REFORM OF MONETARY POLICY OPERATIONAL FRAMEWORK[1]

A: Objectives and Stages

1. **Definition of monetary policy operational framework.** According to international practice[2] monetary policy operational framework involves

(I) **In broader terms:**
Monetary policy objectives in general (incl intermediate and ultimate targets, set-up of monetary policy instruments as means to achieve these targets, etc);
Central bank independence and policy transparency issues;
General legal framework and guiding legal instruments (incl banking practices and unwritten standards).

(II) **By narrower definition:**
Liquidity system and constraints stemming from financial stability objectives.

The following framework reform strategy is based on the continuation of the currency board arrangement (CBA) in Estonia until joining the Economic and Monetary Union (EMU). Hence the reform will review the monetary policy operational framework in narrow terms, ie the operational framework design for liquidity management purposes.

2. Currency board arrangement is based on stringent rules and efficient markets. As a classical orthodox type currency board set-up does not involve open market operations to influence money supply and interest rates, the monetary policy objectives are accomplished through smooth operating of standing facilities. Efficient financial markets will ensure adequate supply of resources to meet demand, leading to stabilisation of interest rates, the latter being one of the key factors in the currency board based macroeconomic stabilisation process. **Under a rule-based monetary system such as a currency board, the major emphasise is on the fluent functioning of the operational framework.**

3. **The last view is also emphasised in the Strategic Development Plan of Eesti Pank.** Paragraph 3 of the document "The Activity Guidelines of Eesti Pank for 1999–2001" states the following: "The main tools of Eesti Pank in securing the efficiency of the transition mechanism of the rule-based monetary policy in the conditions of rapid economic and financial development are the relevant structure of the operational framework of monetary policy and improved access to the information..." Thereby, efficient functioning of monetary policy operational framework ensures the efficient functioning of the whole monetary system.

4. During the last two decades international financial markets have undergone vast and rapid changes. Asian and Russian financial turmoil have contributed to the impetus of globalisation and further integration, the largest monetary union – the Economic and Monetary Union was founded. Both domestic economic and monetary policies have to keep pace with global trends. Commensurate with the globalisation trend of financial markets, the free movement of capital gathers even more weight – in this light more flexible and less distorting monetary policy operational framework is the key contributor to the development of efficient financial markets.

5. **The medium term goal of Estonia is joining European Economic and Monetary Union, as stated in Estonian negotiation position.** Despite the fact that the exact time of accession to the EMU is unknown, **it is necessary today to take steps to support the convergence of the monetary system with the European standards and to maintain monetary stability during the transition phase (at the same time)**. Thus the monetary policy reform has two clear objectives: contemporary improvement of the liquidity management system in the short-term and the long-term perspective to pursue operational convergence with the Eurosystem.

[1] This is the explanatory letter to the decision "The Strategy of the Monetary Policy Operational Framework Reform" the Board of Eesti Pank approved on 25 April 2000 (see Eesti Pank Bulletin No 3, 2000, pp 6 to 7).
[2] The definition used here relies on that of the CCBS.

6. The hereby presented monetary policy framework reform should not be viewed separately from the previous policy decisions of the central bank aiming at the stability of monetary environment, the latter being a necessary precondition for price stability. The current framework reform is a logical continuation of the policies started in 1999 to lessen the somewhat distorting impact of the present framework on market structures as well as to promote the integration of Estonian banks into European markets. Eesti Pank's decision to remunerate the required reserves of commercial banks as from 1 July 1999 should be viewed in this light. Taking into account the ultimate objective of joining the EMU, the following concept of monetary policy operational framework reform includes both the short and long-term horizon.

The Goals of the Reform

7. **The reform of monetary policy operational framework has two distinct objectives**:

(I) **In the short-to-medium term** critical review of the efficiency of monetary policy instruments and rules to ensure smooth functioning of the fixed exchange rate mechanism under currency board arrangement;

(II) **In the longer perspective** convergence of the monetary policy operational environment towards that of the Eurosystem.

