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FOREIGN EXCHANGE MARKETS FOR UKRAINIAN KARBOVANTSI IN RUSSIA AND FOR RUSSIAN RUBLES IN UKRAINE: ANALYSIS OF DEVELOPMENT IN 1993–1994

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Foreign Exchange Markets forUkrainian Karbovantsi in Russia and for Russian Rubles in Ukraine: Analysis of Development in 1993-1994

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This research is aimed to give an analysis of the developing market for the Russian ruble and the Ukrainian karbovanets in Russia and Ukraine in 1993-1994 before the unification of the Ukrainian exchange rates in October 1994. These markets had emerged as a part of the foreign exchange markets in two countries after the break-up of the ruble zone. The authors are intending to trace the impact of the changes in the economies with high inflation rates to the development of this sector of the financial markets of both countries. The official exchange rates, currency exchanges' and commercial banks' ones were substantially different in Ukraine at the time period concerned. Multiple exchange rates of the two 'not fully convertible' currencies and the influence of dollar exchange rates in two countries are investigated. Opportunities for various arbitrage operations are described. Finally, the monetary approach to the karbovanets-to-ruble exchange rate determination is tested.

CONTENTS

Two Ukrainian importers met.
One asked: "Have you bought the currency?" The other one answered: "Oh yes, I have. No dollars and even less currency units of another countries..." Question to the reader: what currency has been bought, how much and at what rate?

Anecdote

I. Introduction

The period of transition to the market economy has coincide with deep economic recession of the successor states of the former Soviet Union. Some economists argue that the break up of the USSR and therefore of previously established ties between the economies of the former Soviet republics had contributed greatly to that recession. From this point of view the collapse of the ruble zone was especially important. The absence of a common currency aggravated the intra-xUSSR trade and thus stimulated the inflationary processes through the external shock of both supply and demand in goods markets of the countries of the former Soviet Union.

The introduction of national currencies in most countries of the Commonwealth of Independent States (CIS) in the end of 1993 - beginning of 1994 resulting from the collapse of the so-called ruble zone completed the process of establishing the national money markets. The new targets were to stabilise national currencies, to reduce inflation and to develop the market credit systems. The national foreigh exchnage markets had emerged in order to meet the needs of their residents, both physical persons and legal entities. As a rule, non-residents are not allowed to operate in these markets. The markets are not connected formally and function independently of each other. All states has their own foreign currency trade regulations, restrictions on the obligatory exporters' earnings sales and on byuing foreign currency by importers.

However, the Russian ruble is still the common base for the national foreign currency markets in the CIS. It is quoted officially in all these countries and plays the main role in the set of the so-called 'soft' currencies of former Soviet republics. The newly introduced currencies were not very stable and not fully convertible into the currency units of other countries. This name has been given in order to distinguish them from so-called 'hard' currencies, i.e. the US dollar, the German mark, etc.

The most part of the inter-state trade between the CIS countries apart from the trade with Russia is conducted using Russian rubles. The exchange rate of a national currency to the ruble affects the balance of payments with Russia, which is of vital importance for other CIS countries. Being unstable due to the inflattion in Russia, the ruble, however, played the role similar to one of the 'hard' currencies, being the parallel currency in the circulation. That is why some economists talk about *dollarisation* and *rublevisation* of the CIS economies.

Apart from the Baltic states, Ukraine has been one of the first former Soviet republics to introduce its own currency parallel to Russian rubles. Two years period of existence of this market allows to analyze the logic of its development and the

interaction of the two foreign exchange markets. The question was, to what extent the Ukrainian an the Russian exchange rates were following the same dynamics and which market was more representative. The other problem for the investigation was an impact of one unstable currency (the ruble) to another which was even more unstable (the Ukrainian karbovanets). Finally, the monetary approach to the karbovanets-to-ruble exchange rate determination is tested.

The paper will proceed as follows. A review of the trade and payments between the Russia and Ukraine is given in the second section. The structure of the foreign exchange markets and its participants in Russia and Ukraine, the regulation of the markets is given in the third section. The next one rewires the development of the two markets in 1993 - 1994, before the Ukrainian exchange rate unification. Section five gives the test results of three versions of the monetary model for the exchange rate determination. Conclusions are presented in Section six. Graphs and tables are given partly in the Appendix.

II. Trade and Payments Between Russia and Ukraine in 1992-1994

Russia and Ukraine: Still Important Trade Partners

Prior to 1992 both Russian and Ukrainian economies were parts of the 'common economic complex of the USSR' and the trade between them was not considered as external but internal trade. The degree of co-operation between different enterprises in different republics of ex-Soviet Union was very high, as the central planners tried to exploit the comparative advantages and the division of labour between the republics. It is arguable to what extend that degree of co-operation was dictated by the economic reasons rather then by the political ones (strengthening the ties between different parts of the country). However, it is quite clear that all this system was based on the well-below-world-market prices for Russian oil and natural gas.

Soviet industrialisation policy fostered the development of the trade structure -- Russian energy carriers for Ukrainian agricultural and manufactured goods -- by favouring cheaper and more abundant sources of energy carriers in Russia, Turkmenistan and Azerbaijan. As a result, Ukraine saw the production of its domestic fuels being wound down to one half-one third of the peak level in the mid-1970s and at the same time experienced significant growth in its energy-intensive, heavy industrial sector. At the moment of the collapse of the USSR Ukraine's energy requirements far outstrip even its previous production levels. (Erik Whitlock 'Ukrainian-Russian Trade: The Economics of Dependency', *RFE/RL Research Report*, 1993, 2, No. 43). Anyway, the two biggest economies in the Soviet Union were extremely closely tied together.

The disintegration of the Soviet Union in December 1991 had turned overnight all the commodity flows between technologically interlinked enterprises in different republics into the external trade. For Russia, for example, that meant that the volumes of its foreign trade almost doubled. However, due to the fall of industrial production in all the former USSR republics, introduction of custom duties and regulations requiring settlements in foreign currency, the mutual trade between the CIS states experiences constant decline.

In 1992 **Russian trade** with the former Soviet republics in consumer goods had fallen sharply both due to fall in output and to their re-distribution in favour of internal consumption and re-orientation of trade to so-called *far abroad* (countries outside former USSR): 39 % of Russian exports of consumer goods went in 1992 to the USSR successor states compared to 95 % in 1991 (*Finansovyje Izvestija*, 1993, No.38). Export of food commodities to Ukraine had dropped from 42 % of total export of food from Russia in 1991 to 20 % in 1992. Exports of non-food consumer goods to Ukraine were 42 % (36 % in 1991). One third of food imports to Russia from the former Soviet republics in 1992 came from Ukraine, same as before, while in non-food consumer goods the Ukrainian share had fallen.

As *Russian Economic Trends* (1994, 3, No.1) estimate, the volume of Russian trade with other former Soviet republics in 1993 was only one-half of the volume in 1991: oil deliveries were reduced by 57 %, natural gas by 15 %, coal by 68 % and petrol by 60 %. In value terms 88 % of Russian 1993 exports were composed of fuels, while in 1992 the share of fuels was only 51 %. (*Ibid.*) The increase of Russian energy prices was accompanied by rapid growth of payment arrears for fuel deliveries .The main debtors for Russian energy supplies are Ukraine (54 % of total debt or R1.28 bn on 1 March 1994, of which for gas R1.02 bn), Belarus (17 %) and Kazakhstan (15 %).

In 1994 Russia established a free trade regime with nearly all CIS states. Some Russian exports to the CIS still remain subject to export taxes (fuels, metals, timber and chemicals) and export quotas apply to 14 most important raw materials (*Russian Economic Trends,* 1994, 3, No.2)

The economic recession which has plagued all CIS states, compounded by the problems of trade financing, has caused further decline in CIS trade with Russia in 1994. In the first half of 1994 Russia's measured exports to the CIS totalled R9.3 trn, or 3.8 % of GDP, while imports amounted to R6.6 trn, or 2.7% of GDP, while in 1991 these figures were correspondingly 10.4 and 8.0 (*Ibid.*) Fuel shipments continue to dominate Russia's exports to the CIS in 1994. Their share was even higher than in 1993 despite the continued fall in the volumes of exported fuel.

By the end of 1994 Russia trades more with developed countries, especially with Western Europe, than with other former Soviet states - a dramatic change in trading patterns over the past three years (*Financial Times*, 24 November 1994). Russia's trade volumes with the members of the European Union stood at 37 % of its total trade, comparing with 24 % of total trade (or $6.2 bn exports and $4.6 bn imports) for trade turnover with the other CIS member states. By far the largest part of Russian exports to these and other countries is raw materials, especially energy.

Russia has cut back on energy supplies to the CIS states, preferring the greater ability to pay and the higher prices paid by states outside of the former Soviet Union - a policy which the government has said will continue in 1994 and which is likely to cause problems for the weaker CIS members.

The structure of the **Ukrainian foreign trade** is dominated by the exports of raw materials and some consumer goods (87 % in 1992 compared to 79 % in 1991), some types of machinery and equipment (10 % compared to 12 % in 1991) and imports of oil and gas, non-ferrous metals, timber and chemical products, finished and semi-finished engineering goods, and consumer goods.

In recent years Ukraine imported 92 % of its oil, 78 % of gas, 49 % of wool, 77 % of paper and almost all medicines from Russia. In 1987 53.9 % of Ukraine total (foreign and inter-republican) exports went to Russia (other estimation is 60.7 %: Whitlock *Op. cit.*), and 21.5 % of Russia's total exports went to Ukraine. Concerning the inter-republican trade, in 1991 Ukraine was a net exporter of electric power, hard coal and coke, iron and steel-products, machinery and equipment (mostly to the Russian market) and it is well known that it had a disproportionate share of the former Soviet armament industry. Meanwhile, Ukraine was a net importer of crude oil, heavy fuel oil and natural gas. In consumer goods Ukraine was a significant net supplier of milk and dairy products, eggs, vegetable oil and sugar. In the case of non-food consumer goods, Ukraine was mostly a net importer of these goods (*PlanEcon* 1992, 8, Nos. 35-36) However, even at the old skewed internal prices, in 1990 Ukraine had a trade deficit with the republics and with the rest of the world (Helen Boss *Ukraine* in *Russia, Ukraine, Kazakhstan: 1992 Debt Outlook and Prospects*, WIIW, Vienna 1992).

In 1992, the oil and gas bill accounted for 13 % of Ukrainian GDP, three times the 1991 level. The changes in relative prices, coupled with the collapse of investment demand, led to a striking shift in the composition of trade. The share of raw materials increased sharply with corresponding decline in the share of capital goods (*IMF Economic Review. Ukraine*, 1993, No.10) On the export side, the share of ferrous metallurgy in total earnings from the former Soviet Union (where Ukraine contributed to 64 % of Soviet exports of pig iron and 37 % of rolled metal) doubled to 30 % from 14

% the year before, while the share of machine building approximately halved to 24% from 42 %. Similarly, on the import side, the share of energy products jumped to 46 % from 15 % in 1991, while that of machine building fell to 12 % from 31 %. Also noticeable was a large decline in consumer goods trade, as products from the CIS region were displaced by goods from the rest of the world.

The direction of trade also changed substantially during 1992. Whereas in 1991 trade inside the USSR had accounted for four fifths of all trade, in 1992 more than half of the total was directed toward countries outside the former Soviet Union. Within the former Soviet Union, the share of Russia increased to over two thirds, compared with about one half in 1991, largely as a result of the substantial increase in energy prices.

The 1992 analysis of *PlanEcon* states that for what Ukraine chiefly needs to import (primarily oil, natural gas) it has no choice of the supplier in the short run -- Russia -- and even in the longer run its choices are severely limited. On the other hand, for what Ukraine has to offer for sale -- grain, food (especially sugar), coal, iron ore, steel, low quality, technologically obsolete machinery incompetitive on the world market -- the market is either very limited (steel, machinery and equipment) or highly competitive (coal, grain and food) (*PlanEcon*, 1992, No.35-36).

In 1993 Russia accounted to 77.8 % of the Ukrainian trade turnover with the USSR-successor states (krb 26708 bn of krb 34343 bn in January-October 1993) -- with 75.8 % of exports (krb 8511 bn) and 78.7 % of imports (krb 18197 bn) -- and to 81.5 % of its trade deficit (krb 9686 bn).(data of Ministry of Statistics of Ukraine, *Uriadovyj Kurjer*, 1 January 1994). The structure of Ukrainian exports has worsened during 1993 because of the growing share of raw materials and commodities with a low degree of processing -- 56 % by the end of 1993 comparing to 42 % in the second quarter of 1993. However, the structure of imports had changed for the better, with the share of energy resources fallen from 83 % in second quarter to slightly over 50 % by the end of the year. There was an evident and gradual drop in Russia's share of Ukrainian imports, while Russia continues to receive over 74 % of all Ukraine's exported products designed for manufacturing and technological purposes. This is explained by the relevant division of labour and siting of production facilities. During the first quarter of 1993 Ukrainian exports of manufacturing and technological products covered only 32 % of exports from Russia, rising then steadily to 62 % by the end of 1993 (Lidia Kuznetsova 'The Balance is Bad -- But Not Getting Worse', *Ukrainian Business Journal*, 1994, No.2).

In the first half of 1994 Russian share in the Ukrainian trade turnover was $1400m in exports (or 67.5 % of that to CIS states and 38.2 % of total exports) and $2160m in imports (or 72.7 % of that from CIS states and 58.1 % of total imports), while in 1993 it was 74 % and 71 % respective shares of trade with CIS states (*Finansovaja Ukraina*, 3 August 1994). Imported energy resources, mainly from Russia (almost half of all imports, including natural gas (39 %) and crude oil (9 %)) were responsible for the overall trade deficit of $464 m in January-September 1994. Machinery and equipment made up 19 % of total imports. The Ukrainian total exports were dominated by the products of metallurgy (36 %), especially non-ferrous (28 %), iron ore and other mineral resources (13.2 %) and machinery (13 %), with relatively low share of agricultural goods (5.5 %) (*IntelNews* 18 December 1994).

After three years of post-Soviet era, Russia and Ukraine are still mutually important trade partners and this situation is likely to continue in future.

Inter-Republican Payments System in 1992-1994

The difficult transformation of the Ukrainian-Russian trade from the intra-national to the international was aggravated by the problems with payment system as the single currency area started to collapse after the break-up of the USSR. In 1992 all the central banks of the successor-states started their experiments with *de jure* single currency (Soviet ruble). As a result, on the territory of former USSR 15 'national' rubles had emerged *de facto*, being emitted by 15 central banks. The economic disintegration of the former single economic area pushed the republics to the sort of bilateral clearing trade relations alike existing in the COMECON. This system, designed for the command economies, started making failures under the transition to the market relations. The outcome was wide-spreading barter trade, payment arrears up to many months, accumulation of trade deficit of the republics with Russia.

During 1992, nonbarter interstate trade was settled in rubles, with the exception of some trade through commodity exchanges, which was transacted in convertible currencies. On 1 January 1992 countries of the former Soviet Union officially adopted a new system of channelling all ruble transfers trough a system of central bank correspondent accounts, following the example of Russia.

When at the end of 1991 Russia had terminated the old interbranch (MFO) settlement system on its territory and replaced it with a network of correspondent accounts channelled through the regional cleaning centres of the Central Bank of Russia (the CBR), that was the major factor in the emergence of huge inter-enterprise arrears during the first few months of 1992. The old MFO system generated 'automatic crediting', which was not appropriate for a decentralised market economy, and this system was viewed by the Russian authorities as obsolete. Under the new arrangements, payment orders did not reach the bank of the payee until they had passed through the regional clearing centres, a process that could take weeks for interstate transactions. In addition, infrastructure for such system change was inappropriate. Ukraine claimed to have been particularly badly hit by this sudden change: as a large country, it had more bank branches and clearing centres, and hence many more accounting links to disentangle and remake.

Tightening of monetary conditions throughout the former USSR also contributed to the emergence of growing payments arrears. The deliberate easing of monetary control in both Russia and Ukraine during the second quarter of 1992 achieved little but growing tensions between the two countries, as Russia pointed to Ukraine's rising deficit on its correspondent account at the CBR.

The system was modified on 1 July 1992, and new corresponding accounts with other states of ex-USSR were introduced, incorporating limits of the amount of overdrafts that could be incurred. These measures created a new bottleneck in the payment system. Matters came to a head at the end of September, when the CBR declared that Ukraine's overdraft limit would be raised no further, leaving Ukraine little choice but to take the final step towards an independent currency, and that step had been done in November 1992. In 1993-1994 all other CIS states had introduced their own currencies (the Baltic states were ahead in 1992).

The payments system was changed again on 1 January 1993. A new correspondent account with the Central Bank of Russia was established, with a technical credit (effectively an overdraft ceiling) of R250 bn. However, this correspondent account was used only for importing certain priority goods, such as oil and gas, under

inter-governmental agreements. All other interstate payments are henceforth to be conducted through the correspondent accounts of commercial banks.

By the beginning of 1993 there was a move back toward decentralised payments arrangements. Ukraine and Russia agreed that their commercial banks could establish correspondent account relationships with each other, and in March 1993 the National Bank of Ukraine issued instructions that *all* payments between the two countries, other than government-to-government payments, would have to be made through such accounts and not through the central banks. The network of interbank correspondent accounts had since been expanding, albeit at a slower pace than the authorities had hoped (*IMF Economic Review*, 1993, No.10).

In 1994 the attempts of the CIS states to create a reliable payments union were blink. The mechanism of mutual convertibility of their currencies remained the main problem. The most logical solution to it seemed an organisation of regular auctions of these currencies on -- most realistically -- MICE. However, the MICE management was determined to deal only with Ukrainian, Belarusian and Kazakhstani currencies. The Interstate Bank of CIS was created following the initiative of the national central banks with task of fine tuning of exchange rates according to countries' balances of payments. However, it never started its operations. (*Commersant Weekly*, 1994, No.16). Even by the end of 1994 the CIS Custom and Payments Union is still a matter for future considerations.

The Ukrainian Ministry of Statistics gives data on how the Ukrainian trade operations were paid in the beginning of 1994 (*Finansovaja Ukraina,* 3 August 1994).

Table 1. Distribution of the Ukrainian Foreign Trade operations by the Types of Payments in January-May 1994.

Type of payments	Exports, $m	Exports, %	Imports, $ m	Imports, %
Karbovantsi payments: total	176	4.8	61	1.6
ex-USSR	121	3.3	53	1.4
other states	55	1.5	8	0.2
Hard currenc payments: total	1360	37.1	2276	61.2
ex-USSR	358	9.8	1665	44.8
other states	1002	27.5	611	16.4
Barter trade: total	1519	41.5	844	22.7
ex-USSR	1063	29.0	618	16.6
other states	456	12.5	226	6.1
Other types o payments: total	609	16.6	538	14.5
ex-USSR	533	14.5	488	13.1
other states	76	2.1	50	1.4

It is safe to assume that roughly 75 % of $121m, or $90m of trade turnover with the republics of the former Soviet Union in January-May 1994 paid in the Ukrainian karbovantsi is that with Russia. The payments in Russian rubles have to be included under the *Other types of payments* entry. Making the same assumption, we get up to $400m of trade turnover with Russia paid in Russian rubles. These figures show the size of market for Russian rubles in Ukraine and Ukrainian karbovantsi in Russia and so give the yardstick to measure the importance of problem discussed in this paper.

III. Structure, Participants and Regulations of the Foreign Exchange Markets

Ukrainian Market

The framework for foreign exchange regulations in Ukraine was set forth by the following decrees of the Cabinet of Ministries dated 19 February 1993: *On the System of Foreign Exchange Regulation and Foreign Exchange Controls, On the Rules of Settlements in Foreign Currencies, On the Provisional Rules for the Disposal of Foreign Exchange Revenues* (All Ukrainian legal documents of 1993-first half of 1994 cited in this paper are translated from the source: *Zakonodatel'nyje Akty Ukrainy po Vneshneekonomicheskoj Dejatel'nosti I Inostrannym Investicyjam. Valiutnoje Regulirovanije*. Ekobud, Kiev 1994). These regulations were fully effective for a relatively brief period of 1993, and the authorities then introduced various restrictions on their use (as it is discussed later), but the restrictions were considered as temporary (at least that was the excuse when the authorities introduced them) and the Ukrainian foreign exchange market is still developing in the direction provided by this set of legislation.

These decrees were effective as of March 9 1993. According to them, Ukrainian karbovanets is the only legal tender on the territory of Ukraine. Special restrictions are applied to foreign currency operations. Residents and non-residents must acquire individual licenses for conducting currency operations; further restrictions exist regarding investment abroad, deposits in foreign banks etc.

The most notable requirement is that all residents have to sell half of their foreign currency earnings to a licensed bank, and may keep other 50 % for their own disposal. The 50 % conversion is considered as a temporary measure, introduced until the karbovanets is stabilised. Importantly, the decrees are careful not to tread on the rights granted to foreign investors; forcible conversion does not apply to physical persons neither if the currency was obtained from sources other than business activity.

All residents are required to carry out currency operations through a Ukrainian bank licensed to perform such operations; they may purchase foreign currency from such banks for a specific business purpose which must be declared at the time of purchase, and the currency must be used for the declared purpose within five banking days. the sale of a resident's currency is similar in procedure. Non-residents have the right to purchase foreign currency mainly for the repatriation of their revenue obtained in connection with their investment in Ukraine.

