CONTROLLING DOMESTIC LIQUIDITY

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1. Introduction

The main goals of monetary policy, the stability of general price level and keeping the monetary expansion in line with the long term output potential of the economy, can be met by utilizing direct controls or market oriented monetary instruments. Nowadays sophisticated market oriented procedures are mostly used in developed countries, as well as in many less developed countries and recently in Eastern European countries.

During 1992 and 1993 the National Bank of Croatia (NBC) effected many changes in types and relative role of its monetary policy instruments. These changes are very useful and important, but they are moderate in comparison with modifications of instruments which have been recently made in other countries similar to Croatia. Direct controls are stilt major monetary instruments, largely because of exogenous factors.

The reform of monetary policy instruments is one of the key elements that are necessary for the success of stabilization programs. It is not a coincidence that such a reform was performed in many modern stabilization programs. The first part of this article shows why direct controls must be replaced with market oriented monetary instruments and what it means for the conduct of monetary policy. The second part surveys principle elements of financial reforms that are already effected in other countries. Because recent economic and monetary policies still contain some old fallacies, the third part provides the brief interpretation of monetary instruments commonly utilized in former Yugoslavia. The fourth part examines the setting of monetary policy instrument after the introduction of Croatian Dinar.[1] The fifth part focuses on changes of monetary instruments effected after the October 1993 stabilization program. Finally, I will conclude the article with recommendations that are based on positive experiences of other countries.

2. Direct Controls vis-a-vis Market Oriented Monetary Instruments

By setting monetary policy instruments a central bank can affect the stock of base money and the value of money multiplier, as well the general level of interest rates and exchange rates. Certain monetary instruments do not have mutually exclusive, but they may have several different simultaneous effects. For example, if a central bank increases the reserve requirement, it will result in the reduction of money multiplier, the increase of the base money stock, and it will also increase the demand for the reserve deposits which, other things being equal, creates tendencies to raise interest rates and to appreciate the currency.

Any central bank would like to control simultaneously the stock of monetary aggregates, general level of interest rates and exchange rates. Such central banks' attitudes are understandable because the monetary expansion - if it is not in step with trends of economic activity and consumption - will result in the demand pull inflation. Moreover, as the rise of interest rates and the exchange rate depreciation push up costs, it can produce pressures on prices, too. Therefore, in spite of the impossibility to control stocks and prices simultaneously, many central banks tried to do so, and their efforts often resulted in the use of direct controls.

[1] *The Croatian Dinar replaced the Yugoslav Dinar as means of payment in Croatia on 1 January 1992. Afterwards, on 1 June 1994, it was replaced by Kuna.*

A central bank's desire can be to post interest rates that are lower than prevailing market rates, without producing any change in long-term trends of monetary aggregates. Such conflicting goals can be met by using two following monetary policy instruments: the automatic or semiautomatic borrowing facilities to commercial banks at the central bank and the ceilings on commercial banks credits.[2] Automatic borrowing facilities ensure posted interest rates, but they also seriously undermine the central bank's ability to control the stock of base money. In spite of that, the central bank protects its control of monetary aggregates by setting ceilings on commercial banks' credits.

When there are automatic borrowing facilities, the setting of interest rates can be described in the following way: since central bank credits are always freely available to banks at administered rates, central bank credit rate (which in practice can be called differently, for example, a discount rate or a prime rate) becomes the marginal price that commercial banks must pay to raise deposits. Accordingly, the central bank credit rate becomes the highest deposit rate in the banking system. Commercial banks credit rates are set by adding spreads to their deposit rates. Every bank will try to maximize its spread. In the banking system, the value of spreads will depend on competitiveness on the interbank market and other markets as well.

Similar logic can be used to explain the setting of exchange rates. The central bank can, provided that it has sufficient international reserves, fix the exchange rate, when it stands ready to accept every supplied or demanded quantity of foreign exchange at the central bank exchange rate. However, by fixing the exchange rate the central bank will loose the control of one of base money components. Therefore the control of monetary aggregates will be achieved either by sterilizing the effects of foreign exchange operations of the central bank or by setting ceilings on commercial banks credits. If the central bank sterilizes the

[2] *The ceiling on commercial banks' credits is the maximum amount of credits that can be granted by commercial banks. Ceilings are always set on bank-by-bank basis. The overall ceiling is the sum of banks' specific ceilings.*

base money creation resulting from its foreign exchange operations, it will actually control the base money stock. It will also control monetary aggregates, because they are related to the base money through the money multiplier. On the other hand, if the central bank sets ceilings on commercial banks credits instead of sterilization, it will give up the control of base money stock, but will directly control the net domestic assets of the banking system. The control of net domestic assets ensures the stability of the balance of payments and the protection of international reserves. Without such control international reserves could be exhausted and the balance of payments problem could emerge. Such situation in the balance of payments usually results in the exchange rate depreciation as well.[3]

Posted interest rates have many negative effects. Interest rates that are lower than market rates should be result in the non-price allocation of credit and lower savings rates. Non-price allocation of credit may, in particular when banks are under direct government control, create a tendency that banks prefer projects of lower profitability to those of higher profitability. Banks also favor projects with lower risk, compared to projects involving higher risk but also the higher profitability. The approval of projects whose general feature is lower profitability leads also to the lower savings rate. This, in turn, leads to the lower growth rate for the economy as a whole.

