of 1995 later achieving world level. Thus, as in October-November of 1994 there were not fixed any difficulties with oil and gas supply the deepening of output fall since November of 1994 was predetermined by the interactions of two tendencies: imposing of more tight money-credit policy (than at the end of 1993), and enormous hike of prices on energy resources for enterprises. Discussed below relative growth of interenterprise arrears taken place that moment indicated worsening of financial conditions of enterprises. As interenterprise arrears can be a good substitute of bank credit (Ickes and Ruterman, 1993), credit contraction impact on output was weakened, so relative fall of output was so small.

Scheme 6. Ordinary Least Squares

Dependent Variable	INDPR	Number of Observations	12
Mean of Dep. Variable	-12.02	Std. Dev. of Dep. Var.	18.71
Durbin Watson statistic	1.57	Estimated Autocorrelation	.21
Std. Error of Regr.	13.68	Sum of Squared Residuals	1685.4
R - squared	.5623	Adjusted R - squared	.46

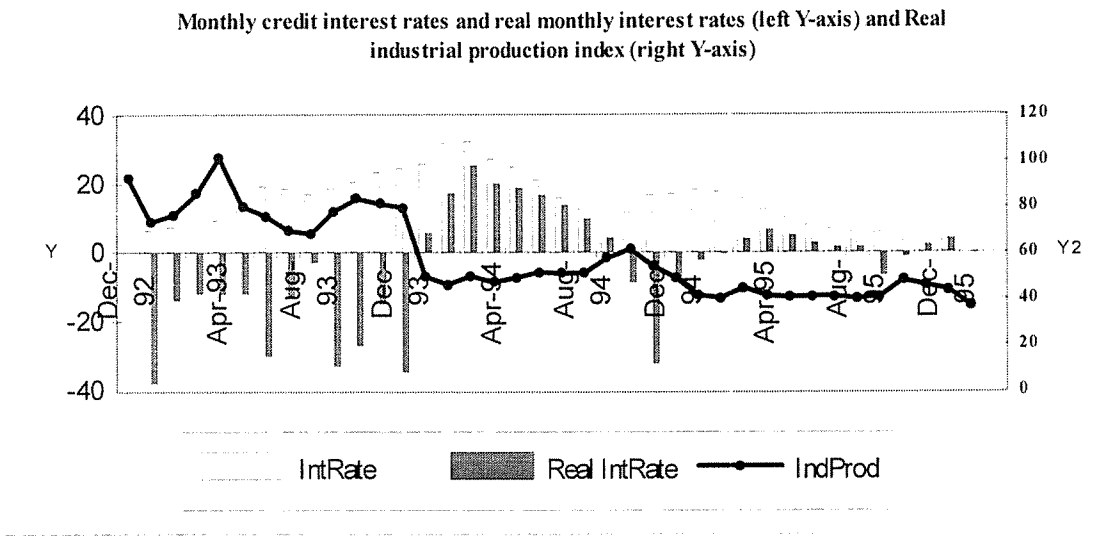
Variable	Coefficient	Std. Error	T-ratio	Prob |t|>X	Mean of X	Std.Dev. of X
ONE	--26.71	6.103	-4.377	.0017	1.000	.000
COAL	- .12 E-01	.435 E-02	-2.837	.0195	598.41	1613.508
ELECTR	.11	. 33 E-01	3.397	.0079	196.583	212.348

It is possible to conclude that output behaviour at the beginning of 1994 and since November of 1994 can be explained by the next mechanism. In both time periods supply shock either in the form of energy resources supply fall or as a steep rise of prices was mainly responsible for output contraction. As each of this supply shock was coincided in time with contraction of credits volume, money-credit policy played very important role in output depression because enterprises were not able to compensate the rise of production costs through banking credit, and they must use interenterprise arrears channel for financing their production activity. During last three years the money -credit policy had predominant impact on output trend on the stages when production activity began to expand (relative rise of GDP), because injection of liquidity into economy led to improving of net financial position of enterprises. Rather flat pattern of output in 1995 can be mainly linked with the absence of any supply dislocations and hikes of prices on energy resources, and also with more soft monetary policy than it was in 1994.

In the previous part of the paper the interest rate policy of the National Bank was discussed in details, so it is relevant here only to mention briefly negative impact of high positive interest rates on output trend shown on Graph 11. There is a good correlation between steep fall of output and high positive values of real interest rates at the beginning and at the end of 1994.

In 1993 it was very profitable for enterprises to receive credits under negative real interest rates, so relative rise of industrial output in four last months of 1993 can be linked with high credit flow received by enterprises under conditions of hyperinflation. So, after inflation rates fall in 1994 the demand for credits became very low, and worsening of the financial conditions of enterprises did not allow them to receive loans from banks under very high real interest rates. Again, in 1995 some rise of output was observed im periods (March and October) following periods of negative interest rates.

Graph 11:



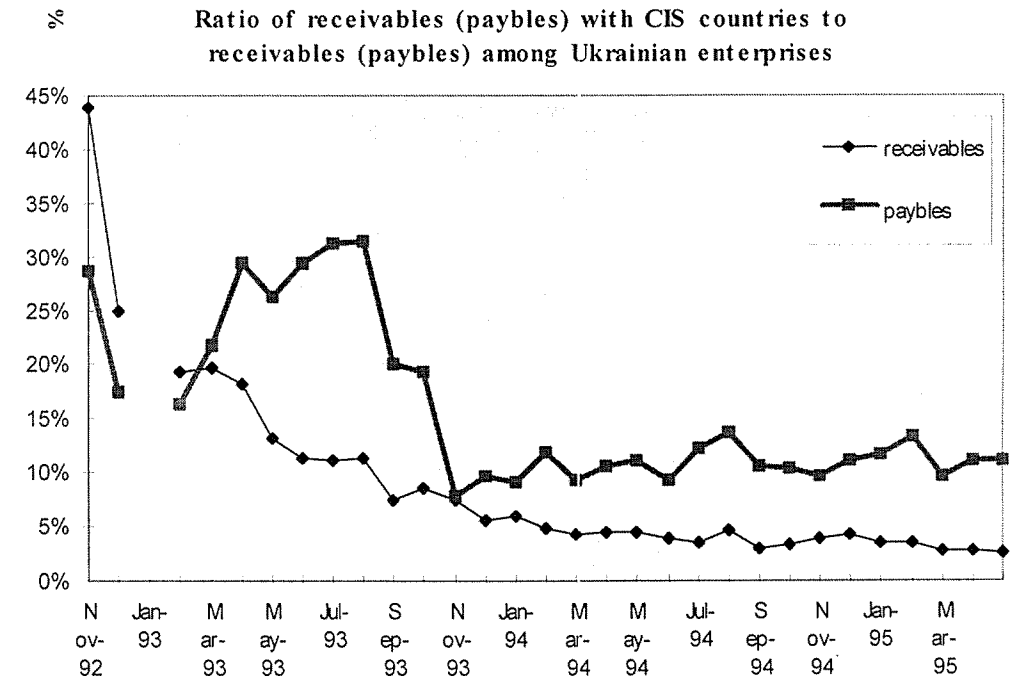
Sources: "Ukrainian Economic Trends", January'95.

Since the beginning of 1992 enterprises in the former Soviet Union suffered from difficulties in conducting payments between new independent states because the creation of new well-functioning banking system takes a time. The only one solution for the payment crisis was the well-known in some other transition economies (Romania, and Poland by lesser degree) experience of running arrears. As it was mentioned by E. Clifton and M. Khan (1992), interenterprises arrears have involuntary character, and at some moment government loses control over development of arrears. It is possible to outline two common reasons of arrears chain appearance in the former Soviet Union: 1) inherited from command-administrative system high degree of cooperations among monopolistic enterprises in new independent states; 2) inability of new private banks to provide economy with needed amount of loans, so enterprises were forced to substitute banks in conducting payments.