In March 1993 the NBU issued an instruction *On the Procedure of Setting and Using of Exchange Rate of the Ukrainian Karbovanets*, where the following exchange rates were envisaged: (i) the official exchange rate set by NBU and to be used by all entities for current account transactions, accounting and reporting purposes; (ii) the buyer/seller rate of the NBU to be used by the NBU alone for foreign exchange transactions outside the interbank foreign exchange market; (iii) exchange rates set by commercial banks for current account transactions within a 2.5 % band around the official exchange rate (later this peg of the commercial banks rate to the official one was abolished); (iv) a special exchange rate that could be separately set by the NBU for capital transactions, with (i)-(iii) rates to be exclusively used for all types of current

account transactions (foreign trade and short-term credit payments, transfers of interest payments on loans and profits from foreign investment, etc.)

Another NBU instruction of that period, namely *Rules of Operations Conducting on the Interbank Foreign Exchange Market* envisaged that the only legal participants of that market are: the NBU, the commercial banks licensed by the NBU for conducting operations with foreign currency, other licensed resident financial institutions (insurance companies, investment funds etc.), legal entities that have agent contracts with licensed banks for opening the currency exchange offices, non-resident financial intermediaries individually licensed by the NBU, and also currency exchanges or currency departments of stock and commodity exchanges that obtained the NBU license for trade in foreign currency.

The Kiev Currency Exchange (then the Ukrainian Interbank Currency Exchange -- UICE) was established by 40 founder banks. At the beginning it was not independent from the NBU, even if the decree about its independent status was worked out as early as in April 1993, and was re-registered as an independent currency exchange in July 1993. The UICE experienced steady growth of volumes of sales in the second quarter of 1993 because of lifting of restrictions for exporters that stimulated their foreign currency export earnings, and because of the obligatory 50 % sell of those earnings on the UICE. At the same time the NBU had set new reserve requirements for the commercial banks at 25 %, so some banks had to sell their foreign currency to build up karbovantsi reserves.

The members of the UICE could buy foreign currency for their clients only, for specified purposes. The banks were able to buy foreign currency for themselves by the individual permission of the NBU only.

The commercial banks that had the general foreign currency license of the NBU were allowed to open their own currency exchange offices to deal with foreign currency in cash. The general licence also allows opening of the accounts in foreign currency, non-trade operations (trade in foreign cash, travellers cheques and credit cards servicing, selling of foreign currency to the legal entities for financing business trips etc.), operations with the correspondent accounts in foreign banks, participation in the currency auctions of the NBU, opening of the deposit accounts and issuing loans in foreign currency.

In July 1994 the NBU set new regulations on issuing the licenses for foreign exchange operation. More than ECU 3m authorised fund is required now for the commercial banks to receive general license for foreign currency operations. More than krb 10 bn authorised fund required for licensed operations with currencies of the CIS states and for operations with hard currencies through the correspondent accounts in the Ukrainian banks with general license. The commercial banks with the authorised funds krb 5 bn to 10 bn could receive the NBU license for operations with currencies of the CIS states. Table 2 presents a list of the top Ukrainian banks that were eligible for the general license on 1 July 1994 (they were also the main participants of the foreign exchange market in 1993; however, this list does not include all of the participants).

In 1993 the operations with US dollars, German marks and Russian rubles were almost equally popular among the banks. By the end of 1994, dollar operations prevail. There is a regional pattern for the operations with the currencies of former Soviet republics and COMECON countries. Eastern banks deal with Kazakhstani tenge and Uzbekistani soms, Western ones -- with Moldovan lei, Czech crowns, Polish zlotys, the banks of the Central Ukraine are either not involved at all in such operations, or restrict themselves to the Belarusian rubles.

Table 2. The Participants of the Ukrainian Foreign Exchange Market.

Bank	Location	Total assets, krb bn *	Authorised fund, krb bn *
Prominvestbank	Kiev		
Ukraina	Kiev	161,814.491	596.828
Ukrsocbank	Kiev	75,140.320	147.129
INKO	Kiev	7,786.279	51.114
Vidrodzhennia	Kiev	4,020.003	68.293
Pryvatbank	Dnipropetrovsk	3,708.062	25.045
Ukrinbank	Kiev	3,538.352	44.300
Brokbiznesbank	Kiev		
1st Ukrtainian International Bank	Donetsk		
Gradobank	Kiev	2,175.243	68.841
Aval	Kiev	1,417.585	24.440
Ekonombank	Kiev	1,360.465	13.448
Krym-Bank	Simferopol		53.560
UkrKredytBank	Kiev	1,097.405	10.000

*On July 1, 1994

The banks open the correspondent accounts in other countries, having different strategies. Some (*Praveks-Bank* (Kiev), *Ukrinbank* -- are equally oriented on the CIS and the Western financial markets). Ukraina (in partnership with the German *Commerzbank*) hopes to participate in the international capital markets. *AZhIO* (Kiev) is orienting more on the integration into the financial system of the CIS, being a member of four systems of quick electronic payments. So does *Pryvatbank* from Dnipropetrovsk, probably the leading Ukrainian bank for ties with the CIS states. This bank (one of *top ten* and the 'First and Biggest Private Bank in Ukraine', as it usually advertises itself) has been taking an active part in various attempts of the commercial banks of the former Soviet Union to create a reliable payments system among them, so that payments between Russia and Ukraine now take three bank days as a maximum. The latest report (*Dilo*, 5 December 1994)about these activities was that *Pryvatbank* plans to form an interstate bank consortium with the Russian *Moskomprivatbank* and the Belarusian *Exchange Bank* at the market of soft currencies. At present these banks are establishing single quotations for the US dollars, Ukrainian karbovantsi, Russian and Belarusian rubles and Kazakhstani tenge. In the future they will do the same with currencies of other CIS states.

The cash market is influenced also by different financial firms that opened their own exchange offices, like *Dendy Ltd* or *Mercury* that dominate the cash market in Kiev and some other cities.

Russian Market

Participants of the market

At the beginning of the development of the market for the 'soft' currencies the main participants of it were financial companies *Dialog-Optim*, *Brok-Invest-Servis, Krug, Inkorp*. In the end of 1993 the priority moved to banks. Financial companies may suggest about 5 kinds of 'soft' currencies, although banks can suggest more 'exotic' kinds of operations (forward contracts, etc.).

TABLE 3. Participants of the market for karbovantsi in Moscow

Name of bank or financial company	Non-cash operations	Cash operations	Forward operations
BANKS			
1. *Rossijsky Credit*	+	+	+
2. *Aeroflot*	+	+	+
3. *Neftianoy*	+	+	+
4. *Menatep*	+	+	
5. *Kredit-Moskva*	+	+	
6. *Mezhdunarodny Moskovsky bank*	+		
7. *Tveruneiversalbank*	+		
8. *Toribank*	+		
9. *Alfa-bank*	+		+
10. *Germes-center*	+		
11. *Olimpijsky*	+		
12. *Moskomprivatbank*	+		
13.*Tokobank*	+		
14.*Vneshtorgbank*	+		
15. *Inkombank*	+	+	
16. *Neftehimbank*	+	+	
17. *Mesheconomsberbank*	+		
18. *Kuzbassocbank*	+		+
19. *Bitza-bank*	+		
20. *Stolichny*	+	+	
21. *Imperial*	+		
FINANCIAL COMPANIES			
1.*Brokinvestservice*	+		
2.*Dialog-Optim*	+		
3.*Krug*	+		
4. *Inkorp*	+		

In July 1994 35 Moscow banks had the CBR license for opening corespondent accounts in Ukrainian banks. The most active participants of the market (banks and financial companies) are included in Table 3. Banks *Rostrabank, Rusich* and *Russky slavyansky* (not included into the table) received the CBR license in July. *Rybhozbank,*

Delovaya Rossiya, Orbita participated in 1993. These banks probably do not conduct the operations with karbovanets at present and they are not included as well.

The competition between banks is going in different forms. Some of them are trying to offer their clients the whole range of currencies of the former Soviet republics. Nevertheless, the most popular soft currencies were karbovantsi, then Kazakhstani tenge, then Belarusian rubles. A lot of banks could not expand operations in currencies different from above because of lack of demand. Banks' dealers estimated that 70% of the operations with 'soft' currencies were conducted with Ukrainian currency which was of highest demand (*Finansovye Izvestia,* April 1994).

The other banks tried to introduce new operations, apart from non-cash ones. They are: cash operations, forward contracts. Banks offering these activities are given in Table 3. In September 1994 Bank *Rossijsky Credit* introduced new operations: payments in karbovantsi using accreditive. It is expected to provide additional guarantees for the payments.

Since Summer 1994 more and more participants of the Moscow market started to trade in Ukraine as well. One of the directions was the creating of subsidiaries (*Tveruniversalbank, National credit, Dialog-Optim*). Commission rates are about 0.5-1.5%, interstate payments take 1-3 days.

The role of the Central Bank of Russia

The CBR does not take part in trade sessions on karbovanets. This circumstance lead to more opportunities for speculations in the market. Official exchange rate is set twice a week based on the results of the MICE sessions on particular days of trade. As far as the CBR does not interfere into the operations with 'soft' currencies, ruble-to-karbovanets exchange rate in Moscow is more representative than the Ukrainian rates (apart from the exchange rates set by commercial banks).

The official exchange rate of ruble-to-karbovanets is set twice a week, on Wednesdays and Fridays, according to the results of the latest MICE trade sessions. Even though the trade sessions are held every day since March 1994, the CBR kept the old order of setting the rate. Thus, the official exchange rate is smoothed in comparison with the MICE exchange rate, however this is not very important when the exchange rates are taken on weekly or monthly basis.

In August 1994 it was suggested to introduce a new methodology of setting the official exchange rate. The suggested scheme included setting the official rates of three 'soft' currencies for every month, calculated as weighted average of the MICE trade results for a previous month.

The main aim of the suggested methodology is to make the exchange rates more representative. However, this particular scheme hardly can increase the interest of the banks to the operations at the currency exchange. It is not clear if such exchange rates would be representative. When a currency is traded on daily basis, the exchange rates deviate from the weekly average figures significantly.

However, the CBR can influence the market more. The big market dealers suggest to change the system of accounting, for instance, to introduce special types of accounts for 'soft' currencies. This would allow to give up the restrictions on open position limit for these currencies. At present operations with 'soft' currencies are included when the open position in foreign currencies is calculated. This leads to

included when the open position in foreign currencies is calculated. This leads to decrease of banks' interest to 'soft' currencies which are more risky assets, than fully convertible or 'hard' currencies.

The other suggestion is more active participation of the CBR in MICE trade sessions, including fake contracts in order to increase trade volumes. They are still low and this prevent banks from participating in the MICE sessions.

MICE trading

New opportunities given by introducing at the MICE karbovantsi trading were as follows.

- It was possible to make payments to Ukraine much faster.
- Russian enterprises were given real possibility for buying karbovantsi.
- Arbitrage possibilities were foreseen. In April 1993 the market rate of Ukrainian currency in Russia had been estimated as 4 krb/R, at the same time it had been about 2.8 - 3 krb/R at UICE.

The MICE exchange rate does not reflect the equilibrium of the foreign exchange market, i.e. ruble is overvalued or undervalued in comparison with the exchange rate at the interbank market. This seems to result from 'thinness' of the market - any of the 10 participants can make the weather. Volumes of trade are small. 100-150 millions of rubles is enough to 'do' the exchange rate, taking into account the average trade volumes (for instance, in May 1994 average daily volumes of trade were about 110 million rubles). The problem could have been solved if Ukrainian banks were allowed to take part in the MICE trading.

Not all of banks-members of MICE participate in the trade sessions. On the other hand, sometimes a bank operates at the non-exchange market, and later joins the MICE. For instance, in June 1994 the Moscow bank 'Neftyanoy' became a new member. This bank already was one of the ten leaders in the 'soft' currencies trade sector.

All 'soft' currencies traded at the MICE are good for speculation. The general tendency for depreciation of these currencies leaves space for relatively high volatility. The position of the banks and their clients, who are looking mostly at the MICE exchange rates seem to be worse than those banks which prefer to set the buy and sell rates themselves at the market-average levels. For instance, 'TORIbank' and 'Tveruniversalbank' base their rates on the MICE indicators. This makes life easier for their clients, who are supposed to know the MICE exchange rate and the bank's commission. However this can lead to significant difference in the particular bank's rates and non-exchange rates.

At present the speculation operations with 'soft' currencies are done not between bank dealers but mostly between dealers and their clients. The trade volumes on MICE are low enough to set the exchange rate at a level desired by a particular bank by extending demand or supply of currency. This exchange rate becomes the basis for negotiations with clients, who are looking at MICE rates more than at market average non-exchange rates which are usually closer to the reality.

Other currency exchanges

Apart from MICE several Russian currency exchanges tried to start trading in karbovantsi. The very first attempt had been made by the Ural Regional Currency Exchange in April 1993. One million karbovantsi was sold at the rate of 4.2 krb/R (official CBR rate - 4.55 krb/R). They never tried to restart trading this currency. On May 8, 1993, at the Siberian Interbank Currency Exchange 40 million of karbovantsi was sold at the rate 4.0 krb/R. On June 30, 1993 Rostov Interbank Currency introduced four new currency in their trading, including the karbovanets. However, these trade sessions could not become regular due to the lack both of demand and supply.

The Rostov ICE continued these attempts in 1994. They conducted several trade sessions on karbovanets in February 94. 1.7 billion - trade volume. exchange rate 16.67 -17.5 krb/R (official CBR rate was 20 krb/R). The Siberian ICE conducted a trade session on Ukrainian currency in May, 40 million krb had been sold and the exchange rate was set at 25 krb/R.

Later there was a long pause in karbovantsi trading at both exchanges. Most of their members were not interested in further trading. At the beginning of July 1994 Siberian ICE conducted a trade session on karbovanets once again. The exchange rate (21.37 krb/R) was very close to the MICE one. Volume of trade was close to that on the MICE. Rostov ICE conducted a session on karbovanets on July 7 and fixed the exchange rate at 20.5 krb/R.

Non-regular trade sessions at regional exchanges do not meet the interests of banks, which clients desire to make payments in karbovantsi. These banks move their 'soft' currencies operations to Moscow market. For instance, on June 22nd two Siberian banks became new members of MICE. Sibirsky Torgovy Bank (Novosibirsk) and Omskpromstrojbank (Omsk) were going to participate in 'soft' currencies trade sessions only. These Siberian banks had some experience in 'soft 'currencies trading, they tried several times to start this kind of trade at Siberian Interbank Currency Exchange . Being not supported by local colleagues they switched to the Moscow market where trade sessions are regular.

Non-exchange interbank market

The main feature of the interbank non-exchange market (direct trading between banks) is that this market is much bigger than the interbank currency exchange market. It is rare case when more than ten banks take part in the MICE trade sessions. Banks' dealers tell that MICE trade is based only on small clients' bids (110-150 million karbovantsi approximately - *Finansovye Izvestia,* April 1994). This clients are satisfied with the MICE exchange rate. i.e. overvalued karbovanets. Respectable clients' bids are fulfilled by the bank itself or by the transaction in the non-exchange market. Moreover, the Moscow government introduced a tax on exchange operations (0.01% of amount of every transaction at the currency exchange). This does the MICE operations less attractive.

The most important problems for banks are to find reliable partners, establishing a network of correspondents and solving of technical questions. The risky transactions in this market can be very profitable.

Cash market

Unlike the non-cash market the cash trading in 'soft' currencies is developing slower that it is desired by the banks' clients. This sector is less profitable for banks than non-cash operations. One of the main problems of commercial banks is the absence of permanent flow of karbovantsi in cash to Moscow. The NBU abandoned the Russian banks to use their corespondent accounts in Ukrainian banks in order to withdraw karbovantsi in cash and transfer them to Russia. The only sources of cash are small and average sums of karbovantsi brought to Moscow by private currency speculators.

The demand for operations in cash is stable, however the volumes are not high. The instability of the situation in the Ukrainian market, the low level of protection from forgery is preventing from participating in the operations with karbovantsi. The general non-balance between supply and demand for karbovantsi in Russia is significant and remains for a long time. Even though supply exceeds demand, the CBR does not allow to conduct the operations in one direction. This results in accumulating of large amounts of karbovantsi in currency exchange offices.

The opposite situation is also quite possible. Deficit of karbovantsi in Moscow currency exchange offices could be explained by the seasonal factor - period of vocations. Apart from that the 'sell' exchange rates for cash in Moscow were higher than in Ukraine (22.7 krb/R in Moscow while the average 'sell' rate in Ukraine was 20.5 krb/R). On the other hand the 'buy' rate in Moscow sometimes could be very low - 1.5 R/krb and in Ukraine it was 4.7 R/krb. The above caused the non-balance of supply and demand and provoked the deficit of karbovantsi.

Forward market

It is well known that forward market with high liquidity could be formed if there already exists developed spot-market of the currency. Therefore it is not surprising that 'soft' currencies already traded on MICE have been first to be tried for trading in forward contracts involving currencies of former Soviet republics. Operations with karbovantsi are at the first place according to trade volumes.

Banks 'Rossijskij credit' and 'Aeroflot' were the firs ones to offer forward contracts to their clients in order to hedge their future payments to and from Ukraine, Belarus and Kazakhstan. As the interest rates have been falling in Russia, the financial structures were more interested in the money markets of other republics, i.e. in cross-deposit and cross-credit operations. These operations require hedging of future payments.

A lot of banks and companies tried to negotiate such contracts but only some of them have been successful in signing a few. The average weekly trade volume of this type of contracts is highly volatile: in 'Aeroflot' bank it could be $1 million in dollar equivalent or zero, on average the weekly trade volume does not exceed $250 thousand. This can be explained partly by the fact that half of the bids for buying 'soft' currencies is provided by the banks' clients. To compare with, the part of clients' bids in dollar forwards is not more than 30%. As a rule, the banks are in a better position than their clients. For instance, a condition of buying a forward for buying or selling a 'soft' currency from a bank is putting an guarantee deposit into this bank. This circumstance prevent a lot of clients from these operations. Taking the above into consideration, some banks intend to cut the size of the guarantee deposit which sometimes can reach

10% of the contract value. Bank 'Aeroflot' was going to establish flexible rates for the size of guarantee deposit depending on the credibility and reputation of a client.

The interest for contracts of this type increased significantly in September when the karbovanets was no more stable. A lot of effective speculative opportunities arose that time and a lot of banks dealing with karbovanets offered hedging by forwards. However, none of Ukrainian banks has been interested in forward contracts with their currency.

Selected forward rates for Moscow are presented in the table below.

Table 4. Forward rates in Moscow banks, April-July 1994

Date	Type of contract	Spot rate krb/R	Forward rate *buy/sell*	Spot rate at t end of contract
15/04/94	one month	21.74	41	23.26
15/05/94	one month	23.26	24	22.57
12/07/94	one month	20.45	22.7 / 20.7	21.51

IV. Development of the Foreign Exchange Markets in 1993-1994

Ukrainian Market

The history of the foreign exchange market in independent Ukraine has few distinctive stages, with different legal regulations both of the foreign exchange and foreign trade operations, different policies pursued by the Ukrainian authorities and different framework of the national economy.

January 1992 - March 1993

For most of 1992, Ukraine was officially part of the ruble area, with foreign exchange rates being adjusted weekly on the basis of the Moscow Interbank Currency Exchange (MICE) rate. At the same time, Ukraine maintained a restrictive and complex set of exchange and trade regulations: the presidential foreign exchange decree of 5 February 1992 imposed repatriation requirements on all exporters and an export tax payable in foreign currency, 40 % on average. Enforcement of these rules were relatively ineffective. High level of taxation, differences between official and parallel rates (until July 1992) and unremunerative domestic interest rates discouraged enterprises from repatriating foreign exchange, especially through official channels and resulted in growing barter trade with the former Soviet Union and the rest of the world.

At this stage the first signs of market for the Russian rubles as foreign currency appeared in January 1992, when Ukraine took the first step towards withdrawing from the ruble area with the introduction of the multi-use coupon, that was intended to inhibit the access of nonresidents to Ukrainian state stirs (with the aim of protecting supply of goods), as well as to relieve the currency shortage so evident during the last months of 1991. By mid-1992 coupon had become a genuine surrogate currency. Although coupons could not initially be purchased by rubles, a black market quickly emerged, with a brief period of exchange rate of 10-15 rubles for coupon, as coupons were scarce initially and of great demand. As the supply of coupons increased, this rate gradually approached parity (which was the official accounting rate) and then remained there through spring and early summer. During June 1992, the NBU authorised the opening of exchange bureaus through which rubles and coupons could be freely exchanged at 1:1 rate. By this time, however, there were signs that the very rapid expansion in coupon issue was beginning to depress the coupon's value, even relative to the weakening ruble, and the black market rate of coupons fall to 1.3-1.4 coupons for one ruble. That was a reflection of different monetary policies in Russia and Ukraine.