The time frame of the operational framework reform is somewhat complicated due to uncertainty about the exact time of the accession to the EU and Eurozone. This stems from stepwise accession to the EMU and divides the reform into two stages at least: (1) period of pre-accession to the EU and (2) post-accession period for a country with derogation (ie as a member of the EU but not the member of the Eurozone). **Hence the preparations for full convergence into the EMU framework has to be divided between two periods; during the first period this means improvement of the existing currency board arrangement.**

8. **The exchange rate regime as a main determinant for operational framework reform in the short term**. In the light of the definition of operational framework mentioned above, the exchange rate regime is the main determinant of the liquidity system. As opposed to discretionary monetary framework, the monetary systems relying purely on rules and markets – like a currency board – the liquidity system is treated as a central complex ensuring the functioning of the system, including maintaining the fixed exchange rate. Therefore the intermediate targets and monetary policy strategy are unavoidably different from that of discretionary monetary arrangement. As an illustration to that, the intermediate target for the CBA is the exchange rate as opposed to money supply target and/or direct inflation target of the Eurosystem. As the ultimate goal is the same – price stability – it can be said that CBA means targeting price stability via exchange rate stability.

9. **EMU aspects today**. The reform of monetary policy operational framework relies on the principle of acceptable plurality of exchange rate regimes during the pre-accession period. This means that the main characteristics of the monetary framework will remain unchanged during the pre-accession period. This also means no changes in legislation of the CBA regarding the exchange rate aspects. The last statement is also supported by the ECB's statement on the suitability of the CBA (on the case-by-case basis) within ERM2 as a unilateral commitment[3]. **Additionally, it is clear by now that immediate implementation of monetary framework of the Eurosystem in applicant countries is not realistic due to different stages of development and available monetary policy choices; early implementation can also cause serious drawbacks in the course of normal development.**

10. **The need for critical evaluation of the existing monetary policy operational framework in the short perspective**. The last thorough evaluation of operational framework took place in 1996. The core of the 1996 reform was monthly averaging of required reserves' calculation. In addition the spread for buying/selling forex to commercial banks was abolished, remuneration of banks' excess reserves with the central bank was linked to *Bundesbank* discount rate, penalty rate for not meeting reserve requirement was implemented, etc. Since 1996 the financial system has undergone several changes including international testing during financial markets' turbulence in 1997–1998. It can be said that the framework has worked well and proved to be sustainable in difficult circumstances. Still, bearing in mind the changes in the financial markets, the operational framework needs to be re-assessed and improved, if necessary.

[3] "…Thus such countries may participate in ERM2 with a CBA as a unilateral commitment augmenting the discipline within ERM2." (ECB press conference from 13 April 2000).

The Efficiency of Changes in Operational Framework in 1996–1999

11. As a classical currency board mechanism does not support open market operations to influence money supply and interest rates, the ultimate goal of monetary policy has to be accomplished through the smooth functioning of the rest of the operational framework. In Estonian monetary policy framework major emphasise has been on the standing facilities (forex window and deposit facility) and on the required reserves' system. The development of the standing facilities during 1996–1999 can be qualified as a response to the turbulence in the internal and external macroeconomic environment. Even though the external shocks demanded *ad hoc* policy decisions to address the structural imbalances in the economy, the Bank has stressed the importance of having in mind the long-term policy objectives, including the efficiency of the monetary system. In Table 1 the chronology of monetary policy decisions over the last three years is presented; the impact of these steps on monetary environment is added.

12. Major changes in both internal and external environment and development of the financial system have induced the need for re-assessment of the operational framework. First and foremost, the problematic area is the build-up of required reserves' system in respect of its various functions (liquidity function, restrictive function, etc). Additionally, central bank CD auctions have lost their initial meaning due to very small amounts with interest cap. Under this design, the auctions failed during turbulent times (due to much lower yield compared to market rates) and represented an alternative form of investment for banks at normal times. Hence they have lost their meaning in monetary policy framework.

The Environment and Timing of the Reform

13. **Monetary environment**. Relying on the experience of the last three years, it can be stated that the present build-up of monetary policy operational framework has supported the credibility of Estonian monetary system, reinforced capitalisation and liquidity of commercial banks and created favourable environment for real and nominal convergence towards the EU levels. **Monetary environment has significantly improved after the Asian and Russian crises what in turn gave a chance for starting an operational framework reform.** Additionally to that, growing integration into international markets and rapid development of real-time settlement systems also support the timing of the reform.

14. **Accession to the EMU as a background for the timing of the reform. The reform will be divided at least into two stages.** According to information available at present, the accession to the EMU cannot take place before 1 January 2003; however, later dates are possible. Consequently the first stage of the reform which is mainly targeted for further improvement of the smooth functioning of the CBA must be accomplished no later than 2001.