Concerning Ukraine, available statistics shown in Table 10 coveres period from November of 1992. As for period before this data, it was possible to found that total amounts of overdue payments rose by 181 times from October of 1991 till October of 1992, however

inflation rates rose no more than 20 times for that period. In this total amount the overdue interenterprise payments were 98% in October of 1992, and their annual rate of growth was 204 times. The other component was unrepaid banking loans, which annual rate of growth was 39 times. So, within one year after collapse of Soviet Union overdue payments became a serious problem for the Ukrainian economy because registered at the beginning of the fourth quarter total volume of overdue payments amounted to 44% from GDP produced during 9 month of 1992. Later the situation was worsening sufficiently, which is shown in Table 11. We can see some improvement of situation with arrears on enterprise balances and payments on bank balances in the first quarter of 1993 when the government conducted clean-up of arrears, but after this arrears began to rise more faster because of appeared economic agents' expectations of inevitable next clean-up and growing necessity to substitute banking credits. In reality, situation with arrears was even more difficult because, as it is seen from Graph 13, ratio of overdue repayments of debts on settlement documents to total arrears continually grew.

Graph 12:



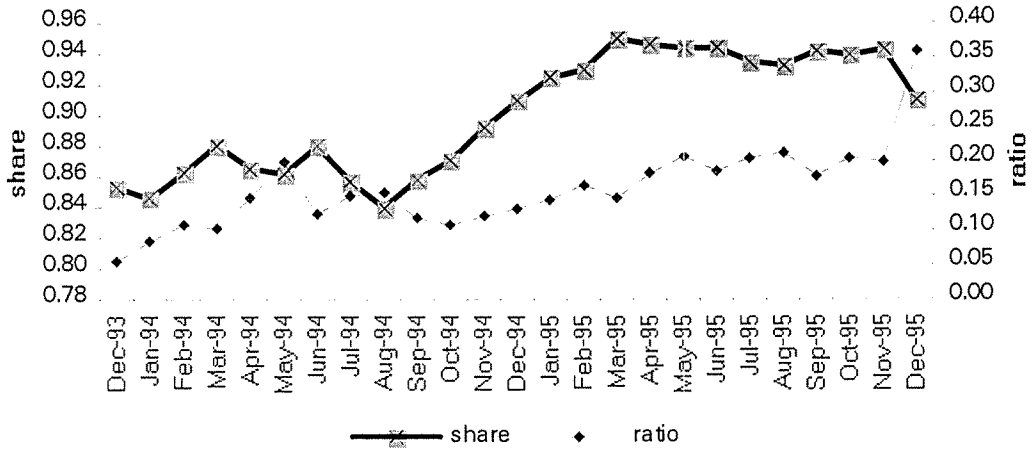
Sources: Ministry of Statistics.

From Graph 12 and Table 10 it is possible to observe some parameters of interenterprise arrears dynamics. Here the receivables mean arrears on the balances of enterprises who sold production to other enterprises but did not receive money back, and the paybles mean arrears on the balances of enterprises who bought production from other enterprises but

were not able to pay for this purchase. It is evident from Graph 12 that since the end of 1992 payment crisis in Ukraine has acquired endogenous character, because for the receivables the ratio of arrears with the CIS countries to arrears among domestic enterprises fell from 30% in Nov'92 to 2% in Jan'95, so in 1995 comparing with 1992 only very small share of the Ukrainian products bought by other CIS countries was unpaid. The situation with paybles with CIS countries was much worse, especially in the second and third quarter of 1993. It can be explained by the fact that the total volume of paybles with the CIS countries is mainly predetermined by purchasing of energy resources in Russia and Turkmenistan, so relative fall of the ratio since November of 1993 indicates unwillingness of the neigbouring countries to provide the Ukrainian enterprises with "free of charge" oil and gas when the debt of Ukraine amounted to very high value. Relative fall of industrial production (see Graph 10) in November-December of 1993 and industrial production contraction tendency from November 1994 till now was coincided with the periods when ratio of paybles with the CIS countries to paybles among the Ukrainian enterprises decreased (see Graph13). This can be an additional confirmation of the impact of energy resources supply and prices on the trend of GDP and industrial production.

Graph 13:

Share of arrears in the total sum of arrears and banking credits versus ratio of overdue repayments of debts on settlement accounts to arrears.



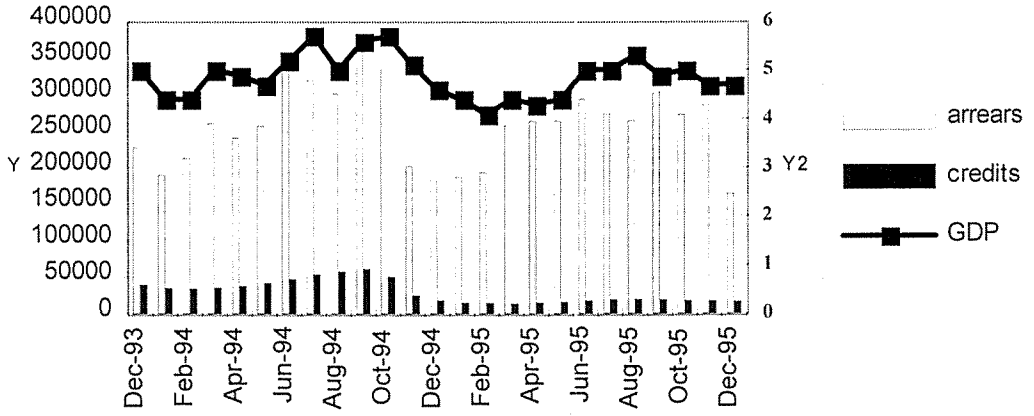
Sources: the National Bank of Ukraine Statistics.

Discussing receivables and paybles behaviour, it seems reasonable to assume that the more higher is the share of paybles in the total volume of arrears, the worse should be net financial conditions of enterprises. From two last columns of Table 10 it is seen the continual

worsening of the ability of enterprises to pay for purchased production. Concerning payment relations among the Ukrainian enterprises, the situation began to be worsen after tightening of monetary policy in November of 1993 and after some improving of situation this share began to rise again when in October-November of 1994 the next tightening of credit-money policy took place. This behaviour of enterprises is well understood taking into account that interenterprise arrears can substitute bank credit. So, as enterprises should not pay any interest on their arrears, and time per time government implemented cleaning-up of interenterprise arrears, it was not any obstacle for unlimited rise of arrears. Graph 13 gives the opportunity to see the continual growth of the share of interenterprise arrears in the total sum of credits for economy and interenterprise arrears. It is seen that at the beginning of monetary policy tightening there was 10% jump of this share. Coming back to Table 18, the relative rise of the rates of growth of paybles and receivables among the Ukrainian enterprises was registered in November-December of 1993. Next relative jumps of these components in February-March, June, and September of 1994 had seasonal agricultural character (in 1993 they were fixed in the same periods). Perhaps, deepening of payment crisis in January of 1995 (see Table 6) can be explained by the enterprise expectations of cleaning-up of arrears in the first quarter of 1995.

Graph 14:

Dynamics of real credits to economy, real gross domestic arrears, and real GDP (all nominal values were deflated by PPI index),



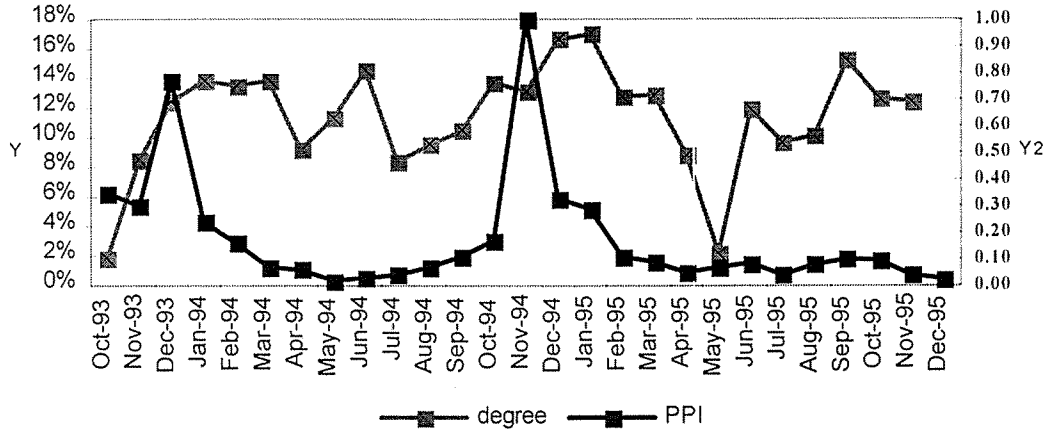
Sources: NBU materials, "Ukrainian Economic Trends".