As the issuance of domestic coupons by Ukraine accelerated, however, the integration of the foreign exchange markets proved increasingly difficult to maintain. Since 15 June 1992 foreign agents were not allowed to obtain foreign exchange in the MICE, and on 22 September 1992 the National Bank of Ukraine began its own weekly US dollar auctions, which henceforth served to determine the rate for transactions in the banking system. The authorities continued to set an official exchange rates based on the MICE rate, or (in principle) on the local auction rate when it appreciated more than the one in Moscow, but this rate was hardly even used.

Meanwhile, Ukrainian bank deposits continued to be denominated in rubles. The stated rationale was that Ukrainian enterprises had to trade with their counterparts in other states of the former Soviet Union, and for this they needed ruble bank balances.

However, the ruble payment system was itself falling victim to the break-up of the USSR (see chapter on **Payments**). The final step towards an independent Ukrainian currency had been made between November 12 and 16, 1992. All ruble bank deposits in Ukraine were converted to *karbovantsi* at a 1:1 rate. (Coupons had always been denominated in *karbovantsi,* which is simply the Ukrainian word for ruble; thus, coupon notes remained in circulation and became the sole legal tender). Shortly after conversion, the new currency was devalued against the Russian ruble to a rate 1.45:1, and by the end of December 1992 the karbovanets had been allowed to depreciate to 1.54 per ruble (*IMF Economic Review*, 1993, No.10).

From November 1992, official exchange rates for the karbovanets were established by the NBU against the Russian ruble and the US dollar, and separate banking system rates were determined in interbank markets. In particular, the banking rate against the dollar continued to be established in weekly NBU auctions. The official ruble was set essentially on the basis of the average interbank rate, and the official rate was then multiplied by the MICE ruble-dollar rate to obtain the rate against the US dollar. There were significant divergences between the official and banking rates, and even larger spreads between these rates and rates in the parallel 'black' market. One reason was that even though the exchange rate in the auction was determined by competitive bidding, only six banks were permitted to participate, and bids were subject to preselection before they were submitted.

At the beginning only the US dollar auctions were held by the NBU. The first auction where non-cash Russian rubles were sold as a foreign currency was held by NBU on January 11, 1993. The exchange rate was set 2.8 krb/R (the official exchange rate had been 1.53 krb/R). Three banks took part in the auction, The initial demand was 13 billion rubles, the initial supply 10 billion rubles, the latter equals the whole trade volume. However, no regular trade was established. As a result, the karbovanets was held officially on the fixed (overvalued) level to rouble and the undervalued rate to dollar . The main aims of this policy were as follows: to make easier the change of orientation of Ukrainian economic and political priorities to the West; to create the basis for the relatively cheap imports from Russia and therefore control the growth of domestic inflation; to stimulate the dollar flow from Russia based on the artificially overvalued karbovanets with respect to dollar. The growing Ukrainian debt to Russia forced the National Bank of Ukraine (NBU) to correct their policy.

The decline in the dollar value of the karbovanets outpaced that in the dollar value of the ruble in the Moscow market, forcing the NBU progressively to raise its official karbovanets-ruble exchange rate. This rate, having been set at 1.45 karbovantsi per ruble immediately following withdrawal from the ruble area, reached 2.8 by end-March 1993. As official exchange rate depreciated by 38 % on March 30, the response of black market, relatively stable in the beginning of 1993, was 50 % jump to 3.6 krb/R -- that seemed as overreaction and the rate fell back in few days to 3.2 krb/R.

Market Liberalisation: March 1993 to August 1993

From the second to the third quarter of 1993 careful liberalisation of the foreign exchange operations took place following the adoption of a new foreign exchange decree in March 1993 that called for the unification and liberalisation of the foreign exchange markets (see above). On 16 March the weekly US dollar auction was expanded to 40 banks; a new 50 % surrender requirement (which actually represented a

reduction from the 100 % surrender previously required) was applied for the first time; and turnover increased almost tenfold from $2-3 million to $25 million. On April 13 a weekly auction of German mark was introduced. The resulting auction rates, together with rates for other convertible currencies that are established by the NBU on the basis of cross-rates in the London foreign exchange market, were applied each Friday for all transactions during the following week. The differential between official rates and auction rates had thus been eliminated.

The exchange rate non-cash karbovanets to cash US dollar was pretty stable from mid-January 1993 to April on the level of 3300-3600 krb/$ and was not affected by the fall in auction rate krb/$ of end-March and beginning of April. On the contrary, the cash currency market was in turmoil as the commercial banks had their rates pegged to the falling auction (and official) rate. They were not allowed to buy currency at the cash market clearing rate that was lower than the official 3000 krb/$, and they terminated these operations. The result was shift of the customers to the unofficial exchange market, with growing exchange rate there (but still to the level lower than the official one).

On April 21 a weekly auction of Russian rubles began, and the exchange rate krb/R had jumped to 3.5 krb/R, as demand for rubles on the auction exceeded supply by R1.4 bn, or 107 %. Since 22 April 1993 all the trade in Russian rubles outside the Currency Exchange at the NBU is banned. The weekly auctions have to be held each Wednesday.

Next week, on 28 April 1993 the ruble auction showed 20 % depreciation of the karbovanets, with the official rate being set much higher than the black market one. Total turnover of ruble trade increased by 4.75 times relative to the previous week up to R9.5 bn from R2 bn. However, demand exceeded supply by almost R4 bn, forcing the exchange rate to depreciate. The disparity between the CBR exchange rate for karbovanets (5 krb/R) and the NBU rate (4.25 krb/R) was much lower now. The pattern of ruble behaviour on the April auctions was very much alike that one of the US dollar at the beginning of the month and was a result of large credit emissions by government to agriculture before the sewing campaign in spring.

The ruble auctions attracted the largest number of banks comparative to the dollar and mark auctions because of shortages of rubles on the accounts of the client-enterprises, that were needed for payments to their counterparts in Russia.

Throughout most of May, the auction rate remained stable at 4.34 krb/R as the spread between supply and demand had narrowed significantly (18 % in May, down from average 50 % in April). In June it had narrowed further to 10 %, and the depreciation in June was 10 % only. The official rate over that period was significantly higher than the black market rate. The reason for this was the significant distinction between the cash and non-cash markets, with different supply and demand conditions, so that large-scale arbitrage was neither easy nor costless (*Ukraine in Numbers*, 1993, No.8).

In June 1993 the commercial banks' exchange rates were unpegged from the auction rate; they were allowed to have margin 7 % rather than 2.5 % as before. However, sales of foreign currency to the individuals were restricted on the level of $400 per year. The former decision caused relative stabilisation of the cash exchange market, with the convergence of the black market rates and bank rates.

On June 5 1993 the Ukrainian Cabinet of Ministries had decided to raise state controlled prices. In accordance to this, the NBU implemented a depreciation of

karbovanets. However, there was no adequate jump in the cash exchange market, because despite the price increase there was no proportionate increase in money balances, thus the demand for foreign currency had fallen. This was definitely a temporary phenomenon. The exchange rate was expected to follow the inflation.

The foreign exchange market in Ukraine in summer 1993 was affected by the credit policy of the Ukrainian authorities. The NBU tried to keep its discount rate high and had managed to get some financial stabilisation. However, the new credits to the agricultural and industrial sectors authorised by the parliament, led to the increase in money supply. However, after the NBU started its policy on restrictions of cash turnover, the exchange rate of cash karbovantsi started to rise comparative to the non-cash.

June 1993 was a period of relative stability. Cross-rates of Russian rubles via US$ and DM were equalised with the UICE ruble auction rates. At the beginning of June the cross-rates via US$ were almost 1.5 times higher. Some experts argued that this was a sign of overvalued karbovanets that ultimately led to uncompetitiveness of the Ukrainian exports to Russia.

There was a period of the relative parity of the exchange rates krb/R on the UICE and on the MICE auctions (with that established on the MICE being slightly lower). However, the volume of trade on both these auctions was much less than the trade turnover between the two nations. Partly it was because of the attempts of the government to build up trade barriers to control all the trade flows and correspondingly the flows of export earnings in rubles.

System in Crisis: July-August 1993

During the third quarter of 1993, the exchange rate began to depreciate rather rapidly as a consequence of the government's release of credits to agriculture in spring. The official rate was maintained at its peg to the auction rate, but the rapid depreciation by the end of July forced the government to reverse its policy of pegging the official rate to the floating auction rate. Thus began the governmental policy of controlling the exchange rate administratively.

July 1993 was a period of uncertainty. After quite substantial price increase in June (70 % inflation) the real price of dollar was estimated as about 7000 krb. However, there was no adequate depreciation of the Ukrainian currency (about 4000 krb/$ officially), the commercial banks dollar rate even lower and went down in some banks. At that time the dollar rate in Russia was slowly decreasing almost by 10 % with the beginning of mass privatisation, emerging of the securities markets and consequently with flow of funds to this market from the foreign exchange market. The supply of dollars was high in the UICE, keeping the exchange rate relatively low. Volumes of trade were equal to 20-25 % of that on the MICE. The tendency of the permanent excess demand for foreign currency was disturbing, however.

Already on the auction of July 21 ruble costed 5.61 krb and on July 22, 1993, the dollar auction had been suspended. The NBU had used its right to suspend auctions if the auction rate exceeds the rate of previous auction more than 10 % at the point when the auction rate was 5700 krb/$ (up from 4501 krb/$). In the meantime the Kiev Currency Exchange of the NBU was re-registered as an independent Ukrainian Interbank Currency Exchange, with 42 commercial banks as founders. The former head of the NBU Vadym Hetman had become the first chairman of UICE Committee.

The situation with the Russian ruble was extremely uncertain. With the decline of ruble on the MICE auction and the invalidating of the old ruble banknotes (of 1961-1992 issues) ruble at the cash market had fallen by the end of July to 3.5 krb/R. The non-cash ruble was nevertheless on its upswing, and the ruble auction of the newly established UICE was suspended on 30 July for the '10 per cent' reason, which was explained by the NBU officials as designed to protect buyers of foreign currency from paying excessive price.

All around Ukraine the commercial banks and exchange offices suspended their foreign currency sales, envisaging probable fall of karbovanets. For the same reasons the officials of the Cabinet of Ministries advised the NBU to suspend the currency auctions. The NBU had responded by the desperate attempts to keep the exchange rate constant (pressing some banks to cancel their bids). Despite these efforts on the auction on 1 August, 1993, dollar had jumped to 5760 krb/$, with demand exceeding supply by 200 %.

It was clear that the inflationary pressure of krb 7,200 bn of credit emission authorised by the parliament in June 1993, cheap (30 % annual interest) agricultural credits and general absence of coherent economic reforms is ready to hit the Ukrainian foreign exchange market. As if it were not enough, more than 20 main metallurgy enterprises (the main source of foreign currency earnings) were freed from the 50 % obligatory surrending of their export earnings. Mr Hetman estimated that almost one third of the exporters were subject to such benefits (*Uriadovyj Kurjer*, 16 September 1993).

Crisis and Collapse of Market: August - December 1993

The authorities had two alternative projects of dealing with the crisis. The deputy PM Viktor Pynzenyk proposed to set 100 % level of obligatory selling of enterprises' export earnings through the UICE, thus securing high supply of foreign currency on the market. Another solution was proposed by the deputy PM (and in few months acting PM) Jukhym Zviahilskyj, namely abandoning the flexible exchange rate and fixing the karbovanets exchange rate according to the balance of payments. The arguments were that foreign currency was bought mainly for speculative purposes, free movement of foreign exchange across the borders created agiotage demand with undervalued karbovanets etc. (*Holos Ukrajiny*, 24 May 1994).

The authorities had chosen the latter. This was no surprise, as on July 17, 1993, the NBU had set the official rate for ruble at 4.58 despite the fact that the auction rate was 5.1. Another factor that has to be considered: massive purchases of Russian energy supplies by the Ukrainian enterprises and social sector. Up to that moment, no rubles were bought at the UICE to pay for the Russian energy. With time coming to pay the energy bill to Russia, the Ukrainian authorities had decided to eliminate the factor of *imported inflation.* In general, the new deal of the Ukrainian government was a result of 'importers lobby', with Mr Zviahilskyj as its leader. The official exchange rate was used as a mechanism of redistributing export earnings in favour of selected group of importers. It was imposed on August 9, 1993 by the decision of Ministry of Finance. All enterprises had to surrender 50 % of their hard-currency earnings at the fixed exchange rate of 5970 krb per US dollar and 5.61 krb per Russian ruble. The purpose of this meaning was explained as twofold.

First, it was aimed at building up foreign exchange reserves to fund Ukraine's trade deficit with Russia. Second, given the conditions of hyperinflation then prevailing, the authorities were trying to set a nominal peg for the price system. However, this step was not accompanied by institutional reform or by the tightening of monetary and fiscal policy, and if it was intended to be a first step to stabilisation, it was a failure. As some of the officials were arguing later, the idea was to give a temporary advantage to the state in order to stabilise the situation. However, no adequate stabilising mechanism was created, and the idea had become fruitless. Both the Head of the NBU Viktor Jushchenko and the Chairman of the UICE Committee Vadym Hetman were opposed to the fixed exchange rate regime and favoured flexible rate with 100 % of export earnings of enterprises being surrended for sales on the UICE.

At the beginning of the fixed exchange rate system all the transactions in foreign currency were settled through the biggest Ukrainian bank-- Prominvestbank (former state bank, it is monopolising as much as 60 % of all money turnover in Ukraine, according to the estimation to the chief manager of the biggest Ukrainian commercial bank INKO Petro Miroshnykov). At that time acting PM Zviahilskyj was personally in charge for distributing of foreign currency for the Ukrainian enterprises. Some argue that as the result of his efforts Ukraine did managed to decrease its trade balance deficit with Russia, while others reply that the fixed rate system made more losses for Ukraine because of capital flight. Later the NBU proposed to organise the tender committee on the base of the UICE.

The change in the regulatory policy of the authorities resulted in the direction of foreign currency cross-operations between Russia and Ukraine changed. The sharp rise of the dollar rate in Ukraine in the beginning of July resulted in sharp contraction of the supply of rubles. After the 9 August 1993, it had become profitable to buy hard currency in Russia, buy rubles in Ukraine and then transfer them back to hard currency on the MICE auctions. The supply of rubles had shrinked almost immediately. The volume of trade in rubles in the UICE from 18 August till 15 September was only 29 % of that in June. Moreover, the Ukrainian enterprises continued to hold rubles, in contravention of the 100 % ruble surrender rate set by the government, thus contributing even more to the drop of volumes of ruble trade.

Table 5. Monthly average krb/R exchange rates and volumes of trade on the UICE in the second and third quarters of 1993.

	average rate krb/R	volume of trade, R m
April	3.16	11,557.42
May	4.35	45,454.46
June	4.12	65,772.41
July	5.24	55,795.77
August	10.3	50,779.89
September	15	16,268.72

The September 1993 auctions showed slight appreciation of the karbovanets regarding the US dollar (thus somewhat proving 'unjustness' of 19050 krb/$ rate in August), however even with the supply of dollars exceeding demand, this appreciation was quite modest. The Russian ruble was stable at 15 krb/R, and the NBU through the UICE management was trying to pursuade some banks to recall their bids in order to

establish parity of supply and demand (with success) and to prevent further drop of karbovanets-to-ruble rate. However, the drop of volume of trade on the UICE created instability on the foreign exchange market a dangerous possibility of sudden freefall of the karbovanets. The auctions of the last week of September 1993 terminated this tendency, with both dollar and ruble going up. The hyperinflationary spiral started to gain pace, and in last four months of 1993 the inflation was never less than 50 % monthly, with peaks in September (80 %) and December (90 %).

Fears of capital flight, which is typical in periods of hyperinflation, were probably correct. In consequence of the policies of the Ukrainian authorities and three times difference between the official and market rate of karbovanets, both the exporters and the importers had experienced fall in their outputs. The exporters had no incentive to export their production, because of the effective double taxation making exports unprofitable, and the importers that had no access to the currency distributed by the officials, were not able to import raw materials and intermediate goods. They had to switch to barter or hide the export earnings. The Head of the NBU, Viktor Jushchenko, admitted that the fixed exchange rate system was effectively a subsidy of foreign suppliers, and was making the Ukrainian trade deficit even worse (*Uriadovyj Kurjer*, 16 August 1994). As a rule, this deficit was cleared by the monetary emissions. In 1994 the NBU had to credit a number of exporters in fact to cover losses from the unprofitable export operations.

Another effect was a major shift of the export operations out of the official economy, with the bulk of unofficial export appears to have become capital flight of estimated $1.3 bn. Daniel Kaufmann, who heads the World Bank Office in Kiev, estimates that at least $200m a month exports from Ukraine, or about one-half of all exports, are not channelled trough the official economy (Daniel Kaufmann, *Diminishing Returns to Administrative Controls And the Emergence of the Unofficial Economy: A Framework of Analysis and Application to Ukraine,* preliminary draft, June 1993).

The government attitude to the collapse of the karbovanets which it had caused itself was to try to ban the foreign exchange market. On November 2, 1993, President Kravchuk issued a decree No.502/93 *On the Management of Currency Regulations*, whereby the operations of the UICE were suspended for six weeks. This policy was designed to increase government influence on the karbovanets/dollar exchange rate. The auction rate was frozen on the level of 31,000 krb/$, 30 krb/R and the official rate was raised to approximately 7,000 krb/$ and 10.24 krb/R during December 1993. Only government-licensed importers and exporters were now permitted to exchange hard currency at a fixed rate which the NBU was ordered to reimpose.

The presidential decree was expanded in the joint Statement No.96 of the Cabinet of Ministries and the NBU *On the Realisation of the Presidential Decree No.502/93* , where the NBU was authorised to set the official exchange rates of karbovanets, an obligatory surrending of 50 % of export earnings was envisaged, and all the trade in foreign currency was allowed with rate no more than twice of the official one.

However, this regulation was never implemented, with the NBU letter on 6 December 1993 stating that all the export earnings of the Ukrainian enterprises in US dollars, German marks and Russian rubles have to be sold by the official rate: 40 % mandatory, 50 % via the Centre of Clearing Payments of the UICE, and 10 % (and all other foreign currencies) being bought by the NBU itself at a special rate, 25,000 krb/$

in December 1993. All the non-cash transactions had to be settled according to the official exchange rate.

The cash market took time to adjust to the new economic policy. It initially (in mid-August) followed closely the official rate, where in September the official rate was 71 % of the cash rate, and only 35 % of the auction rate. The cash rate was only 50 % of auction rate. After the imposed rise of state controlled prices on 10 September 1993, the cash rate started to approach the auction rate and adjusted to it rate at the beginning of October as a reaction on the September monetary emissions. After the government had suspended the UICE and had brought about measures for regulating the exchange of karbovantsi, the cash rate had stabilised during November and December 1993 at around 25,000 to 30,000 krb/$.

Uncertain Stability: January - July 1994

On December 23, 1993, the UICE was allowed to resume operations (because of resistance from the foreign exchange market and business lobbies), but now the exchange rate was not set by auction but rather through a 'less then competitive' tender system monitored by a government currency regulatory committee. The first auction did not supported the predictions of 50,000-60,000 krb/$ rate, but 32,000, with only $950,000 having being bought by the *Ukraina* bank from proposed $50m.

The official exchange-rates were to be determined by the special commission of the NBU 'on the basis of parity of prices'. Tender for selling the export earnings of Ukrainian exporters was established. The pre-selected enterprises were allowed to buy foreign currency at the official exchange rates 12610 krb/$ and 10.24 krb/R. Tender Committee included representatives from the Cabinet of Ministries, various economical Ministries, Ministries of Interior and of Defence. The first tender took place on December 23rd. Average volume of trade in 1994 was $9 million.

The relative stability of the karbovanets since November 1993 was linked to the NBU strict credit policy, whereby commercial banks were limited in their access to new credit, and so could not pass on more cash to enterprises. These enterprises then were not paying out salaries, which in many cases had fallen into few months arrears. thus, a karbovantsi liquidity crisis had arisen, and so demand for karbovantsi had overtaken that for foreign currency. The NBU's policy for the beginning of 1994 had been to release the required credits, for money supply purposes and for payments of salaries to the state social service sector, into the economy very slowly and evenly, and so the effect upon the exchange rate at the cash and non-cash market was minimal. The result was inflation down from 90 % monthly in December 1993 to 20 % next month, and then inflation had decreased quickly to its low of 2 % in July.

The NBU dollar auction (started at 25 February 1994 to help importers) showed stable rate of 30,120 krb/$, with 17 banks participating. No restrictions on buying of dollars (except the pre-selection of bidders). There was not enough both non-cash and cash karbovantsi, thus rate was stable. In March 25 to 30 banks participated. Priorities for choosing the bids were as follows: contracts for critical commodities and services (fuel, medicines, spare parts etc.). If it was necessary to choose between 'equal' priority -- preference was given to those contracts with commodities already supplied.

Non-cash and cash ruble rates had converged during March 1994 (with former rose to 21.25 and latter fall to 22 krb/R) because of inflow of cash rubles from Russia and high profitability of some exports to Russia. Changes of the non-cash ruble rate

were in accordance to change in efficiency of 'dollar-ruble-karbovanets' operations, while cash rate was stable. In April 1994, the 'non-cash karbovantsi crisis' of the Ukrainian banks was over, and the supply of interbank credits went up with gradually decreasing interest rates (as a result of eased monetary policy of the NBU). Instability, thinning of the market, rising competition of banks on cash market. Relative stability of the Russian ruble made ineffective short term operations, thus banks were not very interested in ruble operations.