15. **The CBA by itself sets the limits for available monetary policy tools.** Rapid development and further globalisation of financial markets induces further combination of CBA principles with modern liquidity management practices. For a CBA this means ensuring smooth functioning of standing facilities in broad sense, as discretionary means are normally not used for achieving monetary policy goals. Under standing facilities in broad terms we mean a standing facility for buying/selling forex deposit facility and required reserves' system[4]. **Hence the first stage of the reform involves:**

(I) **Improvement of the liquidity system over a further development of standing facilities**; first and foremost this covers required reserves' system;

(II) Re-assessment of operational framework in other respects.

16. **One of the central issues of the reform is the optimal level of required reserves**. In principle it is possible to derive the so-called "optimal level for Estonia in international context" from international comparisons; however this approach remains highly conditional due to big differences between different countries in respect of size, exchange rate regime, openness of the economy, etc. With taking into account that long-term goal is the harmonisation of operational framework with that of the EMU, the level of required reserves should be lowered to 2% as the final target. On the other hand, as required reserves' system is one of the key components of the Estonian CBA, the immediate unification with the EMU framework is not realistic. **Therefore it is appropriate to treat the issue of optimal level of required reserves in the form of**

[4] This approach differs to some extent from that of the ECB where monetary policy instruments are divided into three families: open market operations, standing facilities and reserve requirements. Here standing facilities in broad terms also cover reserve requirements.

Table 1. Measures taken by Eesti Pank (EP) aimed to improve the monetary policy operational framework in changing internal and external environment

Measure	Date	Underlying causes	Impact on markets
STANDING FACILITY OF BUYING/SELLING FOREIGN CURRENCY TO COMMERCIAL BANKS ("FOREX WINDOW")			
Abolishing the spread in EEK/DEM (since 1.01.99. EEK/EUR and other EMU currencies) transactions between EP and domestic credit institutions	01.07.96	· Promote the effective functioning of the forex market and facilitating short-term interest arbitrage	· Bigger banks have established an effective infrastructure for such "broader liquidity management" as well as strengthened their foreign liquidity buffers · Transactions between EP and commercial banks have simplified · Role of the domestic inter-bank forex market has gradually weakened · Lowered interest rate margin between the Estonian kroon and the euro due to missing capital controls · For liquidity management purposes the "forex window" could not be viewed as an alternative to required reserves in very short term (T+0)
RESERVE REQUIREMENT			
Introducing the monthly averaging principle in meeting the reserve requirement	01.07.96	· Provide for banks more flexible buffer for the short-term liquidity management in order to limit liquidity risks and stabilise the inter-bank money market interest rates	· The use of daily minimum requirement by banks decreased substantially · Assessment of the impact of introducing the averaging on the interest rate stability is complicated because of significant structural changes in the banking sector over the past 3 years. However, the interest rate level has been stable in normal times
Lowering of the cash deductibility in meeting the reserve requirement	01.07.96 (40%) 01.07.97 (30%) 19.06.98 (20%)	· Decrease actual cash demand · Increase liquidity buffers · Decrease of security risks of cash holdings	· In 1996-1997 banks have taken into account cash deductibility ratio in their cash holdings · In 1998 the impact of the decrease of cash component was insignificant
Adding net liabilities of credit institutions vis-à-vis foreign banks to the reserve requirement calculation base	01.07.97	· Diminish structural deviations caused by the massive foreign capital inflow · Eliminate "unjustified advantages" of credit supply based on foreign capital inflow · Limit credit expansion · Increase liquidity buffers	· Strong signal to banks about the risks of foreign liabilities based credit expansion · Banks' circumventing the requirement in various ways (over reporting cycle, over channelling capital inflow via other parts of banking group) · The size of foreign reserves of banks grew; at the same time the quality of foreign assets remained ambiguous · The size of foreign reserves of banks grew; at the same time the quality of foreign assets remained ambiguous
Increase in the penalty interest rate for non-compliance with the reserve requirement to 20%	01.11.97	· Ensure the meeting of the reserve requirement in a situation where the market interest rates tend to grow higher than penalty interest rate set by EP	· Created the "ceiling" for the money market interest rates · The penalty interest rate has been too high and rigid at normal times
Raising the daily minimum reserve requirement to 4% of the reserve base	01.11.97	· Force the banks to keep intra-day kroon liquidity reserves due to instability stemming from Asian crisis · Provide EP with some flexibility in the case of potential liquidity crisis	· Because of the relatively high (monthly averaged) reserve requirement the daily requirement did not play any important role, particularly for bigger banks
Extending the reserve requirement base: including financial guarantees into reserve base	01.08.98	· Avoid circumventing of "net liabilities against foreign banks" clause in reserve requirements over channelling the capital inflow via other parts of financial groups · For strengthening the liquidity buffers of the monetary system	· The volume of effective reserve requirement increased significantly · Rapid adjustment of banks: the amount of banks' guarantees to financial institutions and non-resident credit institutions diminished
Remuneration of required reserves	01.07.99	· Decrease distortions on financial market by reducing negative impact of the uncompensated reserve requirement · Decrease advantages of other financial market players (not subject to reserve requirement) over credit institutions · Avoid reducing liquidity buffers, while reforming operational framework in a more market-oriented direction	· Decrease in the structural deviations · Signalling effect: continuation of restrictive monetary policy in the conditions of expansive fiscal policy · Partial compensation for the restrictive monetary policy
ADDITIONAL LIQUIDITY REQUIREMENT (ALR)			
Establishing liquidity requirement	01.11.97	· Prevent banks from expanding their loan portfolios at the expense of liquidity buffers in the deteriorating financial environment · Enhance financial stability · Restrict credit expansion	· Considerable growth of banks' deposits held with EP · Most banks did not face any trouble meeting the requirement after the introducing it · Strong positive signal in the middle of Asian financial crisis
Maintaining the liquidity requirement	1998	· Maintain adequate liquidity buffers and secure financial stability (precautionary measures in order to avoid the contagious effects of the Russian financial crisis)	
	1999	· Continue restrictive monetary policy in the conditions of the expansive fiscal policy · Maintain adequate liquidity buffers for potential Y2K problems	
Penalty for non-compliance with additional liquidity requirement	01.11.97	· Ensure the meeting of ALR	· Overwhelmingly correct meeting of ALR · Case by case penalty rule may cause moral hazard · Liquidity buffer at EP is in practice not operational (due to harsh penalty measures), thereby hindering smooth liquidity management
STANDING DEPOSIT FACILITY			
Establishing standing deposit facility	01.07.96	· Increase banks' incentives to maintain liquidity in domestic currency	· Assessment of the impact on reserve demand ambiguous · The instrument has supported smooth functioning of the liquidity management
CERTIFICATES OF DEPOSITS OF EESTI PANK			
Central bank CD auctions	19.03.93	· Increase the efficiency of inter-bank money market · Smooth seasonal fluctuations in the cash demand cycles · The creation of an instrument based on domestic eligible security was meant to encourage domestic inter-bank market (via providing potential collateral)	· Does not function at turbulent times (if market rates are significantly higher than the yield offered by the central bank) · Is a divergence form orthodox currency board as it changes money supply; hence the volumes have been kept very small and yield capped; hence its role diminished in line with deepening of financial intermediation