From Graph 14 it is evident the positive impact of arrears on the level of real GDP. The periods of relative rises of GDP level were coincided with periods when real arrears and real

credits to economy values increased. However, new tendency appeared in 1995 that real credits to economy did not change while real arrears rose since December and real GDP began to rise since March. This process is natural taking into account that at the beginning of the stabilisation program implementation (Calvo and Coricelli, 1993) credits and arrears move in the one direction, but when economic agents lose confidence in the program interenterprise credits begin to rise while banking credits may continue to fall. So, despite expectation of the stimulation role of interenterprise credits on the level of production, but presence of arrears chain in Ukrainian economy (see Graph 15) leads to more ambigious situation. First, arrears have unvoluntary character. Second, social turmoil appeared on enterprises (especiall coal mines) having large unvoluntary receivables because there were no money to pay wages to employers. At the beginning of 1995 very serious problem in Ukraine. Third, high share of arrears on the balances of enterprises unables to determine their market value correctly during privatization process. Fourth, any attempts of government to tighten monetary policy and rise efficiency of economy have not positive results because enterprises substitute banking loans by running into arrears (costs of running into arrears are very low).

Graph 15:

Degree of circularity (left axis) and PPI dynamics (right axis).



Sources: Ministry of Statistics.

The observation of the degree of circularity dynamics from Graph 15 leads to some important conclusions about enterprises behaviour. It is seen that degree of sircularity (ratio of net arrears to gross arrears) jumped in the times when inflation hikes took place. This can be explained using assumption that in the times of high inflation enterprises try to accumulate

more paybles and less receivables, because paybles are enterprise' liabilities which value must depreciate due to inflation and receivables are assets. The jump of the degree of circularity in May-June of 1994 was connected with expectation of money reform (however it was not implemented), so enterprises accumulated high volumes of paybles before introducing of new currency. It is seen that after January 1995 both PPI rates and degree of circularity fell till May'95. As the intention of government to cancel sufficient share of arrears before money reform was declared, enterprises began to accumulate paybles with very fast rates (see Graph 15 and Table 10) in June'1995, and this process continues in the second part of 1995.

Since October'94 the government tried to solve arrears problem through forcing enterprises to issue the promissory notes in accordance with volume of their receivables and paybles (clearing of arrears) but results of these government' efforts are minimal. Thus, gross arrears was 760 trln. krb. on 1.10.94 (when clearing of arrears was begun), but enterprises raised financial claims amounted to 563 trln. krb. Only financial claims amounted to 224 trln. krb. were accepted from which only 46% were provided a bill. It was shown earlier that rates of growth of arrears were accelerated after October'94. The failure of this attempt to decide a problem with arrears through clearing was rooted in: 1) expectation of next inevitable clean-up of arrrears in the nearest future, 2) inability and unwillingness of state-owned industry to solve their financial problems without running into arrears, 3) chain character of arrears when growth of overdue repayments of debts in one branch led to worsening of financial conditions in other branches of industry.

For checking last conclusion of the previous paragraph the cross-section analysis was undertaken for period October'94-May'95 where branch distribution in the economy of the industrial production, short-term credits, overdue repayments of debts on settlement documents on private banks balances (below - overdue repayments), demand balances denominated in krb. on settlement accounts of enterprises in private banks (below - demand balances) was observed. The purpose of this analysis was aimed to answering some questions: 1) In which branch of economy is the main share of industrial production, credits, demand balances, and overdue repayments concentrated?; 2) Is there any correlation in each branch of industry between industrial production volumes from the one side and overdue repayments and credits from the other side (OLS regressions were run for each branch)?; 3) Is there any correlation between property right in some branch of industry and financial conditions of this branch?; 4) Is there the direct impact of credits and demand balances on overdue repayments size (OLS regressions were run for each branch)? All tables and OLS regressions are written in Annex 2.

It is seen from data in Annex 2 that mostly (comparing to the share of a branch in the total industrial production level) short-term banking credits were directed into joint-stock corporations, syndicates and associations created on voluntary basis, and State Committee for Light and Textile Industry. Thus, private banks prefered to provide with credits either

enterprises with non-state property form or enterprises of consumption sector. At the same time, main share of overdue repayments of debts was accumulated by the enterprises belonging to the Ministry of Industry (chemical industry and metallurgy), Ministry of Coal Mining, and Ministry of Machine Building (all branches of loss-making heavy industry). Main share of demand balances was concentrated on settlement accounts of enterprises included into joint-stock corporations, syndicates and associations created on voluntary basis, and State Food Committee. The ratio of overdue repayments to credits in May'95 exceeded 100% (in the order of magnitude) for the Ministry of Coal Mining, Ministry of Energy, Ministry of Industry, contractor-run enterprises, Ministry for Machine Building, State Food Committee, joint-stock corporations, and State Committee for Light and Textile Industry. While, overdue repayments of debts can be easily covered, in principle, by means of accumulated on settlement accounts demand balances in the enterprises belonging to syndicates and associations created on voluntary basis, Ministry for Agriculture Products, and State Committee for Light and Textile Industry. The fact that these enterprises did not use available on their settlement accounts money for covering overdue repeayments can serve as a confirmation of extremely low costs of running into arrears for the economy under condition of existed arrears chain and expected next government initiative on the cancellation of arrears. During five months of 1995 the financial condition of enterprises, measured as the correlation between overdue repeayments and demand balances on settlement accounts, was worsen for all branches and ministries except syndicates and associations created on voluntary basis. This result leads to the conclusion that only those enterprises created as private on the voluntary basis (they did not inherit old soviet style of manadgement) were not hit by financial crisis.Thus, it is possible to assume that tight monetary policy was not the main reason of payment crisis, it only shed a light on the ineffectivity of state property enterprises still dominated in the Ukrainian economy.

Regression analysis showed that the level of industrial production was mainly determined by available banking credits for joint-stock corporations, syndicates and associations created on voluntary basis, enterprises belonging to the Ministry of Energy, Ministry of Machine Building, and State Committee for Light and Textile Industry. The lack of available credits on the enterprises subordinated to other ministries forced enterprises to accumulate arrears for conducting minimal business activity. It is observed that for all ministries the relative fall of credit component led on impact to the inevitable rise of accumulated arrears (which became a substitute of credits) with one-month lag.

However there is a positive correlation between arrears and industrial production level on the short-run, obviously that severe payment crisis rooted in the dominance of state property in the Ukrainian economy can hinder all government attempts to stabilize inflation rates and output level. The main problem in this respect is that there is a strong incentive in the government and Parliament to reject from tight monetary policy previously agreed with IMF (which is mistakenly treated as responsible for present economic crisis) trying to achieve two main aims: 1) to raise industrial production level due to money injection into state-owned

industry; 2) to solve arrears problem through cancellation of the sufficient share of overdue repayments of debts. It is supposed to achieve both these aims just through huge money emission. So, the question of quick imposing of large-scale privatisation on the bulk of the Ukrainian economy is the crucial in respect to solving of payment crisis, in particular, and successful stabilising of economy, in general.

Conclusions

This paper was devoted to the analysis of inflation and industrial output trends in Ukraine in 1992-1995 with special attention to the role of money-credit policy in affecting these macroeconomic variables behaviour. The dynamics and preliminary aftermath of three different stabilisation attempts (January 1992, November/December 1993, and October/November 1994) was discussed taking into account the degree by which inflation dynamics was predetermined by initial price shock eliminated pre-reform monetary overhang. The results showed that price overshooting present in 1992 induced excessive contraction of all real parameters which were able to influence GDP growth. During 1992-1993 the keeping of stable level of output was the main task of the government, so initial fall of real variables was compensated by conducting of accommodative monetary policy. Assuming adaptive expectations mechanism being in work, the Friedman´s accelerationist mechanism helps to explain how government attempts to keep output higher its new natural level (resulted from the whole series of supply shocks) can lead to accelerating inflation rates and loss of the control over nominal variables trend.

As high inflation is caused usually by soft budget policy resulted in monetazing of budget deficit, the regression analysis was conducted where relative impact of various variables on budget deficit was investigated. The results showed that size of budget deficit is mainly predetermined by budget expenditures on economy and tax revenues.

It was evaluated the money demand function where lagged with 1 month real money balances, interest rate and growth rate of GDP were used as independent variables. The regression results showed strong serial correlation, so adaptive expectations played dominant role in determining of needed by economic agents real money balances.