The second quarter of 1994 had seen stability in the more market driven exchange rates, while the official NBU's fixed exchange rate had been gradually devalued, reflecting the NBU's policy of gradual unification of exchange rates. Between the beginning of May and the beginning of August 1994, the official fixed karbovanets exchange rate had been devaluated by 54.6 %, dropping from 12,610 krb/$ to 19,500 krb/$. During the same period, the NBU currency auction rate had depreciated the karbovanets by 8.6 %, moving from 36,800 krb/$ to 39,970 krb/$. The market exchange rate experienced practically no change over the period, other than a dramatic rise to about 54,000 krb/$ in the first week of June on rumours that the Ukraine's long awaited new currency, *the hryvnia*, would be introduced overnight. What had occurred was the removal from circulation of karbovantsi notes less than 50 krb in denomination. The official rate and the NBU auction rate have been stable through careful regulation by the NBU, while the drop in real wages in the consumer market had dampened demand for hard currency, and hence had provided stability for the market rate of exchange. (*Ukraine in Numbers*, 1994, No.12)

After the so-called 'binded' emission to the agricultural sector made by the NBU in mid-April, ruble appreciated to 25-26 krb/R. On 27 April 1994 first auction of Russian rubles had attracted much attention, with demand exceeding supply by 60 % and rate 20.5 krb/R. With cash and non-cash market responded with appreciating karbovanets there was an evident tendency of converging of auction and market rates. The NBU auctions confirmed the determination of the NBU to hold karbovanets stable by balancing carefully supply and demand. So the Ukrainian foreign exchange market was affected mainly not by change in the fundamental economic indicators, but by the administrative decisions of the authorities. Due to this NBU policy, in June karbovanets was not only stable but even appreciating slowly but steadily (20 krb/R at the beginning of July 1994, 19.5 krb/R in mid-July, 19.4 on August 5), with gradual more than four times increase in volumes of trade.

Table 6. Trade in Russian rubles on the NBU foreign currency auctions in April-September 1994.

Date of auction	Exch. rate	Volume of trad R m	Initial deman R m	Initial supply, m	No. o banks
27 April	20.5	2467	2504	1500	
27 May	22.22	921	852	1250	10
15 June	20.32	1802	1796	1802	17
20 July	19.5	2127	2127	2127	12
5 August	19.4	5281	4781	5781	16
31 August	21	10495	11010	5100	22
14 September	25.8	9725	12043	5000	

It is interesting to compare these volumes with that on the foreign currency tender (at the official exchange rate):

Table 7. Trade in Russian rubles on the foreign currency tender in July-September 1994.

Date of tender	Volume of trade, R m	Initial demand, R m
19 July	13019	20439
29 July	9985	52456
10 August	7323	60406
17 August	14904	57535
13 September	6236	44086

From five to ten times more foreign currency had been traded on this tender under the supervision of the officials, and the initial demand for the currency at the undervalued official rate was sometimes eight times as high as the volume of trade. Consequently, there were enormous opportunities for corruption on all levels. Interesting point: in October 1994, already mentioned Mr Zviahilskyj was formally accused of misappropriating about $25 m while he served as acting PM before June 1994.

The Ukrainian market for foreign exchange started its decentralisation. Both the Head of the NBU Jushchenko and the Chairman of the UICE Committee Hetman (although being accused by the Ukrainian media in the attempts of monopolising the Ukrainian foreign currency market and controlling all the flows of foreign currency) were stating publicly that they are in favour of decentralising of the Ukrainian market. They admitted that even in the second quarter of 1993, when the regulations were quite liberal, the existing infrastructure of the UICE was not enough to satisfy the needs of market. They envisaged the creation of the system of affiliated currency exchanges in the main financial centres if Ukraine, *e.g.* in Lviv, Kharkiv, Dnipropetrovsk, Odesa, Donetsk. However, Simferopol (Crimea) was the first.

The Crimean Interbank Currency Exchange was created according to the decrees of the Ukrainian president *On the Regime of Free Economy on the Territory of the Crimea* and the Crimean president *On Banks and Banking Activity of the Republic of Crimea.* In June 1994 the NBU gave relative independence to its Simferopol branch, and the newly created Republican Bank of Crimea had established its currency exchange. The RBC was the sole founder of the CICE, because most of the Crimean banks are the affiliated of the Kiev banks, and are not legal entities. Since end of July it was trading in Russian rubles (initially once, and later twice a week), and since end of August in US dollars, planning to start trading in German marks and credit resources. Only the Crimean residents were able to participate in its auctions initially, however, later other Ukrainian banks were allowed, too. For a brief period before the re-opening of the UICE auctions the Crimean Currency Exchange was considered as almost the only place where the price of the Ukrainian currency was determined by market forces. The exchange rate of Russian ruble was higher than that on the NBU auctions, so more attractive for the exporters (the exporters in the Crimea were obliged to sell 50 % of their export earnings not at the official rate, but at the CICE rate) and there were fears expressed in Kiev of capital flight out of Ukraine 'through the Crimean isthmus. Some

analysts expected the NBU being tough to regulate the CICE, however, the NBU was in general quite supportive and did not interfere in the operation of the CICE.

The volumes of trade were relatively small, though, and the CICE management feared the possibility of being swallowed after the re-opening of the UICE auctions. The provisions of decentralising of the Ukrainian foreign exchange market under the decree of 22 August 1994 (see below), however, could provide a good possibility for the CICE to become a regional centre of the foreign exchange market in southern Ukraine. It offers some advantages to the participants. The director of the CICE Viktor Morhun explains that they had more flexible system of trade than in Moscow or Kiev, without the depository for accumulating assets, allowing the participating banks to work directly with each other after the process of trade (*Finansovaja Ukraina,* 21 September 1994).

Table 8. Trade in Russian rubles on the Crimean Interbank Currency Exchange in July-September 1994.

Date	Exchange rate	Volume of trad R m	Initial deman R m	Initial supply, m	No.of banks
29 July	19.8	738			12
10 August	20.48	983	1514	947	14
17 August	20.48	950	960	905	9
8 September	27.96	319	319		14

Stable Uncertainty: August - October 1994

By the mid-summer of 1994 the cash and non-cash market had stabilised for the following reasons: no new substantial monetary emissions for a long time, appreciation of the karbovanets on the Russian market because many Ukrainian exporters were reluctant to sell their goods to Russia for rubles, restrictions imposed on state sector crediting.

After the presidential elections in July 1994 the market entered a period of uncertainty. The new president, Leonid Kuchma, was known for his favouring of abandoning the fixed exchange rate, and in late July 1994 he made few public announcements about his economic policy. One of the important points was his determination to unify the exchange rate of karbovanets. Moreover, the new credits to the agricultural sector were released for the harvesting campaign and the indexation of the fixed capital of the enterprises were expected, with clear inflationary consequences. These inflationary expectations caused appreciation of the dollar. Ruble was quite stable, partly because its depreciation against dollar in Moscow. However, on the NBU auctions the NBU tried to strengthen the position of the national currency before the inevitable devaluation. Other move of the NBU that had at least temporary stabilising results -- forcing the commercial banks to finance the credits for agriculture, thus selling their foreign reserves and increasing the supply of foreign currency on market.

The rapid depreciation of the karbovanets in late August 1994 the experts attributed to the expected changes in the foreign exchange regulations, but mostly to the NBU credit emissions to the agriculture, that were released by the second half of August, and expected rise in state controlled prices from the beginning of September. The draught in the southern regions of Ukraine caused additional difficulties. The Cabinet of Ministries had asked the NBU to postpone paying back of loans for the agricultural firms in these regions. Already in August the inflation was twice as high as

in July 1994. The head of the NBU Viktor Jushchenko admitted that the NBU alone was unable to keep inflation under control.

On 22 August 1994, the Ukrainian president Leonid Kuchma signed the decree *On the Improvement of the Foreign Exchange Regulation.* (*Holos Ukrainy,* 22 August 1994). The decree was viewed as a compromise because it did not envisaged immediate lifting of the fixed rate, as the reformist economists proposed, but gradual rapprochement of the official rate to the market one 'taking into account the inflation, money supply and the state of balance of payments of Ukraine. Deputy minister of economics Anatolij Danylenko expressed fears shared by many officials that the immediate freeing of the exchange rate will triggered the inflation and by increasing the costs of production make most of the enterprises bankrupt (*Biznes*, 1994, No.35).Another rationale for graduate reproaching of the rates -- necessity to accumulate the foreign currency reserves and to reach an agreement with the international financial organisations. As the presidential adviser Anatolij Halchynskyj explained (*Post-Postup,* 1994, No.30), by September 1994 the official rate should be 50 % of the market one, and in October 1994, 75 %. Consequently, the distributive Inter-Departmental Committee was kept in place.

Next important point: the necessity of the decentralised foreign exchange market has been recognised, so the Crimean Currency Exchange gained an unequivocal legal recognition of existence, and the emerging of the new currency exchanges in the big financial centres of Ukraine has become only a matter of time. And last but not least: only 30 % of all the foreign currency earnings have been made eligible for the obligatory selling at the fixed rate, and the remaining 20 % -- at the market rate.

However, the decree was not clear enough on how the official rate will be set and for how long, and the uncertainty on the Ukrainian exchange market had increased. Rates started to go up, with some slowing down at the beginning of September, when there was not enough cash karbovantsi.

The new presidential decree on September 7, 1994, *On Measures to Ensure the Foreign Exchange and Export Control*, imposed more strict supervision on the foreign currency earnings of the Ukrainian enterprises, and announced that the new regulations on the accounts in foreign currency will be imposed soon. The main issue was to focus on capital export.

In September the NBU pursued its policy of gradual increasing of the official exchange rate. However, the market one had started to rise, too, pacing almost 5 % of depreciation a week at the beginning of the month, and at more than 15 % (rubles) a week by the end of September.

The economical situation of Ukraine has been improving after the catastrophic drop of output in the first quarter of 1994 (partly due to the tight monetary and credit policy of the NBU). In the second and third quarters there was a rise in output. However, by October 1994, the budget deficit had grown high (not least because of the tax system failure, capital flight and growth of unofficial economy to avoid governmental restrictive regulations). 75 % of the budget deficit was covered by monetary emission, as deputy ministry of finance Stanislav Bukovynskyj had admitted (*Delovaja Ukraina*, 1994, No.72)

On 7 October 1994, the UICE had re-opened its auctions. The NBU, as it was told, used a lot of efforts to keep dollar not higher than 65,000 krb/$ on the first auction (anyway a sharp drop from the rate of 54,000 set at a central bank

currency auction on previous week). This time it was done by persuading the bidders, but Mr Jushchenko announced that the NBU will use interventions mechanism later. Under the temporary regulations, the contracts paid partly with currency received through the tender committee, were not allowed to participate. The exchange rate is closer to a market rate, but not entirely free as trading is temporarily being regulated by an "expert commission" of central and exchange officials. The commission reviews contracts to by or sell currency before trading. Contracts for purchasing consumer goods and for advance payments or to other former Soviet republics will get less priority than those for buying fuel, medicines and other strategic goods.

Headlong Race to Economic Reform: October 1994 and After

Ukrainian economy in 1994 experienced both sharp fall of output at the beginning of the year and relatively strong performance starting from the second quarter of 1994. Despite of that, Ukrainian real GDP fell by 24.3 % in January-October 1994 in comparison with the same period of 1993. Investment in the economy is falling and industrial decline is serious, aggravated by a steep payment crisis and large budget and trade deficit (*IntelNews* 10 December 1994). Even the collapse of the Russian ruble, which plunged more than 20 percent in value on 11 October 1994, was not helpful for Ukraine. 'If the situation were different, we could take advantage of the moment and pay off our debts. But the problem is we have no money with which to pay. What is bad for our neighbour is bad for us. Although we are not tied to the ruble, our economies are very close and we'll feel the repercussions of Russia's problems,' said Oleh Popov, foreign economic adviser to president Leonid Kuchma, as *Reuter* reported on 12 October 1994.

On 10 October 1994 president Leonid Kuchma presented his economic reform plan to parliament, urging "decisive, aggressive action" to speed reform and overhaul Ukraine's failing economy. Kuchma foresaw three stages of structural reform, with complete privatisation of small firms by the end of 1995, and of medium and large enterprises within three years. The budget deficit, at 20 % of the gross domestic product, is to be cut to 8 percent in 1995 and four percent by 1997. Kuchma would stop credits to failing industrial enterprises. He also asked for a single-market rate for the karbovanets, and said that if his program is followed Ukraine's permanent currency, the hryvnia, could be introduced next year. The hryvnia would initially be introduced at a rate pegged to one of the foreign currencies used in Ukraine. On 19 October 1994 Ukraine's Parliament endorsed President Leonid Kuchma's package of economic reform moves aimed at moving the country's centralised economy toward a free-market system, so Ukraine met conditions for a $700 million economic reform loan from the International Monetary Fund. Some success with the reforms would make Ukraine eligible for a further, stand-by $1 billion IMF loan before the end of 1994.

On October 24, the NBU established a unified rate of exchange for the coupon with respect to foreign currencies. The official exchange rate for the coupon have to be determined as a result of trading at the UICE, and on 27 October 1994, the UICE set a fixed rate for the US dollar at 78,600 Ukrainian karbovantsi. Restrictions on joining the exchange were expected to be eased and the number of contracts signed for the purchase of hard currency at the exchange to increase. On that same day Ukraine was to receive the first half of a loan from the International Monetary Fund. Part of the loan, according

to the International Monetary Fund and the Bank of Ukraine, will be funnelled into the currency exchange in order to stabilise the rate of the coupon.

The NBU decision anticipated that banks and currency exchange businesses will be able to buy and sell currency within a 5% margin, fluctuating from the official rate by plus or minus 2.5%. On 2 November 1994, the NBU repealed it as the cash trade collapsed almost tenfold in official market. Commercial banks now have the right to independently establish rates for buying and selling currency within a margin of no more than five percent. Rates will be determined in the morning and will not change during the course of the day. The activities of businesses which only buy or sell currency 'will be considered by the NBU to be violations of their issued licenses.'

On 31 October 1994 already mentioned reformist economist Viktor Pynzenyk was appointed to the post of first Vice Premier of Ukraine. Pynzenyk said that his first duties will relate to easing export policies for Ukrainian products. 'The most important task will be to prevent Ukraine's entering a pattern of spiralling hyperinflation and to avoid repeating the situation which occurred when prices for goods increased 2-2.5 times per month.'(*Post-Postup* 1 November 1994).

Serious move towards the economic reform is a painful issue. The cancellation of the official fixed exchange rate was followed by sweeping price liberalisation, affecting both food products and manufactured goods. Energy, rent and transportation prices soared, and wages and pensions were doubled to compensate for the cut in subsidies. The inflation jumped to 22 % in October and then to 72 % in November 1994. The government expected inflation in December to reach 35 to 40 % (*RFE/RL Daily Report* 16 December 1994). However, the government is determined to move ahead with the reform and to bring inflation down to one to three per cent by the end of 1995. Monetary reform is under way, so the stable Ukrainian hryvnia is expected to be introduced at the beginning of 1995. The government also resists firmly the parliament's attempts to allow new monetary emission. Hopefully it will be successful.

It looks like the foreign exchange market believes in this success. The cash and non-cash market rates that were going up constantly till the third decade of November 1994 (when the commercial banks charged us much as 142,000 krb/$, and the unofficial market average was about 137,000 krb/$), first stabilised and then even moved down to converge with the UICE auction rates. By mid-December the UICE auctions experienced excess supply of foreign currency, and the karbovanets started to appreciate against US dollar and ruble even in the UICE. At that point the official rates are 109,800 krb/$ and 33.00 krb/R. Success of hard currency measures, coupled with an appreciation of the NBU tight monetary policy, is apparently causing increased confidence on the part of brokers at the UICE, and it is expected that the karbovanets will appreciate further by the end of 1994 (*IntelNews* 18 December 19994). If all that means the long-awaited stability of the foreign exchange market, it is a good background for a strong economic performance in 1995.

Russian Market

The market for Ukrainian currency in Russia had emerged in 1993 based on the necessity of financing the trade with Ukraine. Its further development resulted from introduction of the obligatory 50% sails of export earnings in Russian rubles made at the NBU auction exchange rate. The Moscow Interbank Currency Exchange (MICE) auctions started to be held at the same time. When the official exchange rate was fixed

in Ukraine, the trade volumes on the MICE increased significantly and playing in the currency market started to be possible.

According to the official fixed exchange rate karbovanets was overvalued in Ukraine. That was profitable for the importers headed by the acting prime minister. Exporters used several methods of avoiding high losses caused by the obligatory sales. one of them is as follows. Goods were sold for karbovantsi rather than for rubles. The value of contract is fixed in rubles and it is recalculated according to the market exchange rate, not the official one. As a result, export earnings do exist, however, the foreign currency does not. The increasing popularity of the transactions with karbovantsi in Russia can be explained partly by this fact. The more sharp was the conflict of interests between Ukrainian entrepreneurs and the state, the more actively the market for Ukrainian currency in Russia was developing. Moreover, due to the absence of the free market for rubles in Ukraine (the tenders were used only as the mechanism of redistributing the export earnings) this market "moved" to Russia.

At the early stage of the market development Russian residents were unlikely to buy karbovantsi due to the customs regulations in Ukraine. Payments for Ukrainian imports in karbovantsi required a special permit from the NBU. However, non-residents were not allowed to take part in the MICE trading. It is very likely that Ukrainian residents used Moscow banks as intermediaries.

Russian market in 1993

Regular Moscow Interbank Currency Exchange trade sessions on karbovantsi started on June 3, 1993. In July the trade volume was 1.26 billion karbovantsi. That is 1.5 times less, than in June (*Finansovye Izvestia,* N 43, July 1993). At trade sessions on 1st and 8th July, 1993, there were no transactions made. The dynamics of the exchange rate reflected the exchange rate of both currencies to dollar. Also it was influenced by the monetary policy of Ukrainian government at that period. As a result the demand for karbovantsi at the MICE was small. The tendency of karbovanets' slow depreciation was quite predictable, there was no interest to play at the currency exchange.

In August and September 1993 the volume of trade increased significantly (10.9 and 16.5 billion karbovantsi respectively) (*Finansovye Izvestia,* N 51, October 1993). Even though, the market was still thin. The most part of Russian-Ukrainian trade at that time was done according to interstate agreements which contained the conditions of trade and payments. Almost all the payments were in Russian rubles.

The exchange rate on the MICE changed from 5.62 krb/R to 14.49 krb/R, that is about three times. In the end of August the increasing supply of karbovantsi was caused by the attempting to avoid financial losses. Then the trade volumes stabilised and it became possible to start playing the market.

Up to October Russian banks tried consciously to stabilise the karbovanets on the MICE auctions. Rationale: their clients were faced the problem of sharp depreciation of karbovanets and consequently their assets in conditions of non-balanced trade between Russia and Ukraine and impossibility of repatriation of their karbovantsi earnings. The banks' clients were given a chance to use karbovantsi effectively: to put them on deposit accounts in the Ukrainian banks (that had interest on deposits 1.5 to 2 times higher than in Russia); to convert karbovantsi into the most stable of the Soviet successor states' currencies (kroon and lat); or to buy the Ukrainian commodities demanded at the Russian market.

In October 1993 a sharp decrease of karbovanets took place sumalteniously at the MICE and the UICE. It was caused by the deteriorating financial situation in Ukraine (see graphs). Inflation level was about 60% in October and the budget deficit in 1993 was estimated to be about one sixth of the GDP (*Finansovye Izvestia,* N 55, November 1993). In November the exchange rate and volumes of trade were highly volatile. The supply and demand differed substantially. In December 1993 this disbalance become even more significant. Total volume of demand in December was 45,849 billion karbovantsi, however, total volume of demand was only 26.937 billion. (*Finansovye Izvestia,* N 2, January 1994).

The seasonal factor - end of year - caused an increase in the MICE trade volumes. Dollar and ruble were attractive for the former Soviet republics. High inflation force banks and enterprises to hold their assets in more stable currencies. In the end of the financial year it is necessary to close balances, pay taxes and pay off the credits nominated in karbovantsi. The demand for domestic currency increased in Ukraine and, in turn, affected the Russian market for karbovantsi. Russian commercial banks' supply of karbovantsi was not enough to balance it. This caused the appreciation of karbovanets. The seasonal factor alone was not enough to cause such a change. The tight monetary policy of the NBU in the end of the year influenced the market as well.

The main trends of karbovantsi trade in Russia in 1993 is summarised in Table 9. The dollar equivalent of the annual trade volume in karbovantsi was 0.07% of the whole trade volume in all currencies (*Finansovye Izvestia,* April 1994).

Table 9. Karbovantsi Trade on the MICE in 1993

Month	**Volume of trade** billion karbovantsi	**Average exchange rate** krb/R
June	1.89	4
July	1.26	5.3
August	10.9	10.1
September	16.5	15.4
October	20.667	21.7
November	70.537	30
December	18.620	24.4
TOTAL 1993	140.374	-

The volumes of karbovantsi trade at the MICE in 1993 were negligible comparative to the volumes of rubles trade at the UICE before the suspending of the UICE auctions (Graph 6). After that point on November 1993 the MICE volumes had increased significantly.