gradual lowering in time with the aim to reach the same level and structure of required reserves as in the EMU. The central bank strongly believes that lowering the liquidity buffers before joining the EMU is not acceptable. The last statement stems from the specific features of the CBA.

17. To summarise, during the pre-accession period to the EMU it is necessary to start reforming the operational framework towards the EMU standards. At the same time further improvement of the CBA is necessary for ensuring price stability in the medium term. **In longer perspective, operational convergence towards the EMU framework starts from standing facilities; the implementation of open market operations before joining the EMU is not likely.**

B: Monetary Policy Operational Framework Reform

18. For clarity reasons and in line with the above mentioned objectives of operational efficiency and operational convergence the reform is divided into two different phases. Table 2 describes both the first and second phase of the reform and presents the main necessary changes to the operational framework in the long term. Even some of the monetary policy instruments not existing under current framework such as the marginal lending facility have been reviewed.

19. The first phase of the operational framework reform takes us to the second half of 2001 and will be followed by the second phase lasting till Estonia joining the EMU. The division of the reform between the two phases is justified by the difficulties in predicting both the exact speed of economic-political integration process to the EMU over the medium term and the pattern of Estonian economic cycle. Relatively high level of reserves at the central bank would be justified during the first phase of the reform to ensure adequate cover of settlement buffers when the new payment systems start operating. This leaves the banks ample time to set up and test their cross-boarder liquidity management systems.