The ratio of seigniorage and inflation tax to GDP was calculated for period 1992 -1995 where broad money supply was used as a basic variable. Their trends helped to trace the impact of contraction and expansion phases of monetary policy on inflation rates during second and third government attempts to stabilise economy using money supply as nominal anchor. In addition the attempt was done to link different components of money supply and credits and their lagged values (lag was chosen between 1 month and 3 months) with inflation trend during the period 1993-1994. It was found the positive impact with three months lag of broad

money supply rates of growth on price index rates of growth. Similar impact on price index was observed for deposits of enterprises (three months lag), credits in foreign currency, credits to state enterprises.

The main reason of unsuccess of stabilisation attempt in 1993 is the chosen by government approach to fix official exchange rate, prices, and refinancing interest rate in combination with drastic cut of monetary aggregates rates of growth. Inflation began to fall since January 1994 till September 1994 reaching one digital numbers, money multiplier and excessive reserves fell, so commercial activity of banking system was depressed. However, in a three months liquidity began to be injected again into economy, but government used some sterilisation measures. As prices were fixed, the impact of the observed expansion of monetary policy (mainly credits of the National Bank for government component) was postponed till late autumn. Subsidies volume and budget expenditures on economy rose when government tried to decrease rates of fall of output, so inflation potential was accumulated. Credits of the National Bank for government were the main component responsible for inflation burning in the fall of 1994. Stabilisation program credibility was absent, and currency substitution process was accelerated. Regression analysis showed that degree of economy dollarization began to rise in pair with money velocity. Introducing of more tight monetary policy was not followed by any radical changes in fiscal policy, so temporal character of low inflation was predetermined.

Last stabilisation program co-ordinated with IMF takes into account all mistakes of the previous years. As prices were fully liberalised in November 1994 (except communal service and public transport costs for population), the government tactics of moderate contraction of all monetary and credit aggregates, including credits for government, in combination with budget balancing directly influenced inflation trends observed till February 1995. So, when all nominal variables are liberalised, the impact of monetary policy is direct.

The appeared inability of government to keep inflation target in the second half of 1995 was rooted in exessive level of budget deficit. So, budget discipline is the key to success of any stabilization program in Ukraine.

Concerning GDP and industrial output behaviour, the whole set of reasons of output depression was analysed. During last three years output expressed strict tendency to shrink, but this process became especially obvious at the beginning of 1994 and in the autumn of 1994 when monetary policy contractions were implemented. However, analysis showed that credit crunch was not only one reason for so deep fall. First, hyperinflation hindered demand of population for non-durable goods. Second, high tax burden, unwillingness to pay inflation tax, and excessively high administrative control over business activity forced sufficient share of economy to shift into informal, shadow sector of activity. So, officially estimated fall of GDP and industrial production can be connected with narrowing of taxed economy share. Third,

prices for energy resources hikes in 1994-1995 (however they were not so large as in 1993) also contributed into inflation rates and output fall.

Interenterprise arrears in pair with credit crunch can be considered as mainly responsible for low output-high inflation equilibrium. However payment crisis began to develop immediately after collapse of the Soviet Union, but the outburst of interenterprise arrears was fixed in the moment of credit contraction. So, enterprises substituted bank credit by interenterprise credit. The business activity falls together with output cut because arrears chain appeared in economy. Government time per time, when situation with payments is especially difficult, should provide economy with credit flow for cleaning-up arrears. As a result, inflation rates begins to rise, and arrears growth accelerated because enterprises formed expectations of the next inevitable clean-up.

Conducted cross-section analysis showed that mostly severe payment crisis which was coincided in time with the tight monetary policy implementation was rooted in prevailed state ownership in the Ukrainian economy. That is why state-owned enterprises faced with unwillingness of private banks to provide them with loans just substituted loans with arrears and waited for next cancellation of their overdue repayments of debts. So, any attempts to conduct financial stabilization (with the assistance of IMF or without) without large-scale privatization and institutional reforms will not have any success.

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ANNEX

Table 1: Money and Credit, % change at the end of period

	Money Base	Net Claims on Gover-nment	Claims on rest of the Economy	Broad money	Demand Deposits	Time and Saving Deposits	Foreign Currency Deposits	Inflation Rate
Q1'92	161	-3	199	41	42	30	0	375
Q2'92	95	225	143	110	120	39	8000	65
Q3'92	109	69	82	63	47	31	636	69
Q4'92	67	93	101	110	135	53	264	112
Q1'93	102	-30	183	78	97	128	445	200
Q2'93	89	64	80	81	50	127	101	165
Q3'93	470	46	166	207	287	99	72	165

* data for Q1'92 mean % change relative to the whole 1991 year.

Source: National Bank of Ukraine statistical materials.

Table 2: Expenditures and revenues side of consolidated budget

	nominal GDP, bn. krb.	expend. on economy and support of foreign trade, % of GDP	expen. on social security, educ., health, science, % of GDP	total expendi-tures, % of GDP	tax reven-ues, % of GDP	total revenues, % of GDP	% change CPI	consolidated budget deficit, % of GDP
Q1'1992	513	8.6%	7.1%	29.4%	14.1%	26.3%	75.4	3%
Q2'1992	964	9.5%	9.7%	37.5%	16.5%	29.5%	18.1	8%
Q3'1992	1374	6.7%	14.5%	39%	16.5%	29.7%	19,2	9.3%
Q4'1992	2317	21%	18.9%	55.1%	21.7%	37.4%	28,5	17.7%
Q1'1993	5984	6.7%	11.8%	34.9%	22%	33.8%	39,7	1%
Q2'1993	11955	18.2%	19.8%	55.4%	30%	42.3%	39,4	13%
Q3'1993	34504	14.8%	14.6%	43%	21%	36.7%	44,5	6%
Q4'1993	89573	9%	21.15%	47.5%	27%	41.4%	66,4	6%
Q1'1994	146949	10.2%	13.5%	43.6%	22.4%	37.3%	12,4	6.4%
Q2'1994	189537	22%	14.9%	59.6%	34.2%	51%	5	8.9%
Q3'1994	236076	39%	15.6%	80.5%	41%	61%	4	19.8%
Q4'1994	508703	15.7%	14.4%	54.7%	26%	46.6%	39,5	8.1%
Q1'1995	842509	7%	12.8%	43.7%	24%	36%	16.8	7.9%
Q2'1995	1113760	7.6%	15.8%	47.1%	22%	41.9%	5.1	5.3%
Q3'1995	1459489	8.5%	12.1%	46.2%	22.3%	39.2%	7.9	7%
Q4'1995	1642618	8.4%	12.7%	52.5%	25.1%	41.9%	21	10.6%

Sources: Ministry of Finance Materials, "Ukrainian Economic Trends" data for GDP values.

Table 3. Calculations of Seigniorage and Inflation Tax

	Money base	Indif (money base)	Price index	Indif (price index)	Real money balances	Geometrical mean (real money balances)	Nominal GDP	real GDP
Q4'92	1525		1		1525		2317	2317
Q1'93	3462	0.82	3.02	1.11	1146.36	1322.00	5984	1981.46
Q2'93	7755	0.81	8.05	0.98	963.35	1051.00	11955	1485.09
Q3'93	17303	0.80	21.38	0.98	809.31	883.00	34504	1613.84
Q4'93	28220	0.49	91.78	1.46	307.47	499.00	89573	975.95
Q1'94	45575	0.48	130.8	0.35	348.43	327.00	146949	1123.46
Q2'94	70099	0.43	151.3	0.15	463.31	402.00	189537	1252.72
Q3'94	123439	0.57	170.02	0.12	726.03	580.00	236076	1388.52
Q4'94	160395	0.26	463.1	1.00	346.35	501.00	507746	1096.41
Q1'95	191018	0.17	738.44	0.47	258.68	299.00	843383	1142.11
Q2'95	267895	0.34	856.41	0.15	312.81	284.46	1116930	1304.20
Q3'95	316477	0.17	1018.53	0.17	310.72	311.76	1462283	1435.68
Q4'95	354031	0.11	1299.6	0.24	272.42	290.94	1680316	1292.95

	seign-iorage	inflation tax	seignioage/ real GDP	inflation tax/gdp	CPI % change	tax revenues, % of GDP	budget deficit, % of GDP
Q4'92					112%	22%	22%
Q1'93	1083.84	1461.15	55%	74%	200%	22%	1%
Q2'93	847.62	1030.42	57%	69%	165%	30%	13%
Q3'93	708.64	862.50	44%	53%	165%	21%	6%
Q4'93	244.09	727.01	25%	74%	328%	27%	5%
Q1'94	156.74	115.85	14%	10%	41%	22.40%	5.40%
Q2'94	173.08	58.53	14%	5%	16%	34.20%	8.20%
Q3'94	328.19	67.66	24%	5%	12%	41%	27.60%
Q4'94	131.21	502.02	12%	46%	172%	26%	3.90%
Q1'95	52.24	139.51	5%	12%	59%	24%	7.80%
Q2'95	96.21	42.16	7%	3%	16%	22%	5.3%
Q3'95	51.96	54.05	4%	4%	25%	22.3%	7%
Q4'95	32.62	70.90	3%	5%	21%	25.1%	10.6%

Sources: IMF materials, Ministry of Statistics, National Bank of Ukraine Monetary Reviews, "Ukrainian Economic Trends".