Russian market in 1994

Changes in the Russian government (dismissing of Gaidar and Fedorov) affected the markets of the former Soviet republics, Ukraine in particular. Crisis of payments took place in Ukraine at the same time. No trade at UICE took place that time, only tenders. After a number of allowances for exporters have been abandoned the volumes of trade increased significantly. The tenders were held every Thursday.

The karbovanets-to-ruble appreciation began at the end of December 1993 and had no direct connection to the situation at the Russian foreign exchange market. Basically it was caused by the tight monetary policy conducted by the NBU. Taking into consideration the non-payments crisis and the end of financial year the deficit of karbovantsi in Russia is not surprising. As a result, the karbovanets was overvalued at the MICE. The increase of the MICE dollar exchange rate also contributed to the ruble-to-karbovanets depreciation.

Since March 1994 Ukrainian currency have been traded on MICE every day. Karbovanets was relatively stable but the seasonal factors (spring purchases of oil-products) determined the increasing demand for rubles in Ukraine and, hence, expectations of its appreciation at the MICE.

In the end of July 1994 commercial banks of Baltic states bought a considerable amount of Ukrainian currency before its revaluation. According to Russian dealers, Baltic states banks had a preliminary agreement on that action. Similar agreements between Moscow banks were faced with contradiction between their private goals.

During the summer of 1994 the karbovanets depreciated on 15% at the MICE. In Kiev karbovanets-to-ruble depreciation was about 5% during the same period (8-10% to $ and DM). High volatility in trade volumes lead to the jumps of the exchange rate. For instance, it was possible to play effectively as a 'bull' and a 'bear' during the same week. When the NBU kept the official rate of karbovanets 2-3 times higher than the market rate it was too risky to play as a 'bear'. The statement made by Leonid Kuchma on the abandoning of fixed exchange-rate of karbovanets influenced the dynamics of the currency in Moscow. It started to depreciate. This happened in the end of August. Meanwhile the trade volumes grew significantly. Probably this indicated the dealers' expectations on further depreciation of karbovanets.

Table 10. Karbovantsi Trade on the MICE in 1994

Month	**Initial demand** billion krb	**Initial supply** billion krb	**Volume of trade** billion krb	**Average exchange rat** krb/R
January	11.61	10.14	9.4	22.08
February	27.35	34.52	24.18	18.66
March	90.57	109.25	75.11	20.62
April	76.48	82.37	57.54	21.6
May	73.76	109.84	91.07	22.88
June	93.3	68.02	85.9	22.42
July	68.45	122.99	98.68	20.92
August	131.76	310.18	206.49	21.74
September	183.56	406.54	197.15	28.65
October	290.75	275.07	186.88	30.49
TOTAL	1047.59	1528.92	1032.4	-

The main results of the MICE trading are summarised in the Table 11. Generally speaking, the initial supply of karbovantsi exceeded the initial demand all over the year, leading to its depreciation. This difference become more significant during last three months, indicated in the table. Volumes of trade increased highly at the same time (Graph 7).

Arbitrage operations

When economic conditions are stable and currencies are fully convertible all exchange rates equalise very quickly. Thus, there is no possibility for arbitrage or it is limited normally, and the play is based on the quality of operative forecast and on the speed of interbank payments. In case of former Soviet republics arbitrage is based on the inconsistency of the national currencies' rates to the Russian ruble and to the US dollar (or the German Mark). The precondition for arbitrage operations with 'soft' currencies involving the dollar and the German Mark is the volatility of dynamics of the ruble-to-dollar and ruble-to-DM exchange rates in national foreign exchange markets. The other important feature of these markets is the low speed of interbank payments. For instance payments between countries can take from one to three days. The restrictions on participating in currency trading and, therefore, thin markets also give place for different kinds of arbitrage operations. Even though the information was available to everybody, banks which have correspondent relations with banks in the other country or a subsidiary there could use it to play effectively.

The arbitrage schemes, presented below age given from the point of view of a Russian dealer.

Direct arbitrage

The MICE and the UICE exchange rates were very close to each other in the first half of 1993. This is shown in Graph 4. Till the introduction of the fixed official exchange rate in Ukraine it was almost no possibilities for classical direct arbitrage. Apart from above, there was lack of correspondent relations between Russian and Ukrainian banks.

Since July 1993 direct arbitrage in non-cash market became more possible due to bigger differences in the exchange rates in Moscow and Kiev. However, it was relatively difficult to make arbitrage in the currency exchange market because of the restrictions imposed on the UICE trade and several cancellations of trade sessions results done by the NBU. After the UICE trade was stopped arbitrage operations were possible only at the non-exchange market.

Since UICE (NBU actions) trade restarted in April 1994, the difference between the MICE and the UICE exchange rates was relatively stable. On Graph 5 one can see that this difference was about 10%. Sometimes it was more; due to the big difference in the karbovanets rate in Moscow and Kiev in mid-September 1994 it was profitable to buy rubles in Kiev at 23 krb/R and sell in Moscow at 27 krb/R, making 25 % profit.

Triangle arbitrage

This kind of arbitrage operations according to the definition involves three currencies. Three exchange rates give more chances for obtaining gains if the foreign exchange markets adjust slowly to the changes in the situation. Here we consider the ruble, the karbovanets and the third one is hard currency (either the US dollar or the German mark). The opportunity for making profits results from the slow adjustment of the exchange rates involved to each other; it occurs also due to government policy,

which includes keeping the foreign currency undervalued to the domestic currency. This was the policy kept by the Ukrainian government.

The general scheme of the operation is as follows.

1. Rubles are transferred from Russia to Ukrainian banks in order to buy karbovantsi.
2. Karbovantsi are exchanged for US dollars or German marks, which are transferred back to Russia.
3. Dollars are sold in Russia. In case of efficient transaction the amount of rubles obtained in the end of the chain of transactions exceeds the one invested at the beginning.

The two conditions of profitability are: relatively expensive ruble and the simultaneously existing possibility of purchasing dollars at a 'good' rate. The first conditions holds when the ruble exchange-rate is high in Ukraine, and the second one holds when the cross-rate of karbovanets via the dollar (or via the German mark) is below its exchange rate.

The effectiveness of triangle arbitrage in Ukraine in January - August 1993 is summarised in below. The coefficients of profitability for US dollars and German marks operations are given in the first shadowed column. Costs of transactions are not taken into account.

Since end of February these operations could give high profits (on 5 March 1993 the profitability was 51.2%). After the sharp increase in the karbovanets-to-dollar exchange rate in the beginning of April the effectiveness dropped to zero. However, in the end of April the arbitrage transactions became effective again. In the first column of Table 11 the cross coefficients are positive and relatively high (4%-41%) from April 23 to June 4, 1993. It can be seen also on Graph 10 that the cross-rate of the karbovanets was significantly less than the non-cash exchange rate at the Ukrainian commercial banks. Later there was a simultaneous increase in the exchange rates of the dollar and the ruble, therefore the profitability coefficients dropped again.

In August there was very short period when the arbitrage profits could be extremely high (almost 100%). This happened due to the time lag in exchange rates movements in Kiev and in Moscow. Graph 11 shows that there was an increase of both the non-cash market exchange rate and in the cross-rate of karbovanets-to-ruble between August 19 and August 27. However these increases were not simultaneous and it was possible to use the high difference between the banks' exchange rate and the dollar cross-rate. The possible gain exceeded 100%.

In a case of developed ties with the Ukrainian financial structures it was possible to buy dollars at a cross-rate of 1038.3 R/$ on the UICE auction on 4 November 1993, and to sell the dollars at the MICE auction at a rate of 1176 R/$ on 5 November, thus gaining 13.26% profit (cross-operation coefficient 1.1326). However, already on 5 November the average cross-rate R/$ on the Ukrainian interbank market was 1320 R/$. It is clear that in the above examples only those agents that are specialising in a particular market (i.e. having direct immediate access to the auctions and the accounts both in rubles, karbovantsi and dollars) were able to receive such profits.

The above-given scheme could vary according to the market conditions. By February 23, 1994, the cross-rate R/$ via krb was 1650 R/$, much higher than 1550 R/$ on the MICE. This margin made the cross-scheme dollar-karbovanets-ruble-dollar

attractive for Ukrainian residents. Resulting from that the rise of demand for rubles in Ukraine and thus rate going up was expected.

Non-cash and cash ruble rates were equalising during March 1994 (rise to 21.25 and fall to 22 respectively) because of inflow of cash rubles from Russia and high profitability of some exports to Russia. Cash dollar was overvalued in Ukraine, non-cash ruble was cheaper. Therefore it was profitable to buy hard currency for rubles and then sell it in Russia. By the end of March karbovanets rate at the MICE had approached closely the non-cash rate in Ukraine. Changes of the non-cash ruble rate were in accordance to the changes in the efficiency of 'dollar-ruble-karbovanets' operations, while the cash ruble rate was stable.

It can be seen from Graphs 12 and 13 that in 1994 almost no arbitrage was possible in cash market, however, in non-cash market it was possible till the end of June. In July after the results of elections became known and the unification of the exchange rates was foreseen, all the market karbovanets exchange rates including the MICE rate became pretty close (see Graph 13) thus eliminating arbitrage possibilities.

Arbitrage involving two 'soft' currencies

There could be more complicated scheme of arbitrage operations involving 'soft' currencies. The essence of this type of cross-operation is:

- to include to the chain of transactions two 'soft' currencies instead of one and
- to use the inconsistency of their exchange rates to the ruble as well as to the dollar (or the German mark).

This operation was described by the *Commersant* experts Zhuravliov and Ivanter in 1993. The idea was to buy dollars in a former Soviet republic where they were relatively cheap being recalculated from the national currency to rubles. The second step was to sell dollars where they are more expensive being recalculated in the same way.

The condition of efficient transactions was the excess of the ruble cross-rates of the 'soft' currencies over their dollar cross-rates. The chain of transactions started in Russia with rubles and it should have been ended in a republic where the national currency rate to the dollar was depreciating faster than to the ruble. Dollars should have been transferred to the countries with more stable currencies, who kept the ruble undervalued (compared to the ruble cross-rate of their national currencies).

The general scheme of the operation is as follows.

1. Russian dealer transfers rubles to the republic **A** and buys national currency which is relatively cheap in comparison with rubles. Then the national currency is exchanged into dollars or German marks.
2. 'Hard' currency is transferred to the republic **B** where the national currency is relatively cheaper than dollars or German marks and exchanged for the national money.
3. The national currency of the republic **B** is used for buying relatively cheap rubles which are transferred back to Russia.

The results of these operations for 1993 are summarised in Table 11. Ukraine is supposed to be the republic **A** - the first recipient of the rubles. In the head line the countries of type **B** are given: Latvia, Lithuania, Estonia and Belarus. In other countries

TABLE 11. EFFICIENCY OF CROSS-RATES OPERATIONS IN 1993 INVOLVING CURRENCIES OF RUSSIA, UKRAINE AND A THIRD COUNTRY

DATE	UKRAINE		LATVIA		LITHUANIA		ESTONIA		BELARUS	
	$	DM	$	DM	$	DM	$	DM	$	DM
30-Dec	0%		1.6%		-22.9%		0.2%		8.0%	
14-Jan	0%		13.0%		-18.6%		-2.2%		5.8%	
19-Feb	26.6%	27.3%	62.3%	50.8%	3.7%	-5.6%	25.8%	16.9%	10.5%	2.6%
26-Feb	34.8%	54.3%	33.7%	33.4%	1.4%	-1.4%	31.2%	30.8%	51.3%	50.6%
05-Mar	51.2%	54.1%	121.8%	121.9%	44.8%	41.2%	50.4%	50.7%	57.3%	57.3%
12-Mar	14.3%	14.8%	64.6%	64.6%	14.1%	14.0%	34.4%	14.0%	33.1%	33.2%
19-Mar	5.6%	3.8%	39.3%	39.5%	7.7%	7.5%	2.4%	2.5%	17.9%	18.0%
26-Mar	15.0%	18.3%	61.3%	61.1%	23.6%	21.9%	26.7%	27.2%	36.9%	36.7%
02-Apr	0%	0.0%	14.1%	13.7%	0.5%	0.4%	0.6%	0.6%	12.9%	13.0%
09-Apr	1.9%	12.3%	16.3%	16.2%	0.3%	0.6%	3.2%	3.7%	2.6%	2.6%
16-Apr	0.0%	1.1%	43.7%	43.2%	-6.9%	-7.0%	-1.0%	-14.7%	-34.2%	-34.2%
23-Apr	4.2%	3.2%	16.2%	16.2%	1.5%	-5.1%	3.7%	4.2%	-34.5%	-34.7%
30-Apr	15.2%	7.06%	14.4%	23.23%	1.92%	4.63%	6.24%	-1.25%	-15.18%	-10.57%
07-May	12.3%	19.68%	18.33%	21.19%	7.82%	38.64%	12.81%	5.78%	-8.54%	-7.52%
14-May	24.9%	22.09%	22.18%	18.53%	8.35%	5.39%	19.01%	21.94%	-11.89%	-13.6%
21-May	33.4%	33.36%	23.92%	22.90%	15.58%	13.58%	27.95%	27.23%	6.07%	8.3%
28-May	41.8%	36.45%	30.24%		20.02%	17.50%	42.48%	27.60%	24.77%	23.6%
04-Jun	24.8%	26.91%	18.19%	20.01%	0.32%	0.73%	24.79%	27.88%	1.85%	3.44%
11-Jun	0.8%	1.64%	9.32%	5.91%	-21.06%	-24.86%	1.60%	-0.29%	-8.20%	-9.26%
18-Jun	1.8%	1.63%	-41.14%	-38.83%	-1.45%	3.53%	-18.59%	-14.82%	-15.41%	-11.04%
25-Jun	3.4%	0%	28.70%	7.03%	-12.25%	-19.27%	6.70%	-11.27%	-2.50%	-10.25%
02-Jul	0%	0%	12.80%	0.04%	-19.76%	-30.00%	-1.60%	-22.56%	-20.69%	-26.50%
09-Jul	0%	0%	10.63%	8.08%	-10.68%	-12.96%	-3.89%	-15.70%	-22.22%	-23.97%
16-Jul	0%	0%	-15.14%	-10.93%	-2.13%	2.45%	-8.24%	-15.24%	-5.50%	-0.77%
23-Jul	10.4%	12.95%	2.14%	6.62%	13.57%	14.89%	9.71%	14.67%	4.5%	7.82%
30-Jul	0%	0%	-13.54%	-12.47%	-14.55%	-17.88%	-10.98%	-11.36%	-12.67%	-12.47%
13-Aug	0%	0%	-10.90%	-21.29%	-19.42%	-24.05%	-7.27%	-19.01%	33.89%	17.39%
20-Aug	103.0%	32.3%	-66.52%	-50.42%	-69.64%	-55.33%	-64.22%	-46.48%	-4.99%	-0.25%
24-Aug	16.73%	9.9%	-19.64%	-26.00%	-5.24%	-8.8%	16.47%	11.39%		

TABLE 12. CROSS-CREDIT AND CROSS-DEPOSIT OPERATIONS IN JULY-SEPTEMBER 1994

Date	Discount rate NBU	Average interest rates on one-month credits		Average interest rates on one-month credits One month before		Excnange rate krb/R, buy-sell		Real monthly value	
		Credit	Deposit	Credit	Deposit		One month before	Credit	Deposit
	I	II	III	IV	V	VI	VII	VIII	XI
19/08/94	140%	150%	110%	250%	160%	21-22	20.5-21.5	23.70%	6.40%
26/08/94	140%	150%	110%	250%	170%	21-21.5	21-21.5	23.70%	11.50%
02/09/94	140%	140%	110%	200%	130%	24-25	21.5-22	6.90%	-4.70%
09/09/94	140%	140%	110%	190%	120%	25.5-26.5	23-24	9%	-4.50%
16/09/94	140%	120%	90%	150%	110%	25.5-26.5	23-24	5.90%	-5.3

FORMULAS

(VIII)=[100+(IV)/12]x[(VII)sell/(VI)buy]-100 — Minimum monthly profit rate (in rubles) required for paying back a loan denominated in karbovantsi

(XI)=[100+(V)/12]x(VII)buy/(VI)sell]-100 — Minimum monthly profit rate (in rubles) possible in case of exchanging rubles and depositing karbovantsi in Ukraine

the foreign exchange markets and banking operations were very weak-developed or not yet existing, therefore they were not included. These four countries are used for exchanging dollars for national currencies and the latter are exchanged for rubles. If Ukraine is considered as the country **B** as well (see first shadowed column of Table 11), we obtain the efficiency coefficients for triangle arbitrage.

The coefficients of efficiency of the whole chain of transactions are given as a percentage of the amount of rubles invested. The current average commercial banks' buy and sell rates were used for the calculations, as well as the official dollar rates in the given countries. For Belarus the currency exchange rate of the Russian ruble was used, because the direct banking operations were not developed that time.

Negative coefficients in the table indicate losses in the scheme described above. However, one had to change the direction of the operations and positive arbitrage was still possible. Profits were close to zero during the periods of relative stability of the MICE dollar exchange rate. At the time of significant volatility of the ruble-to-dollar exchange rate in Moscow possible cross-rates gains are increasing due to the uneven adjustment of the foreign exchange markets in the ex-Soviet republic.

It is important to guess the right direction of the transactions because high losses are possible as well. For a surprisingly long period the optimal way was Russia-Ukraine-Latvia -Russia. Profits were positive and high both for Dollars and German marks exchange rates. On March 5, 1993 the efficiency was more than 100%, even though this should be considered as an exemption. Nevertheless, the profits in these particular case were relatively stable till June 93. In July the situation changed and using of the old scheme could lead to more than 10% losses.

It is necessary to mention that all the profitability presented by the coefficients was potential only. Only few banks could use the situation to made the transactions. Sometimes there was no enough time for all the necessary transfers. The result always depended on the well-developed contacts with banks in the involved countries and the quality of the Moscow dollar exchange rate forecast.

Cross-deposit and cross-credit operations

Apart from classical currency arbitrage operations the transactions involving the Ukrainian markets for credits and deposits had been very profitable for Russian enterprises and banks until the NBU decreased the discount rate from 240% to 190% per annum in July 1994. The maximum interest rate for credits was set at 250% per annum. At the same time the banks had to decrease the interest rates for earlier issued credits. Formally Ukrainian banks fulfilled the NBU requirements, although they started to give one-month credits only. The average rate of interbank credits was also 250%, therefore commercial credits seem to be more expensive than the level required by the NBU.

The decrease of the deposit rates from 230% to 200% in July and from 170% to 110 % in August made Ukrainian market less attractive for Russian enterprises for keeping their deposits. The real interest rate on deposits in Ukraine was about 14% per month in July 1994, in August it declined to 11.5% . Nevertheless, the opportunity to hedge one's export-import operations and low risks depositing in Ukrainian commercial banks were still attractive for Russian investors in comparison with Russian deposit market operations. However, at the beginning of September the real deposit rate in Ukraine was already negative and the deposit operations there became unprofitable.

The technical side of the cross-deposit operation is as follows. The client signs a contract with a bank for buying karbovantsi and depositing them in Ukraine. The bank converts client's rubles into karbovantsi according to current market exchange rate. Then it transfers them to a deposit account in a Ukrainian bank. Potential participants on the Ukrainian side are Kiev banks - *INKO, Aval, Azhio, Gradobank* and *Privatbank* from Dnipropetrovsk.

The Moscow bank guarantees the buy-back of karbovantsi including the interest rate payments according to the current exchange rate at the end of deposit contract. The scheme can include one more intermediary between the client and the Moscow bank - a financial company. In fact, this is a trust agreement, offered by a bank or a financial company. The commission fee is fixed (about 2%). The existence of several intermediaries in the chain is necessary for the legal side of the operations and for the minimisation the risk of non-payments. Nevertheless, the currency risk for the client still exists, that is, a sharp depreciation of karbovanets during the time of deposit contract. The bank could take a part of currency risk. In that case a minimum level of earnings is negotiated and all the income above this level is shared between the bank and its client (this proportion is 3/7 in the bank 'Rossijsky Credit').

Banks Tokobank and Mezhdunarodny Moskovsky Bank are also conducting dealing operations in Ukrainian market for short-term credits. However, the real hedging of cross-deposit operations is not possible until the forward market is developed. In April 1994 only two banks in Moscow conducted operations with forward contracts. During the summer their number increased but the market was still very thin until September 1994.

The results of these operations in July-September 1994 are presented in Table 12. Column VIII gives the real value of credits in karbovantsi in case of Russian residents borrowing in Ukraine. The figure 23.70% presented in the first row of the column VIII shows, what was the minimum profit rate required on August 19, 1994 to pay back the loan denominated in karbovantsi, borrowed on July 19, 1994 (one month before). The figure 6.40% in the first row of column IX presents the average real interest on deposits for Russian residents in Ukrainian banks. The interest and exchange rates in shadowed columns indicate the levels at the beginning of the operation, i.e. one month before the corresponding date.

It is easy to see that cross-deposit operations were profitable in end of July - mid-August 1994. After August 20, 1994 the real inters rate became negative and these operations could bring losses. However, cross-credit operations started to be profitable.

