

## The History and Sustainability of the CBA in Estonia

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### 1. Introduction

Estonia has had a currency board arrangement (CBA) for more than 10 years. Due to the successful performance of the Estonian economy under a CBA the current position of the Bank of Estonia is to maintain its exchange rate regime until full participation in the EMU, *inter alia*, during Estonia's participation in ERM 2. Therefore, it is necessary to analyse the reasons for maintaining the CBA in the past and whether it is a viable option in the future.

The main aim of this paper is therefore to give an overview of the history of the Estonian CBA and examine the different aspects of its sustainability. In section 2 the article describes the basic features of the CBA in general and the Estonian CBA in particular and discusses the rationale for the choice of a CBA in Estonia. The third section of the article describes the main developments of the Estonian economy during the last 10 years. Both financial sector and real sector developments are briefly discussed.

In the fourth section, we assess the sustainability of the Estonian CBA. We specifically analyse whether the preconditions for the successful performance of the CBA are in place. First, we examine the fiscal policy stance after the introduction of the currency board with special emphasis upon the period strongly influenced by external shocks (1997–1999). Secondly, we discuss the flexibility of the real sector of the economy. For this purpose the flexibility of wage setting, movements in the real exchange rate and changes in foreign trade are discussed. Thirdly, we analyse the resilience of the banking sector by looking at

its performance during the external shocks experienced during the Asian and Russian crises.

The article concludes that the Estonian economy fulfils the main economic pre-conditions for the sustainability of the CBA – sufficient fiscal discipline, flexibility of the real sector and resilience of the financial sector. Therefore, the CBA could be considered a suitable exchange rate arrangement before Estonia's entry to the third stage of the EMU.

## **2. The History and Overview of the Estonian CBA**

For a decade, Estonian monetary policy has been based on the currency board arrangement (CBA). This part of the paper sketches the evolution of the Estonian monetary framework since the introduction of the CBA to the present.

### ***2.1. The Basic Features of an Orthodox CBA***

A currency board is a special type of fixed exchange rate arrangement, governed by strict institutional rules. Those rules include a strong explicit (usually legislative) commitment to a fixed exchange rate and the requirement that domestic currency is issued only against foreign exchange (IMF, 1996). An orthodox currency board has to stand ready to exchange domestic currency for the reserve currency at a specified and fixed exchange rate and all issued currency has to be backed with foreign reserves or gold.<sup>1</sup>

Those strict institutional rules eliminate (constrain) the scope for issuing unbacked monetary liabilities, ensuring that the board does not run out of foreign reserves to maintain the parity (IMF, 1996). For that reason the issuance of domestic currency is tied to the growth of foreign reserves in the currency board (usually directly through the cumulative exchange of reserve currency vis-à-vis domestic currency at the currency board), and money supply becomes endogenous, imitating the changes to central bank foreign reserves. This element of the currency board is sometimes called the automatic money supply mechanism.

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<sup>1</sup> Full backing of issued currency with foreign reserves and gold is characteristic of an orthodox currency board. Some non-orthodox CBAs have used the requirement that only part of the issued currency has to be backed with foreign reserves.

The fixed exchange rate under perfect capital mobility sets clear constraints on pursuing independent monetary policy. Currency boards therefore have limited power and no incentive to engage discretionary monetary policy or to intervene. This typical characteristic of currency board is called inability (or lack) of monetary policy. Consequently, the liquidity management of this system is the responsibility of the markets. The automatic money supply mechanism assures that excess (or shortage of) liquidity is automatically sterilised (corrected) by capital movements making money supply endogenous vis-à-vis money demand. In other words, banks tend to increase their foreign assets if there is no acceptable demand for their domestic assets (Hanke *et al*, 1994). The opposite process is also possible, meaning that banks increase their domestic assets by decreasing their foreign assets.<sup>2</sup> This adjustment mechanism works through interest rate (and currency)<sup>3</sup> arbitrage due to the fixed exchange rate. Evidently, unlimited convertibility and liberal treatment of capital movements are preconditions for ensuring the smooth functioning of this feature.

Similarly, the currency boards lack a Lender-of-Last-Resort (LOLR) facility, as the backing rule constrains unbacked issuance of domestic monetary liabilities by the board. While an orthodox use of a CBA by definition rules out the LOLR facility and other monetary policy instruments, in systems similar to a currency board, such functions are limited to the board's (central bank's) excess of foreign reserves.

A CBA is thus an extreme form of fixed exchange rate systems whereby irreversibility of commitment is guaranteed by a legally fixed parity between the national currency and the reserve currency (Avramov, 1999). As a currency board

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<sup>2</sup> It is important to note that this does not mean that money supply shadows current account developments only, as it is sometimes misguidedly assumed and which, therefore, has led to some criticism of the CBA (see Schuler, 1992). Due to capital flows and bank credit, money supply is able to grow even in the absence of a current account surplus.