Table 4: Dynamics of the interest rates

	Official refinancing interest rate of the National Bank	Actual refinancing interest rate of the National Bank	Average commercial banks credit interest rate	Average commercial banks deposit interest rate
1,93	80	70,8	76,6	62,1
2,93	80	31,8	88,2	84,9
3,93	100	32,3	87,1	70,2
4,93	100	72,8	110,5	83,4
5,93	240	238	144,3	107,6
6,93	240	131,2	231,8	162,5
7,93	240	52,8	223,3	225,8
8,93	240	55	204,4	170,1
9,93	240	57,8	224,2	186,5
10,93	240	93,7	246,3	183
11,93	240	28	279,2	231,7
12,93	240	132	295,1	215,8
1,94	240	126,2	310,2	224
2,94	240	240	383,4	284,8
3,94	240	171,1	389,8	328,6
4,94	240	197,8	328	329,1
5,94	240	195,2	299,4	276,1
6,94	240	149,5	254,7	220,6
7,94	190	115,5	192,5	179,7
8,94	140	97,5	151,3	140,2
9,94	140	48,2	141,6	126,8
10,94	300	115,6	141,4	108,1
11,94	300	*	201,4	146
12,94	300	135,1	204,7	139,5
1,95	252	*	220	144.9
2,95	252	289	212	128.9
3,95	214	257	189	112.6
4,95	153	120.4	152	88,2
5,95	96	96	122.2	61
6,95	80.4	56.4	92.4	
7,95	67.2	56.4	81.6	
8,95	63.6	61.2	74.4	
9,95	69.6	62.4	78	
10,95	87.6	105.6	93.6	
11,95	94.8	88.8	103.2	
12,95	110.4	104.4	105.6	

* - in this month there were no refinancing credits at all.

Sources: National Bank of Ukraine materials.

Table 5: The National Bank Monetary Policy Indicators

	M0, % change	Refinancing Credits, % change	Commercial Banks Reserves, % change	Base Money, % change	CPI, %
7,93	54	109	89	81	37
8,93	19	-8	23	22	21
9,93	68	129	-14	1	80
10,93	47	10	-19	1	66
11,93	17	-4	6	11	45
12,93	42	17	28	45	90
1,94	25	44	-7	12	19
2,94	24	-22	7	14	13
3,94	19	-7	30	26	6
4,94	25	1	95	48	6
5,94	-3	4	-29	-10	5
6,94	19	0	27	16	4
7,94	20	30	29	22	2
8,94	10	-8	55	32	3
9,94	17	2	5	9	7
10,94	9	-9	3	8	23
11,94	22	-20	-18	3	72
12,94	15	-3	28	17	28
1,95	5	-18	-40	-12	21.2
2,95	15	-10	38	20	18.1
3,95	19	-10	6	13	11.4
4,95	30	4	4	18	5.8
5,95	2	-2	13	5	4.6
6.95	19	167	-11	9	4.8
7,95	14	28	17	15	5.2
8,95	4	17	-15	-1.6	4.6
9,95	6	2	2	5.1	14.2
10,95	-5	4	2	-3.4	9.1
11,95	5	-3	-9	1.4	6.2
12,95	18	21	11	16.2	4.6

Sources. "Ukrainian Economic Trends", National Bank materials.

Table 6: Deposits and Cedits Dynamics of the Banking System.

	Cred. for gvnm, % change	Cred. for state enterpri-ses, % change	Cred. for private sector, % change	Commer-cial banks credits for economy, % change	Total cred-its govern-ment, pri-vate sector, enterpri-ses), % change	Cred. in foreign currency, % change	M2, % change	Time de-posits de-nominated in foreign currency, % change	Total sum of deposits of enter-prises, % change	Total sum of depos-its of house-holds, % change
10`93	30	13	27	15	18		16	9	7	25
11`93	0	13	26	15	12		18	4	18	20
12`93	28	-7	11	-3	3		7	102	-11	61
1`94	13	-1	45	10	11	7	4	-2	-10	19
2`94	62	18	2	13	24	5	17	9	9	26
3`94	50	8	18	11	22	12	20	-2	19	28
4`94	34	10	18	13	21	4	24	-12	24	26
5`94	9	8	20	12	11	24	11	11	20	23
6`94	23	9	31	17	19	25	23	32	28	21
7`94	13	12	27	18	16	15	18	19	16	20
8`94	42	14	16	15	26	6	26	7	42	10
9`94	14	9	28	17	16	37	15	37	16	5
10`94	7	-14	10	-3	2	71	5	117	4	1
11`94	10	3	-8	-2	4	106	11	70	4	13
12'94	5	14	-12	2	1	3	15	6	18	7
1'95	0	9	-1	5	4	15	-4	-89	-14	30
2'95	20	11	0	7	12	10	11	17	9	7
3'95	11	0	2	1	7	-2	16	-5	15	8
4'95	19	24	10	19	19	-2	14	-6	2	8
5'95	2	8	19	12	7	13	9	16	18	5
6'95	-2	25	13	20	8	19	16	5	14	7
7'95	47	11	18	13	29	-2	14	7	15	6
8'95	-1	8	10	9	3	18	4	8	4	2
9'95	10	5	12	7	9	2	2	5	-2	1
10'95	7	4	2	3	5	1	-2	-3	0	3
11'95	2	2	3	3	2	-2	1	-3	-5	11
12'95	21	2	-5	-1	11	-6	15	-4	10	21

Sources: Monetary Review of the National Bank

Table 7:

	Money (M2) velocity	Money multiplyer	Active reserve ratio
Dec`92	4,9	1,51	56
Jan`93	7	1,45	61
Feb`93	7,4	1,3	69
Mar`93	7,8	1,32	70
Apr`93	7,5	1,16	83
May`93	9,6	1,04	94
Jun`93	9,3	1,03	96
Jul`93	9,6	0,86	n.a.
Aug`93	9,0	1,14	85
Sep`93	8,0	1,51	57
Oct`93	10,1	1,73	43
Nov`93	10,1	1,83	39
Dec`93	12,5	1,35	52
Jan`94	13	1,25	51
Feb`94	13,6	1,28	49
Mar`94	13,5	1,22	53
Apr`94	11,7	1,03	83
May`94	9,9	1,26	49
Jun`94	9,8	1,34	49
Jul`94	9,1	1,29	54
Aug`94	6.9	1,23	58
Sep`94	7,0	1,3	58
Oct`94	8,2	1,28	57
Nov`94	12.1	1,37	45
Dec`94	12,8	1.35	49
Jan'95	14.4	1.48	17
Feb'95	14.7	1.37	21
Mar'95	15.4	1.4	21
Apr'95	13.8	1.32	25
May'95	13.5	1.31	24
Jun'95	14.3	1.44	20
Jul'95	13	1.4	21
Aug'95	13.5	1.44	17
Sep'95	13.5	1.47	17
Oct'95	14.5	1.45	18
Nov'95	14.3	1.46	16
Dec'95	14.1	1.49	17

Sources: "Ukrainian Economic Trends", National Bank materials.

Table 8: Key Macroeconomic Indicators in 1990-1994.

