Review of Economies in Transition
Idäntalouksien katsauksia

1995 • No. 2 19.4.1995

Reprint in PDF format 2002

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Bank of Finland
Institute for Economies in Transition, BOFIT

ISSN 1235-7405
Reprint in PDF format 2002

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Financial intermediation in Estonia[1]

1 Introduction

The view that financial intermediation favours economic growth and development is generally accepted. Efficient financial intermediation tends to increase the savings rate and accelerate the rate of capital formation.

Still the importance of the financial sector to growth is not limited to the accumulation of resources. R. Levine stresses that productivity improvements are at least as important as the savings rate (Levine 1994, p.5). Much of the contribution of financial intermediation to economic growth is in the a promotion of efficient allocation of resources.

The role of financial intermediation in economic development is discussed in the classic work of Goldsmith (1969). The most recent advance in this field is the endogenous growth model of R. King and R. Levine, which highlights the connections between finance, entrepreneurship and economic growth (see Levine 1994, King-Levine 1992, King-Levine 1993).

The aim of the present paper is to describe financial intermediation in Estonia. The paper starts with a short description of the Estonian financial sector.

The next section presents the macroeconomic indicators for financial intermediation in Estonia. It seems reasonable to look for the causes of weak domestic intermediation in the money supply. In the fourth section the Estonian money supply indexes are compared with those of other countries.

In the remaining sections of the paper the adequacy of the results of preliminary analysis will be studied. First, I check the representativeness of the indicators estimated for 1993.

In the next two sections the reasons for the low deposit money supply and low level of financial intermediation are analyzed through the behaviour and preferences of the public and the commercial banks. The treatment is based on aggregate data. Therefore, the portfolio behaviour of financial intermediagies is not discussed in detail.

The last section of the paper describes the latest developments in financial intermediation in Estonia.

The paper ends with a summary of the conclusions.

[1] I am grateful to Juha Tarkka and Vesa Vihriälä for valuable comments.

2 Development of the financial sector in Estonia[2]

The fundamental characteristics of the banking sector are determined by the fact that Estonia is a transitional economy changing from a centrally planned to a market economy. This means that Estonia is still building up a two-tier banking system and a structure for financial intermediation, both of which are typical of a market economy.

This is important to keep in mind in considering the efficiency of financial intermediation. The existence of a two-tier system as well as liberalized financial markets are necessary preconditions for the effective performance of the principal functions of intermediation[3]. The performance of these functions is decisive for active intermediation in which the banking sector plays a role a dynamic growth factor.

The reform of the monobank or segmented two-tier financial system of the planned economy to the two-tier liberalized banking sector is crucial for starting effective intermediation. The directive-oriented regime of the centrally planned economy prohibits banks from accomplishing the main functions of financial intermediation.

2.1 The financial sector in the planned economy

The banking sector of a planned economy appears to be underdeveloped compared to the other sectors. A centrally planned economy in any form is a nonmonetary economy in which currency flows represent nominal transfers reflecting commodity flows. The aim of financial activities is to provide state-owned enterprises with the financial means for achieving their plan targets.

In pre-reform Estonia the banking sector was a segmented two-tier system, consisting of the local branches of the all-union state bank (Gosbank) and certain specialized banks. At the end of the 1980s banking in Estonia was concentrated in the local offices of six Soviet banks (all with headquarters in Moscow): the Gosbank (central bank of the Soviet Union), the Vneshekonombank (the Soviet foreign trade bank), the Agricultural Bank, the Bank for Industry and Construction, the Savings Bank, and the Social Bank (Estonia (1993), p.48).

The main functions of banking sector were (a) issuing the currency according to the so-called cashplan; (b) accumulating deposits; (c) granting credit to enterprises according to plan guidelines. (The Economy 1990,p.3)

These characteristics of the Estonian financial system were typical of all centrally planned economies (see Financial 1993). The financial circuits were separated for households and enterprise sectors. Moreover in some cases deposits were separated from depositors. For example, the deposits of enterprises were not freely at the disposal of the

[2] As financial sector reform in Estonia has been described in detail by Hirvensalo (1994), Lainela-Sutela (1994) and Hansson-Sachs (1994), only highlights will be given here.

[3] (a) Risk pooling, reduction and allocation; (b) maturity shifting; (c) transformation of illiquid assets into liquid liabilities (Tobin 1992, p.80); (d) evaluation of firms; (e) mobilization resources and allocation of capital; (f) monitoring managers and firms (corporate governance); (g) facilating trade (Levine 1994, pp.6-8).

depositors. Typical for the imperial constitution of the USSR, resources mobilized in Estonia (including savings deposits) were put at the disposal of Moscow, which decided on their allocation according to the all-union credit plan. (The Economy 1990, p.3)

The credits were directed according to the production plan. Credit distribution was exercised through branch ministries and the planning committee.

Interest rates were controlled and kept artificially low. They played no role in allocating financial resources.

Under these conditions, monetary policy (exercised in Moscow or in Estonia) had no active role. Further different governmental bodies controlled the central bank, which weakened the image not only of the central bank but also the banking sector as a whole.

The directive nature of the system resulted in a lack of commercial banking and liquidity management skills (Hilbers 1993, p.13). Inexperience in commercial banking became decisive for the extent of financial intermediation during the initial stages of transition.

And, last but not least, the outstanding feature of the financial sector of a centrally planned economy is the absence of a market for intangible assets. The main reason for this was the lack of tradables. Due to the state ownership, corporative stock, securities and other financial instruments simply did not exist. This in turn explains the absence of investment bankers and companies, trustee organizations and other institutional and individual investors.

2.2 Reform of the Financial sector

Reform of the financial sector involves[4] the formation of a conventional two-tier banking sector along with the introduction of a market based financial system. The latter presumes the liberalization of banking activities and an improvement in the legal framework as well as the development of financial markets.

2.2.1 Formation of a two-tier banking system

The formation of a two-tier system started in December 1988 with the establishment of the first commercial bank (Tartu Commercial Bank) in the USSR. Tartu Commercial Bank was founded on the basis of state capital. The later growth of commercial banks has resulted from the recapitalization of state owned banks and the institution of new banks by private capital[5]. As of December 31, 1994 there were 23 authorized banks in Estonia (and two Finnish banks, Kansallis-Osake-Pankki and Union Bank of Finland, had obtained licenses for opening local branches).

The process of establishing a central bank in Estonia began in December 1989 when the Supreme Council adopted the decree for establishing Eesti Pank (Bank of Estonia). The decree came into force on January 1, 1990. From then until October 1991, two

[4] Detailed lists of the tasks of the financial sector reform are presented in Hilbers 1993 and Galbis 1994.

[5] For details, see Lainela-Sutela 1994 and Hirvensalo 1994.

central banks operated separately in Estonia. In addition to Eesti Pank, the local office of the all-union state bank (Gosbank) continued its activities as issuer, creditor, clearing center, etc. Dual monetary power came to an end with the decision by the Supreme Council (October 1991) to merge the branch of Gospank with Eesti Pank.

The current nature and extent of Eesti Pank's activities is determined by the monetary reform of June 1992. With the monetary reform, the currency board system was introduced and since then Eesti Pank has been operating as a currency board.

The main characteristic of the currency board system is that the board stands ready to exchange domestic currency for the foreign reserve currency at a specified and fixed rate (Walters-Hanke 1992, p.558). So, with a currency board the money supply is entirely automatic and endogenous (responding to the exchange of domestic currency at a fixed exchange rate for reserve currency).