<sup>3</sup> Tsang (1998) argues that not only do interest rate hikes contribute towards the stabilisation of a currency, but there is also a second mechanism in the CBA: currency (exchange rate) arbitrage. Given the currency boards unlimited convertibility, people (banks) can convert their cash (domestic currency) into foreign currency via the currency board at the predetermined exchange rate. Then they can sell it on the foreign exchange market, if the market exchange rate weakens from the official rate, thus bringing the market exchange rate back to the official level (Tsang, 1998).

is a rule-based technical arrangement (a fixed exchange rate with strict commitments and an automatic money supply mechanism), it is not affected by political pressures. The government cannot print money or borrow from the central bank to fund its budget deficit; thus inflationary financing of government cannot take place. These constraints should help to achieve better fiscal discipline (Mihalke, 1997) and the resulting conservative fiscal policy is more important for ensuring the credibility of the CBA. The full backing of issued currency should guarantee the board's ability to maintain convertibility with the reserve currency at their stated fixed rates of exchange.

Those properties of a currency board – limited discretion, rule-based set-up, legal barriers, and the inability to monetise fiscal deficits – should provide more credibility for the arrangement when compared with other monetary regimes<sup>4</sup>. By providing clear signals about the policy intentions of the authorities, and ensuring monetary independence from the government, CBAs facilitate an adjustment of expectations and promote wage and price discipline, thereby lessening potential inflation bias (IMF, 1996).

The CBA also bears a certain resemblance (though in a completely modified context) to gold standard principles – a CBA could be considered a 'surrogate' for the automatism and rules of the gold standard. In some sense, it is a return to the gold standard's hierarchy of goals and the corresponding adjustment mechanisms (Avramov, 1999).

## ***2.2. The Particular Features of the Estonian Currency Board***

In Estonia, currency board principles were introduced together with the monetary reform in 1992. The Law on the Security of the Estonian Kroon sets the legal enforcement of CBA principles. This legislation enforces all the essential principles of a currency board:

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<sup>4</sup> Rivera Batiz and Sy (1997) analysed credibility effects of the CBA. They found that the CBA stabilises inflation and can indeed give some credibility gains.

- i) Kroon exchange rate determined with respect to the German mark;<sup>5</sup>
- ii) Bank of Estonia is prohibited to devalue the kroon;
- iii) kroons issued (ie currency in circulation and deposits held in the Bank of Estonia) require full backing with convertible foreign currencies and gold;
- iv) full convertibility of issued kroons guaranteed at the official rate;
- v) Bank of Estonia issues kroons only against corresponding change in foreign reserves.

As we can see, the Law on the Security of the Estonian Kroon in fact enforces the currency board framework in quite an orthodox form in Estonia. However, the currency board is not institutionally separated from the central bank. According to the law, the Bank of Estonia is responsible for the following duties typical of a central bank – maintaining the stability of the legal tender, conducting banking and monetary policy (as far as it does not contradict the principles mentioned above), promoting financial stability, implementing banking supervision (until 2002), collecting statistics, conducting research, etc. In implementing its tasks, the Bank of Estonia is independent from all government agencies. Loans to the government by the Bank of Estonia are prohibited and the bank is not liable for the state's financial obligations.

The institutional unification of currency board principles with the other duties of the central bank, however, does not mean a weakening in the enforcement of CBA principles, since the most fundamental are guaranteed by Law. The scope for possible monetary policy is therefore legislatively limited by the amount of excess reserves in the central bank (ie CBA constraints).

This can also be seen from the practical implementation of monetary policy in Estonia (see also Appendix). Concerning the monetary policy operational framework, CBA principles are managed via the facility provided by the Bank of Estonia in the forex market. This results in an unlimited forex purchase and sale facility ('forex window') for all major currencies (including the euro and USD)

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<sup>5</sup> The exact exchange rate of kroon (1 DEM = 8 EEK) was set by a separate decree of the Bank of Estonia. However, only parliament has the power to make changes to the central parity. Since 1999, the kroon is through German mark fixed also with a euro (1 EUR = 15,64664 EEK).

against the Estonian kroon. Transactions at the forex window are initiated by commercial banks (ie there are no discretionary interventions by the central bank) and there are no restrictions or limits of access to this facility for commercial banks. Moreover, there are no exchange rate spreads for euro (purchase and sale) transactions in this facility, meaning that all forex transactions (purchase and sale) with EUR (before 1999 DEM) are carried out at the central parity of the currency board.