Interest rates and exchange rates are set by market forces in modern market economies. Nevertheless, central banks have significant influence on interest rates and exchange rates. Their monetary policies are usually described as having one of three possible orientations. When there is neutral stance of monetary policy, the central bank actions offset the demand for reserve deposits, and interest rates and exchange rates are set solely by market forces. When there is expansionary stance of monetary policy, the central bank actions

[3] *This explication is based on the monetary approach to the balance of payments which originates from David Hume. There is extensive literature on this approach.*

create the excess supply of reserve deposits, which creates tendency for the reduction of interest rates and the exchange rate depreciation. Finally, when there is restrictive monetary policy, the central bank actions create the excess demand for reserve deposits, which leads to the rise of interest rates and the exchange rate appreciation. Accordingly, in modern market economies the central banks' control of the base money stock depends on the base money influence on interest rates and exchange rates.[4] The decision on the stance of monetary policy is based on the final goals the central bank wants to achieve.

It is often in the small open market economies that the exchange rate is pegged to the currencies of their leading trade partners. Pegging the exchange rate reduces foreign currency risks, but it also reduces the room for the conduct of monetary policy. As in the case of fixed exchange rates, monetary policy actions affect only domestic interest rates, and the exchange rates are set according to the given rule. However, when domestic interest rates are set according to the world interest rates, monetary policy is entirely inefficient.[5]

3. Reforms of Monetary Policy Instruments

In developed financial systems there are well developed secondary securities markets and interbank markets. The main procedure of controlling domestic liquidity involves central banks interventions at

[4] *To say that the central bank controls the base money stock is the same as to say that the central bank controls the reserve deposits stock. These aggregates defer only for the currency in circulation, and the demand for the currency in circulation is always met.*

[5] *Such case was first explained by R.A.Mundell in the article "Capital mobility and stabilization policy under fixed and flexible exchange rate (1968).*

interbank markets.[6] In some countries, central banks also intervene at other financial markets. Interventions, either at interbank markets or at other financial markets, are also called open market operations.

The development of financial markets was a long process in developed countries. Therefore many less developed countries and Eastern European countries decided not to wait passively for spontaneous and probably delayed development of financial markets. They passed and implemented financial reforms, whose purpose was to build competitive financial markets and appropriate institutions. There are numerous positive examples of undertaken financial reforms.[7]

Reforms of monetary policy instruments are usually based on the elimination of commercial banks credit ceilings, the abolishment of central bank automatic borrowing facilities, the establishment of the primary market for government or central bank bills, the introducing of repurchase agreements in these bills, and the reforming of central bank liquidity credits. Monetary policy instruments that are also commonly used are reserve requirements, central bank interventions at the foreign exchange market, and, sometimes, the management of government deposits.

The use of commercial banks credit ceilings will become unnecessary, once the central bank has decided to control the stock of base money.

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[6] *Interventions are the common name for central bank auctions. There are different auction techniques. The choice of technique depends on goals and targets of monetary policy, types of financial instruments that are being auctioned, and the development of interbank market. In fact, there are three main types of auctions: (1) free auctions, where the quantity to be traded is announced in advance and the price is derived from competitive bids (offers), (2) fixed price tenders, where the price is announced in advance and the traded quantity is whatever the demand is, and (3) mixed auctions, which are combinations of above two techniques (for example, where the quantity to be traded and the range of acceptable prices are announced in advance).*

[7] *In particular, see about it in R.B.Johnston i Odd Per Brekk (1989).*

However, the central bank will be able to control the base money stock only if it eliminates its automatic borrowing facilities.

The elimination of automatic borrowing facilities is also a precondition for the development of interbank market and other financial markets. Namely, when banks are allowed to borrow automatically from the central bank, they do not have any incentives to cover their cash deficits from sources other than the central bank. On the other hand, when central bank money is not easily available, and borrowing from the central bank is regarded as unfavorable, the banks will tend to cover their cash deficits by borrowing at interbank market or in other financial markets.

The main purpose of creating the primary securities market is to introduce safe and liquid financial instruments, and fiscal considerations are not relevant.[8] Therefore there is no major difference between initiating the primary market for government securities or the primary market for central bank securities.[9] However, there are some practical differences between these securities, which give advantage to the central bank securities. Namely, when securities are issued by the government, their types and volumes are usually tailored according to the fiscal needs. In case of central bank securities, the central bank can arrange their types and volumes of issue corresponding to goals and targets of monetary policy. More, the task of organizing the primary market for central bank securities represents the exclusive responsibility of the central bank.

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[8] *The techniques of financing can not solve the budget deficit problem. Nevertheless, the budget deficit always has the impact on prices, interest rates and exchange rates.*

[9] *If securities are issued by the government, the government budget will be directly affected by the net costs of issue. If securities are issued by the central bank, the central bank profit will be reduced, and the government budget will be affected indirectly.*

Repurchase agreements in securities are used to smooth daily and seasonal variations of banks' liquidity. Liquidity management reduces the volatility of interest rates and exchange rates, while stable interest rates and exchange rates guarantee that the economy will receive appropriate signals.