Currency boards are required to hold realizable financial assets in the reserve currency at least equal to the value of domestic currency outstanding (Walters-Hanke 1992, p.558). This limits the ability of the currency board to extend credit. Therefore, Eesti Pank does not lend to the public or corporate sectors. In exceptional circumstances some financing of the banking sector is allowed. Credits to commercial banks are limited by the amount of the Eesti Panks's excess external reserves. This avoids any possibility of violating the full backing principle of the currency board[6].

2.2.2 Introduction of a market based financial system

One target of the financial reform is to replace the administrative regulation with a more effective system. In place of bank specific credit ceilings and selective credit allocation, market forces are relied on in credit allocation.

In Estonia the liberalization of the domestic money market ended with the introduction of the currency board arrangement. Neither Eesti Pank nor any other financial authority has the power to interfere in the market by controlling interest rates, etc. Further, under the currency board arrangement neither Eesti Pank (or anyone else) has effective instruments for indirectly controlling money market operations[7]. It is the market mechanism by which the currency board system equilibrates the demand and supply of foreign exchange and the demand for cash[8].

[6] In addition to the typical features, the Estonian currency board has certain minor distinctive characteristics. See Bennett (1993), Hanke-Jonung-Schuler (1993), Lainela-Sutela (1994).

[7] Eesti Pank has no monetary targets, credit restrictions for banks nor discount rate. The role of Eesti Pank is to support the formation and development of financial markets (through the initiation transactions, as e.g. issuing CDs into the interbank market). Eesti Pank also prepares legislation needed for the efficient regulation of markets and for rationalizing the behavior of commercial banks. The supplementing of legislation includes also improvement of prudential ratios for commercial banks (see Quarterly Review of Eesti Pank (1993 #1, #4) and Eesti Pank Bulletin (1994 #3, #7). The latter is tightly connected with banking supervision, which in the responsibility of Eesti Pank.

[8] Regarding the adjustment processes under the currency board arrangement, see Bennett (1992), Lainela-Sutela (1994), Hanke-Jonung-Schuler (1992), Bennett (1993), Hansson-Sachs (1994), Schwarts

The foreign exchange and capital movement restrictions have almost diminished to nil. After the monetary reform Estonia turned to current account convertibility[9], forced repatriation of export revenues and investment income, conversion at the unified exchange rate and certain modest restrictions on capital movements (IMF 1993). The major changes required for the introduction of full capital account convertibility were made by Eesti Pank in 1993[10]. The liberalization was extended in March 1994, when Parliament nullified the Foreign Currency Law. In June 1994 Eesti Pank abolished restrictions on opening foreign currency accounts. These changes essentially introduced full convertibility for capital account purposes.

The success of financial sector reform presumes essential improvements in legislation. Legislation inherited from the planned economy is seems to be inadequate for market regulation. The most critical issues here relate to changes in the ownership structure and setting rules for transactions related to real estate and other forms of ownership. The lack of precisely enunciated property rights limits the use of collateral. This in turn restricts the ability to enforce loan contracts, which hampers credit extension and reduces the efficiency of financial intermediation.

In this field a breakthrough was made in the second half of 1993 when Parliament passed laws defining property and the real estate transactions (June 9, 1993 and October 27, 1993).

The efficiency of a market-based financial system depends on the development of the money and credit markets. Unfortunately the money market in Estonia is still in the formative stage. The interbank overnight market is more highly developed. The Interbank market started to develop in June 1993 when the first (collateralized) overnight lendings took place. In 1994 the banks started to use the interbank market more actively to minimize their excess reserves held at Eesti Pank. This year all commercial banks have been participating in the market. The volume of overnight lending increased substantially - from EEK 840 million in 1993 to EEK 16 353 million in 1994. (**Teabeleht # 7 1995**). Meanwhile the share of lending without collateral increased. A new development in the interbank market was the extension of maturities (up to 57 days). By the end of 1994 the average yearly interest rate had stabilized at 5.67 % (in 1993 6.3 %) (**Teabeleht # 4 1995**).

Financial markets are efficient only if the securities and capital markets function. The securities Market Act was passed in 1993. In 1994 new issues of bonds and stocks increased considerably, to EEK 684.5 million. Yet the total volume of bonds and stocks (EEK 950 million) majanduse areng 1994). The market for stocks and bonds is only in the embryonic state (**Economic Transition (1994)**, p.23) also due to the lack of a secondary market. The only regularly traded securities are Eesti Pank certificate deposit

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(1993), Honahan (1994), Osband-Villaneuva (1992).

[9] Current account convertibility means that domestic currency can be freely converted for current account transaction purposes (for trade). Capital account convertibility allows for conversion for capital flow purposes. (Sutela 1992, p.89).

[10] See *Changes Liberalizing the Rules Regulating Currency Use During 1993* in *Quarterly Review of Eesti Pank* #4 (1993).

with 28-day maturity.

Certain one factor accelerating growth of the capital market is the selling of shares of state owned firms for privatization vouchers. This process started at the end of 1994.

The financial system is effective when there is enough competition and banks have to compete with other financial institutions. Unfortunately, as a heritage of the planned economy, there is an absence of other institutional investors (except insurance companies). Trade Unions are weak and the retirement payments system is still basically different from the western system based on retirement funds. In Estonia pensions are paid out of extrabudgetary funds financed by taxes. The first retirement fund to operate as an institutional investor was established only in the fall of 1994. There are 9 investment funds operating in Estonia, but their role in financial intermediation is still unimportant (see Raamat 1994).

In summarizing, one can conclude that regarding the introduction of a market-based financial system, Estonia's primary achievement has been the liberalization and establishment of a money market. However, the development of other financial markets as well as the onset of institutional investors are tasks for the future.

Due to the irrelevance of non-bank intermediaries in Estonia, financial intermediation is analyzed in this paper in terms of the banking sector.

3 Indicators of financial intermediation

Financial intermediation was measured by means of the indicators developed by King and Levine[11]. The indicators describe the relative importance of commercial bank loans and credits to the private sector as well as the level of domestic credit.

3.1 Definitions[12]

3.1.1 The central bank versus commercial bank lending

Bank is the ratio of domestic assets of deposit money banks (IMFIFS line 22) to the sum of domestic assets of deposit money banks and central bank (IMFIFS line 12).

The higher the value of *Bank*, the greater the degree to which financial services are provided by the banking system excluding the commercial bank and the higher the level of financial development.

3.1.2 Credit issued to the private sector

Private is the ratio of claims on the non-financial private sector (IMFIFS line 32d) to total domestic credit (IMFIFS line 32).

Privy equals credit issued to the non-financial private sector (IMFIFS line 32d) divided by GDP.

If financial sector interactions with the private sector are more indicative of the provision of productivity-enhancing financial services than financial sector interactions with the public sector, then higher values of *Private* and *Privy* should indicate greater efficiency of financial intermediation.

3.1.3 Level of credit

Privy is defined above.

By is the ratio of deposit money banks' domestic credit (IMFIFS line 22) to GDP.

The interpretation of credit level is straightforward. The higher the level of credit, the more intermediation and the more highly developed the banking sector.

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[11] King-Levine (1993), King-Levine (1992), Levine (1994).

[12] The indicators are defined and interpreted by King-Levine (1992, pp.167-168) and King-Levine (1993, p.529).

3.2 Estonia's Indicators[13]

The indicators of financial intermediation are for the year 1993 (Table 1).

Table 1. **Financial Development Indicators for different development stadiums** (King & Levine (1993, p.167) **and for Estonia**[14].