Transactions at the forex window constitute the only channel for base-money issuance<sup>6</sup>, assuring that money supply is only adjusted according to changes in the central bank's foreign reserves. In other words, there is no active monetary policy in Estonia. There is no central bank policy rate or other operational monetary policy targets in Estonia. Therefore, there exists neither discretionary monetary policy instruments<sup>7</sup> nor an explicit LOLR facility.<sup>8</sup> The currency stability objective is tied to the anchoring role of the exchange rate, and all the necessary adjustments are left to the market. Consequently, the key role in achieving and maintaining sufficient liquidity buffers remains with the financial system. The CBA is supported by the reserve requirements placed upon banks. These have been somewhat higher in Estonia, compared to other Central European transition countries, in order to promote stronger financial discipline and strengthen the financial sector as well as to compensate for the lack of a LOLR facility.

These differences do not constitute a major divergence from CBA principles but rather a minor complement to the CBA. The institutional unification does not

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<sup>6</sup> A slight divergence from this principle existed between 1993–2000, when the Bank of Estonia issued central bank CDs. In addition, on rare occasions, the Bank of Estonia has extended liquidity support to the banking sector that has also influenced base money supply.

<sup>7</sup> Between 1993–2000, the Bank of Estonia's monetary instruments also contained the issuance of certificates of deposits. The initial aim of the CDs was to increase the efficiency of the inter-bank money market and to smooth seasonal fluctuations in the cash demand cycles. However, due to the introduction of the averaging principle to the reserve requirement in 1996 and the small overall amount of CDs, the instrument lost its initial importance. The volumes of CDs were kept small and yield capped.

<sup>8</sup> As there have existed excess reserves during most of the CBA period, those loans are not explicitly ruled out either. In practice, such support from the Bank of Estonia has however been limited to specific cases that were made to avoid excessive systemic risk in the financial system.

result in a weakening of CBA principles, since they are guaranteed by law. There is a strong rationale for backing clearing accounts in a modern currency board (see Yam, 1999). Therefore, this should actually increase the credibility of the arrangement<sup>9</sup>. The reserve requirements do not contradict CBA principles, but may be regarded as a ‘substitute’ for the LOLR facility. Finally, the possibility for some monetary policy, stemming from excess foreign reserves, has largely remained a ‘theoretical possibility’. The only discretionary instrument the Bank of Estonia has used was the issuance of CDs between 1993–2000, where the amounts were small and the aim was directed toward enforcing the development of the inter-bank money market. In summary, we can claim that the CBA has been implemented in rather an orthodox form in Estonia.

Hence, the actual set-up of Estonian monetary policy also follows quite orthodox CBA principles. The most important differences are: (1) the currency board has not been institutionally separated from the central bank; (2) the backing requirement in Estonia does not cover only notes and coins, but also accounts at the Bank of Estonia; (3) reserve requirements exist as an instrument supporting financial discipline; and (4) a theoretical possibility to conduct some monetary policy using excess foreign reserves also exists.

### ***2.3. The Rationale for the Choice of a CBA in Estonia***

The rationale for the initial choice in favour of a CBA in Estonia was complex and combined political and economic as well as pragmatic aspects. Regimes ranging from free floating to complete ‘dollarisation’ were considered during the pre-reform period<sup>10</sup>.

One set of reasons for the choice of a CBA was connected to institutional underdevelopment, namely to limited central banking expertise as well as a lack of knowledge concerning transmission mechanisms. This knowledge was difficult to acquire in the early 1990s, as statistical data about the economy was poor or lacking. In addition, prior to reform the Bank of Estonia did not have any

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<sup>9</sup> In Estonia, the interbank clearing system is in the central bank. Most of the accounts in the central bank are settlement accounts.

<sup>10</sup> For an overview of the discussion on the rationale of the choice of the CBA and implementation of the monetary reform in Estonia see Knöbl, Sutt and Zavoico (2002).

experience in implementing independent monetary policy. In an environment of rapid structural transformations, there was clearly insufficient knowledge concerning transmission channels and relevant time lags in order to conduct discretionary monetary policy. Therefore, a fixed exchange rate under a CBA was chosen partially for its simplicity.

The second set of reasons for the choice of a CBA stemmed from an economic situation that called for very rapid stabilisation. The limited convertibility and hyperinflation of the Russian rouble as well as problems with cash circulation had made monetary stability and credibility the first and most important precondition for other economic reforms in 1992. A CBA was believed to be one way to rapidly reduce inflation, increase credibility and also increase fiscal commitment. Therefore, a CBA was chosen so as to gain credibility and provide a solid nominal anchor for stabilisation and restructuring (Sepp and Randveer, 2002). In addition, the public strongly appealed for a currency with stable external value together with internal convertibility (as opposed to the non-convertible rouble at this time) (Lõhmus, 2001). This was believed to be more difficult to achieve through a more independent monetary regime, considering the underlying economic situation and the smallness of the economy. It should also be added that the general academic and political discussion concerning monetary regimes in the early 1990s (in preparation for creating monetary union in Europe) was also probably more in favour of monetary unions and rigid exchange regimes.