Table 2. Enhancements to the monetary policy instruments

INSTRUMENT	REFORM SCENARIO
1. Forex window	First phase of the reform will not bring along any changes to the forex window; further enhancement of this facility will depend on the technical solutions of intra-day liquidity management in the real-time gross settlement system as well as on the developments of international real-time FX settlement systems
2. Required reserves **Note:** monthly reserve averaging will be maintained	Reform of reserve requirements will be accomplished in two phases: 1. Unification of the additional liquidity requirement under the reserve requirement: common legal status and penalty mechanism 2. Eligible assets for meeting the reserve requirement will include both the banks' reserve deposits at the central bank and prime foreign securities held by banks in predefined scale (up 50% of required reserves) 3. Adjustment of the reserve base for the needs of p 2 Level of the reserve requirement: The effective level of Estonian kroon required reserve holdings with the central bank will be reduced over time in compliance with simultaneous increase in the required level of foreign assets for meeting the reserve requirement. All in all the total level of liquidity buffers including both the Estonian kroon and anchor currency denominated instruments of the banking sector will be preserved at current levels for contributing to financial stability in the run-up to EMU
3. Deposit facility	Differentiation of the deposit interest rate from the reserve interest rate (remuneration rate of the required reserves) in accession to EMU, currently no changes are foreseen
4. Marginal lending facility	During the first phase of the reform introduction of the marginal lending facility is not foreseen. In principle it is possible to set up collateralised lending facility during the second phase of the reform
5. Open market operations	Central bank CD auctions will be discontinued as they have fulfilled their objectives. Operational framework for the Eurosystem open market instruments incl the main and longer term refinancing operations will be set up in context after accession to EMU

20. **First phase of the operational framework reform involves:**

(I) Unification of the additional liquidity requirement under the reserve requirement;

(II) In line with the integration of the Estonian banking system into the European markets, the liquidity buffers of the monetary system in the sense of the reserve requirement will take into account both the banks' domestic and foreign reserves: (a) the main part of the reserve requirement has still to be met by holding Estonian kroon deposits with the central bank, (b) the remainder of the reserve requirement, to be seen as a temporary measure until Estonia joining the EMU, could also be met by holding eligible fixed income securities of investment grade or higher and nominated in the anchor currency;

(III) Discontinuation of the central bank CD auctions as with the introduction of new required reserves' system and later new settlement systems there will be new alternatives for liquidity management;

(IV) Before full implementation of the reform on 1 January 2001 the reserve base will be reviewed according to the needs of the reform.

21. **The second phase of the reform (2001+)** includes complete harmonisation of the Estonian minimum reserve system with that of the ECB, incl unification of the reserve calculation base and reserve requirement level of 2%. In addition a real-time intra-day repo facility will be introduced for payment system purposes, and a standardised marginal lending facility backed by eligible assets will be set up, if necessary.

22. **The first phase of the reform will foresee partial meeting of the reserve requirement with foreign assets (fixed income securities).** One crucial criterion for the eligible foreign securities is that they should be close substitutes for kroon deposits held with the central bank; this means they should be liquid instruments and of high rating. The second precondition for the substitution criterion is efficient functioning of the forex window; the latter will largely determine the speed of cross boarder flows. The efficiency of the forex window will improve with the launch of real-time gross settlement system. **At least during the first phase of the reform foreign assets are not perfect substitutes for reserve deposits due to technical restrictions imposed by the present stage of settlement systems (operating on t+2 basis).**

23. **Real-time gross settlement system will be operational from the second half of 2001.** The operational framework reform does not foresee any changes for the operations of the forex window during 2000 as the reserve deposits will provide ample liquidity buffers for the settlement systems. During the second phase of the reform, when the reserve deposits' levels will be lowered, the intra-day liquidity facility and/or the forex window will be introduced. It is likely that both options are necessary as **introducing intra-day repo facility means also operational convergence towards the Eurosystem**. Research on the optimum liquidity facility design will be carried out in cooperation with the commercial banks.

24. **One of the main objectives of the reform is to minimise market distortions stemming from the required reserves' system itself, while sustaining adequate liquidity buffers. Hence, the planned reform of required reserves' system will involve gradual lowering of the required reserves to be met by holding kroon balances with the central bank and a respective increase in the liquid eligible foreign assets holdings.** So the overall level of required reserves remains the same. This arrangement leaves the liquidity position of the banking sector largely unchanged (it is supposed that high-rated liquid foreign assets are almost perfect substitutes to the reserve deposits held with the central bank). The restrictive effect of such an "Argentinean type" liquidity requirement remains somewhat ambiguous, as both the motives for holding foreign assets and the quality of foreign assets vary remarkably across banks. In principle there is no difference where the liquidity reserves of the monetary system are kept – in the form of high quality securities or in central bank deposits provided the liquidity transfer mechanism works perfectly. The reform's impact on the money supply and credit growth is somewhat difficult to predict; the summary of theoretical foundations and analysis is presented below. **The sterilisation effect from this type of reserve instrument is the higher the higher the credit quality for eligible assets. The quality of eligible assets is crucial both from the liquidity and sterilisation aspects; it is obvious that lowering of quality will undermine the effectiveness of the minimum reserve system.**