The volatility of interest and exchange rates results from high daily and seasonal variations of reserve deposits. Daily variations of reserve deposits may result from changes of currency outside banks and changes of government deposits at the central bank. Seasonal variations may be due to tourist migrations. From the point of view of rational expectations economics, it may be claimed that commercial banks will foresee these variations by building proper precautionary reserves. However, in addition to daily and seasonal variations, monetary trends have the random component. Sudden shocks would affect interest rates and exchange rates, and therefore central banks' interventions are always necessary.

The main advantage of repurchase agreements in securities is their flexibility in terms of being easily adjusted to suit the purposes of the central bank. It may be illustrated by two examples. If the central bank wants to increase the stock of reserve money for the next ten days, it will offer ten days repurchase agreements. If it wants to increase the reserve money during the tourist season, it will offer repurchase agreement with the longer maturity.

In addition to repurchase agreements, central banks have developed other instruments for banks' liquidity management. Firstly, lagged reserve requirements have been replaced by the contemporaneous reserve requirements. The latter type of requirement permits banks to have the occasional end of day reserve deficiencies, and banks must meet their requirements during the prescribed time interval. Secondly, in some countries like Canada the management of government deposits is also used as the monetary policy instrument. Government deposits are in principle kept with the central bank, so they reduce banks' liquidity. Accordingly, the central bank can intervene by making short-term transfers of these deposits to and from the commercial banks. Finally, one of the main factors which supports the stability of interest rates and exchange rates is the possibility to forecast the bank's liquidity. Such forecasts are very much based on the future payment flows. In modern payment systems the large value payment orders[10] are processed during the same day and all other payment orders next day, so banks can easily project their liquidity position for the next business day.

In order to help the banking system to cope with sudden shocks, liquidity credits are also present in the set of new monetary policy instruments. The central bank grants such credits on the basis of bank's request, but frequent borrowing will induce the central bank to send its inspectors to the commercial bank. Liquidity credits are frequently; but not always, under quantitative ceilings and they are usually backed with securities. They are also the only channel of base money creation where the initiative comes from commercial banks.

The purpose of reforms of monetary policy instruments is to develop competitive financial markets. In the first step the interbank market is formed. It is expected that its development will positively affect the evolution of other financial markets. In passing it may be noted that reforms of monetary policy instruments are processes which may involve some problems. In particular, in oligopolistic banking markets there is a danger that administered regulations are replaced by inefficient market structures. Each financial reform must take this into the account, and the phasing of reform must depend on real situation.[11]

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[10] *Large value payment orders result from trade at fhe interbank market and other financial markets.*

[11] *After developing interbank market, interest rates should adjust fo the inierbank race. If, for some reason, this did not happen, central bank should react. In the extreme case, the central bank could respond by directly influencing the behavior of management of the largest banks However, it could be more practical that, in addition to commercial banks, the central bank offered securities to nonbank sectors. By doing this, fhe central would directly compete with banks for raising*

4. Instruments of Monetary Policy in Retrospect

Some lessons can be derived from the monetary policy procedures that were commonly used during the communist rule in the former Yugoslavia. Than the central bank did not control the stock of base money, and it controlled the broad money by setting ceilings for commercial banks credits. Interest rates were low and mostly negative in real terms. Moreover, during the second half of 1980s, there was a policy of fixed real exchange rate, i.e. the currency was pegged to the difference between domestic and foreign inflation. At the end of 1980s, there were some efforts to reform monetary policy instruments. The emerging political crisis halted those reforms.

The central bank could not control the stock of base money, because it did not control either its foreign exchange operations or its credit activities. The main monetary control instrument were commercial banks credit ceilings. Such instrument was perpetually enforced from 1978 to 1988. The endless use of ceilings resulted in the downward trend of the value of money multiplier in 1980s.[12]

During the second half of 1980s, excluding a few short exceptional intervals, there was a policy of fixed real exchange rate. The currency was nonconvertible, so the black foreign exchange market existed parallel with the official market. The spread on the black foreign exchange market was stable.[13] The stability of spread indicates that the central bank did not control its foreign exchange operations, and in fact

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deposits. Further, the same tactics could be applied for solving oligopolistic problems on foreign exchange market.

[12] The detailed analysis of money multiplier and monetary developments in former Yugoslavia is provided in R. Martić (1989).

[13] However, when there were sporadic deviations from fixed real exchange rate policy, the spread increased.

it regulated the exchange rate.[14]

Refinancing of banks was based on documentary credits. Such credits were granted, once banks - by the delivery of certain documents - proved that they had already granted credits to final users for earmarked purposes. Thanks to such arrangement, banks were always highly liquid, and documentary credits were crowding other credits out of their portfolio. Further, the central bank charged its discount rate for documentary credits. This rate was considered to be the chief interest rate in the banking system, but it was not always the case.