In choosing an anchor currency, the Swedish kronor, Finnish markka and ECU were considered in addition to the German mark as candidates for the peg or even as candidates for full 'dollarisation'. There were very strong arguments in favour of pegging the kroon to the ECU and for some time it even formed the basis for the monetary reform plans (Kelder, 1997). A single currency peg was however believed to be more transparent and simpler than pegging to the currency basket. Besides, any other basket of currencies would have been difficult to compile. Russia and the former Soviet Union were Estonia's main trade partners during that period, but substantial reorientation of trade in the coming years was expected.

The final choice of the German mark was based on the importance of the DEM (as a proxy for the ECU) and on the belief that it would help to reorient external trading towards western countries. One argument against the ECU was that it

only existed as a unit of account; hence, it would have been more difficult to explain such a choice to the public (Kelder, 1997). However, the euro-based peg already had its roots ten years ago. In the light of this it is interesting to note that the US dollar was never brought up as a serious alternative during those discussions (Lõhmus, 2001).

What is the present validity of those arguments? In the early 1990s the central monetary policy issue concerned exchange rate based stabilisation – today convergence with the EU is the main issue (The Activity... 2000). In the wake of EU accession, a fixed exchange rate against the euro still seems feasible. Moreover, the Bank of Estonia has become increasingly convinced that under the high degree of openness, free capital movement and small domestic money market, independent monetary policy would be a rather complex issue. In this regard, by giving up monetary autonomy under a CBA, Estonia has received monetary stability in return (Sepp and Randveer, 2002).

### **3. An Overview of the Main Developments of the Estonian Economy under a CBA**

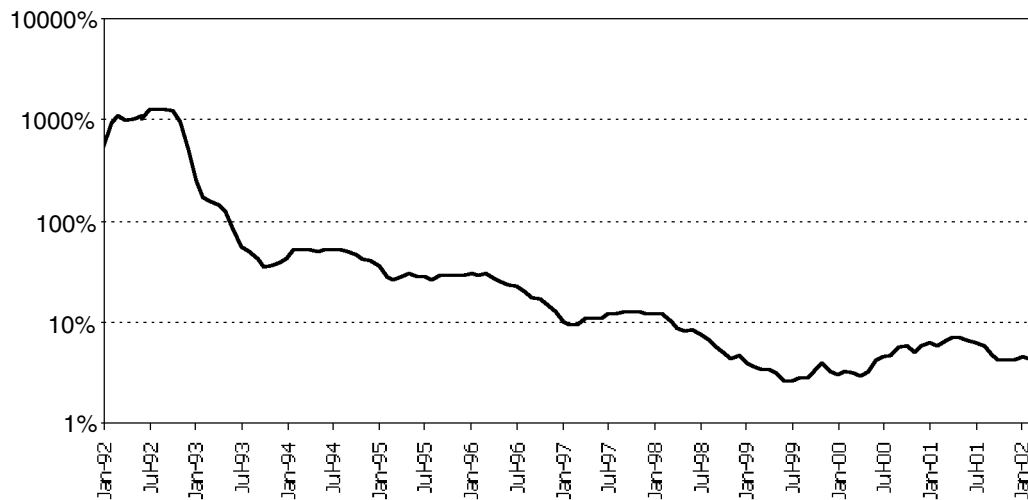
The currency board framework helped to achieve a stable monetary environment relatively quickly. Here we will give a brief overview of these developments, concentrating firstly on the monetary and financial developments, and then on real sector issues. Some of these topics will also receive closer attention in the fourth part of this paper, where some sustainability issues will be discussed.

#### ***3.1. Initial Stabilisation and Nominal Convergence***

The ultimate aim of the CBA is to import the price stability of the base currency into the Estonian economy. The monetary reform in 1992 was carried out in a hyperinflationary environment, having inflation levels well above 1,000 per cent. After the monetary reform hyperinflationary pressures continued for some months, before the first implications of the reform were seen in a rapidly declining inflation level. In 1993, the inflation quickly declined to 89% from the levels above 1,000 per cent in 1992 (see Figure 1). As money supply is endogenous and the discretion of the monetary authority and its (presumable) inflationary effect is not relevant under the CBA (Sepp *et al*, 2000), such rapid stabilisation was expected. Inflation rates also continued to decline in the following years,

not, however, reaching single-digit levels before 1998. In recent years, inflation has been around 4–5 per cent (See Table 1).