	Real gross domestic product (GDP), %	Gross Agriculture Output, %	Industrial Production, %	CPI (within period), %	Foreign Trade, mn US$	Budget deficit, %
1990	- 3.6	n.a.	- 0.1	4.2	n.a.	
1991	-13.4	-18.8	- 4.5	161.0	n.a.	
1992	-17.0	-8,2*	- 6.4	2734.0	-621	-12.2
1993	-25.0	-1,5*	- 7.4	10155.0	-1828	-6.5
1994	-40.0	-16,0*	-28.0	501.0	-281	-10.5
1995	-6.9	-2	-16	181.6	187	-7.9

Sources: IMF (1992,1993,1994), Ministry of Statistics, "Ukrainian Economic Trends",
* - "Ukraine. 1994 Statistical Review, Volume 1, # 1, World Bank ".

Table 9: Industry users energy prices.

	Industry user price for coal, % change	Industry user price for gas, % change	Industry user price for oil, % change	Industry user price for electricity, % change	Industrial Production, %
Q4'91	0%	0%	0%	0%	n.a.
Q1'92	5697%	709%	2300%	733%	-15,3
Q2'92	65%	0%	157%	248%	-12,3
Q3'92	-4%	361%	51%	128%	-9,8
Q4'92	14%	43%	319%	75%	-9
Q1'93	152%	136%	97%	-4%	-5,2
Q2'93	131%	623%	253%	255%	-5,1
Q3'93	158%	323%	93%	295%	-7,8
Q4'93	27%	102%	182%	143%	-7,4
Q1'94	487%	42%	26%	37%	-38,4
Q2'94	2%	0%	22%	28%	-36
Q3'94	40%	12%	44%	16%	-31,2
Q4'94	412%	416%	341%	405%	-34

Sources:" Ukraine in Numbers", #13.
* in 1995 relative prices on electricity, gas and coal were stabilized at the world level.

Table 10: Dynamics of the interenterprise arrears on enterprise balances.

	Receivables with CIS countries % change	Receivables among Ukrainian enterprises % change	Paybles with CIS countries % changes	Paybles among Ukrainian enterprises % changes	Share of paybles with the CIS countries in the total volume of arrears with CIS countries, %	Share of paybles among the Ukrainian enterprises in the total volume of arrears among Ukrainian enterprises, %
11,92	n.a.	n.a.	n.a.	n.a.	37%	47%
12,92	-16%	48%	10%	80%	43%	52%
2,93	*	*	*	*	45%	49%
3,93	65%	62%	128%	72%	53%	51%
4,93	5%	14%	58%	17%	63%	51%
5,93	11%	52%	43%	61%	69%	53%
6,93	38%	61%	97%	75%	76%	55%
7,93	28%	32%	46%	37%	78%	56%
8,93	49%	46%	39%	38%	77%	55%
9,93	32%	100%	-13%	36%	69%	45%
10,93	19%	3%	25%	30%	70%	51%
11,93	15%	33%	-38%	52%	56%	54%
12,93	22%	62%	116%	75%	69%	56%
1,94	7%	2%	-1%	5%	67%	57%
2,94	8%	30%	67%	29%	76%	57%
3,94	14%	30%	2%	31%	74%	57%
4,94	9%	3%	8%	-6%	74%	55%
5,94	4%	6%	15%	11%	76%	56%
6,94	15%	32%	19%	41%	76%	57%
7,94	-7%	3%	19%	-9%	80%	54%
8,94	34%	-1%	15%	2%	78%	55%
9,94	-15%	34%	6%	36%	81%	55%
10,94	12%	3%	8%	11%	81%	57%
11,94	43%	21%	10%	19%	76%	57%
12,94	27%	15%	43%	24%	78%	58%
1,95	7%	31%	39%	32%	83%	59%
2,95	22%	21%	28%	11%	83%	56%
3,95	16%	45%	4%	46%	82%	56%
4,95	12%	14%	22%	5%	83%	54%
5,95	10%	15%	2%	1%		51%
6,95		9%		32%		56%
7,95		-1%		-5%		55%
8,95		4%		5%		55%
9,95		19%		32%		58%
10,95		1%		-4%		56%
11,95		10%		9%		56%
12,95				8%		

* - nominal data for January of 1993 was not collected, so it was not possible to calculate here % changes, data concerning arrears with CIS countries were not available for the second half of 1995.

`Sources: Ministry of Statistics.

Table 11: Ratio of Total Arrears on Enterprises Balances to GDP and Overdue Payments on Private Banks Balances to GDP.

	Q4'92	Q1'93	Q2'93	Q3'93	Q4'93	Q1'94	Q2'94	Q3'94	Q4'94	Q1'95	Q2'95	Q3'95
Total Arrears*/ GDP	1,93	1,71	2,63	2,68	2,73	2,88	3,26	3,37	2,62	3.06	3.27	3.19
Overdue Pay-ments/ GDP	0,17	n.a.	0,05	0,05	0,14	0,28	0,38	0,37	0,35	0.45	0.58	0.57

* - means sum of paybles with the CIS countries, paybles among Ukrainian enterprises, receivables with the CIS countries, and receivables among Ukrainian enterprises , beginning from Q2'95 only domestic arrears were taken into calculations.

ANNEX 2

1) Joint-stock corporations created on the basis of state enterprises

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue repayments of debts on settlement documents on private banks balances, % share of total industry data	demand balances denominated in krb. on settlement accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repayments value in this industry/ short-term loans value in this industry, %
Jan-94	18.1%						
Feb-94	16.8%						
Mar-94	18.4%	10.2%					
Apr-94	19.6%	11.2%		4.6%	16.4%	60%	30%
May-94	22.6%	14.8%	15.0%	4.3%	16.9%	51%	30%
Jun-94	23.5%			6.8%	16.6%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		25.0%	7.0%	8.9%	20.8%	59%	25%
Nov-94		27.0%	9.0%	8.9%	21.2%	59%	33%
Dec-94		27.7%	13.0%	8.7%	20.6%	70%	47%
Jan-95	16.4%	28.2%	17.0%	9.6%	23.1%	59%	71%
Feb-95	16.7%	27.8%	20.0%	9.1%	25.2%	65%	78%
Mar-95	19.2%	27.8%	22.0%	10.8%	25.3%	79%	118%
Apr-95	19.2%	26.0%	25.0%	10.4%	27.1%	77%	139%
May-95	22.6%	25.4%	23.0%	10.4%	26.5%	83%	155%
Jun-95	22.5%						

**** MULTIPLE REGRESSION#1 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.98189
R Square	.96411
Adjusted R Square	.89233
Standard Error	.04865

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.06357	.03178
Residual	1	.00237	.00237

F = 13.43142 Signif F = .1894

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
ARREARS	1.083673	.246185	.897333	4.402	.1422
CREDL1	2.994104	.718333	.849683	4.168	.1499
(Constant)	-.409923	.096745		-4.237	.1475

* **ARREARS** means overdue repayments,
CREDL1 means credits with one-month lag.

**** MULTIPLE REGRESSION#2 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.61867
R Square	.38276
Adjusted R Square	.22845
Standard Error	.11078

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	.03044	.03044
Residual	4	.04909	.01227

F = 2.48042 Signif F = .1904

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL1	-1.876757	1.191641	-.618673	-1.575	.1904
(Constant)	.413025	.074645		5.533	.0052

2) Ministry of Industry (metallurgy, chemical industry)

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	17.9%						
Feb-94	16.9%						
Mar-94	16.6%	1.08%					
Apr-94	18.9%	1.15%		12.5%	4.4%	155%	791%
May-94	18.8%	1.43%	33.00%	10.0%	5.7%	178%	720%
Jun-94	18.4%			13.8%	4.8%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		2.67%	2.00%	12.8%	4.2%	112%	337%
Nov-94		2.77%	2.00%	14.1%	3.5%	94%	505%
Dec-94		3.14%	2.00%	14.5%	2.3%	69%	703%
Jan-95	17.1%	3.46%	2.00%	19.3%	2.3%	48%	1154%
Feb-95	17.6%	3.96%	2.00%	19.2%	2.7%	48%	1156%
Mar-95	17.7%	3.70%	2.00%	17.9%	2.9%	68%	1480%
Apr-95	18.9%	7.44%	2.00%	16.6%	2.4%	24%	777%
May-95	18.7%	6.02%	2.00%	15.9%	2.1%	27%	1000%
Jun-95	17.9%						

**** MULTIPLE REGRESSION #3 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.98661
R Square	.97340
Adjusted R Square	.94680
Standard Error	.01514

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.01678	.00839
Residual	2	.00046	.00023

F = 36.59706 Signif F = .0266

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL3	.240984	.072850	.388760	3.308	.0805
ARREARL2	.332057	.039627	.984783	8.379	.0139
(Constant)	-.130782	.017129		-7.635	.0167

* **ARREARL2** means overdue repayments with two-months lag,
CREDL3 means credits with three-months lag.