	Estonia	Poor	Poor	Rich	Rich
Bank	82	62	71	77	86
Privy	6...7	9	14	23	35
Private	100	48	56	71	72
By	9...10	12	17	25	43

According to *Bank* the share of credits extended by commercial banks is rather high. This is due to the effective monetary rule. Eesti Pank, under the currency board arrangement has very limited possibilities to extend credit. Therefore, credit extension is carried out by mainly by the commercial banks.

The share of credits to the private sector *(Private)* is at a maximum. This is partly due to accounting reasons. The Estonian state budget is in surplus and the surplus is almost equivalent to the amount of credit extended to public sector firms. So, the net financial flow is roughly equal to zero. If the budget were balanced actually extended credits, *Private,* would be 77 %, which is very high. The main causes are the weak financial conditions and the insolvency of state-owned firms (see below).

The level of domestic credit (to the private sector), *Privy,* is almost insignificant. The same is confirmed by, which indicates the low level of domestic credits extended by commercial banks. Thus, the Estonian banking sector is modest in terms of financial intermediation and money creation. Inrespect of long-term economic growth, this could be harmful. The restructuring of the national economy requires an enormous amount of investment. Due to the currency board arrangement and the underdeveloped state of the capital market, the granting of credit by commercial banks is a significant a source of investment financing. The only possible domestic alternative here is the reinvestment of the operating surplus of corporate sector.

The main conclusions on the basis of an analysis of the indicators of financial intermediation are the following.

The intermediation is developed in the sense that
(a) the role of the central bank in intermediation is minimal. Intermediation is carried out mainly by commercial banks on a commercial basis, which makes it possible to allocate

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[13] The data are from Eesti Pank: banking sector information is from the Banking Statistics and Analysis Department and the estimation of GDP is from the Macroeconomic Research Department.

[14] It is worth of pointing out that table 1 is purely illustrative, as the groups are quantified according to GDP per capita for 1970.

resources efficiently. The preconditions for such intermediation were created by the introduction of the currency board arrangement.
(b) the share of the state-owned sector in credit is insignificant. Assuming the inefficiency of state enterprises in using resources, the banking sector channels capital to firms that are able to employ it efficiently.

Financial intermediation is modest due to the low level of domestic credit extension.

In Estonia it seems that the main function of banking sector is not to intermede depositors' assets to domestic investors. Instead, the banking sector mobilizes deposits for investment abroad. In this sense banking is separated from real sector of the Estonian economy.

One reason for this situation could be the low demand for commercial credits. This is connected to the lack of credit demand by the giant state-owned sector[15], which is caused by the weak position of state enterprises. Insolvency prevents state enterprises from being acceptable loan customers to the banks.

Moreover, some state-owned firms are not actually interested in obtaining credit from commercial banks. Post-state-owned-enterprises[16] in a demand-driven economic environment are rarely interested in optimizing their short-term behaviour, not to mention long-term goals (for details, see Yavlinsky-Braguinsky 1994). This implies modest investment needs and little demand for credit.

Of course, the demand for credit is sensitive to the interest rate, which remains higher than in the international markets dude to the country- and exchange rate-risk premium[17].

However, sluggish credit demand alone does not explain the low level of financial intermediation. Financial intermediation, as well as the extension of credit, depends on the existence of resources to be distributed. The problem seems to lie in the fact that the money supply, particularly the broad money supply, is small.

[15] Unfortunately, there is little information about the share of the state-owned sector in the total national economy. According to preliminary estimates by the Estonian State Statistical Office, in 1993 state- and or municipally-owned firms produced 50 % of total value added in the non-financial corporate sector (share of GDP 75 %).

[16] A term by Yavlinsky-Braguinsky (1994) underlying the fact of missing government control in the activities of state owned firms.

[17] Thanks to the fixed exchange rate, it would be advantageous to borrow from abroad. Unfortunately, as a rule this channel does not work. Estonian firms are unknown and therefore unacceptable to international lenders.

4 Money supply

The aim of the analysis was to compare the money supply in Estonia with the countries of the same level of development[18]. The data base for comparison was formed from the cross-country indexes of money supply (M1Y, LLY, QLLY[19]) calculated from the World Bank's World Tables for 1992[20].

The broad money supply in Estonia (*LLY*=18 %) corresponds to countries at a considerably lower level of development[21]. *LLY* was within the interval 16-21 % in 1992 in Rwanda (per capita GDP equals USD 250), Central African Republic (410), Ghana (440), Niger (310), Chad (210) Mali (300) and, as an exception, the middle-income country Gabon (4480).

Depending on the estimation of the real exchange rate, Estonia's per capita GDP was between 1600 and 3200 in 1993.

The situation is in determinate[22] for *M1Y*. In the case of Estonia M1Y was 15-16 %. This is almost as much as in Austria and in Canada (M1Y was 14 % and 16 % respectively and per capita GDP USD 22 230 and 20 600); or in Burkano Fasao the figures were 14 % and USD 300).

From the above-presented indicators one might conclude that the composition of the money supply in Estonia is far from typical. The main component of money is M1. The supply of quasi-money is extremely small. The ratio of quasi-money to M1 is 15 % in Estonia. From the available sample only one country (Chad) had a ratio of similar magnitude.

Considering Estonia's development level, the quasi-money supply should be considerably larger. Assuming Estonia's per capita GDP is USD 1600-3200, *QLLY* should be 24-26 %[23]. The actual figure was only 2-3 % or as low as only in a very few

[18] The relationship between the economic development and development of intermediation was assumed according to King-Levine (1992), King-Levine (1993) and Levine (1994).

[19] *M1Y* is money by the World Bank definition, ie it includs currency outside banks plus demand deposits (equal to IMF IFS line 34), divided by GDP at current prices.

LLY is the money supply broadly defined divided by GDP at current prices. The money supply broadly defined is the normal form of financial liquidity that an economic transactor holds in the monetary system. By definition, the holdings of nonresidents and the central government are excluded (World Tables 1991, p.x)

QLLY is "quasi-money" (equal to IMF IFS line 35) divided by GDP at current prices.

[20] Distribated on diskettes in STARS software.

[21] The development level is measured by per capita the GDP index.

[22] There appeared to be no relationship between M1 and the level of development. The coefficient of correlation between M1Y and per capita GDP was 0.31 (the cross-country sample involved 87 observations for 1992).

[23] The quasi-money supply is clearly dependent on the state of development. The higher the development, the greater the supply of quasi-money. The coefficient of correlation between QLLY and per capita GDP was 0.61 (the cross-country sample included 74 observations for 1992) and the regression function was

developing countries[24].

So, the indicators of money supply are in Estonia worse than in countries of the same level of development.

QLLY = 0.2213 + 1.64E-5 * GDP PC,

St. errors	.0269	2.52E-6
t-statistics	8.21	6.53

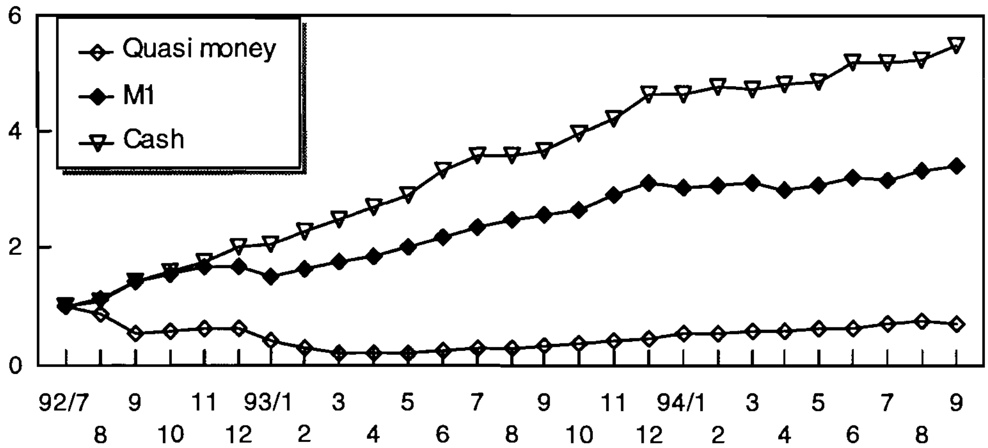
[24] Chad, Central African Republic, Equatorial Guinea and Sierra Leone, where NGP PC was 170-410 USD.