**Figure 1.**  
**Annual inflation in Estonia during 1992–2002 (logarithmic scale)**

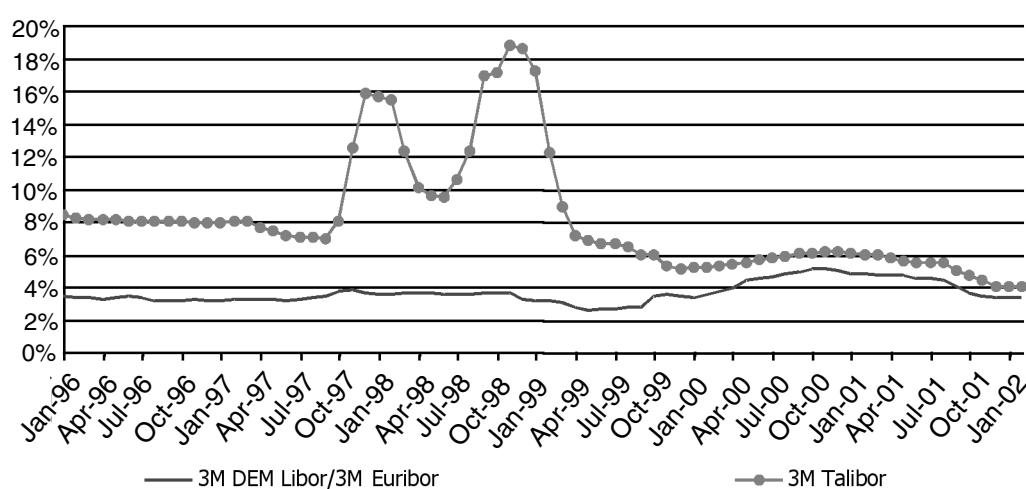


It is important to note that due to the Balassa-Samuelson effect, price increases will remain somewhat higher in Estonia compared to those in advanced economies. The main driving force for this is the higher productivity growth in Estonia due to the real convergence, which yields convergence of the structure and level of prices as well. This effect is believed to cause an inflation difference of about 1.5–2.5 percentage points compared to inflation in advanced economies (Randveer, 2000). Considering the smallness and openness of Estonia, import prices will also remain important in determining inflation in Estonia.

Similarly, Estonian interest rates also started to decline after the introduction of the CBA. As under the CBA, domestic interest rates should converge with anchor currency interest rates (plus risk premium) due to arbitrage possibilities. This decline in interest rates was also expected. In general, during the times of high capital mobility (the capital account was fully liberalised in 1994 in Estonia) and lower risks, the margin between Estonian and German interest rates has indeed shown a declining pattern. Money market rates have followed anchor currency interest rate developments quite closely (see Figure 2). The

only exceptions have been the turbulent years of 1997 and 1998, when Estonian interest rates were pulled away from this convergence path. The real sector retail rates have also decreased substantially (due to decrease in interest rate margins) – from about 40–60% in the early 1990s to 8–9% at present.

**Figure 2.**  
**Short-term money market rates vs 3month DEM/Euribor rates in Estonia**



### 3.2. Financial Deepening

The financial sector has experienced major developments both in terms of quality and in terms of volume during the last decade. The financial reforms started with the demolition of the mono-bank system and establishment of a two-tier banking system (Monetary... 1999). The introduction of the CBA created a stable monetary environment for financial development. The depth of financial intermediation in Estonia has increased substantially since the financial reforms started. At the beginning of 1993, banking sector assets comprised about 20% of GDP, whereas at the end of 2001 this figure was more than 70%. These rapid developments were accompanied both by strong consolidation and bank-ruptcies – the number of banks has dropped from 42 in 1992 to 7 in 2002.

Despite the poor starting point, the banking sector has gone through major restructuring in both the corporate governance field and internal risk control

activities. The environment created by the fixed exchange rate liberalised capital movements and limited Lender-of-Last-Resort capabilities under the CBA made the strengthening of the financial sector a crucial issue almost immediately after the monetary reform. Strict policies – for example already opening the capital account in 1994 and privatising the banking sector by 1996 – has yielded a sound and effective privately-owned (foreign-owned)<sup>11</sup> financial sector in Estonia. The financial deepening ratios – for example, the domestic credit or banking sector assets as a percentage of GDP – are among the highest in accession countries. At the same time the share of non-performing loans has been kept under control, being less than 2% in 2001. The integration of different financial market segments has given banking groups the leading position in financial intermediation (Monetary... 1999).