Namely, whenever the central bank adopted the restrictive monetary targets, commercial banks credit ceilings became inefficient in controlling interest rates. On such occasions the shortage of banks' credits increased trade at the inter-enterprise money market. Interest rates at this market were higher than the banks' rates and they were negatively correlated to the tightness of monetary policy. Over time the inter-enterprise money market became the significant competitive challenge to commercial banks. Therefore, banks had to respond by raising their interest rates, and it was the end of the relation between the central bank discount rate and the banks' rates.[15]

Commercial banks always remained superior to the inter-enterprise money market. Monetary policy stance was mostly expansionary and the inflation was increasing. Inflationary policies always managed to restore the relationship between the central bank discount rate and

[14] *In practice, there was also the switching of supply and demand flows from black io official foreign exchange market and conversely. Switching resulted either from legal changes or misinvoicing.*

[15] *In the first step banks raised their deposit rates, so they were higher than their credit rates. Such banks' policies partly resulted from the special regulation, which was enforced by the central bank. Namely, the central bank prescribed the maximum value of credit rates that banks could charge on documentary credits.*

interest rates in the economy as a whole. Moreover, at the beginning of 1987 this relation was even put in legal form. Than the overall indexation of assets and liabilities was adopted, and the central bank discount rate was defined as one of the indexation rates.

At the beginning of 1989 commercial banks ceilings were replaced by ceilings on the central bank documentary credits. The exchange rate was fixed in real terms. Therefore, if the central bank had intended to control the base money stock, the value of its credit ceiling would have been consistent with the value of its foreign exchange operations. Otherwise, other sterilizing monetary instruments had to be used.

In the same period there was a suficit of the current account in the balance of payments, so the central bank tried to sterilize the base money creation, arising from its foreign exchange operations, by reducing its documentary credits to banks. However, such tactics did not work. Banks complained against reducing their borrowing from the central bank, because they were not able to collect documentary credits granted to the final users. Further, the policy did not suit the traditional priority sectors, so it created the adverse political climate. Political requests to increase the central bank documentary credits were rather frequent. Because of its low independence, the central bank always positively responded to such requests. Afterwards it usually tried to restore the control of money supply by raising the reserve requirements. However, this was not sufficient. Over time, the monetary policy became highly expansionary, which resulted in the exponential trend of inflation.

When ceilings on the central bank documentary credits were the main monetary policy instrument, the stance of monetary policy varied between two extremes: firstly, monetary policy was foremost highly expansionary, and secondly, there were some efforts, which lived very shortly, to stop the inflation by suddenly reducing the monetary growth.

During highly expansionary monetary policies, ceilings on central bank documentary credits were formally enforced, but they were only the loose constraint for the commercial banks' activities. The expansion of money and credit was guaranteed by the really negative central bank discount rate. This rate became the leading price of banks' marginal sources of funds. Therefore, all interest rates adjusted to the central bank discount rate. More, the discount rate became the lowest interest rate in the economy as a whole, and any rise of the discount rate was followed by the increases of other interest rates.

Episodes of restrictive monetary policy were based on the sterilization of central bank foreign exchange operations by either reducing the central bank documentary credits or by raising the reserve requirements.[16] The central bank always reduced its discount rate, too. A lowering of the discount rate was based on two beliefs: firstly, it was thought that all other interest rates would also fall and secondly, it was considered that after inflation gradually decreased the discount rate would become really positive. These beliefs never came true. Due to the changed monetary policy stance, the lowering of the discount rate always resulted in the growth of the general level of interest rates.

The restrictive stance of monetary policy also resulted in the explosion of liquidity crisis. Such course of events should have been foreseen. Namely, the continuous use of documentary credits and the policy of really negative interest rates favored low, or even negative, profitability projects for many years. The enterprises also hedged themselves against inflation by minimizing their cash holdings. Therefore, after changing the stance of monetary policy, it became apparent that many banks were insolvent, and many enterprises were loss making. The central bank would soon return to inflationary policies. Without the comprehensive economic program, it was impossible to control the stock of base money for a time.

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[16] *In addition, foreign borrowing was frequently limited.*

5. Monetary Control Procedures in Croatia from January 1992 to September 1993

After the introduction of Croatian Dinar, monetary policy had conflicting goals. The central bank intended to control the money supply and to post interest rates and exchange rates simultaneously.[17] It was impossible to attain such goals. Therefore, the monetary policy, as in former Yugoslavia, was characterized by "go and stop" policies.

In order to solve the problem of banks' insolvency, in 1991 the Croatian government effected two large rescheduling operations. Firstly, the government granted long term bonds to designated enterprises, and the banks were required to accept these bonds as the repayment of enterprises debt (these bonds are called Big bonds).[18] Secondly, the government swapped banks' claims against the National Bank of Yugoslavia arising from households foreign currency deposits into the banks' claims on itself.[19] As a result of these operations, the Croatian government has become the largest banks' debtor. However, rescheduling operations did not solve problems of banks' insolvency. The government never met its obligations to banks on time, and it often did not pay anything in cash.[20] Problems were further enhanced

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[17] *There were other goals, too. One of the major goals was building up international reserves.*

[18] *The Big bonds operation can also be treated as the recapitalization of enterprises. Namely, under the Privatization law all socially-owned enterprises were later transformed into the joint stock companies. If the enterprise previously received the Big bonds, the government would receive the larger share in the transformed enterprise.*

[19] *The government also blocked households foreign currency deposits for a few years.*

[20] *Formally, banks are solvent, and according to prudential criteria set by the National Bank of Croatia they are among the best in the world. Such funny results are due to the fact that about 50 percent of total banks' assets are claims against government. These claims are considered to be more worthy than, for example, US Treasury bills.*

by the large government arrears to enterprises. Moreover, some banks and enterprises were severely affected by the war. Because of all these reasons, there was a permanent danger of new liquidity crises. Such developments created enough room for "go and stop" monetary policies.