5 The development of the indicators over the time

The monetary reform of 1992 meant the beginning of a new economic (including monetary) policy regime. The currency board system resulted in a relatively restricted money supply. The situation was further constricted by the near collapse of payment flows from Russia after the reform. At the end of 1992 the first post-war banking crisis began in Estonia, which resulted in the closing of three commercial banks.

Strains on the financial sector were reflected in the dynamics of the money supply. Though the money supply increased nominally (Figure 1), it decreased in real terms. The domestic liquidity situation tightened drastically during 1992. According to an IMF estimation, the nominal increase in the money stock implied a 70 percent fall in its real value. It also led to a rise in the velocity of broad money from 1.1 at end-1991 to 3.7 by end-1992.

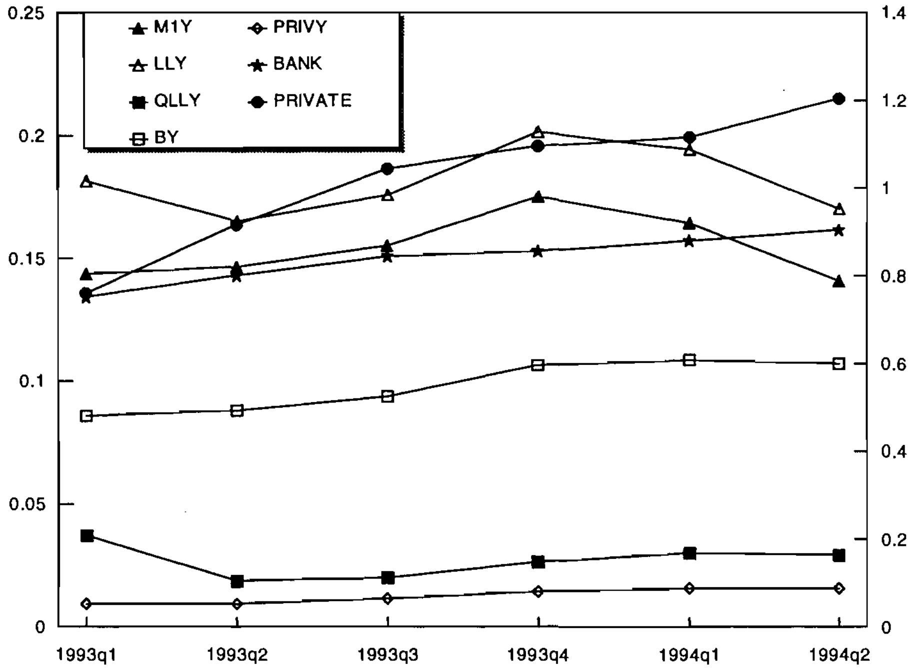
Figure1.**Base indexes of monetary aggregates (July 1992 - September 1994)**



Studying the dynamics of money supply it seems logical to presume a continuation of the tightening in 1993. If so, the indicators of financial intermediation would have been affected by a post-reform (short-term) shock. To define the effect of the shock the indicators of intermediation were estimated on a quarterly basis for the period 1993q1-1994q2.

Underlying the analysis was the hope that the indicators of financial intermediation would improve as the effects of the post-reform shock diminished. Unfortunately, it seems that the indicators did not improve as hoped. Even though there were some changes, they were only temporary in nature.

Figure 2. **Indicators of financial intermediation & money supply**
Left scale; M1Y, LLY, QLLY, BY, Privy
Right scale: BANK, PRIVATE



From Figure 2 it is clearly seen that although *M1Y* increased for some time it dropped toward the end of the period to its initial value. *QLLY* and *BY* have increased but their values remained very low. *BANK* was relatively stable.

The only noteworthy change occurred in the composition of credit. While nominal credit grants to the private sector expanded, credit grants to state enterprises generally remained flat. The shift toward the private sector is seen in the dynamics of *Private* and *Privy* Yet *Privy* remained weak (9 % in 1994q2).

To summarize, it can be stated that analysis of the dynamics of indicators of financial intermediation did not reveal any contradictions with the their values for 1993. Therefore the results are typical and the corresponding conclusions are justified.

6 Reasons for the restrictive money supply

In the case of the currency board arrangement (leaving aside the role of demand), the money supply can be affected by a deficit in the balance of payments and by an insufficient inflow of foreign currency and capital. It does not seem to be a problem for Estonia. During the period under consideration the balance of payments was in surplus and the net foreign assets of the commercial banking sector increased.

So, the low level of the money supply must be attributed to asset holders' decisions regarding portfolio composition.

6.1 Currency substitution

First, the demand and supply of domestic currency is determined by the relevance of the currency substitution dilemma (see Calvo-Vegh 1992, Giovanni 1991).

Currency substitution refers to the replacement of domestic currency in its traditional roles by foreign currency. According to Calvo-Vegh (1992) the intensity of currency substitution under a fixed exchange regime depends on the durability and credibility of the fixed exchange rate. Apparently, the kroon's fixed exchange rate is expected to hold. In this case, currency substitution should not be problem in Estonia, even though there have been changes in the structure of deposits pointing to the possibility of substitution. The share of foreign currency deposits in domestic banks has been increasing continuously. Between August 1993 and October 1994 the share of foreign currency deposits increased almost threefold (from 4.5 % to 13.1 %)[25].

Actually the increase has been reasoned by other causes. First of all by the liberalization in foreign currency transactions. The legal entities were allowed to open the foreign currency accounts in Estonia by the regulation of Eesti Pank of August 1993. The individuals gained the same right since April 1994.

Behind the growth of foreign currency deposits could be also the decrease in fascination of kroon (due to the inflation expectations). It would mean the use of foreign currencies in the domestic market. That does not seem to be the case. The hypothetical change in preferences does not reveal in interest rates. Deposit rates for foreign currencies are almost the same as for kroon. The interest rates of credit extended in foreign currencies are constantly higher (by 3 %). Meanwhile the dynamics of kroon and foreign currency interest rates are identical (Figure 3).

As the dynamics of interest rates do not show any changes in currency preferences (or exchange rate expectations)[26], the possible cause for the increase in deposits denominated in foreign currencies is the opening up of the Estonian economy.