The financial markets in Estonia have generally adopted the ‘universal banking’ model. The securities market in Estonia is primarily an equities market. However, the securities and equity market play a secondary role for real sector financing. Unlike in many other countries, the government securities market has not been the driving force for the development of the securities market. In addition to domestic sources, real sector direct foreign borrowing from international sources (usually through the foreign mother-company) has increased substantially, making up about half of real sector borrowed funds. This is an important aspect, as during some periods (especially after the Russian crisis in 1998 and 1999) real sector direct foreign borrowing partly substituted the diminishing credit supply through the domestic financial sector.

### ***3.3. Financing Real Sector Credit Demand***

The real sector monetary and credit growth has followed a similar pattern to that of the growth in banking sector assets. The major ‘jump’ in real sector borrowing and monetary growth took place in 1996–97, when the creditworthiness of Estonian banks and companies increased and the financial sector gained rapidly increasing access to foreign capital markets. This clearly reduced constraints on financial sector resources, yielding rapid growth of domestic credit as well as asset prices. As the scale of available financial resources increased, it enabled the fostering of credit supply rather quickly using foreign capital. The high credit demand stemmed from the fact that real sector access to bank credit

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<sup>11</sup> Swedish and Finnish financial conglomerates hold about 82% of banks share capital.

had been rather limited in prior years as well as because skyrocketing asset prices were fostering overoptimistic expectations. As the authorities' ability to react to such an expansion with monetary policy measures is clearly constrained under the CBA, the set of measures taken also contained prudential (see also Appendix) and fiscal measures.

The consolidation of the banking sector and changes to the ownership structure in 1998 and 1999 resulted in a significant strengthening of the banks' capital base and liquidity as well as improved corporate governance and internal risk control activities. The domestic monetary developments have been more balanced in recent years. Dramatic changes to monetary developments, as happened in the mid-1990s, are hence less likely to happen in today's environment.

**Table 1.**  
**Selected indicators 1992–2001**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001p
Real GDP growth (%)	-14.2	-9.0	-2.0	4.3	3.9	9.8	4.6	-0.6	7.1	5.0
GDP PPP compared to EU average			30	32	34	37	38	37	38	40
CPI	1076	89.8	47.7	29.0	23.1	11.2	8.2	3.3	4.0	5.8
Current account balance (% of GDP)		1.3	-7.2	-4.4	-9.2	-12.1	-9.2	-4.7	-6.0	-6.2
Exports of goods and services (% of GDP)	55.4	69.6	75.3	72.0	67.1	78.4	79.7	77.2	93.8	90.6
Banking sector assets (% of GDP)	19	29.3	34.8	38.0	43.8	63.4	55.7	61.7	67.7	72.0
Fiscal deficit (% of GDP)		-0.7	+1.3	-1.3	-1.9	+2.2	-0.3	-4.7	-0.4	+0.4
Interest rates of real sector loans <sup>12</sup>		32.6	23.2	17.2	13.1	11.9	13.1	10.8	9.5	8.7
Unemployment (%)		6.5	7.6	9.7	10.0	9.7	9.9	12.3	13.7	12.6
Central Government debt (% of GDP)	2.2	5.6	5.0	5.2	6.2	5.2	4.3	4.6	3.2	2.7

### **3.4. Encouraging Fiscal Discipline**

The introduction of the CBA was a crucial part of the stabilisation package. An important reason for choosing the CBA was the need to gain credibility. The

<sup>12</sup> Prior to 1996 those figures reflect also loans to financial institutions.

currency board framework created a stable monetary environment for the real sector and provided a solid nominal anchor for both stabilisation and further restructuring in Estonia (Sepp and Randveer, 2002). Nevertheless, the CBA and macroeconomic performance in general could not have been successful without the support and consistency from other macroeconomic policies. Fiscal discipline, a liberalised external account, large-scale privatisation and encouragement of private sector development through structural reforms have all been important components of the policy mix, contributing to the stability and growth.

The political consensus for fiscal discipline throughout the entire decade should be strongly underlined<sup>13</sup>. The monetary reform was carried out with substantial fiscal tightening and relatively strong budget discipline. In order to sustain budget discipline, the tax reform was carried out in line with monetary reform. Value added tax was increased from 10% to 18%; corporate tax on dividends was increased to 35% and the upper limit for personal income taxes was increased to 50%. In 1994, the progressive income tax system was replaced with a proportional income-tax system with a uniform income tax rate of 26%. The idea of keeping the fiscal budget balanced has been a relevant basis of macroeconomic policy since monetary reform.