25. **Expected implications of the monetary policy operational framework reform on the liquidity system** are the following:

(I) The reform will decrease market distortions and increase efficiency of the financial intermediation. In that respect meeting reserve requirement with tradable foreign assets is more effective than remuneration of reserve deposits with the central bank as central bank cannot pay market rate due to the necessity to cover its own risks;

(II) An intra-day liquidity management instrument will be set up for payment system purposes. In a longer perspective this will imply operational basis for operational convergence towards Eurosystem monetary policy framework;

(III) As a result of the reform the required reserves' liquidity and restrictive function become more distinct, though a wider set of instruments will be available for managing capital flows;

(IV) The reform will ease the harmonisation of required reserve system with that of the Eurosystem by lowering the reserve deposit level in domestic currency. The reserve requirement to be fulfilled by eligible foreign assets should be seen as a temporary measure, the overall aim of which is not to compromise the currency board integrity before joining the EMU;

(V) The reform will support integration into the European financial markets, a necessary precondition for the successful operation of the currency board.

26. **Possible problems stemming from the monetary policy operational framework reform are twofold:**

(I) Direct impact on the liquidity system;
(II) Indirect impact on the monetary environment.

The main problems in the course of the reform could be associated with the smaller banks, which are not in the same position as the larger institutions to benefit from the additional flexibility offered through the modernised operational framework. In particular, larger banks have already ample experience and have made investments to develop cross-boarder liquidity management capabilities. The smaller banks lack profound experience in investing in international capital markets partly due to economies of scale and lack of comprehensive infrastructure. These issues have to be taken into consideration while designing the technical solutions. The other source of potential problems can be associated with additional expenses for the central bank as a by-product of the reform; these issues will be covered below.

27. **In conclusion, the operational framework reform will serve for more efficient and flexible use of the standing facilities (as the main instruments of the currency board framework) and will expectedly squeeze the interest margin between the Estonian kroon and the euro interest rates through the diminishing market distortions.** In addition the reform will possibly have a stabilising effect on short-term interest rates as domestic banks would be in a position to employ their foreign liquidity buffers at a very short notice to cover unexpected Estonian kroon liquidity outflows from the payments system. The latter will reduce the systemic risk in the RTGS where timing of payments is of critical importance. In the longer run, this reform will enhance the operational convergence towards the Eurozone monetary framework.

C: The Impact of the Reform on Monetary Environment: Macroeconomic Level

28. In addition to the effect on banks' liquidity management, **the impact on the monetary environment has to be considered.** The discussion below is divided into two sub-problems:

(I) The monetary policy signal of the reform as a part of general economic policy;
(II) The impact of the reform on monetary environment, including central bank expenditures.

Expected Impact on Monetary Environment

29. **The role of monetary policy in a small open economy**. Recent developments and experience over last 8 years have stressed the positive contribution of the currency board arrangement to the economic growth but to some extent at the expense of higher volatility of economic activity. The past financial and currency crises have proved to the international community that currency board mechanisms are credible policy alternatives for small open economies, provided there is sound balance between fiscal and monetary discipline. During recent years currency boards have gained more international recognition. Research made by the IMF[5] has shown that countries following currency boards have been successful not only in reducing budget deficits and dumping inflation expectations in the stabilisation phase, but have also outperformed many other countries following other exchange rate regimes in achieving sustainable growth (see Figure 1).