V. Test of the monetary model for the karbovanets-to-ruble exchange rate

The Monetary Approach

The monetary approach explains the long-run nominal exchange rate in terms of relative national money supply and demand. It relies on the assumptions of continuous purchasing power parity (PPP) and the existence of stable money demand functions for the domestic and foreign economies. It can be stated as follows:

$$s = (m - m^*) - c\,y + c^*y^* + dr - d^*r^* \qquad (1)$$

where s is the logarithm of the nominal exchange rate, which may be assumed to depend on the m's and y's - logs of money supply and real income respectively, and r's which are levels of interest rates. Foreign variables are denoted by an asterisk. This is the basic flexible-price monetary model equation, which says, that an increase in the domestic money supply, relative to the foreign money stock, will lead to the rise in s - that is, a fall in the value of the domestic currency in terms of foreign money. An increase in domestic output, as opposed to the domestic money supply, *appreciates* the domestic currency (s falls). Similarly, a rise in domestic interest rate depreciates the domestic currency, because an increasing interest rate reduces the demand for money (MacDonald and Taylor, p.5).

Assuming that the domestic and foreign money demand coefficients are equal ($c = c^*$, $d=d^*$) equation (1) reduces to

$$e = (m - m^*) - c(y - y^*) + d(r - r^*) \qquad (2)$$

One of the first tests of the above equation was conducted by Frenkel (1976) for the German mark/US dollar exchange rate over the period 1920-23. Since this period corresponds to the German hyperinflation, Frenkel argued that domestic monetary effects will overwhelmingly dominate the exchange-rate equation, and, thus, the domestic income variable and even foreign variables could be dropped, and attention focused simply on the effects of domestic money growth and the expected inflation.

Dornbush formulation of the sticky-price monetary model known as Dornbush overshooting model was a further step in the monetary approach. However, Frankel argued that the above model did not allow a role for differences in secular rates of inflation. His model was an attempt to allow for this defect. He included the real interest rate differential as an explanatory variable.

The latest developments of the model are more complicated and the assumptions are more flexible, even though the evidence since the beginning of 1980s is not so supportive of the monetary model. However, the studies of inter-war period and of next one until the late 1970s were largely supportive of this approach. In particular Dornbush (1979) studying flexible-price model and Frankel (1979) studying real interest differential model of the mark-dollar exchange rate both obtained results which can be considered as good explanation. In many reports after 1978 few coefficients were correctly signed, the equations had poor explanatory power as

measured by the coefficient of determination, and residual autocorrelation was a problem (MacDonald and Taylor, p.11).

The monetary approach for the case of Russia and Ukraine have been chosen in order to trace the impact of the monetary growth and inflation on the foreign exchange markets of these countries. The other main view of exchange rate determination - the portfolio balance approach - hardly can be applied to either economy. There are no securities denominated in karbovantsi traded in Russia and the foreign exchange market for karbovantsi is still very thin.

The monetary model was tested without any restrictions on the coefficients as stated in equation (1) as well as in formulation given by equation (2), where domestic and foreign income and interest rate coefficients are supposed to be equal. The impact of high inflation in Ukraine seem to be very important for the explanation of the exchange rate behaviour. Real interest differential substituted for $r-r^*$ term can be rewritten according to the Fisher's equation:

$$i = r - p$$

where i is the real interest rate and p is the rate of inflation. Thus, the exchange-rate equation can be written:

$$e = (m - m^*) - c(y - y^*) + d(i - i^*) \qquad (3)$$

or $$e = (m - m^*) - c(y - y^*) + d(r - p - r^* + p^*) \qquad (3)'$$

Data Sample

Two types of exchange rates were used in the econometric testing of the monetary model for the exchange rate between the Ukrainian karbovanets and Russian ruble: the end-of-the-month exchange rates set on the auctions of the UICE (for 1994 except October 1994 -- the NBU foreign exchange auctions) and the MICE and average non-cash exchange rates of the Ukrainian commercial banks, and the monthly average rates of the UICE and the MICE auctions. For the period when the UICE ruble auctions were suspended, the cross-rates through the US dollar were used as a proxy. Source of data: various 1993-1994 issues of *Commersant, Commersant Weekly, Finansovyje Izvestija, Finansovaja Ukraina, Biznes, Ukrainian Business News* periodicals.

The inflation in Russia and Ukraine is given in this model by the standard consumer price index (CPI), which is reported for Russia since 1992, and for Ukraine since February 1993. Russian monthly CPI is taken from *Russian Economic Trends,* 1994, Nos. 1 and 2 and latest monthly updates. Ukrainian CPI is taken from the economic bulletin *Ukraine in Numbers,* 1993 Nos. 8 and 10, 1994 No.12, and from the monthly economic reports of the Cabinet of Ministries of Ukraine, published in *Uriadovyj Kurjer* government daily.

Money supply M2 is end-of-the-month broad money supply. It includes currency in circulation, time and demand deposits of the households and enterprises and does not include resident foreign currency deposits. The real industrial production is normalised to January 1993 level. The real GDP is calculated based on the level of nominal GDP on the end-of-the-period base. The problem is that only quarterly data are available for Ukraine, while monthly data are available for Russia. So the set of monthly GDP data for Ukraine has been constructed taking into account the time-pattern of the industrial production (it is assumed to be roughly two thirds of the Ukrainian GDP). Sources of these data are the same as above.

The interest rates considered are the official effective annual discount rates of the central banks of Russia and Ukraine, and average annual interest rates in Russian and Ukrainian commercial banks for credits and deposits on the interbank market, calculated on monthly basis. The source for Ukraine is the same as above. The source for Russia -- *Commersant Weekly,* 1993-1994.

Data are presented in the appendix.

Regression Analysis

Different types of the monetary model were estimated for the various karbovanets-to-ruble rates. In general the results were supportive for the model. The rates estimated were the karbovanets-to-ruble rates in all cases, for all the models to be consistent. Consequently, the Ukrainian parameters were considered as 'home', and the Russian parameters as 'foreign' or starred parameters in the equations (1)-(3').

In all versions of the model the coefficients of the monetary variables were in the interval 1...2, usually near 1.5

Next conclusion was that the industrial production was much better proxy for real income in the model than the GDP. It is possibly due to the incomplete data and the way the complete set of GDP data was reconstructed. However, for the rate of the Ukrainian commercial banks, models including the GDP instead of the industrial production, had slightly better explanatory power. Possible explanation is that the industrial production reflects the income in the state sector mainly. The GDP, even if the data is not complete, nevertheless reflects the performance of the private sector, which is especially important for banks as part of that sector. On the contrary, the currency exchanges both in Kiev and in Moscow deal with the state sector: with industrial enterprises. This could be a plausible explanation for the different behaviour of the models for different exchange rates.

Almost in all cases the income variable (both industrial production and GDP) had a wrong sign even though the variable could be significant, *i.e.* contradicting the theory. However, that was not unexpected, as many previously reported econometric testings of the monetary models gave the same result. It is interesting that the models for the bank exchange rate gave few exemptions, with negatively-signed income variable.

Then, the credit rates were found to be the best comparatively to the deposit rates and especially to the discount rates of the central banks. Once more, the deposit rates appear to be much more important in the models for the bank exchange rates, for the reasons much alike the stated above. For the industrial enterprises that are the ultimate participants of the MICE and the UICE auctions, the interest rate at which they can borrow money in the commercial banks, plays an important role, while for the commercial banks operating on the foreign exchange market, the deposit rate is important for their cross-currencies operations, as explained in the section above.

In the majority of cases, the interest rates differentials were more significant for the model than the inflation rates. The estimated coefficients for the inflation were usually not significantly different from zero in 95 % confidence interval.

Next general result: monthly average exchange rates for the UICE and especially for the MICE fit the model slightly better than the end-of-the-month rates. That was particularly true for the models with lagged money supply.

Lags in one and two months in money supply were tested. One-month lag appeared to improve the parameters of model, while two-months lag led to their worsening.

In some cases the coefficients of the model were estimated separately for 1993 and 1994. The estimators obtained were substantially different, thus proving different behaviour of the system in the two periods. The most significant change is that the income variable in the second period (1994) becomes small and insignificant, along with the substantial increase in the coefficient of the money supply.

In the models with relaxed restrictions the common pattern was that the Russian money supply and income were insignificant, as well as the Ukrainian interest rate.

The numerical results of the regression analysis are presented in the tables below.

Table 13. Estimation of Monetary Model for the UICE Exchange Rates

	Constant	(m-m*)	(y-y*) *	(r-r*) **	(p-p*)	F-stat. n,k,F	R^2	Root MSE	DW statistics
1.Equation (1) for end-of-the-month rates***	-13.02 (11.10)	1.116 (0.490) -0.308 (0.644)	1.667 (0.813) -0.310 (2.650)	0.001 (0.003) 0.003 (0.005)	-0.003 (0.002) 0.027 (0.014)	8,12 58.71	0.975	0.186	2.460
2.Equation (1) for monthly average rates***	-13.92 (11.94)	0.728 (0.527) 0.262 (0.693)	1.025 (0.875) -0.088 (2.851)	-0.0016 (0.002) 0.012 (0.006)	0.0004 (0.002) 0.005 (0.015)	8,12 54.59	0.973	0.200	2.056
3.Equation (2) for end-of-the-mon rates	2.477 (0.082)	1.564 (0.132)	1.805 (0.394)	0.003 (0.001)		3,17 115.69	0.953	0.213	2.284
4. Equation (3) for end-of-the-mon rates	2.482 (0.078)	1.484 (0.135)	2.346 (0.499)	0.003 (0.001)	-0.004 (0.002)	4,16 96.21	0.960	0.203	2.392
5. Equation (3) for monthly average rates	2.404 (0.095)	1.504 (0.166)	1.822 (0.612)	0.004 (0.001)	-0.002 (0.003)	4,16 67.95	0.944	0.250	1.996
6. Equation (3) with 1 month lag in money supply	2.517 (0.092)	1.319 (0.136)	2.204 (0.663)	0.005 (0.001)	-0.003 (0.003)	4,15 58.06	0.939	0.227	1.728
7. Equation (3) wit 1 month lag in money supply, average rat	2.475 (0.079)	1.404 (0.117)	1.436 (0.570)	0.004 (0.001)	0.0001 (0.002)	4,15 87.35	0.948	0.196	2.155
8.Equation(2) for end-of-the-month rates, GDP	2.596 (0.202)	1.655 (0.185)	0.534 (0.347)	0.0019 (0.002)		3,17 56.28	0.909	0.299	1.034
9.Equation (2) for end-of-the-month rates, deposit rate	2.563 (0.188)	1.764 (0.188)	1.576 (0.521)	0.0015 (0.002)		3,15 71.33	0.935	0.259	1.715
10.Equation (2) for end-of-the-month rates, 1993, lagged money	3.003 (0.318)	1.743 (0.362)	1.689 (1.159)	0.009 (0.003)	-0.010 (0.005)	4,3 15.49	0.954	0.231	0.145
11.Equation (2) for end-of-the-month rates, 1994, lagged money	2.413 (0.114)	2.077 (0.340)	0.190 (0.422)	0.002 (0.001)	0.075 (0.016)	4,4 16.46	0.942	0.047	1.447

* Industrial production, except No.8.

** Credit rate, except No.9.

*** Above: Ukrainian parameter, below: Russian parameter.

Table14. Estimation of Monetary Model for the MICE Rates

	Constant	(m-m*)	(y-y*) *	(r-r*) **	(p-p*)	F-stat. n,k,F	R^2	Root MSE	DW statistics
1.Equation (1) fo end-of-the-month rates***	-4.687 (14.86)	1.021 (0.656) -0.456 (0.862)	2.102 (1.089) -1.981 (3.547)	0.001 (0.003) 0.003 (0.008)	-0.002 (0.003) 0.008 (0.019)	8,12 34.25	0.958	0.249	2.726
2.Equation (1) for monthly average rates***	17.98 (20.77)	0.611 (0.539) -0.714 (0.879)	2.016 (0.874) -5.503 (3.807)	-0.001 (0.003) 0.009 (0.006)	0.0002 (0.003) -0.017 (0.017)	8,10 32.82	0.963	0.189	1.858
3.Equation (2) for end-of-the-month rates	2.593 (0.091)	1.660 (0.147)	1.911 (0.438)	0.0026 (0.001)		3,17 98.98	0.946	0.238	2.475
4. Equation (3) for end-of-the-month rates	2.597 (0.090)	1.599 (0.157)	2.325 (0.578)	0.003 (0.001)	-0.003 (0.002)	4,16 75.36	0.950	0.236	2.685
5. Equation (3) fo monthly average rates	2.602 (0.093)	1.467 (0.147)	1.502 (0.698)	0.002 (0.001)	-0.002 (0.003)	4,14 46.86	0.931	0.220	1.266
6. Equation (3) with 1 month lag money supply	2.629 (0.091)	1.453 (0.135)	2.410 (0.659)	0.004 (0.001)	-0.004 (0.003)	4,15 66.43	0.947	0.226	2.512
7. Equation (3) with 1 month lag in money supply, average rates	2.642 (0.059)	1.366 (0.081)	1.672 (0.424)	0.003 (0.001)	-0.003 (0.002)	4,14 130.87	0.974	0.135	1.999
8. Equation (2) fo end-of-the-month rates, GDP	2.681 (0.124)	1.895 (0.210)	0.184 (0.386)	0.0004 (0.001)	0.004 (0.003)	4,16 36.04	0.900	0.333	1.507
9.Equation (2) for end-of-the-month rates, deposit rate	2.735 (0.202)	1.876 (0.202)	1.555 (0.559)	0.0003 (0.002)		3,15 64.06	0.928	0.278	1.911

* Industrial production, except No.8.
** Credit rate, except No.9.
*** Above: Ukrainian parameter, below: Russian parameter.

Table 15. Estimation of Monetary Model for the Rates of the Ukrainian Commercial Banks

	Constant	(m-m*)	(y-y*) *	(r-r*) **	(p-p*)	F-stat. n,k,F	R^2	Root MSE	DW statistics
1.Equation (1)***	7.932 (13.06)	0.607 (0.576) -0.453 (0.757)	1.322 (0.957) -3.142 (3.112)	0.0002 (0.002) 0.008 (0.006)	0.001 (0.002) -0.022 (0.016)	8,12 37.88	0.962	0.219	1.569
2.Equation (2)	2.482 (0.088)	1.400 (0.143)	0.985 (0.427)	0.0024 (0.001)		3,17 88.28	0.940	0.231	1.118
3. Equation (3)	2.482 (0.091)	1.391 (0.158)	1.048 (0.583)	0.003 (0.001)	-0.0004 (0.003)	4,16 62.43	0.940	0.238	1.123
4. Equation (3) with 1 month lag i money supply	2.551 (0.049)	1.345 (0.073)	0.874 (0.355)	0.003 (0.001)	0.0005 (0.002)	4,15 205.43	0.982	0.122	1.211
5.Equation (2), GDP	2.573 (0.087)	1.416 (0.150)	-0.513 (0.281)	0.001 (0.001)		3,17 79.84	0.934	0.242	0.796
6.Equation (2), deposit rate, GDP	2.813 (0.155)	1.660 (0.177)	-0.704 (0.267)	0.003 (0.001)		3,15 70.94	0.934	0.247	0.836

* Industrial production, except Nos.5 and 6.
** Credit rate, except No.6.
*** Above: Ukrainian parameter, below: Russian parameter.

VI. Conclusions

In the end of 1994 the foreign exchange markets for karbovantsi and rubles in Russia and Ukraine respectively have been firmly established. Apart from the spot market, based on currency exchange trading and on the direct interbank trading, there already exist forward market for karbovantsi in Moscow. This is a straitforward consequence of the foreign trade pattern of these countries. Russia and Ukraine are the mutually important trade partners and are most likely to remain so in foreseeable future.

The analysis of the foreign trade also shows that Russia is more important for Ukraine than *vise versa*. As a result, the Ukrainian market had emerged earlier than the Russian one, and was more sizable. However, while the Russian market for Ukrainian karbovantsi was less restricted and the Central Bank of Russia (CBR) did not regulate this market directly or by interventions, the market for Russian rubles was strictly regulated by the governments and the National Bank of Ukraine (NBU). After the fixed exchange rate regime was introduced in August 1993, the official exchange rates, currency exchanges' market and commercial banks' ones were substantially different in Ukraine. Even though the volumes of karbovantsi trade were significantly less in Russia, the exchange rate was more representative.

The markets in discussion provide great opportunities for a large-scale arbitrage. Various schemes of it include direct and triangle arbitrage as well as cross-cerdit and cross-deposit operations involving market for credits and deposits apart from foreign exchange one.

As both the historical overview of the market developments in 1993-1994 and the formal econometric analysis show, the exchange rates that are establishing here, are affected primarily by the difference in the monetary policies of two countries. The inflation alone (measured by the consumer price index in the econometric testing) was not as much important as the interest rate differentials and the money supply differentials.

Generally speaking, the econometric testing of the monetary approach to the exchange rate setting in case of Russian ruble and Ukrainian karbovanets was supportive to the monetary model. The results were stable enough for the different varsions of the model, for different rates and explanatory variables used, even though serial correlation was a problem for part of the tests done and not all the fundamental variables were always signed correctly.

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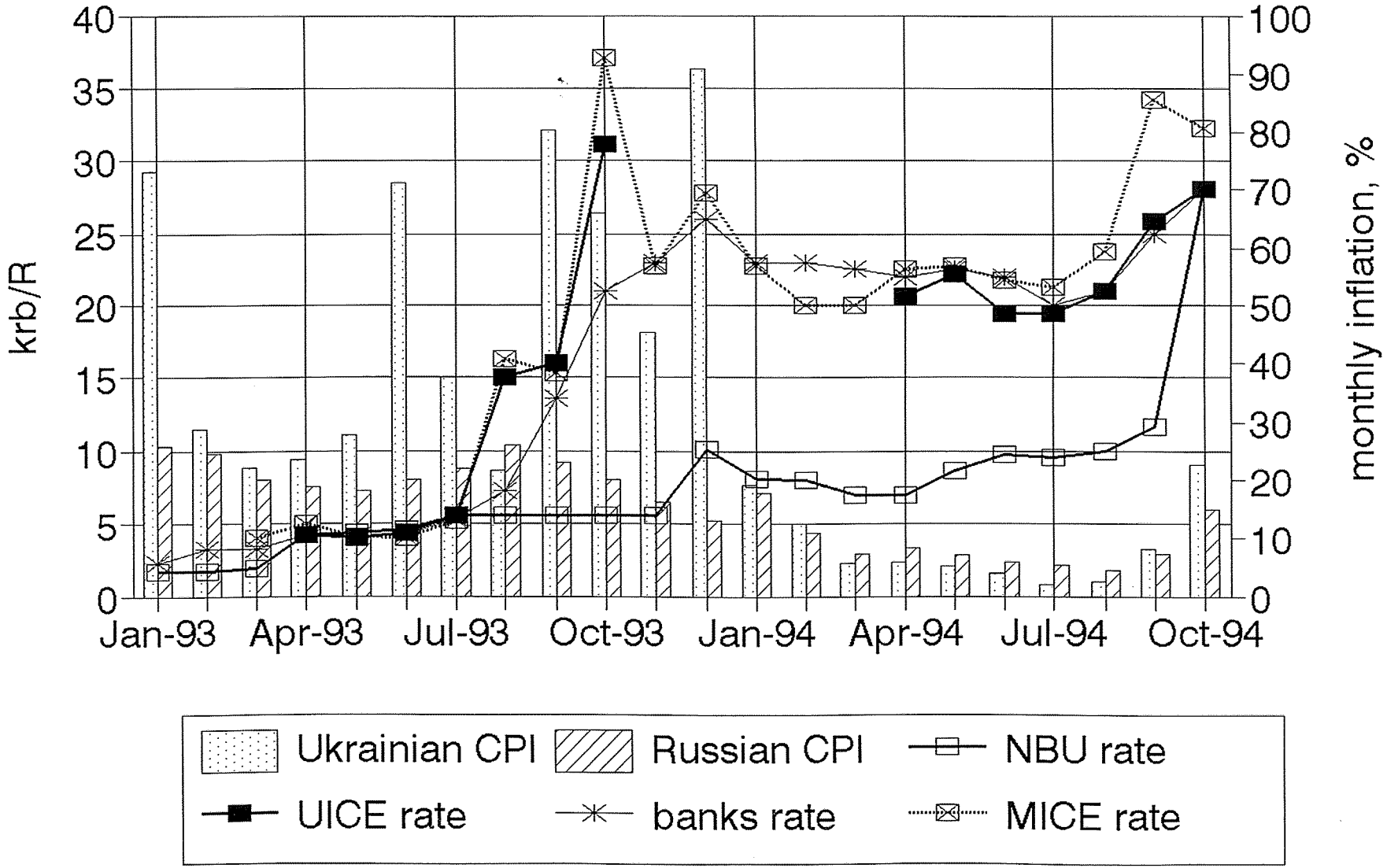
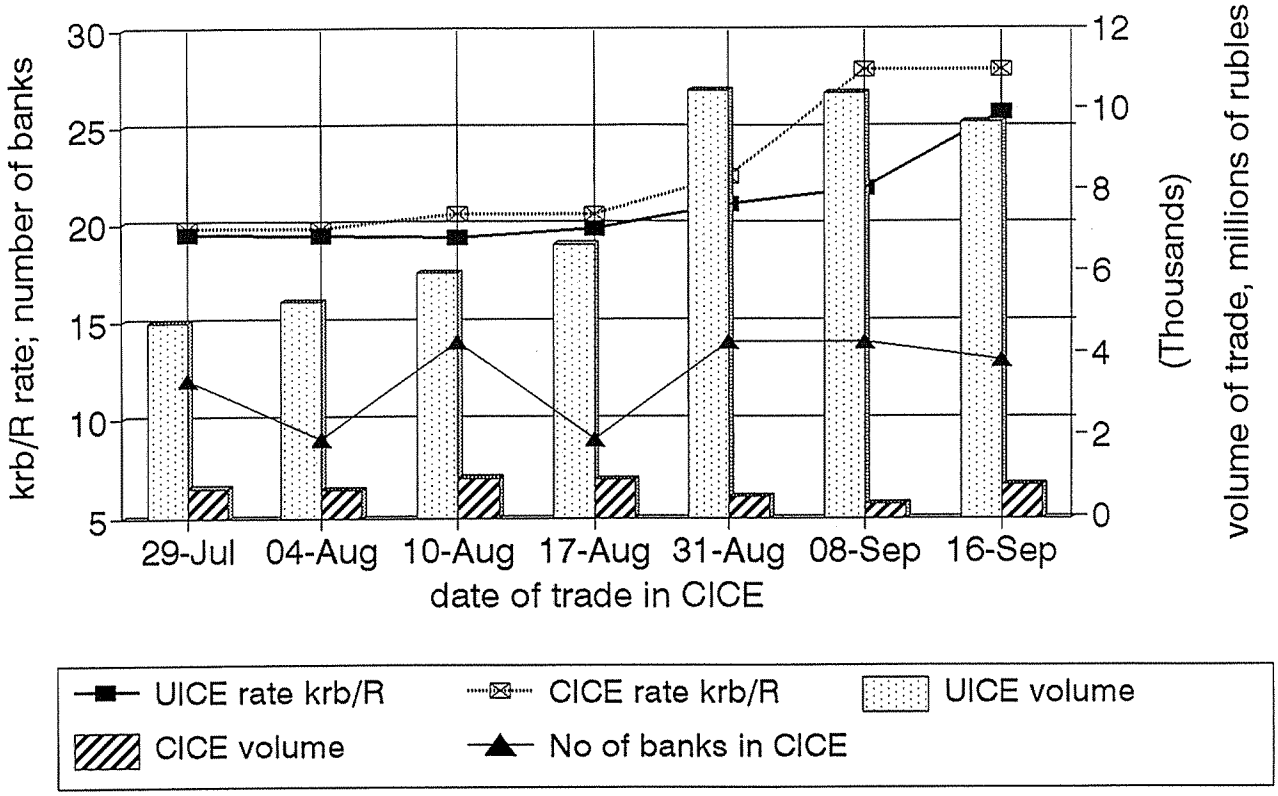
APPENDIX