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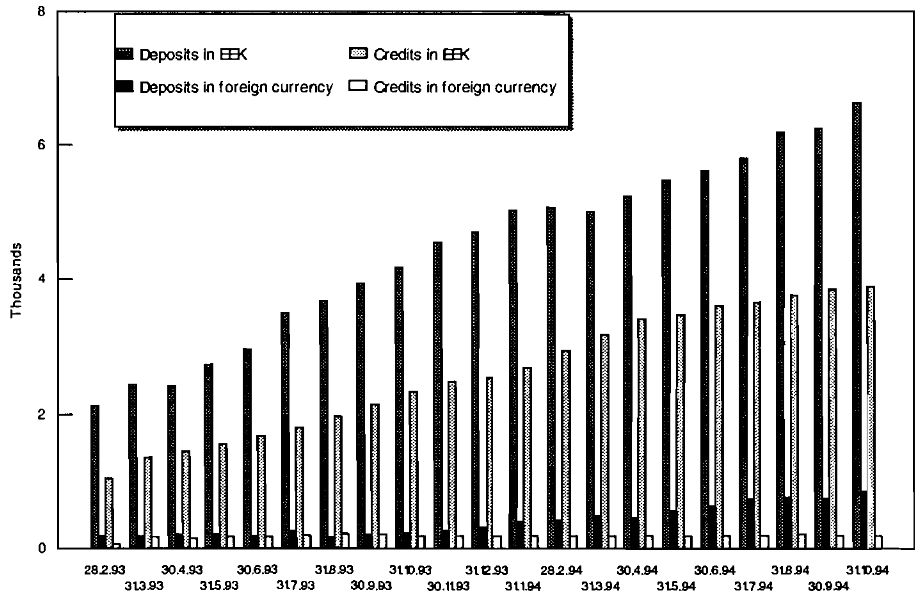
[25] According to the narrow definition, the degree of currency substitution can be valued as the ratio of foreign currency deposits of residents within the domestic banking system to total deposits of residents within the domestic banking system (Mueller 1994, p.3).

[26] It should be pointed out that the time series for foreign currency interest rates are short (only 6 observations), which reduces the reliability of the conclusions.

6.2 Currency preferences[27]

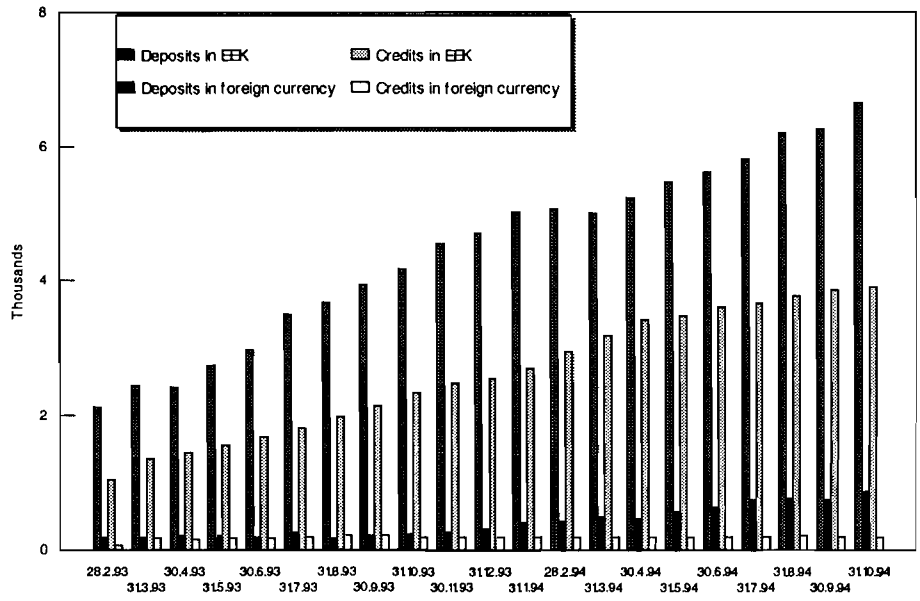
Characteristic of the post-(monetary)reform period is a permanent preference for currency. Deposits increased somewhat in May 1993. Despite the increase in deposits, the ratio of currency to other components of the broad money supply remained very high (65-70 %). Later, the share of currency again began to pick up (see figure 4).

Figure 3. **Deposits and credits of commercial banks (in million EEK)**



[27] *Currency* means *currency outside the banks.*

Figure 4. **Deposits and credits of commercial banks (in million EEK)**



Perhaps one reason for the situation referred to above is the currency board system and its endogenous money supply rule, considering the particular socio-economic conditions that prevail in Estonia.

If under certain conditions currency is preferred by the public and banks are subdued in the creation of money, than an increase in the money supply means that the supply of currency is increasing (as the money supply is driven by the demand).

The preference for currency (the corresponding indicator is the ratio of currency to demand deposits, RCDD) depends on the wealth effect and the effect of changes in expected returns[28]. In the case of Estonia the distinction between these effects is rather complicated, due to their opposing directions. In the following, some results of the analysis are presented, employing the ceteris paribus assumption.

In Estonia the change in wealth has not been effective in forming RCDD. Real income has not changed enough to have any influence on the preference for currency (Figure 5). Likewise, the interest returns on other financial assets have not influenced RCDD. The capital market is underdeveloped in Estonia and the selection of alternative assets is limited.

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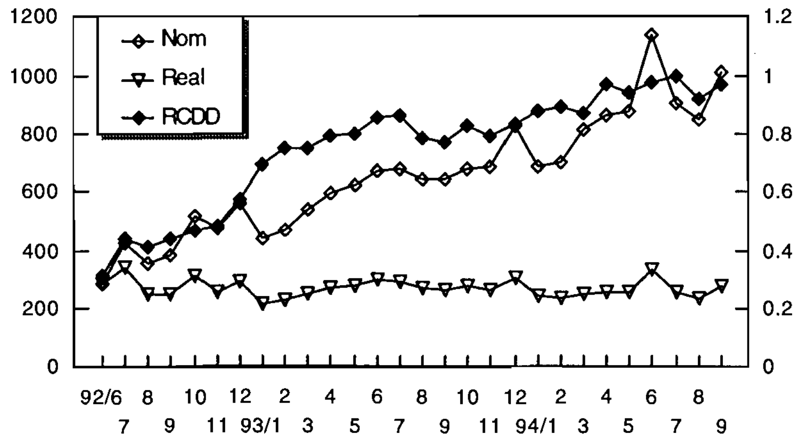
[28] According to Mishkin 1986, pp.282-288)
(1) under the wealth effect, RCDD is negatively related to the growth of income or wealth;
(2) including the effect of changes in expected returns
(2.1) RCDD is negatively related to interest rate paid on demand deposits and other financial assets;
(2.2) RCDD is positively related to bank panics and
(2.3) the extent of illegal activities.

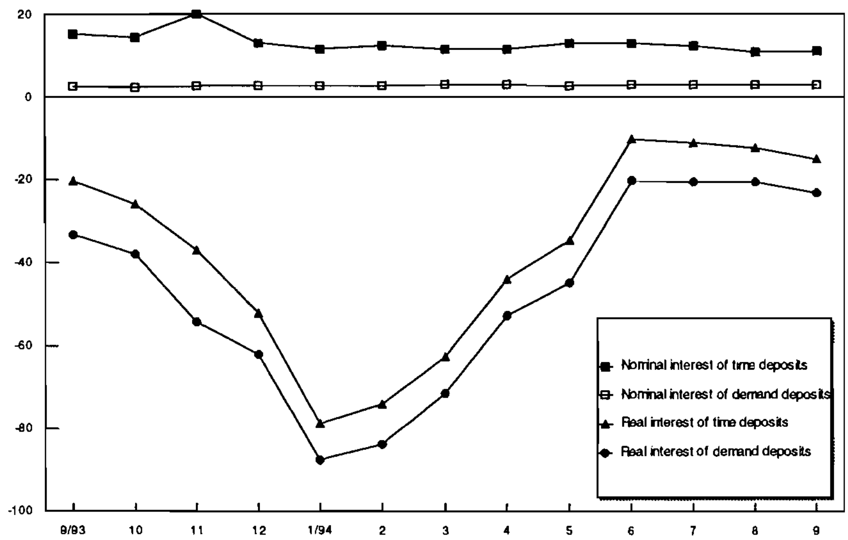
Figure 5. **Ratio of currency to demand deposits (RCDD) and private income**
right scale nom = nominal per capita income
real = real per capita income (in EEK, june 1992)
left scale RCDD



In spite of the cessation of the activities (for shorter or longer period) of three commercial banks in 1992, one in 1993 and two in 1994, there have been no panics affecting the whole banking sector, which could have drastically lowered the preference of deposits. More likely the prevailing attitude in Estonia is that such problems are typical for the banking sector. This is one reason why confidence in banking sector remains fragile, which in turn results in a preference for currency as opposed to deposits.