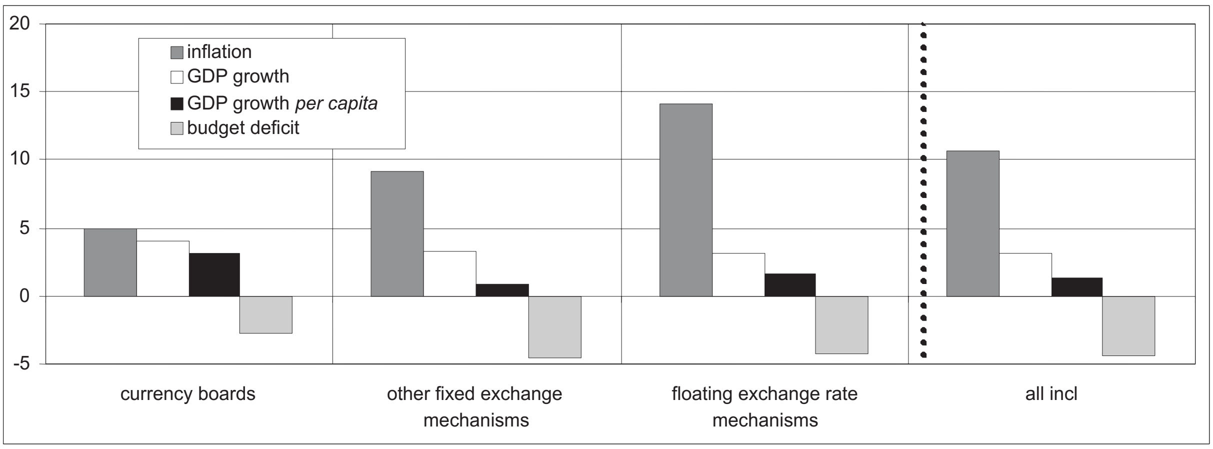

Figure 1. Different exchange mechanisms. Some economic indicators (%)

[5] A. R. Ghosh, A. M. Gulde and H. C. Wolf, *Currency Boards: The Ultimate Fix*? IMF Working Paper 98/9.

30. **The main causes for volatility of economic activity in Estonia** are openness to external shocks and limited possibilities to smooth the effects from external shocks through active use of monetary policy instruments (for example: limited possibilities for sterilising capital inflow and for minimising the effect from direct price shocks etc). On the other hand automatic stabilisers under the CBA imply fast adjustment in the real sector and thus provide quick reaction to the changed macroeconomic environment. Moreover, because of smaller domestic markets all small open economies do have less room for setting independent monetary policy irrespectively from the exchange rate regime.

31. **Implications for monetary policy operational framework. Under the currency board arrangement the operational framework as far as a pure liquidity management system is concerned should function independently from the economic cycle, ie it should function in neither pro-cyclical nor contra-cyclical manner**. Due to the limited set of policy instruments under the currency board arrangement, it is sometimes difficult to distinguish the economic and monetary policy objectives from the goals of effective liquidity management and financial stability. As an illustration to that, the changes (or the status quo) in the required reserves' system in 1997 at the turn of the economic cycle and in 1999 economic downturn have served the purpose of reaching adequate balance in the economic policy. Thus in practice it has been difficult to separate the reserve requirements' restrictive and liquidity functions.

32. **As a result of convergence of the Estonian monetary policy framework to that of the Eurosystem, the level of minimum reserves' requirement will be gradually lowered.** Whereas the restrictive and liquidity functions of the minimum reserve system have been the matter of **reserve requirement level**, the capital inflow sterilisation issues have been first and foremost related to the **composition of the reserve base**. For example the introduction of financial guarantees and net credit position of the resident banking sector vis-à-vis the foreign banks in the reserve base have served the aim of dampening excessive capital inflows inflating the macroeconomic environment. Thus the sterilisation issue has to be analysed also through reserve requirement base.

33. **Impact of the reform on monetary environment** is related to the monetary policy signals (reduction of required reserves in the prevailing economic stance can be associated with monetary policy relaxation) and possible direct monetary expansion. In the foregone analysis it has been assumed that the additional resources freed from the reduction of minimum reserves will be channelled in full by the banks to the domestic credit market and not invested abroad[6]. In broader economic context the reform will depend on the concrete economic situation prevailing at a time. **In short-term horizon** the reform can result in one-time effect on monetary expansion and credit growth. Assuming endogenous money demand under currency board system, even the **long-term effect** on monetary environment should be neutral.

34. **The restrictive function of the reserve requirement in short and long-term perspective.** It has been mentioned that the reform will foresee that part of the minimum reserves could be fulfilled in the future with eligible foreign assets. Reduction of the reserve requirement in terms of required Estonian kroon deposits with the central bank will form the basis for possible one-time monetary expansion (given that sufficient effective demand for credit is there). **However, the short- and long-term effects of partial meeting of minimum reserves with foreign assets are different**. Short-term effect depends on banks' reaction in asset management after the reform; long-term effect is associated with the sterilising effect of minimum reserves.