**** MULTIPLE REGRESSION #4 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.71342
R Square	.50897
Adjusted R Square	.18161
Standard Error	.17062

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.09052	.04526
Residual	3	.08733	.02911

F = 1.55478 Signif F = .3441

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL1	-.317099	.231201	-.574902	-1.372	.2638
DEMBALL1	-.499742	.349821	-.598809	-1.429	.2484
(Constant)	.359908	.084383		4.265	.0236

* **DEMBALL1** means demand balances with one-month lag.

3) Contractor-run enterprises created on the basis of state enterprises

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	11.2%						
Feb-94	11.3%						
Mar-94	12.0%	1.4%					
Apr-94	12.1%	1.2%		1.3%	1.5%	50%	78%
May-94	12.3%	1.3%	21.0%	0.8%	1.5%	53%	69%
Jun-94	12.1%			1.2%	1.4%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		1.5%	3.0%	1.8%	1.5%	69%	86%
Nov-94		1.3%	5.0%	1.9%	1.1%	61%	141%
Dec-94		1.5%	4.0%	1.8%	1.2%	74%	176%
Jan-95	11.7%	1.5%	6.0%	1.9%	1.0%	50%	266%
Feb-95	12.6%	1.3%	8.0%	2.1%	1.0%	53%	381%
Mar-95	12.6%	1.5%	12.0%	1.7%	0.9%	54%	369%
Apr-95	13.3%	1.3%	9.0%	1.6%	0.9%	48%	422%
May-95	13.7%	1.1%	6.0%	1.6%	1.0%	71%	528%
Jun-95	13.3%						

*** MULTIPLE REGRESSION #5 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.80182
R Square	.64291
Adjusted R Square	.28582
Standard Error	.04823

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.00838	.00419
Residual	2	.00465	.00233

F = 1.80043 Signif F = .3571

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
ARREARL1	.392851	.209469	1.018423	1.875	.2016
CREDL3	.275870	.289435	.517577	.953	.4411
(Constant)	-.080884	.057351		-1.410	.2939

**** MULTIPLE REGRESSION#6 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.83767
R Square	.70170
Adjusted R Square	.40339
Standard Error	.11429

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.06145	.03072
Residual	2	.02612	.01306

F = 2.35228 Signif F = .2983

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
DEMBALL1	-.699282	.487268	-1.121410	-1.435	.2877
CREDL2	-2.214916	1.079720	-1.602974	-2.051	.1767
(Constant)	.272011	.052879		5.144	.0358

4) Ministry of Coal Mining.

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	11.8%						
Feb-94	11.4%						
Mar-94	12.1%	0.6%					
Apr-94	12.2%	0.6%		13.9%	2.2%	36%	1712%
May-94	10.6%	1.6%	52.0%	11.2%	2.2%	8%	714%
Jun-94	10.2%			16.6%	2.6%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		0.8%	19.0%	21.6%	1.4%	30%	1815%
Nov-94		0.9%	17.0%	19.7%	1.4%	101%	2100%
Dec-94		1.0%	13.0%	14.0%	2.0%	237%	2204%
Jan-95	10.8%	0.9%	22.0%	12.2%	1.2%	153%	2695%
Feb-95	11.2%	0.9%	18.0%	12.9%	1.1%	77%	3455%
Mar-95	10.6%	1. 0%	26.0%	12.7%	1.5%	53%	4020%
Apr-95	11.1%	0.9%	15.0%	10.9%	1.0%	27%	4307%
May-95	10.3%	1.1%	10.0%	10.9%	1.1%	26%	3844%
Jun-95	9.9%						

**** MULTIPLE REGRESSION #7 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.96860
R Square	.93819
Adjusted R Square	.75274
Standard Error	.02706

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	.01111	.00370
Residual	1	.00073	.00073

F = 5.05920 Signif F = .3133

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
DEMBALL1	-.122456	.068017	-.856878	-1.800	.3228
ARREARL1	1.110120	.349572	.798624	3.176	.1942
CREDL3	1.008190	.661610	.720905	1.524	.3697
(Constant)	-.351710	.087836		-4.004	.1558

**** MULTIPLE REGRESSION #8* ***

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.91525
R Square	.83767
Adjusted R Square	.72946
Standard Error	.03881

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.02332	.01166
Residual	3	.00452	.00151

F = 7.74067 Signif F = .0654

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL1	-1.171909	.434000	-.629215	-2.700	.0738
DEMBALL1	-.062965	.020873	-.702922	-3.017	.0569
(Constant)	.256141	.027445		9.333	.0026

5) Ministry of energy

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	10%						
Feb-94	13%						
Mar-94	11%	0.56%					
Apr-94	9%	0.48%		0.53%	3.49%	3.00%	0.82%
May-94	8%	0.51%	11.00%	1.43%	2.56%	2.27%	2.92%
Jun-94	8%			1.67%	2.26%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		0.91%	0.00%	1.23%	2.37%	1.86%	0.95%
Nov-94		0.94%	0.00%	0.63%	5.03%	3.99%	0.66%
Dec-94		1.76%	0.00%	0.74%	4.59%	2.45%	0.64%
Jan-95	13%	1.61%	0.00%	1.05%	4.85%	2.19%	1.36%
Feb-95	11%	1.87%	0.10%	1.25%	4.23%	1.61%	1.59%
Mar-95	11%	1.74%	0.30%	2.01%	3.75%	1.88%	3.54%
Apr-95	10%	1.58%	0.20%	9.78%	2.93%	1.37%	21.53%
May-95	10%	1.65%	0.10%	8.50%	3.29%	1.58%	19.51%
Jun-95	9%						

**** MULTIPLE REGRESSION#9 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.98375
R Square	.96777
Adjusted R Square	.93554
Standard Error	.02491

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.03725	.01863
Residual	2	.00124	.00062

F = 30.02727 Signif F = .0322

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL3	.340515	.046231	.964499	7.365	.0179
ARREARL2	.089054	.021494	.542559	4.143	.0536
(Constant)	-.195656	.023892		-8.189	.0146

**** MULTIPLE REGRESSION#10 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.99873
R Square	.99746
Adjusted R Square	.99237
Standard Error	.06998

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	1.92123	.96061
Residual	1	.00490	.00490

F = 196.16416 Signif F = .0504

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL3	-2.562422	.165302	-.931900	-15.502	.0410
DEMBALL2	-7.081922	.377042	-1.129163	-18.783	.0339
(Constant)	1.208747	.046537		25.974	.0245

6) Syndicates and associations created on voluntary basis.

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	5.6%						
Feb-94	5.6%						
Mar-94	5.2%						
Apr-94	5.2%	3.3%		1.3%	7.4%	91%	28%
May-94	5.1%	3.4%	24.0%	1.1%	6.4%	84%	32%
Jun-94	5.6%			1.2%	6.3%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		4.7%	20.0%	2.0%	5.3%	81%	30%
Nov-94		4.3%	10.0%	1.8%	5.2%	90%	43%
Dec-94		4.0%	14.0%	1.3%	5.1%	122%	51%
Jan-95	5.1%	4.3%	22.0%	1.1%	5.1%	86%	52%
Feb-95	4.9%	4.3%	28.0%	1.0%	4.7%	79%	54%
Mar-95	4.8%	3.9%	25.0%	1.0%	5.1%	113%	77%
Apr-95	4.3%	4.1%	17.0%	0.9%	4.9%	90%	76%
May-95	4.3%	3.6%	17.0%	0.7%	4.9%	107%	75%
Jun-95	4.8%						

**** MULTIPLE REGRESSION #11 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.99424
R Square	.98851
Adjusted R Square	.96553
Standard Error	.01922

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.03178	.01589
Residual	1	.00037	.00037

F = 43.01726 Signif F = .1072

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
ARREARS	1.157995	.149613	1.309700	7.740	.0818
CREDL1	1.215782	.131765	1.561315	9.227	.0687
(Constant)	-.330051	.033619		-9.818	.0646

**** MULTIPLE REGRESSION #12 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.92931
R Square	.86361
Adjusted R Square	.72722
Standard Error	.05296

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.03552	.01776
Residual	2	.00561	.00280

F = 6.33187 Signif F = .1364

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL2	.616670	.232523	.702484	2.652	.1176
CREDL1	-.351805	.185612	-.502047	-1.895	.1985
(Constant)	.182540	.025585		7.135	.0191

7) Ministry of machine building.