The National bank of Croatia inherited monetary control procedures from the former central bank, but it also introduced many changes. Direct controls remained its main monetary instruments, largely because of the huge public sector deficit which seriously reduced the room for potential reforms.

Non-sterilized foreign exchange operations were the main channel of base money creation. The currency was not convertible, and the central bank was always willing to buy foreign exchange from commercial banks at its exchange rate. Commercial banks operating reserves were continuously increasing, so they were also encouraged to sell foreign exchange to the central bank. At the beginning, their exchange rates were higher than the central bank exchange rate, so the central bank requested banks to apply the central bank exchange rate in all transactions. As a result of this request, banks' exchange rates started to converge to the central bank exchange rate, and multiple exchange rates eventually disappeared in summer 1993. So, the central bank successfully posted its exchange rate to the economy as a whole by using non-sterilized foreign exchange operations. Once it started to sterilize this channel of money creation, as it happened during the shock stabilization, market exchange rates again diverged from the central bank rate.

The central bank determination to build up its international reserves permitted the adoption of internal convertibility for current account transactions in October 1993. However, it may be noted that the central bank international reserves are equal to the sum of banks and enterprises external arrears. If there had been no unilaterally declared moratorium on foreign debt, the money creation arising from central bank foreign exchange operations would have been much smaller.

There were two types of central bank credits granted to banks: documentary credits and liquidity credits. Except in the first quarter of 1992, documentary credits were always subject to ceilings. Namely, in 1992 the portfolio of central bank documentary credits was divided into two quotas. These were the so called general quota and selective quota.[21] At the beginning of 1993, these quotas were merged into the so called uniform general quota. Then the central bank formally stopped granting new documentary credits, i.e. all credits granted within the uniform general quota were simply the unsecured book credits.[22] Further, as foreign exchange operations were non-sterilized, the central bank gradually reduced the real value, and later also the nominal value, of uniform general quota. By such tactics, the central bank largely reduced the government control of banks' credit policies.

The central bank also tried to sterilize its foreign exchange operations by increasing reserve requirements. Banks were subject to three types of lagged reserve requirements: required reserves, obligatory NBC bills and required minimum liquidity. Required reserves are banks' assets that must be kept in the statutory reserve accounts at the NBC. Obligatory NBC bills are banks' assets that must be held in the form of NBC bills. Required minimum liquidity are bank's assets that must be held in giro accounts at the NBC, in the form of cash or partly in NBC bills. As of May 1993 the first two requirements were merged into the required reserves.

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[21] *The selective quota was exclusively reserved for documentary credits. The credits within the general quota had to be partly backed with securities. However, as most of these securities were without any market value, the majority of credits granted within general quota were in fact documentary credits.*

[22] *Later in 1993, the central bank also effected the special type of banks' refinancing called advance credits to banks. Advance credits were granted only to banks' buying foreign bank notes and travellers checks, and they were repaid after summer tourist season. Needless to say that these credits were in fact documentary credits.*

The NBC discount rate was negative in real terms.[23] When the monetary policy was expansionary, commercial banks interest rates were set according to the NBC discount rate. However, when the NBC tried to launch the restrictive monetary policy by reducing the monetary growth and its discount rate, commercial banks interest rates were not adjusted in line with the reductions of the NBC discount rate. The interest rates at the inter-enterprise money markets also had the separate trend. Further, as the inflation did not decrease, the nominal reductions of the NBC discount rate resulted in its fall in real terms, too.

Shortly lived efforts to achieve the restrictive stance of monetary policy were also characterized by banks' liquidity problems. Banks illiquidity always produced the substantial base money creation arising from the NBC liquidity facilities. These facilities include: liquidity credits, special liquidity credits, the use of required reserves, noncompliance with the required reserves, noncompliance with the required minimum liquidity, the end-of-day negative balances in banks' giro accounts at the NBC, overnight interbank credits arranged through the Money Market Zagreb[24] and banks' arrears to the NBC.