### ***3.5. Market Driven Trade Policy***

Another important tool for reinforcing market discipline and resource allocation along with the economy's comparative advantage has been the free trade model. The choice of a free trade model was influenced by the introduction of the CBA as under this exchange rate arrangement the liberalisation of current account transactions are of great importance in guaranteeing smooth adjustment processes in the economy. There have been almost no restrictions on imports during the entire 1990s, which is rather unique when compared to other European countries. Minor customs on some groups of goods from non-EU countries were introduced in 1999 as an institutional step toward the EU. The relevance of those tariffs is insignificant, however, as the majority of trade is carried out with EU countries (see below). The liberal trade model, free capital movement

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<sup>13</sup> To some extent the maintenance of the fiscal discipline was eased by the fact that after gaining independence in 1991 Estonia did not have any public debt.

and stable currency have yielded a very high level of economic openness – foreign trade comprises about 200 per cent of GDP today, whereas in 1992 it was about 100 per cent. Export forms the basis for Estonia's economic growth. Since monetary reform, export volumes have increased by more than five times (in dollar terms).

Reorientation of trade has also been impressive – in 1990, exports to advanced western countries accounted for less than 2% (Lõhmus, 2001) compared to 70–80% today. The stable and convertible Estonian kroon probably intensified the change in trade structure towards western countries – already at the end of 1992, the most important trade partner became Finland, pushing Russia into the second place. Initially such reorientation involved only imports, but within a few years exporting activities also began to change. Today about 60–70 per cent of trade is conducted in euro-area currencies (and with EU countries), and so in currencies with which Estonia has anchored its exchange rate. This reorientation was crucial to subordinate considerable demand risks stemming from unstable CIS markets, and to facilitate Estonia's integration towards European economies through vital improvements in productivity.

A wide trade deficit is a usual feature of rapid economic growth and restructuring in transition economies, reflecting high investment needs. In Estonia the average current account deficit (CAD) since 1994 has been around 7% of GDP. The sustainability of such a high deficit, however, has been broadly secured by FDI inflows, these being sufficient to cover the current account deficit, except for during the boom years of 1996–97. The average FDI since 1994 has been around 6% of GDP. The impact of FDI on the balance of payments is however dual – FDI does not only help to finance the current account deficit but also to increase the CAD through increased imports of investment goods. Nevertheless, the sustainability of the CAD is an important issue under the CBA, as the disposable monetary tools used by the authorities in case of consumption-driven expansion are clearly constrained.

### ***3.6. Real Convergence***

In summing up, economic growth has been relatively good in Estonia since 1995 (the average GDP growth between 1995–2001 has been 5 per cent) – exceeding growth rates in the EU by about 2.5 percentage points and outperforming many other transition countries. Thus, there is no evidence to suggest that constrain-

ing monetary policy with the CBA has had a serious negative impact on economic growth in Estonia<sup>14</sup>.

Consequently, income levels in Estonia relative to the EU have increased from 30% in 1994 to 40% in 2001. This growth has been based on rapid reintegration into the European economy, and the attendant growth in exports to that region. The economic recession in the beginning of the 1990s (peaking at about -15% in 1992) can be attributed to initial stabilisation, as similar phenomena have also been recognised at the beginning of the transition in other transition economies.

#### **4. The Sustainability of the Estonian CBA**

In the following section, we analyse the sustainability of the Estonian CBA by examining whether the economic preconditions for the successful performance of the currency board are in place. The main preconditions considered important for the sustainability of the CBA are fiscal discipline, flexibility of the product and labour markets and the resilience of the financial sector.

##### ***4.1. Fiscal Policy Stance***

Fiscal discipline is an essential prerequisite for the sustainability of the CBA. The CBA eliminates or strictly limits the monetary authorities' ability to monetise fiscal deficits. Nevertheless, there is still the possibility that the government could run irresponsible fiscal policy via excessive borrowing from capital markets. This, in turn, might undermine the stability of the economy and create political pressures for abandoning the CBA, thereby increasing the risk of a currency crisis. Therefore, fiscal policy should be aimed at achieving sustainable economic growth. This is underlined by the fact that under a CBA, the

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<sup>14</sup> In addition to Estonian experience, several studies have indicated that the lack of independent monetary policy under a CBA is not harmful for economic growth. For example Gulde *et al*, (2000) found that CBAs had lower inflation, faster GDP growth and lower government deficits than other exchange regimes (they used *de facto* rather than *de jure* classification). Similarly, Ghosh *et al*, (1998) report, that CBAs have lower inflation and as good growth performance as other fixed exchange rate regimes. Conversely, Kwan and Lui (1996) simulated different monetary regimes in Hong Kong, finding that a CBA indeed reduces inflation and growth volatility, but slows down output growth.

central bank cannot implement effective discretionary monetary policy – the primary policy tool for macroeconomic stabilisation is fiscal policy.