35. **A classical multiplier model has been used to assess the possible short term effect of the minimum reserves' system reform on credit growth.** The results are in a sense partial as money supply and credit markets are just parts of the general macroeconomic framework. Though at its very best the model could be used to assess the possible short term effect on the monetary environment. The medium-term impact from the reduction of reserve requirement will depend on the phase of the economic cycle. Though it is not possible today to fix any exact reserve requirement reduction plan with the aim to bring the requirement down to the Eurosystem level of 2%.

36. **In today's economic situation credit growth stands at fairly modest 15% y-o-y[7], other economic indicators do not point to the risks of overheating or growing imbalances in the short term.** In addition short-term interest rates in the Eurozone are following a rising trend what should help to combat excessive demand in the short term. Thus the reduction of required reserve deposits by 3% implies respective credit growth maximum by 6% with an underlying pessimistic assumption that all resources freed from the minimum reserves will be invested in Estonia. Even though under this marginal scenario credit growth remains well under the 1996 level (not even mentioning the 1997 credit boom), the **results indicate that considering the**

[6] This assumption is relevant, as the aim is to identify the maximum effect on the credit growth. It is clear that in reality this assumption will not be realized in full.
[7] As of early April, 2000.

present economic growth phase the fast reduction of reserve requirements and liquidity buffers can have destabilising effects on the macroeconomic stability.

37. **In general, the medium- to long-term effect of monetary policy operational framework reform on the monetary environment will be neutral and will support further declining of interest rate margin.** As a by-product the base money volatility will be reduced, which is expected to have some stabilising impact on broad money as well.

Expected Impact of the Reform on Central Bank Profits

38. **The second important area of the consequences of the reform is its impact on profits of the central bank**. Relying on the profit distribution strategy of Eesti Pank, approved by the Board of Eesti Pank, it is critical to avoid the substantial decreasing of excess currency board cover before joining the EMU. In other words, in the course of the reform it is important to take into account the restrictions stemming from the nature of the CBA while considering the expenses of upholding the operational framework. Additionally, it is important to stress that maintaining of excess reserves is vital for maintaining the credibility of the monetary system under the CBA.

39. **Relying on previous considerations, the cost of upholding the monetary policy operational framework** is more important for a CBA-based monetary system than under a conventional central bank. Or in other words, **under the CBA the independence of the central bank, and financial independence in particular, is more important for ensuring transparency of monetary policy measures and lowering inflation expectations.**

40. In the context of operational framework reform this means assessment of all costs associated with the operational framework including remuneration of minimum reserves and other services offered by the central bank. Here a pragmatic view on these issues is preferred, ie even though monetary policy is a public good, **under the CBA it is necessary to pursue such framework changes, which ensure the maintenance of sufficient excess reserves. This approach is well in accordance with the profit distribution strategy of Eesti Pank, approved by the Board of Eesti Pank in 1999**.

41. **The main determinant of changes in Eesti Pank profits is the margin between the yield of foreign reserves and minimum reserves' remuneration rate, not the build-up or composition of the reserves as such.** Or in a more detailed way, in line with lowering domestic currency reserve deposits in the central bank both the income base for the central bank (ie monetary base) and the costs of remuneration of reserve deposits will decrease simultaneously. **In conclusion, the reform of operational framework is in accordance with the profit distribution strategy of the central bank, approved in 1999; the expenditures that accompany the reform do not undermine the financial credibility of the currency board in the medium term.**

D: Conclusion

42. **As a conclusion the monetary policy reform strategy will foresee**:

(I) The reform will be carried out in two stages: the first phase will last for a year starting from 1 July 2000; the second phase will start from 1 July 2001 and last until joining the EMU.

(II) At the end of the first phase of the reform 50% of the reserve requirement can be met by holding eligible foreign securities; reduction of the required reserves' deposits will be accomplished during a year in two stages, but no later than 1 July 2001. The required level for eligible foreign assets will be increased at the same time and at the same ratio, respectively. Monthly averaging for reserve requirement calculations will hold. During the first phase of the reform the required deposits at the central bank will be remunerated according to the present system.

(III) The second phase will include harmonisation of the operational framework with that of the Eurosystem in the medium term. The second phase will include convergence into the Eurosystem required reserve system, introduction of the intra-day liquidity instruments (intra-day repos). The second phase will end with the finalising of preparations for full implementation of the Eurosystem operational framework.

(IV) The first phase of the reform will start from the unification of the reserve requirement and additional liquidity requirement at the current (liquidity) levels. The auctions of the Eesti Pank Certificates of Deposits will be discontinued as from 20 May 2000.

(V) Before full implementation of the minimum reserves' reform the required reserves' base and list of eligible assets will be specified.