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[23] *Because of high inflation, the NBC exchange rate nominally depreciated almost every day. Nominal monthly depreciation rate was equal or nearly equal to the NBC discount rate. Therefore, the NBC exchange rate significantly appreciated.*

[24] *As banks' daily payments float is unlimited, overnight interbank lending is nearly without any risk. However, when such lending is organized by the brokerage institution called The Money Market Zagreb, there is no risk at all. This broker was empowered by the NBC to arrange overnight interbank lending under prescribed criteria. Namely, after the closing of business day The Money Market Zagreb receives data on the end-of-day balances of banks' reserves deposits with the NBC. By using this information, the Money Market Zagreb informs banks with excess liquidity on the possibility of granting credits to banks, which are short of liquidity. As of December 1993 the lending bank is required to charge the NBC discount rate for such overnight interbank credits.*

The NBC formally approved on case-by-base basis only liquidity credits and special liquidity credits, and it permitted banks to draw on other types of liquidity facilities automatically. Therefore, liquidity facilities were never under the NBC control. They were only passively registered by the NBC.[25] Further, most of the NBC credits arising from its liquidity facilities were not properly recorded in its books (see downward table which summarizes basic elements of regulations on liquidity facilities).

	The ceiling for bank's credit	The blockade of bank's giro account	Interest rate[1]	The impact on base money
Noncompliance with the minimum liquidity	x			no change
Overnights interbanks credits[2]			dr	no change
Liquidity credits	x		dr + μ^1 pp	rise
Special liquidity credits	x		dr + μ^2 pp	rise
The use of up 10 percent of required reserves		x[3]	dr + μ^3 pp	decline
The use of more than 10 percent of required reserves		x	dr + μ^4 pp	decline
Noncompliance with the required reserves		x	dr + μ^4 pp	no change
Arrears to the NBC		x[3]	dr + μ^4 pp	no change
Negative balances in bank's giro account		x	dr + μ^5 pp	decline

1 *The interest rates are presented as it is done by the NBC. Further, to indicate their typical structure, it may be assumed that they are in ascending order. Meanings of symbols are: dr = discount rate, pp = percentage point, μ^i (i= 1,2,3,...) = scale.*
2 *excluding withdrawals from households current and savings accounts in domestic currency*

[25] *This results from the fact that the concept of "final settlement" is not precisely defined in the Croatian payment system. Namely, the system of domestic payments is organized on gross basis, and it is managed by the special government agency. Each institution presents its payment orders to the agency. The payment orders are transmitted even when there are no sufficient balances in the sending bank's reserve account at the NBC. In such cases, the NBC automatically grants the credit to the sending bank.*

The NBC tried to restrain the use of liquidity facilities without undertaking their radical change. As increasing interest rates did not fit the popular belief about the central bank rate sending signals for the setting of other interest rates in the economy, the interest rates were never used as means for reducing the use of liquidity facilities. Therefore, the NBC tried to tighten regulations on their use. Traditionally, when the bank used the liquidity facilities, the NBC set a ceiling for the bank's credits. With most of liquidity facilities, the ceiling was gradually replaced by the blockade of bank's reserve account with the NBC.[26] Nevertheless, the tightening of regulations proved to be inefficient, and it resulted in invention of new mechanisms of non-compliance with these limits.

The most famous invention was to go around the blockade of bank's giro account with the NBC. Such blockade seemed to be a very rigorous regulation, but in fact it did not do anything. As the NBC was responsible only for banks, banks went around the blockade by establishing their daughter companies which were not subject to the NBC control. Then they simply transferred business to its daughter companies. As a result, banks drew heavily on the NBC liquidity facilities, and they continued to operate like there was no blockade at all.

When the NBC tried to implement the restrictive monetary policy, the same banks were always acting as leaders in creating inventions. They drew heavily on the liquidity facilities, and they rapidly increased their borrowing from the NBC. It is not precisely known whether these banks are truly the largest failures among banks - or whether this happened because they have been heavily burdened with government bonds or severely affected by the war - or whether this was only their tactics.

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[26] *The blockade refers only to payment orders, which are presented by the sending bank itself to the agency that manages domestic payments. It does not refer to payment orders, which are presented by the sending banks depositors.*

However, such developments forced the NBC to choose between higher monetary growth and penalizing other banks.

6. Changes of Monetary Policy Instruments from October 1993 to Onwards

Since the shock stabilization implemented in October 1993 the NBC has been using some market oriented monetary instruments. It has also introduced some elements of banks' liquidity management in its practices. Major changes of monetary instruments were interventions at the foreign exchange market and the marketing of the NBC bills. There were also some changes in the NBC interest rate and reserve requirement policies. On the other hand, as its liquidity facilities were left unchanged, banks can still automatically borrow from the NBC.

The first NBC interventions at the foreign exchange market were recorded in November 1993. Than there was the beginning of shock stabilization, so the NBC wanted to achieve highly restrictive monetary policy and it was very concerned with its base money target. Moreover, there was the banks' liquidity crisis, the interest rates were in fact limited by the Government decree on taxing excessive interest rates,[27] and the market exchange rate was rapidly appreciating. Under such circumstances, the NBC offered banks to buy foreign exchange from them by using the free auction's procedure (the tender volumes were not announced). The introduction of such auctions at the foreign exchange market had two main effects. Firstly, as the room for interventions was very limited, there was no precise effect on the exchange rate, which continued to appreciate. Secondly, as administered increases of monetary base were replaced by free auctions, there was a big shift in distribution of liquidity among

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[27] The NBC interest rates were exempted from the regulation. Moreover, the NBC, for the first time, also set its interest rates charged on the liquidity facilities at tremendously high level.

commercial banks. Therefore, large banks in particular started to complain against free auctions.