Due to the rapid evolution (Figure 6), the interest rate could be a factor increasing the desire for cash. The nominal interest rate on demand deposits has been relatively stable. With double-digit inflation, this has meant a considerably lower real interest rate. Meanwhile there is no evidence in RCDD that the public has reacted strongly to the change the in real interest rate.

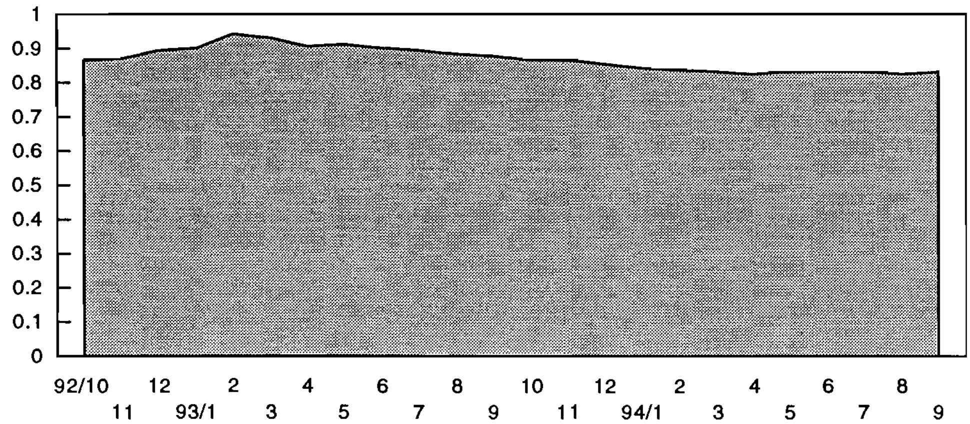
Figure 6. **Interest rates on time and demand deposits**



Considering the size of the underground economy[29], one could presume it to be a particularly important factor in the preference for cash. But again, there is no reason to conjecture a change in the share of the underground economy. So it is not likely that the underground economy has significantly changed the preference for currency.

[29] By indirect estimates, illegal activities amount to one-third of the Estonian economy.

Figure 7. **Share of demand deposits in total deposits**



6.3 Preference for demand deposits

The high relative importance of demand deposits is, along with the large share of currency, another distinguishing feature of the money supply in Estonia. In spite of some decline (figure 7), the proportion of demand deposits remains very high (near 82 % of total deposits). As with the preferency for currency, this is a sign of a lack of confidence in the banking sector. Depositors prefer to keep most of their assets in the form of demand deposits, which are relatively volatile.

Confidence as a major factor influencing the behaviour of the public is seen also by analyzing interest rates. Interest rate differences should affect the preferences for various deposits. For example, it would be presumable that the relative rise in interest rates on demand deposits would increase the share of demand deposits.

In Estonia during the period from September 1992 to September 1994, the interest rate on demand deposits remained almost constant (2.6–2.7 %). On the other hand, the interest rate on time deposits has declined considerably, by 6 % (see the latest changes in figure 6). Thus, summa summarum, this meant an increase in interest rates on demand deposits relative to that of time deposits. If interest rates alone were decisive in forming choices, the share of demand deposits would rise. Instead, it declined.

Interest rates do not play an important role in determining deposit behaviour, as is the case with cash preference.

7 Behaviour of banks and financial intermediation

The limitations for financial intermediation are broadly set by the actions of other institutional sectors of the economy. The preference of the public for currency and for demand deposits certainly restricts the activities of the banks. When the public favours currency, the banks do not obtain the resources for intermediation.

Under these circumstances, the efficiency of the banking sector can reveal rather unexpectedly.

Even though financial reform in Estonia has been relatively successful, the reform of the banking sector in line with a market economy started only with the monetary reform in June 1992. A supply-driven economic environment (similar to the case of a centrally planned economy) prevailed in the pre-reform period. Under these conditions the role of the banking sector as a financial intermediatry was more symbolic (see section 3.2). This means that Estonian financial institutions started to engage in commercial banking only after mid 1992. Due to the short time involved, bank personnel continue beshort on experience.

The situation is aggravated by complications in the allocation of assets during the period of transition to a market economy. The inexperienced staff must act under long- and short-term uncertainties[30]. So asset losses for banks are highly probable. If the banking sector can avoid part of the losses and preserve so the deposits with production of sensible interests, then it can save these resources for future capital formation. In that sense the efficiency of the banking sector during the short-term period of transition can manifest itself even in the preservation of deposited resources.

Considering the limited experience of Estonian banking personnel, it is understandable that low-risk regions (ie industrialized countries with stable economies) were selected for investment.

The increase in the foreign assets of commercial banks is also related to the structure of liabilities. With highly liquid liabilities (recall that the share of demand deposits is higher than in 80 %, see figure 7), prudence, requires highly liquid assets. Unfortunately, there are no data available for calculating how closely Estonian commercial banks have managed to match their assets and liabilities[31]. In any case, it is apparent that the banking crises of 1992 and 1994 were caused by mismatching.

Therefore, if in Estonia there is a lack of (trustworthy) alternatives for obtaining liquid assets, liquid resources must be sent abroad. That is one reason why the structure of deposits resulted in the growth of foreign assets.

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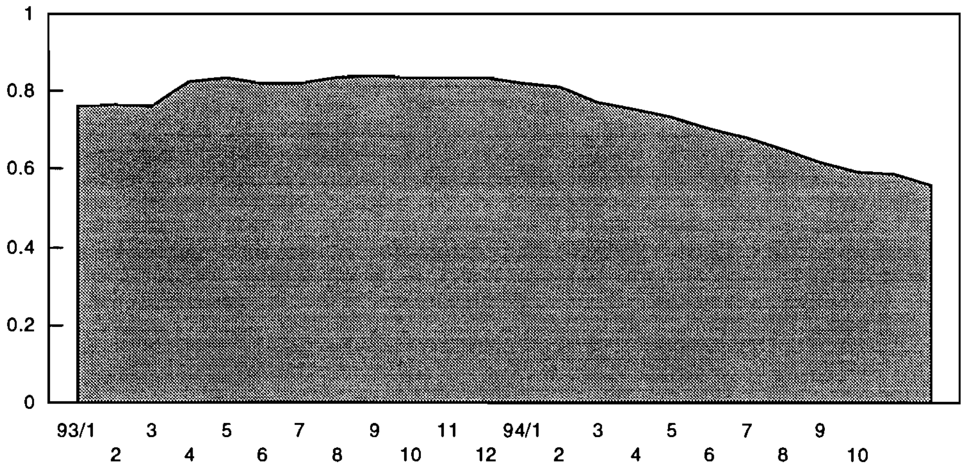
[30] Tirole (1994, p.142) lists three main categories of uncertainty:
(1) Uncertainty about the liquidity position of the firm. Firms are part of a web of interfirm credit. Assessing the solvency of a particular firm may require assessing that of many firms.
(2) Uncertainty about the economic conditions facing the firm (input and output prices, quantity of demand, etc.).
(3) Political uncertainty about the extent to which firms will be recapitalized or bailed out.
Uncertainty regarding legislation should be added to the list. Uncertainty relating to property rights diminish banks' ability to use real estate and other assets as collateral for long-term lending.