1.Inflation in Ukraine and Russia

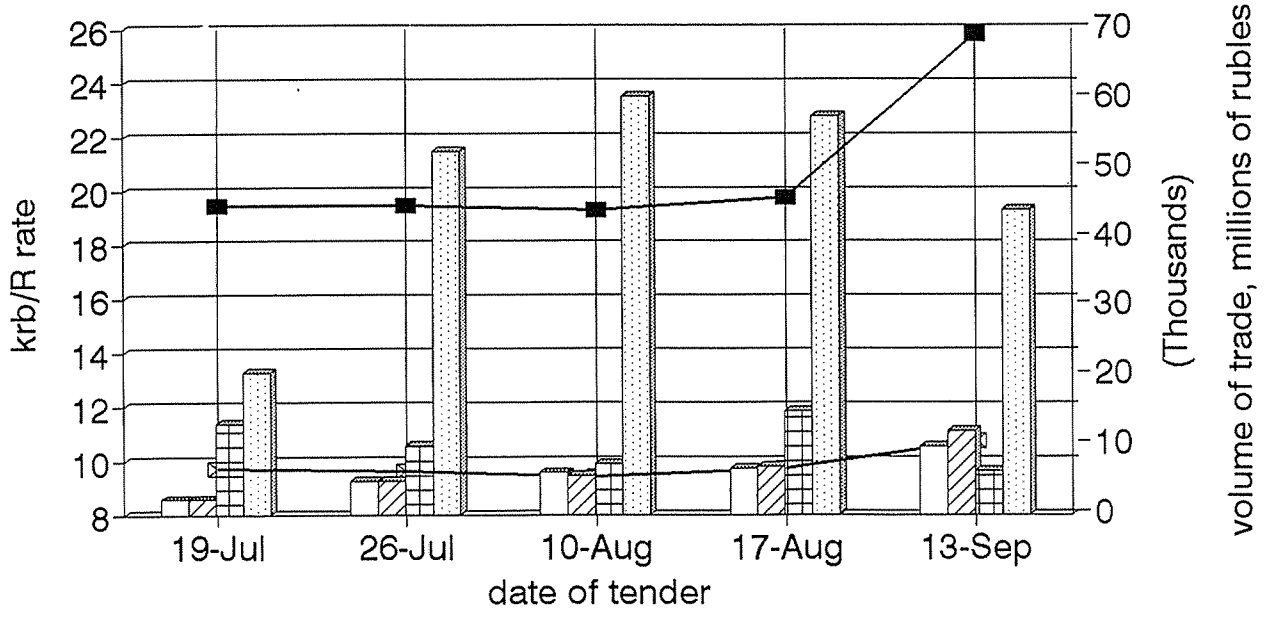
and Karbovanets Exchange Rates



2. Trade in Russian Rubles
at UICE and CICE in July-September 1994

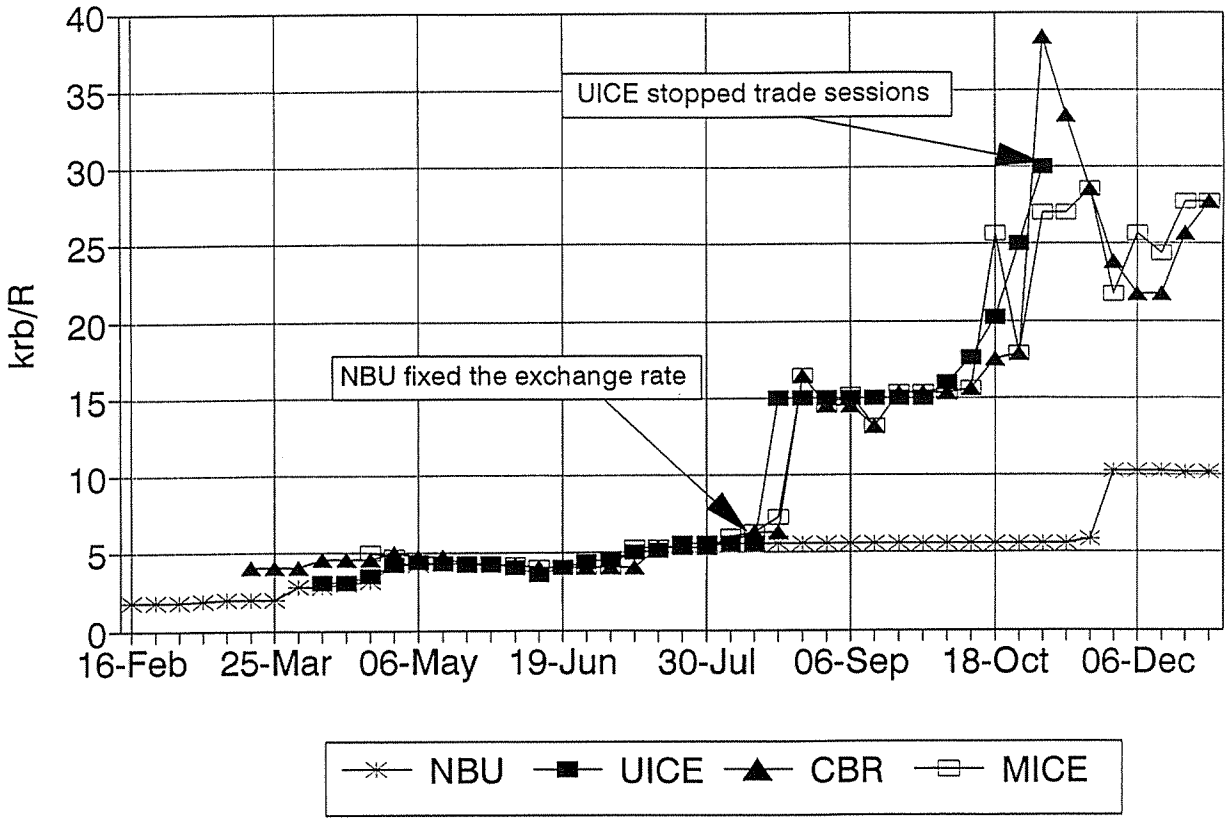


3.Tender Trade in Russian Rubles
in July-September 1994



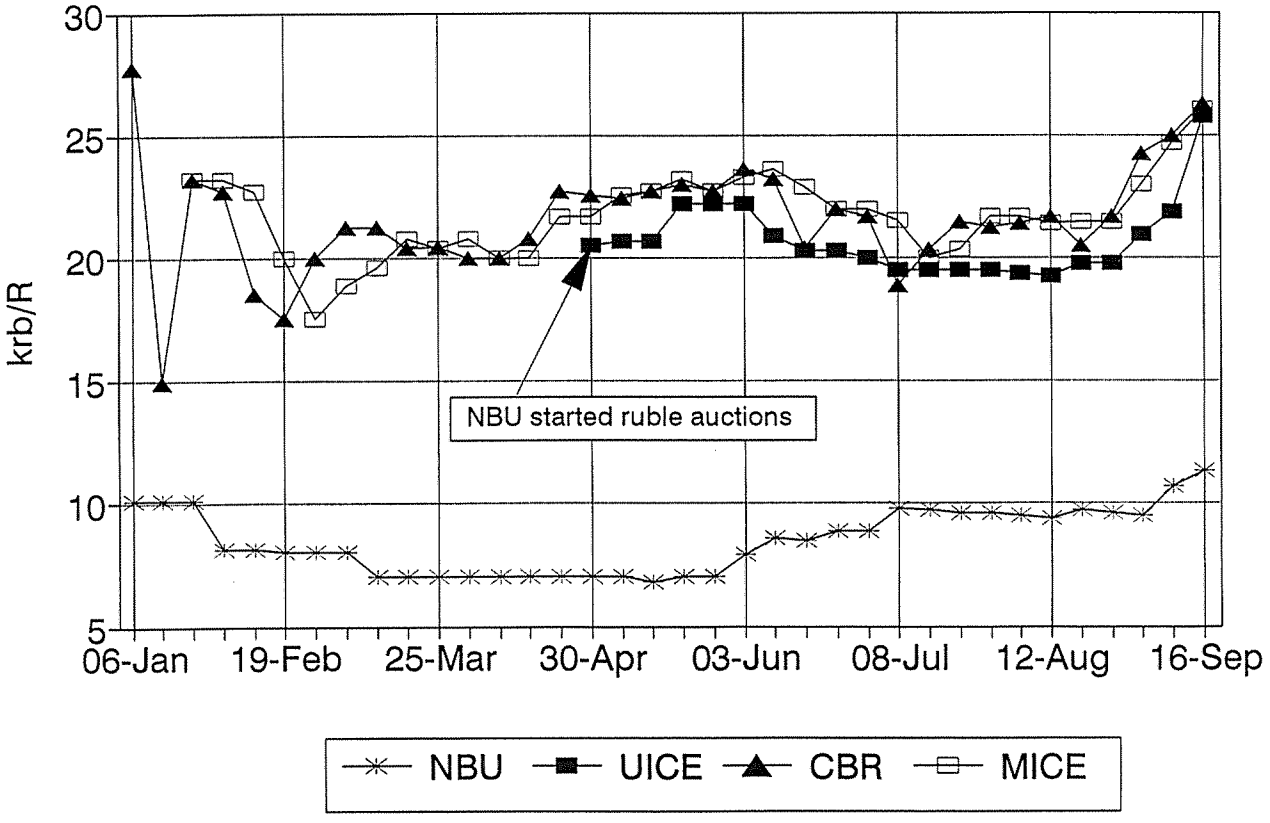
4. NBU, UICE and CBR

Karbovanets/Ruble rates in 1993

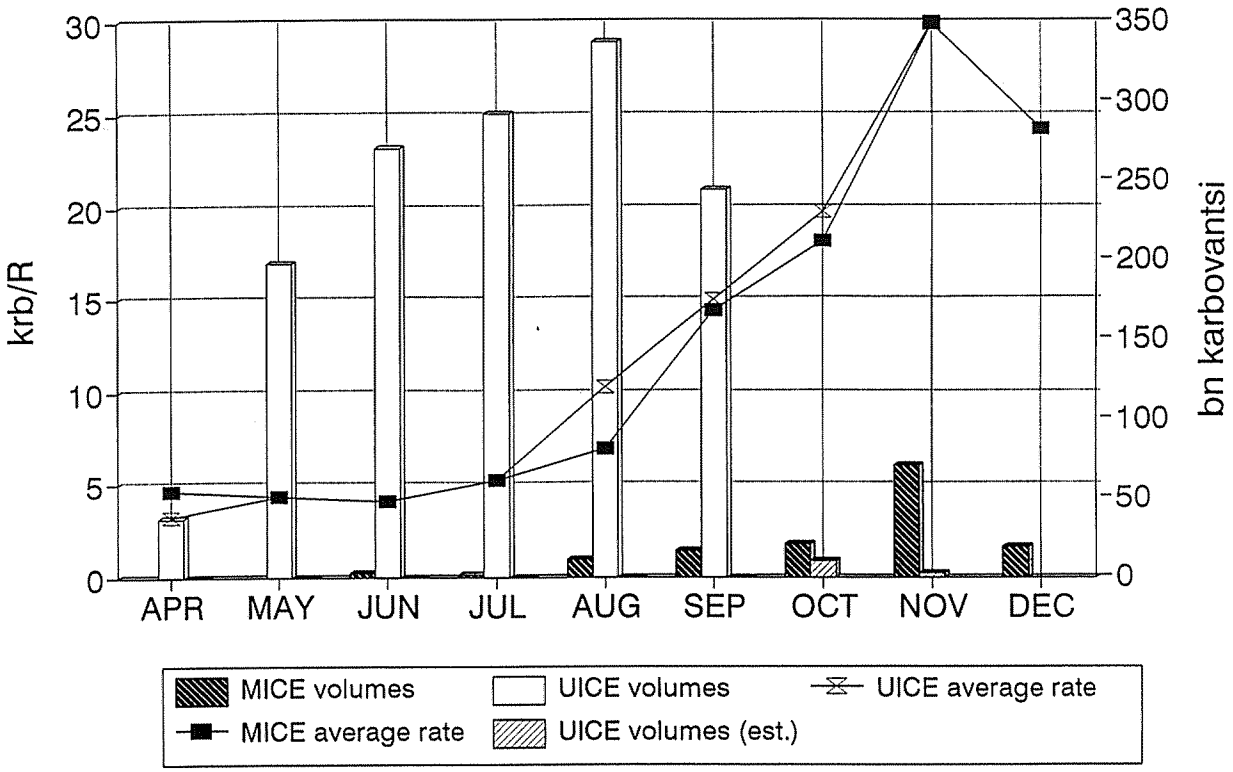


5. NBU, UICE, CBR and MICE

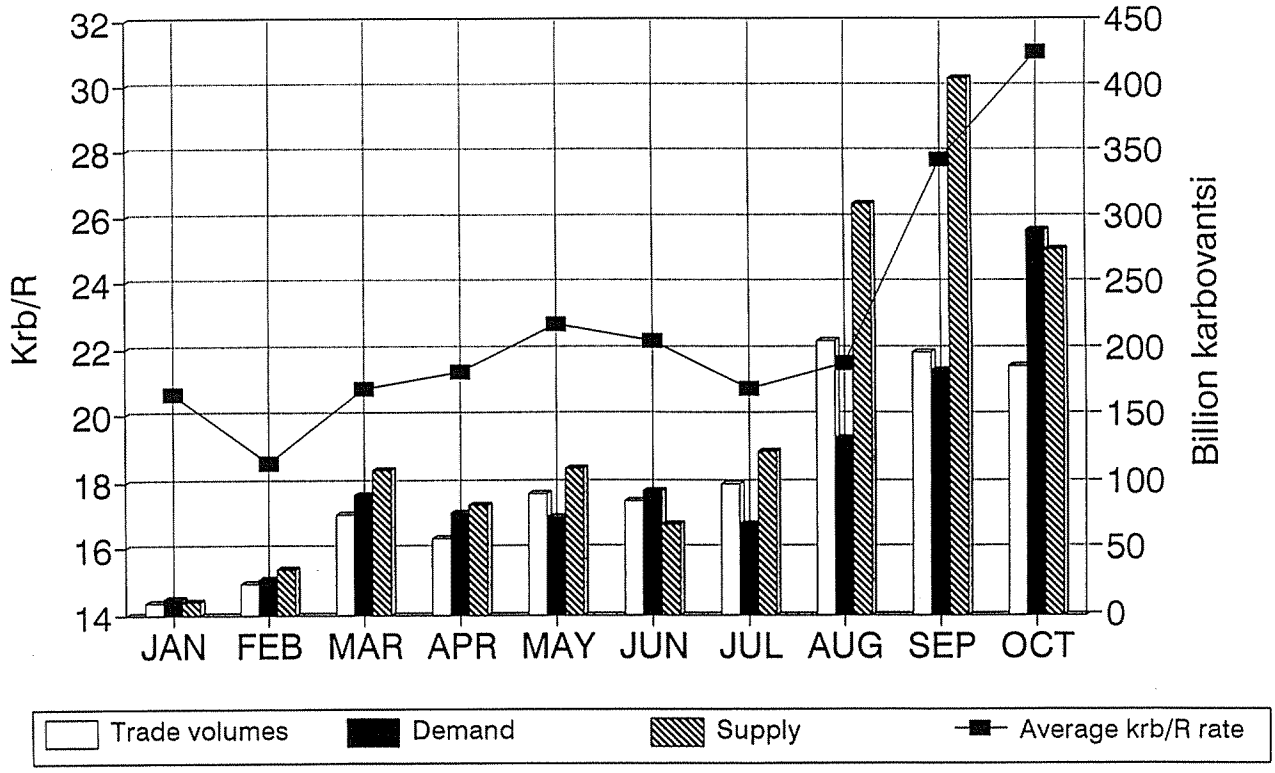
Karbovanets/Ruble rates in 1994



6. UICE ruble trade
and MICE karbovanets trade in 1993

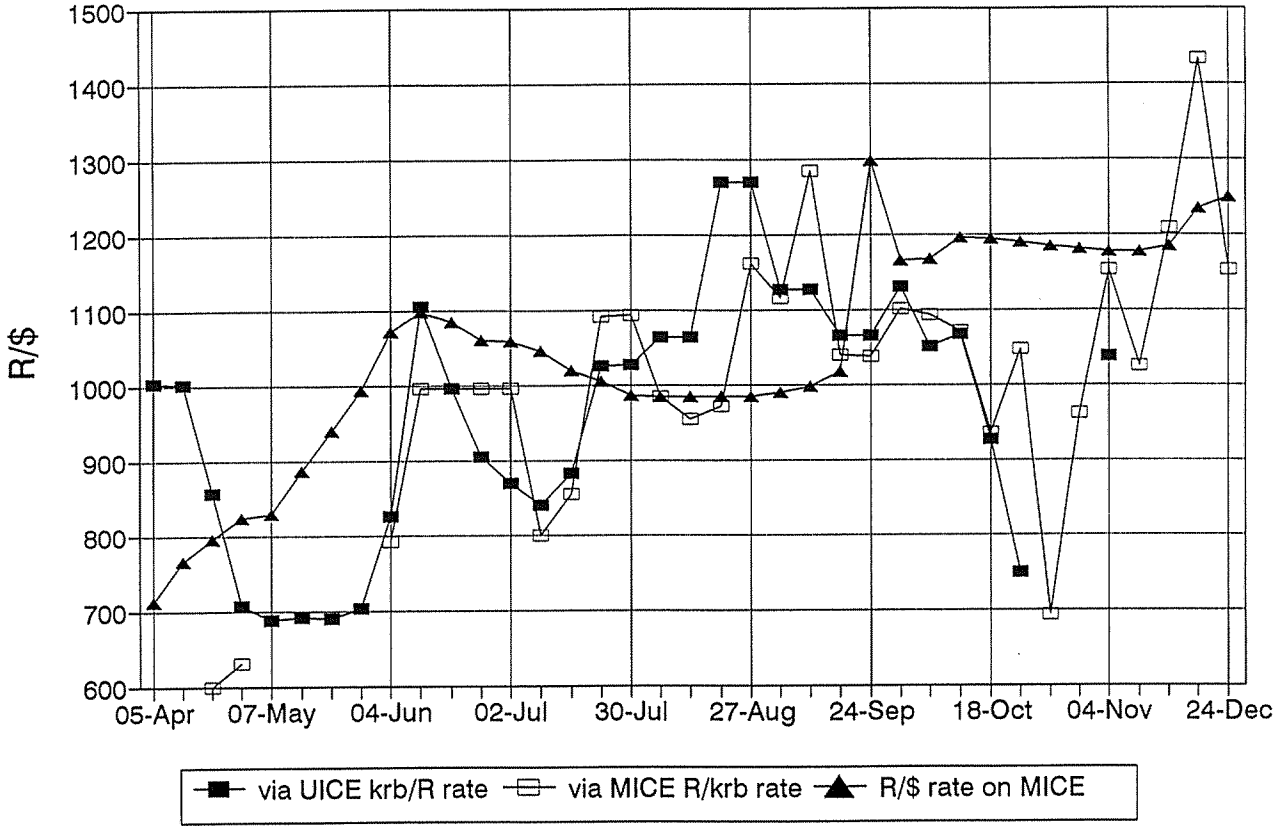


7. MICE karbovanets trade in 1994
Trade Volumes, Initial Demand & Supply



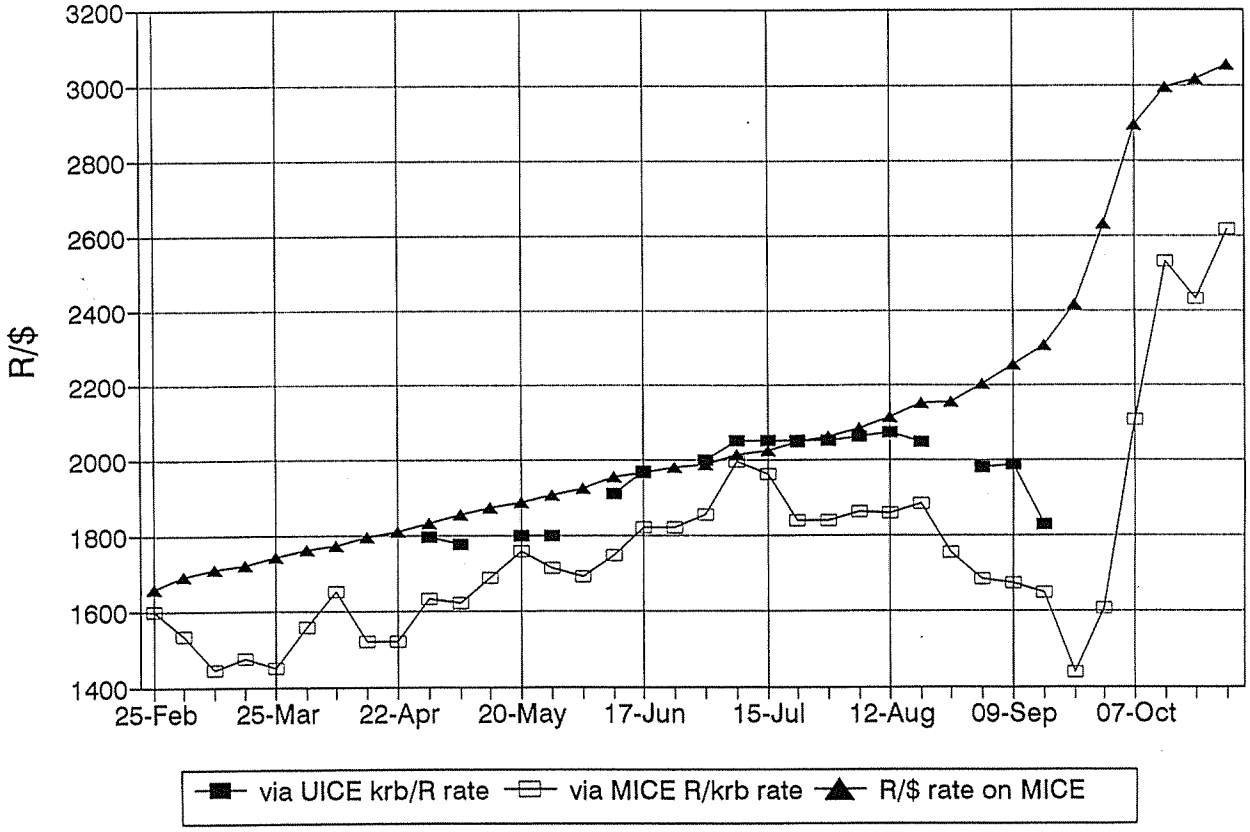
8. Cross exchange rates

Ruble to dollar via karbovanets in 1993



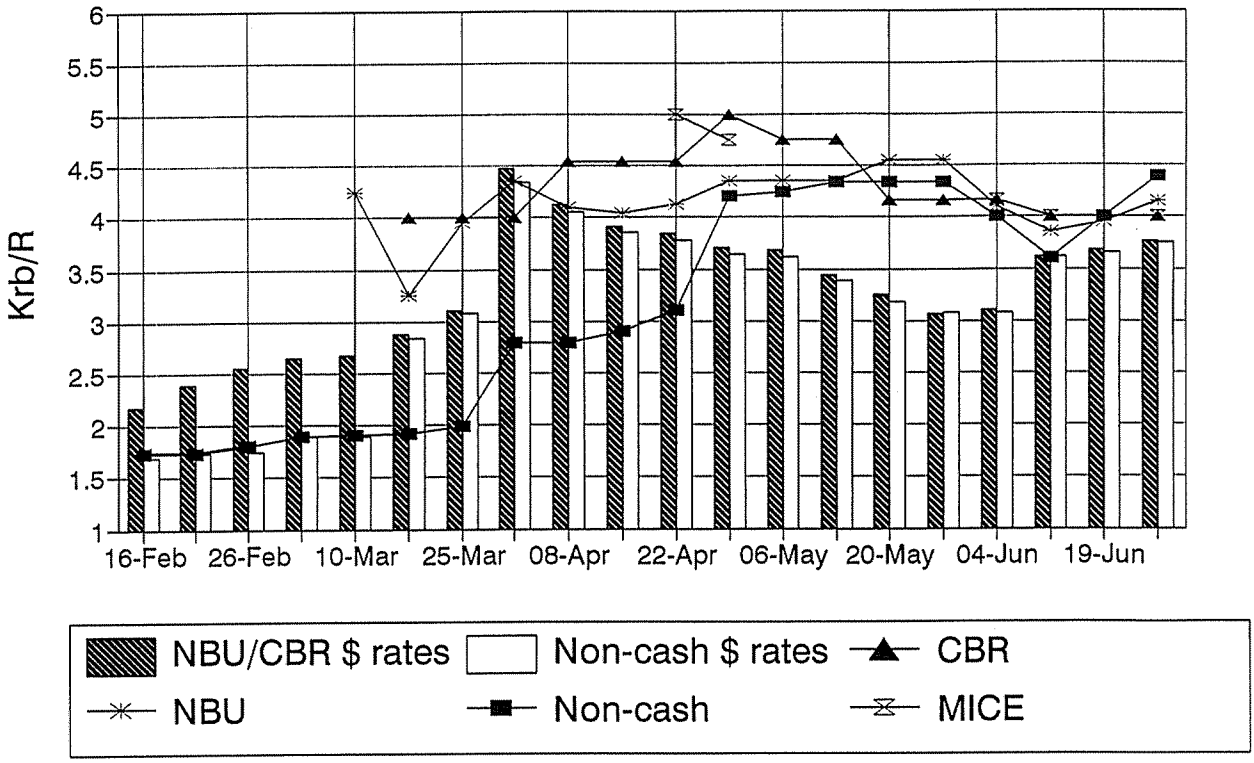
9. Cross exchange rates

R/$ via karbovanets in 1994



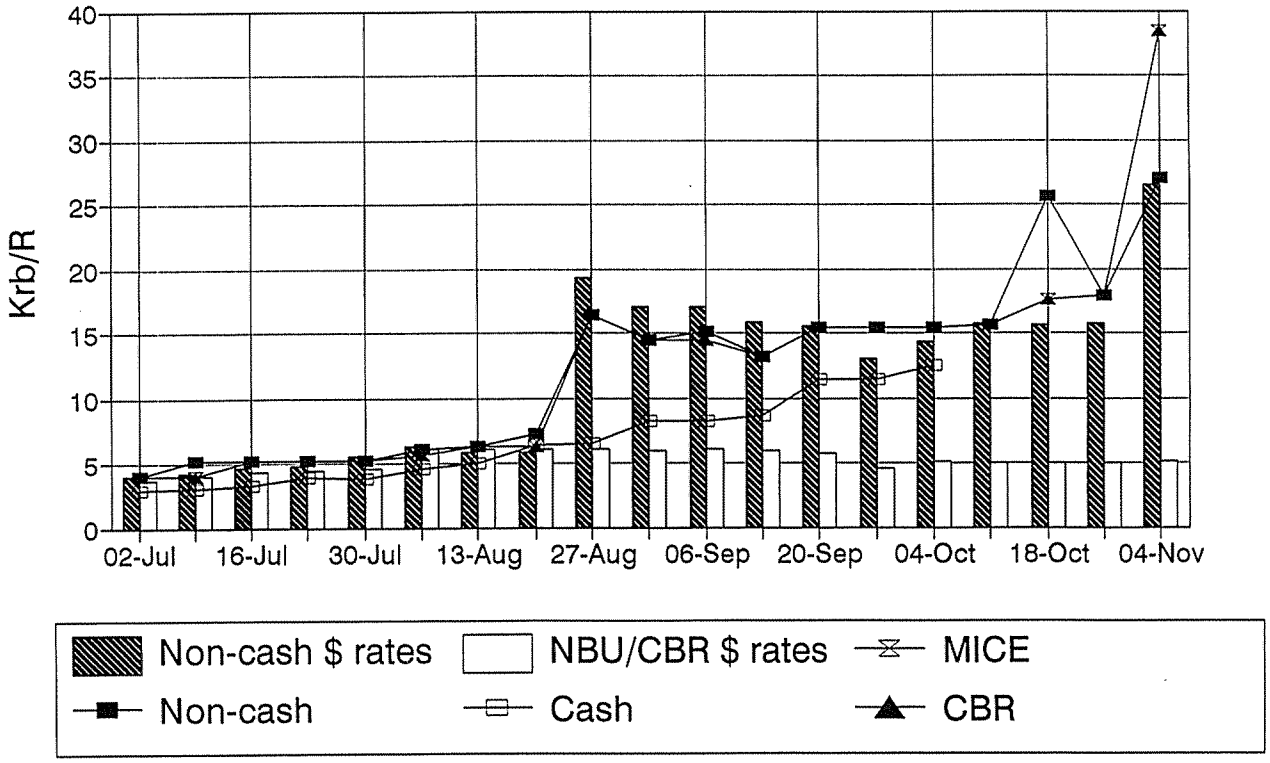
10. Karbovanets-to-ruble via dollar

Cross-rates in February - August 1993



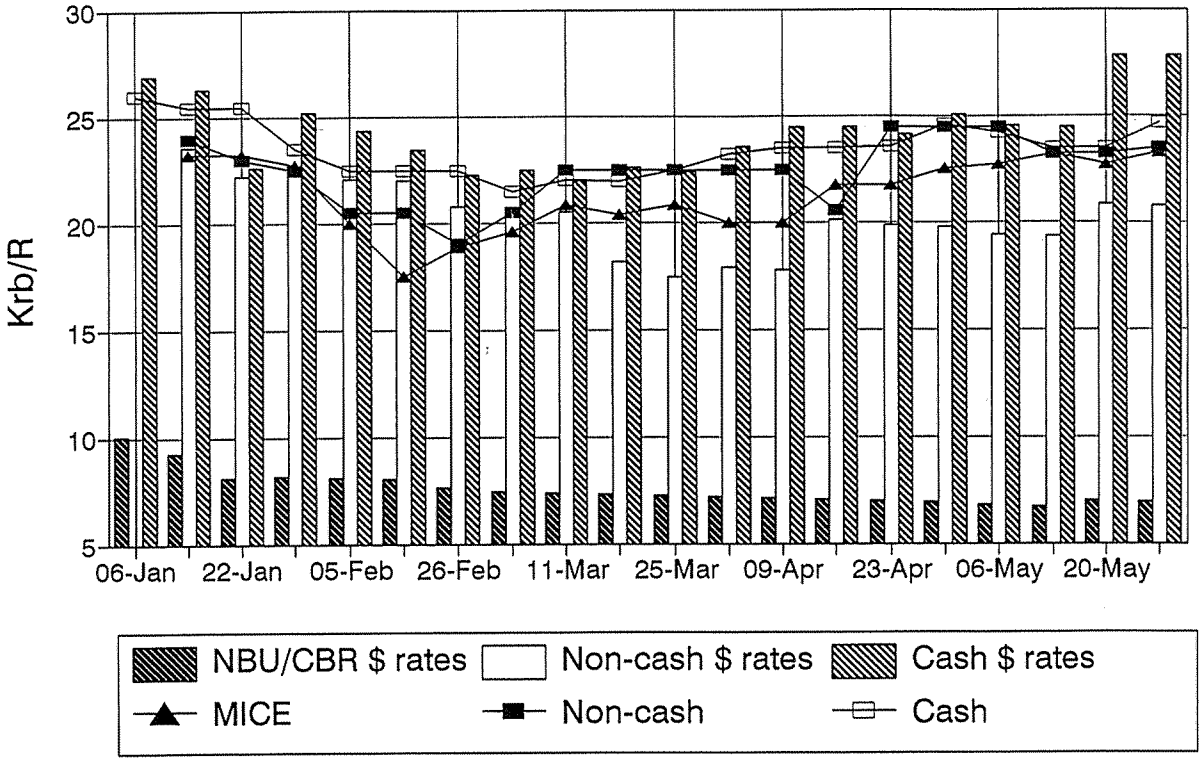
11. Karbovanets-to-ruble via dollar

Cross-rates in July - November 1993



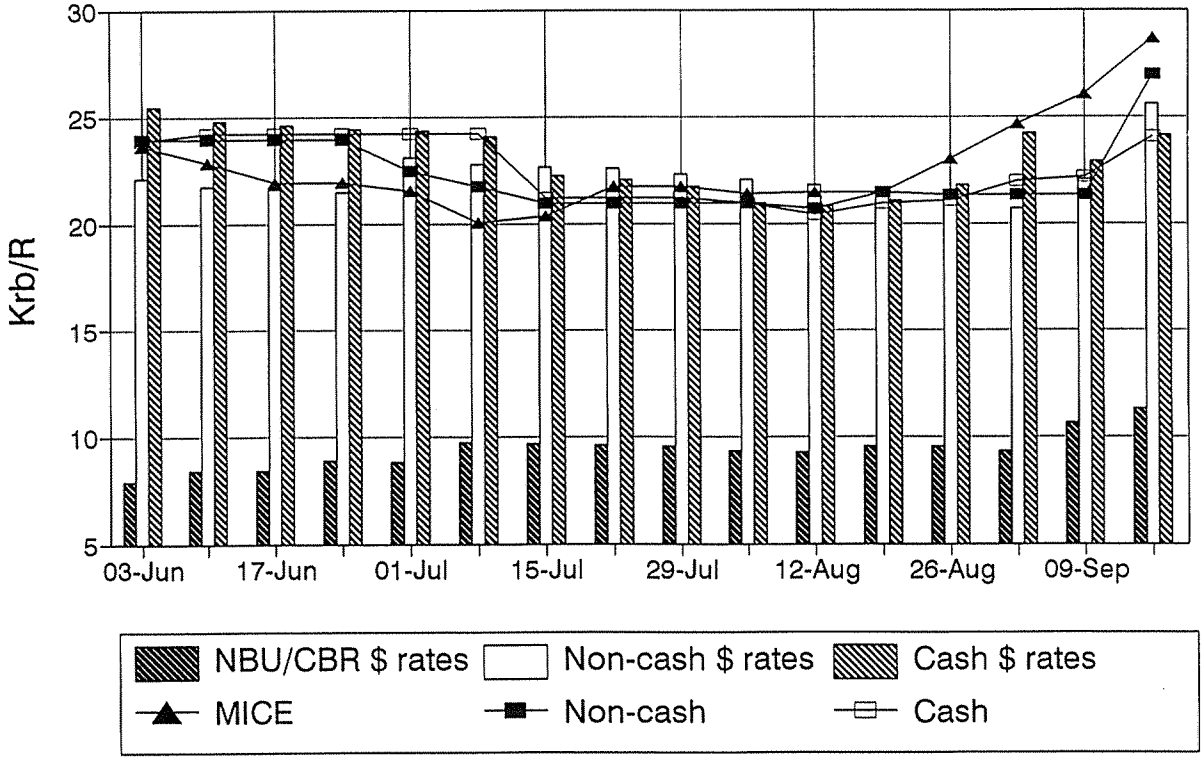
12. Karbovanets-to-ruble via dollar

Cross rates in January - May 1994



13. Karbovanets-to-ruble via dollar

Cross-rates in June - September 1994



DATA USED FOR THE TESTING OF MONETARY MODFL OF THE EXCHANGE RATE (continued)

Date	The banks' exchange rate krb/R	Change of monthly CPI in Russia, %	Russian M2, bn of R	The CBR discount rate, %	Russian interbank credit rate, %	Monthly deposit rate, %	Index of real industrial production,	Russian GDP bn of R	The MICE exchange rate, R/krb
Jan-93	2.3	25.8	8491	80	138	6.4	75	4.334	NA
Feb-93	3.3	24.7	9343	100	140	6.8	80	5.32	NA
Mar-93	3.3	20.1	10932	100	143.9	7.5	81	6.147	0.25
Apr-93	4.28	19	13434	100	153.9	8.3	81	8.47	0.21
May-93	4.04	18	15982	100	155.9	8.6	79	9.394	0.24
Jun-93	4.28	19.9	16219	140	171.8	9.5	77	12.148	0.25
Jul-93	5.32	22	22215	170	175	10.3	71	13.555	0.19
Aug-93	7.2	26	25261	170	182	10.8	67	13.587	0.069