In order to stop the exchange rate appreciation and to affect the distribution of monetary base among banks, in December 1993 the NBC changed its auction procedures. From December 1993 to January 1994 the NBC formally continued with free auctions, but it always announced the minimum acceptable exchange rates in advance. The problem was that the announced rates were always higher than the market exchange rates. As a result, banks always offered the minimum announced rates, and the NBC had to exercise its discretion in accepting their offers. Further, tremendous spreads at the foreign exchange market again occurred. Banks used the NBC announced rate only for the operations with the NBC and households, and the lower market exchange rates were used for the other types of banking business. Therefore, in February 1994 the NBC again changed its auction procedures by adding an announcement of the maximum acceptable value of a singe bid.[28] As it did not help, at the beginning of March 1994 the NBC introduced the new system of its foreign exchange operations, which was a supplement to its auctions. Under the new system the NBC bought foreign exchange from banks at the NBC exchange rate depending on the value of receipts at bank's foreign exchange offices. The new system of foreign exchange operations was the main channel of base money creation from March to September 1994, and auctions were rather rare.[29] After it was introduced, spreads at the foreign exchange market nearly disappeared, and the NBC again posted its exchange rate to banks.

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[28] *This quantity depended on the bank's foreign currency exposure. Therefore it was not same for each bank.*

[29] *As of March 1994 the NBC also offered banks repurchase agreements in foreign exchange. The maturity of such agreements was mainly until the end of current month. The selling technique varied from the NBC discretion to the combination of auctions and the NBC discretion.*

The main monetary instrument used to neutralize the NBC foreign exchange operations was the issue of NBC bills. Until November 1993 the NBC bills were sold on tap, and the interest rate on them was set very low. Therefore, the demand for NBC bills was insignificant. However, in December 1993 the NBC started to organize the primary market for the NBC bills. The selling technique for bills was the combination of free auctions and the NBC discretion. In particular at initial stages, tenders nearly always failed because there were many difficulties with the selling technique. Firstly, since the NBC, at each auction, offered banks bills with the range of maturities, there was often the only one bid for the particular type of bill. Secondly, since the interest rate bids were designed as spreads on the NBC discount rate, the accepted interest rate was subject to the discount rate risk. Thirdly, as the relatively long period of time - almost two days - was needed to complete the sale of bills, banks were burdened with large opportunity costs. In addition to these technical problems, the NBC never announced the tender volume, i.e. it always exercised its discretion at accepting volume. In that way the NBC wanted to avoid possible excessive interest rate volatility.

After a few months of learning, the selling technique of the NBC bills was gradually improved. However, the major change in the issue of bills came in March 1994, parallel with introducing the new system of the NBC foreign exchange operations. Than the NBC decided to accept interest rates that were in line with the interest rates at the inter-enterprise money market. After such decision it was not a problem to market the NBC bills, and it was also possible to neutralize the NBC foreign exchange operations. Nevertheless, the issue of bills was a very costly business for the NBC, and bills rate became the highest among its interest rates.

Interest rates, excluding the NBC rates, were effectively limited by the special government decree on taxing excessive interest rates.[30] The regulation was not effective in all financial markets. In particular it was avoided on the inter-enterprise markets, where borrowers had to pay untypically high charges or they honored fictitious invoices. After adding these additional costs of the use of credit to the interest, interest rates would be several times higher. The NBC adapted to the situation by changing the structure of its interest rates. Firstly, the discount rate was formally left as the NBC main credit rate, and it was set in accordance with the government decree. As the prices were stable, the discount rate was positive in real terms, but it was much lower that the market rates. Moreover, the NBC granted the small amount of new credits, i.e. it granted only advance credits (and it repaid credits within the general quota). Secondly, in particular at the initial stages of shock stabilization, interest rates on liquidity facilities were set very high. As a result, most banks were compliant with the NBC regulations, and only a few banks continuously and heavily drew on the NBC liquidity facilities. Thirdly, as it was mentioned above, the NBC accepted the market rate as the rate for the NBC bills.

The NBC has also changed the regulations on required reserves very actively. Prior to October 1993 the different reserves rates applied to demand deposits, including time deposits with maturity of within three months, and time deposits with maturity of more than three months. These rates were unified in October 1993, and different rates were again set in March 1994. Further, as of October 1993 banks' obligation

[30] *It may be questioned why the government enforced such decree. The common explanation is that enterprises believe that they still operate under the soft budget constraint and the non-price credit rationing, so they are only concerned with the availability of credit. In my opinion, this statement may be correct for some enterprises, but it is generally wrong. There were many discussions on lifting the regulation, but some large banks supported it. Therefore, I think that the decree basically serves as means of protecting large banks. These banks are the largest borrowers at the interbank market, and their assets are mostly long-term government bonds. Accordingly, by lobbying for the decree they protected their profits.*

to meet their required reserves at the end of day was replaced by the obligation to meet them at every moment of time (from December 1993 overnight interbank credits arranged through the Money Market Zagreb have been exempted from this regulation). Moreover, as of the middle of January 1994 the NBC limited the use of required reserves to 50 percent. Finally, as of March 1994 it started to pay the interest on banks' required reserves. In 1994 there were also a few increases in the NBC reserves rates. The required reserves were chiefly used as a means for achieving monetary objectives.