[31] Using, for example, the conversation of funds principle (see Harrison 1985, pp.265-267).

The short maturity of liabilities led to the dominance of short-term credits in the loan portfolios of Estonian banks (Figure 8). The prevalence of short-term credits is also the result of the perception of risks and the inability of banks to assess them under changing circumstances.

Figure 8. **Share of short-term credit in total credit**



It should be mentioned that taking of deposits and the structure of deposits are not totally beyond the control of the banks. Despite the fact that the supply of deposits is relatively inelastic with respect to the interest rate (see part 6.2), banks may have some influence in the short-run on the behaviour of depositors[32].

[32] In Estonia there have been some cases where banks suffering liquidity problems successfully controlled deposit taking through high interest rates.

Table 2. **Interest rates and spreads**

	Interbank overnight market	Deposits	Credits	Spread
1992 Sep		14.8	45.4	30.6
1993 Mar		19	37.2	18.2
1993 Apr		18.6	33.6	15
1993 May		17.9	33.4	15.5
1993 Jun		18.8	34.2	15.4
1993 Jul		17.7	34.3	16.6
1993 Aug		15.7	30.4	14.7
1993 Sep	7.16	15.2	29.7	14.5
1993 Oct	6.82	14.2	25.1	10.9
1993 Nov	6.4	13.9	27.1	13.2
1993 Dec	6.31	12.69	25.4	12.71
1994 Jan	6.01	11.48	26.55	15.07
1994 Feb	5.8	12.3	24.58	12.28
1994 Mar	5.61	11.58	23.27	11.69
1994 Apr	5.59	11.49	22.86	11.37
1994 May	5.48	12.77	23.48	10.71
1994 Jun	5.58	12.71	22.84	10.13
1994 Jul	5.92	12.09	24.49	12.4
1994 Aug	5.56	10.92	22.7	11.78
1994 Sep	5.54	11.16	21.47	10.31

Since mid 1993 deposit interest rates have been almost equal to the interest rate spread (table 2)[33]. This means that rates have declined in accordance with the interest rates on credit (figure 9). This leads one to the conclusion that banks have not made active use of interest rate policy. It seems to be the case that interest rates on deposits are derived using a constant mark-up (figure 10) from interest rate of credit[34].

[33] This is a result of significant change. During a relatively short time the spread has decreased from 31 to 10 percentage points.

[34] Assuming that the drop in credit interest rates is the result of the stabilization of the economy and other factors beyond the scope of the commercial banks.

Figure 9. **Average interest rates**

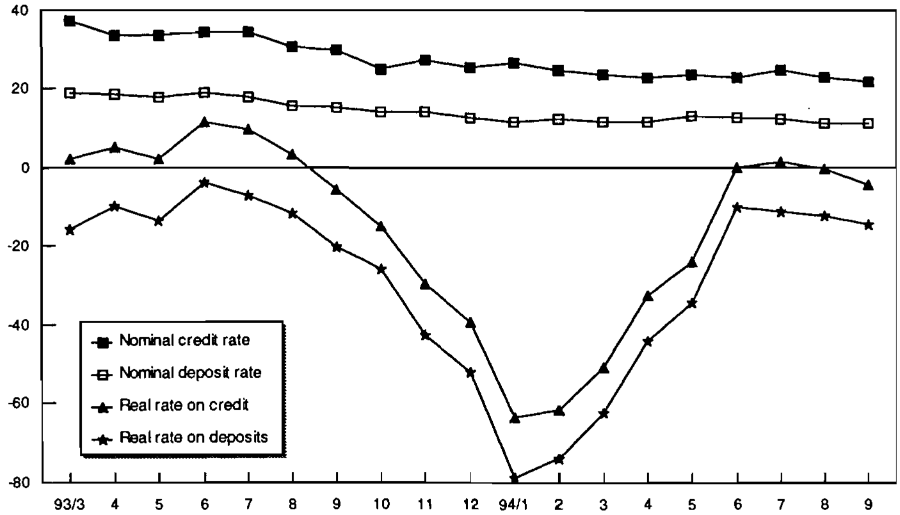
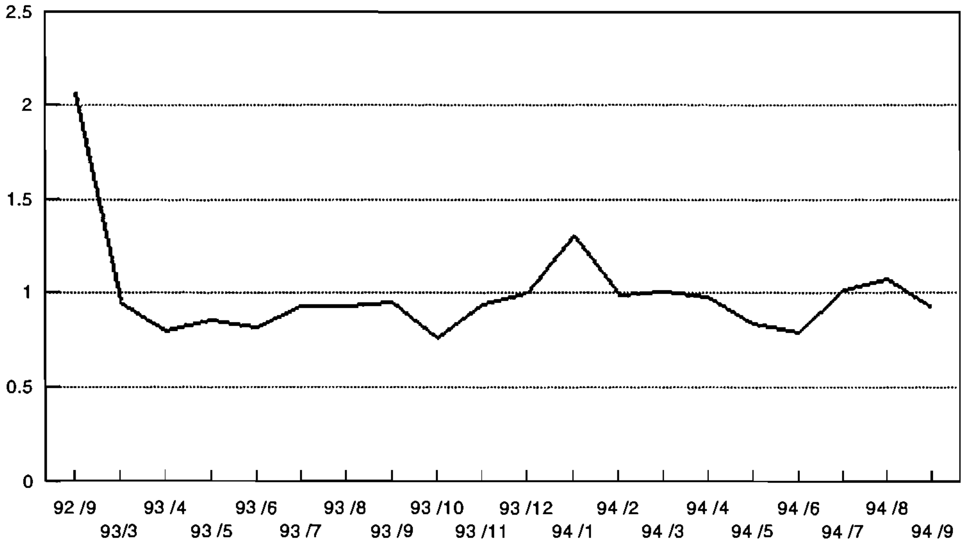


Figure 10. **Ratio of interest rate spread to interest rate on deposits**



8 The most recent developments

Since the end of 1993 several new features have appeared in the conduct of financial intermediation. Despite the persistent structure of deposits, the composition of credits has improved and the share of long-term loans has grown significantly (Figure 8).

The growth of long-term credit is due to improvements in legislation[35]. These have enabled banks to obtain collateral for long-term credits.

On the other hand the increased experience allowed the banks more adequately assess loan applications. This created the preconditions for a wider extension of domestic credits. The result was greater satisfaction of credit needs and improved efficiency in intermediation.

The combined effect of the above-mentioned factors produced an immediate sharp rise in the growth rates for credit. So in the first quarter of 1994 the increase in loans compared with the previous quarter was 7.2 %. Later the index declined somehow and the average for the year was 3.8 % (Ulevaade 1995, p.5).

Relying on the analysis of the asset structure of the banking sector (involving foreign assets, domestic credits and reserves, see figure 11), one could even claim that a change occurred in banks' behaviour. The regression analysis for 1993 and the first half of 1994 indicated that a decrease of reserves by 1 % increased the relative importance of foreign assets by 0.45 % and that of domestic credit by 0.55 %[36]. It shows that relatively more resources have been pumped into domestic economy than exported to international money market.

This is a relatively new phenomenon. Looking at the whole post-reform period, the simple correlation between foreign assets and reserves was 60 %. The relationship between reserves credit was nil. Thus, during this period assets released by lowering the level of reserves at Eesti Pank flowed mainly into foreign assets.