Sep-93	13.62	23	26099	180	187	11.1	69	17.042	0.065
Oct-93	21	20	28866	210	190	12.2	67	19.33	0.027
Nov-93	23	16	31266	210	210	12.3	66	22.467	0.042
Dec-93	26	13	36718	210	211	12.6	67	30.55	0.036
Jan-94	23	17.9	38650	210	220	13.3	58	26	0.06
Feb-94	23	10.8	41011	210	215	13.5	60	34	0.05
Mar-94	22.5	7.4	44772	210	215	13.7	59	36.9	0.05
Apr-94	22	8.5	52352	205	208	13.4	58	43.7	0.0443
May-94	22.5	6.9	59404	200	195	12.1	57	48.9	0.0428
Jun-94	22	6.0	66960	170	173	9.9	56	49.6	0.046
Jul-94	20	5.3	73558	150	150	9.6	54	50	0.046
Aug-94	21	4.6	82460	130	139		53	56	0.0426
Sep-94		7.2	87176	130	111		54	66.2	0.0297
Oct-94		15.1		140	120		59	69	0.0352

DATA USED FOR THE TESTING OF MONETARY MODEL OF THE EXCHANGE RATE

Date	Change of monthly CPI in Ukraine, %	Ukrainian M2, bn of krb	The NBU discount rate, %	Ukrainian interbank credit rate, %	Ukrainian interbank deposit rate, %	Index of real industrial production, %	Ukrainian GDP, bn of krb	The NBU exchange rate krb/R	The UICE exchange rat krb/R
Jan-93	73.2	2299	70.8	79.1	72.5	73.4		1.656	1.63
Feb-93	28.8	3413	31.8	88.2	88.7	76.5		1.738	2.31
Mar-93	22.1	3773	32.3	87.1	87.3	85.7	5251	1.9248	3.00
Apr-93	23.6	4562	72.8	110.4	98.2	101.5		4.25	4.25
May-93	27.6	5780	238	142.6	132.1	80.2		4.34	4.00
Jun-93	71.1	6059.6	131.2	231	169.8	76	14320	4.58	4.40
Jul-93	37.6	7957	52.8	222	243.2	69.7		5.61	5.61
Aug-93	21.7	14101.5	55	202.6	189.5	68.2		5.61	15.00
Sep-93	80.3	22513.7	57.8	225.5	203	78	41801	5.61	16.01
Oct-93	66.1	26070	93.7	245.9	183	83.5		5.61	31.15
Nov-93	45.3	30302	28	279.2	231.7	81.3		5.61	25.22
Dec-93	90.8	35666	130.2	295.1	215.8	79.7	92147	10.11	19.92
Jan-94	19.2	38029	126.2	310.2	224	49.7		8.12	16.03
Feb-94	12.6	39594	240	384.7	284.8	46.1		8.04	18.06
Mar-94	5.7	46530	171.1	389.8	328.6	49.8	142900	7	17.67
Apr-94	5.9	58371	197.8	328	329.1	47.1		7	20.70
May-94	5.2	68959	195.2	303.1	276.1	49		8.6	22.22
Jun-94	3.9	76286	149.5	254.7	220.6	51.4	219000	9.8	19.50
Jul-94	2.1	95000	115.5	192.5	179.7	49.3		9.5	19.40
Aug-94	2.6				130	51.2		10	21.00
Sep-94	6				100			11.6	
Oct-94	22.5							28	

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