7. Proposals for the Reform of Monetary Policy Instruments in Croatia

Administered interest rates existed in Croatia for many years. Such interest rates were posted by the inflationary economic and monetary policy. Further, they were set according to the central bank discount rate, which was usually negative in real terms.

When the shock stabilization was enforced in October 1993, the NBC significantly reduced its discount rate and the Croatian government set the ceiling on interest rates by introducing prohibitive taxes on them. However, as monetary policy was changed, interest rates at the inter-enterprise markets did not follow the same trend. Such developments were normal. There were a few reasons why we could expect turbulent interest rate trends and, at least at the beginning of shock stabilization, the rise of real interest rates. Firstly, in early stages inflationary expectations might still exist and the creditworthness of the program was low. Secondly, disinflation brought about the liquidity crisis. Thirdly, banks' credits are mainly assets of low liquidity and the government was not making timely payments in particular to banks. Finally, financial markets were undeveloped.

The interest rate ceiling repressed the development of financial markets. These markets remained segmented and undeveloped, and the possibility to avoid the ceiling was the main factor affecting the volume of trading on them. Further, the ceiling had two other important results. Firstly, the NBC discount rate was not the base interest rate in the economy anymore. As the inter-enterprise rates had independent trends, the discount rate was not giving signals to the economy at all. Secondly, the NBC profits were wiped out, so the government indirectly incurred large losses. Namely, the NBC created monetary base mostly through its foreign exchange operations, and, on the other hand, it neutralized base money creation by issuing NBC bills and repaying its credit portfolio. As a result, the NBC assets consist mostly of international reserves which bear the world interest, and the large part of its liabilities are NBC bills, which are sold at much higher interest rates that exist at the domestic inter-enterprise money market.

In such circumstances, there is really a great need to push the development of financial markets. The government should lift the decree on taxing excessive interest rates.[31] However, the major tasks are those to be undertaken by the NBC. This institution should become the locomotive of financial markets development.

The NBC has made important efforts in reforming its monetary policy instruments, but all this is far less than needed. The reforms must start from lifting the existing liquidity facilities that permit automatic use of the NBC credits. It is also necessary to enforce the final settlement. These two changes are preconditions for implementing any serious financial reform. They can also prevent existing mechanisms for avoiding regulations.

The NBC bills can be used as the instrument for developing the interbank market. For the time being, there is only the primary market in the NBC bills. After some trials and errors at early stages, the selling

[31] *The government lifted the decree in September 1994.*

technique of bills has been largely improved, but is still closer to the discretion than to auctions. As commercial banks could always borrow from the NBC by using its liquidity facilities, it was probably very difficult to do more. Nevertheless, it remains unclear why the NBC, after reducing the NBC bills to several offered maturities, never tried to offer repurchase agreements in the NBC bills.

By leaving the liquidity facilities unchanged, the NBC also left the initiative in hands of commercial banks. Therefore, there were no major changes in the NBC liquidity management. However, in addition to the repurchase agreements in the NBC bills, the NBC could easily enforce other changes which would largely improve the liquidity management. In particular the payment system could be reformed. Nowadays all payment orders are processed on the same day basis. Instead of that, payment orders, which arise from the transactions at the interbank market, could be processed on the same day, and all other payment orders next day. Such reform is not technically complicated, and banks would get adequate information to be able to forecast their liquidity for the next day. Furthermore, the central bank would have room to intervene, if necessary.

At the same time while lifting the liquidity facilities and changing the payment system, the NBC should introduce liquidity credits. These credits should be granted whenever a commercial bank becomes noncompliant to the NBC, and they should be penalizing for that bank. The bank should be primarily penalized by paying higher interest to the NBC, i.e. measures like the blockade should avoided. The approval of such liquidity credits must be under the NBC discretion. If the bank's liquidity position does not improve soon, the NBC should stop granting liquidity credits to that bank. Namely, liquidity credits, and other instruments of monetary policy as well, serve only to control domestic liquidity, and they can not be used for dealing with banks' failures.

The main channel of monetary base creation were the NBC foreign exchange operations. It is understandable that the central bank tried to control the exchange rate trends. However, relating the NBC foreign exchange operations to the value of receipts at bank's foreign exchange offices had nothing common with market oriented procedures. Moreover, it was the restoration of administered controls.

Therefore, the NBC should rely only to free auctions, and the excess supply at foreign exchange market will vanish (or will be reduced) by introducing banks' escrow account with the NBC. Banks should pay their maturing liabilities to the rest of the world at this account. Arrears will have to be cleared anyway, so it is appropriate to start the creation of adequate banks' reserves immediately. Further, introducing banks' escrow account with the NBC will have anther important effect. As the NBC foreign exchange operations will be reduced, the NBC will have to develop other means of creating monetary base. For example, it could rediscount bills of exchange.

The NBC interest rates should be set in accordance with interest rates at the interbank market. This market will start to develop after lifting current liquidity facilities. However, at early stages the NBC should also carefully monitor interest rate trends at the inter-enterprise market.

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