The inflow of funds under the systemic transformation facility (STF) of the IMF into the Estonian banking sector via the stand-by arrangement influenced the activities of intermediatries[37]. Probably the IMF credit had an effect even before the funds were transferred to the banks. In forming their current loan portfolios banks had precise

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[35] Particularly because of Parliament's passage of laws defining concerning property and the real estate (June 9, 1993 and in October 27, 1993).

[36] The regression functions are

$FA = 0.325 - 0.452 * R$,

St.errors	.0222	0.095
t-statistics	14.64	-4.77 and

$C = 0.675 - 0.548 * R$,

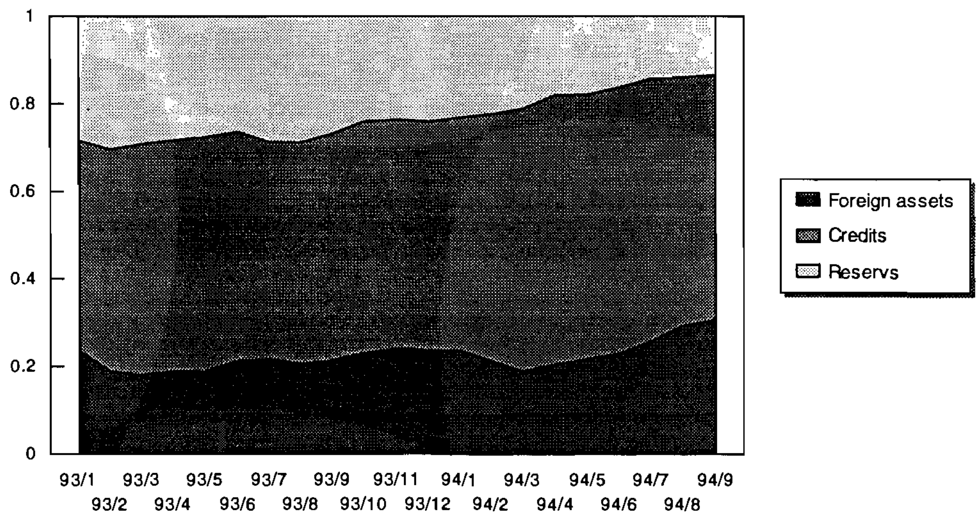
St.errors	.0222	0.095
t-statistics	30.36	-5.79,

where FA, C and R are the share of foreign assets, of credits and of reserves in assets the of commercial banks.

[37] In the third quarter of 1994 STF in the amount of EEK 195.4 million was disbursed to the commercial banks.

information about additional resources with long maturities which would be at in their disposal in the second half of the year.

Figure 11. **Shares of foreign assets, credits and reserves at Eesti Pank in consoliated balance of commersial banks**



Still the shift in activities during the first half of the year was not steady. This is particularly apparent in the allocation of excess reserves.

As an effect of learning-by-doing, commercial bank personnel enhanced their knowledge and skills in liquidity management, which made possible the reduction of excess reserves at Eesti Pank. So, with declining interest rates and thus increasing excess reserves, the actual share of excess reserves declined from 41 % in September 1993 to 28 % in July 1994. In 1994 the share of the deposits of commercial banks held at Eesti Pank has declined by 50 % from the level of the previous year[38].

The liquidity position of the banking sector was improved in the shortterm also through changes in reserve requirements in 1994. In April the required reserve ratio for the Estonian Savings Bank was reduced to 60 %. Since July the banks can include cash in their required reserves. Actually, this meant a reduction in required reserves. As a result, the share of required reserves declined by 22 % in 1994 from the level of the previous year.

As stated above the crucial channel in portfolio formation in the banking sector is the placing of resources in foreign assets. So the emergence of excess reserves caused an intensive outflow of capital during the third quarter 1994. As a result, the share of obligations to foreign banks rose to 20 % of the consolidated assets of commercial banks

[38] This is partly a result of the succesful economic stabilization and the establishment of the interbank overnight market. The role of Eesti Pank was significant in the start of the overnight market. To provide instruments for trade in the interbank market, Eesti Pank has been issuing CDs since 1993.

(in March 1994 the share was 14 %). The share remained at the same level up to the end of the year.

Conclusions

The Estonian banking sector under the centrally planned economy was apparently underdeveloped compared to other sectors of the economy. A centrally planned economy in any form is a nonmonetary economy where currency flows represent nominal transfers reflecting commodity flows. The aim of financial activities was to provide state-owned enterprises with the financial means needed for achieving plan targets.

One target of the financial reform was to replace administrative regulation with the market forces in the allocation of credit.

In Estonia liberalization of the domestic money market was completed with the introduction of the currency board arrangement in June 1992. Neither Eesti Pank nor any other financial authority has the power to interfere with the market controlling interest rates, etc.

In summarizing one can conclude that in the introduction of a market based financial system the most successful aspects have been liberalization and the establishment of a money market. However, the development of other financial markets as well as the arrival of institutional investors are tasks for the future.

To analyze the efficiency of the reformed banking sector the indicators of financial intermediation developed by R.King and R.Levine were used.

The indicators showed that the intermediation is developed in the sense that

(a) the role of central bank in intermediation is minimal. Intermediation is carried out mainly by commercial banks on a commercial basis, which makes possible the optimal allocation of resources. The preconditions for this type of intermediation were created by the introduction of the currency board arrangement.

(b) the share of the state-owned sector in total credit is insignificant. Assuming state enterprises are inefficient in using resources, the banking sector channels assets to firms that are able to employ capital efficiently.

Financial intermediation is modest due to the low level of domestic credit extension.

One reason for this is the low level of the deposit money supply. According to international comparisons, one could conclude that the composition of the money supply in Estonia is far from typical. The main component of money is M1. The supply of quasi-money is unprecedentedly small. The ratio of quasi-money to M1 is 15 %. From the available sample only one country (Chad) has a such a weak ratio. Considering the level of development, the quasi-money supply should be considerably larger.

With the currency board arrangement (leaving aside the role of demand), the modest money supply could be affected by a deficit in the balance of payments and an insufficient inflow of foreign currency and capital. The same thing can happen when the extent of financial intermediation and of bank money creation are constrained.

When the first reason holds, the growth of base money is restricted. This does not seem to be a problem for Estonia. During the period under consideration the balance of payments was in surplus and the net foreign assets of commercial bankings were increasing. So the level of money supply must be attributed to financial intermediation.

The limitations in financial intermediation are broadly set by the actions of other institutional sectors of the economy. The preference of the public for currency and for demand deposits certainly restricts the operations of the banks. If the public favours currency, the banks will find themselves short of resources for intermediation.

The increase in the foreign assets of commercial banks is related to the structure of liabilities. The high liquidity of liabilities explains high liquidity of assets. Due to the lack of credible alternatives for obtaining liquid assets in Estonia, the liquid resources are placed abroad.

As a result, Estonia has experienced a stabilized situation where in banks have very little funds available for lending to domestic borrowers. Actually, the banking sector used to be separated from the real sector of the economy. Although the banks mobilized resources in the domestic economy, they placed these resources abroad. This mechanism had the typical features of the disintermediation - the reverse of financial intermediation.

In the first half of 1993 new features appeared in banking activities. Despite the permanent structure of deposits, the composition of credit improved and the share of long-term loans grew remarkably. One could even claim that certain change in banks' behaviour took place during the period under consideration. Relatively more resources were pumped into the domestic economy than the exported to international money markets. This was a relatively new phenomenon. Previously, the available resources have been mainly converted into foreign assets.

Unfortunately, this seems to have been a short-run effect of improvements in legislation and changes in banking regulation. In the second half of the year, the initial situation was restored and available resources were mainly deposited and invested abroad.

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