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	5.4%						
Feb-94	5.8%						
Mar-94	4.8%	2.43%					
Apr-94	4.6%	2.49%		9.11%	1.25%	21%	267%
May-94	4.0%	3.96%	38.00%	7.07%	1.76%	20%	185%
Jun-94	4.1%			10.09%	1.58%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		3.84%	9.00%	8.34%	1.76%	33%	153%
Nov-94		4.35%	8.00%	8.11%	1.54%	26%	184%
Dec-94		4.98%	5.00%	7.04%	1.75%	33%	214%
Jan-95	4.4%	5.15%	6.00%	6.57%	1.72%	24%	264%
Feb-95	4.7%	4.86%	7.00%	7.00%	1.55%	23%	343%
Mar-95	4.5%	5.01%	8.00%	5.52%	1.54%	27%	337%
Apr-95	4.2%	4.76%	9.00%	4.78%	1.72%	27%	350%
May-95	3.2%	4.61%	10.00%	4.77%	1.17%	20%	391%
Jun-95	3.6%						

**** MULTIPLE REGRESSION #13 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.99203
R Square	.98413
Adjusted R Square	.96826
Standard Error	.03081

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.11775	.05888
Residual	2	.00190	.00095

F = 62.02117 Signif F = .0159

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL2	2.628968	.311394	.755490	8.443	.0137
ARREARL2	.912478	.142140	.574461	6.420	.0234
(Constant)	-.434237	.038398		-11.309	.0077

**** MULTIPLE REGRESSION#14 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.75661
R Square	.57245
Adjusted R Square	.46556
Standard Error	.07121

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	.02716	.02716
Residual	4	.02028	.00507

F = 5.35566 Signif F = .0817

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL1	1.645360	.710975	.756605	2.314	.0817
(Constant)	.074624	.063139		1.182	.3027

8) Ministry of agriculture products

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	3.0%						
Feb-94	3.1%						
Mar-94	3.2%	1.1%					
Apr-94	2.9%	1.9%		3.2%	1.3%	77%	123%
May-94	3.0%	2.3%	34.0%	2.3%	1.5%	90%	105%
Jun-94	3.2%			2.4%	1.7%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		2.1%	5.0%	0.7%	2.5%	189%	24%
Nov-94		2.4%	7.0%	1.0%	2.1%	122%	42%
Dec-94		2.5%	5.0%	0.7%	2.2%	112%	40%
Jan-95	3.1%	2.3%	7.0%	0.7%	2.4%	97%	62%
Feb-95	3.1%	2.1%	9.0%	0.7%	2.1%	106%	77%
Mar-95	2.8%	2.3%	10.0%	0.6%	1.9%	87%	79%
Apr-95	2.7%	2.4%	9.0%	0.6%	2.1%	64%	81%
May-95	3.0%	2.9%	7.0%	0.5%	1.8%	70%	60%
Jun-95	3.0%						

**** MULTIPLE REGRESSION #15 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.98577
R Square	.97174
Adjusted R Square	.88697
Standard Error	.02719

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	.02542	.00847
Residual	1	.00074	.00074

F = 11.46265 Signif F = .2130

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL1	.342573	.111872	.676573	3.062	.2009
ARREARL1	.688356	.134341	1.325322	5.124	.1227
DEMBALL1	.298300	.097079	.854470	3.073	.2003
(Constant)	-.199967	.035250		-5.673	.1111

**** MULTIPLE REGRESSION #16 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.57712
R Square	.33306
Adjusted R Square	.16633
Standard Error	.16055

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	.05149	.05149
Residual	4	.10311	.02578

F = 1.99758 Signif F = .2304

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL1	-.883815	.625330	-.577117	-1.413	.2304
(Constant)	.217235	.077736		2.795	.0491

9) State committee of light and textile industry

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue re-payments of debts on set-tlement docu-ments on private banks balances, % share of total industry data	demand bal-ances de-nominated in krb. on settle-ment accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	1.1%						
Feb-94	1.3%						
Mar-94	1.1%	1.3%					
Apr-94	1.0%	1.3%		1.3%	0.2%	47%	74%
May-94	0.6%	1.4%	15.0%	1.0%	0.3%	50%	80%
Jun-94	0.6%			1.4%	0.1%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		0.9%	5.0%	0.5%	0.3%	118%	42%
Nov-94		0.8%	8.0%	0.4%	0.2%	100%	50%
Dec-94		1.0%	6.0%	0.5%	0.1%	111%	70%
Jan-95	0.8%	1.1%	6.0%	0.5%	0.1%	66%	95%
Feb-95	0.7%	1.0%	7.0%	0.6%	0.1%	71%	137%
Mar-95	0.5%	1.0%	10.0%	0.4%	0.1%	82%	134%
Apr-95	0.3%	0.9%	10.0%	0.4%	0.1%	75%	159%
May-95	0.4%	0.8%	10.0%	0.3%	0.1%	100%	145%
Jun-95	0.2%						

**** MULTIPLE REGRESSION #17****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.96527
R Square	.93175
Adjusted R Square	.72699
Standard Error	.13570

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	.25138	.08379
Residual	1	.01841	.01841

F = 4.55041 Signif F = .3288

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL2	1.342876	1.242194	.570953	1.081	.4752
ARREARL1	.754803	.426855	.672523	1.768	.3277
ARREARL2	-1.139803	.473885	-.986793	-2.405	.2508
(Constant)	-.132023	.131490		-1.004	.4987

10) State Food industry

	Industrial production volume, % share of total industry data	Short-term credits, % share of total industry data	Share of overdue payment in short-run loans, %	overdue repayments of debts on settlement documents on private banks balances, % share of total industry data	demand balances denominated in krb. on settlement accounts of enterprises in banks, % share of total industry data	demand balances value in this industry/ short-term loans value this industry, %	overdue repay-ments value in this industry/ short-term loans value in this industry, %
Jan-94	0.8%						
Feb-94	0.7%						
Mar-94	0.6%	5.5%					
Apr-94	0.6%	5.1%		6.0%	1.9%	15%	85%
May-94	0.6%	7.6%	38.0%	3.8%	1.7%	10%	53%
Jun-94	0.6%			5.0%	4.0%		
Jul-94							
Aug-94							
Sep-94							
Oct-94		3.9%	18.0%	1.8%	2.5%	45%	32%
Nov-94		2.9%	39.0%	1.5%	2.6%	68%	52%
Dec-94		2.3%	48.0%	1.1%	2.5%	103%	70%
Jan-95	0.8%	1.9%	47.0%	1.1%	2.1%	84%	124%
Feb-95	0.8%	1.6%	42.0%	1.2%	2.3%	104%	181%
Mar-95	0.8%	1.3%	39.0%	1.1%	2.2%	146%	249%
Apr-95	0.8%	1.1%	37.0%	1.0%	1.5%	101%	326%
May-95	0.7%	1.1%	23.0%	0.9%	1.5%	111%	313%
Jun-95	0.7%						

**** MULTIPLE REGRESSION#18 ****

Equation Number 1 Dependent Variable.. **INDPROD**

Multiple R	.96717
R Square	.93542
Adjusted R Square	.74169
Standard Error	.04656

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	.03140	.01047
Residual	1	.00217	.00217

F = 4.82842 Signif F = .3200

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
ARREARL1	2.660928	.729914	3.952461	3.646	.1704
DEMBALL1	.337997	.152301	1.036777	2.219	.2695
CREDL2	2.577647	.889278	2.974065	2.899	.2115
(Constant)	-.303610	.084064		-3.612	.1720

**** MULTIPLE REGRESSION #19 ****

Equation Number 1 Dependent Variable.. **ARREARS**

Multiple R	.81944
R Square	.67148
Adjusted R Square	.34295
Standard Error	.11030

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.04973	.02486
Residual	2	.02433	.01217

F = 2.04392 Signif F = .3285

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
CREDL2	-.929841	.565624	-.671016	-1.644	.2419
DEMBALL1	.281500	.206394	.556716	1.364	.3058
(Constant)	.063155	.126320		.500	.6667

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