As mentioned earlier there has been a relatively strong political consensus for fiscal discipline in Estonia. As a result, Estonia's public debt – both domestic and external – is still at a very low level (less than 10 per cent of GDP) making Estonia more resistant to volatile capital flows. Most of the government borrowing has been used to finance specific investment projects (eg investments into roads). Quite high fiscal discipline is also reflected by the fact that currently the market for government securities is non-existent. The public debt consists of guarantees for loans to the private sector (originating from the beginning of the 1990s) and loans attained from international financial organisations like EBRD and the World Bank. Maintaining a low level of public debt has also been easier because of a low starting point – Estonia did not inherit any obligations regarding the debt in the Soviet Union.

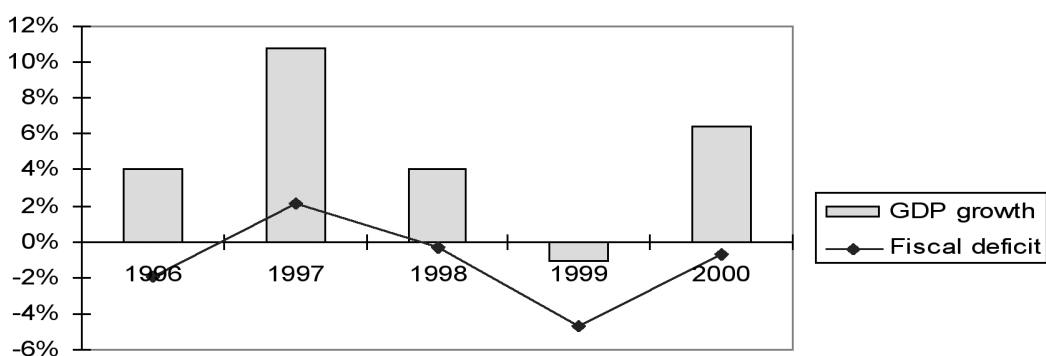
At times, the fiscal policy has also been used for stabilisation purposes. The role of fiscal policy became crucial between 1997 and mid-1998. By spring 1997, the extensive capital inflow and credit developments (with annual growth above 70%) yielded a rapid widening of the current account deficit – the current account deficit exceeding 14% of GDP. The stabilisation package, aimed at curbing an overheating economy, also contained, among other actions, the decision to raise public savings and to establish a Stabilisation Reserve Fund with these savings (see the Appendix). Investing the funds of the Stabilisation Reserve Fund abroad served the aim of reducing domestic liquidity and sustaining foreign investor confidence in economic policy. That resulted in a substantial change in the fiscal stance. Starting from a fiscal deficit in 1996 (*ca* 2% of GDP) the government balanced the budget in the first half of 1997 and generated a budget surplus in the second half of the year. Because of the tightening of fiscal policy, the annual surplus reached 2% of GDP in 1997. This tight fiscal policy also continued into the first half of 1998. Although the possible calming impact of these steps on aggregate demand versus the impact from declining capital flows due to the Asian crisis may be questioned, the policies were directly aimed at reducing the overheating and to avoid a balance of payment crisis.

The largest public sector deficit was witnessed in 1999. The rapid loosening of the fiscal stance was the result of several factors. The deterioration of the fiscal position was mainly the result of the rapid worsening of the economic situation

that started with the Russian crisis in the second half of 1998. While in the first half of 1998 economic growth was nearly 10%, in the first half of 1999, the economy contracted by over 2%. The impact of the economic slowdown on the fiscal position was exacerbated by the fact that the 1999 draft budget was elaborated upon before the full extent of the slowdown and was based on overly optimistic growth expectations. In addition, the draft was worked out and passed at the Parliament in a pre-election period. As a result, the deficit amounted to over 6% of GDP in the first half of 1999. The deficit was financed from the reserve built up during the years of fiscal surpluses. In addition, the government used the proceeds from the privatisation of Eesti Telekom (which took place in the first quarter of 1999) to finance the budget deficit.

After the elections, the new government prepared a supplementary budget, which was adopted by the Parliament in June 1999, cutting expenditures by about 1.2% of GDP. As a result, the public sector deficit decreased somewhat in the second half of 1999, and for the year as a whole the deficit was equal to 4.7 % of GDP. Because of a pick-up in economic activity starting at the beginning of 2000 and a strict fiscal policy, the authorities succeeded in lowering the deficit to 0.7 % of GDP in 2000 and posting a public sector surplus in 2001 (0.4 % of GDP) (see Figure 3).

**Figure 3.**  
**The dynamics of economic growth and fiscal deficit in 1996–2000**



It could be concluded that, up to now, the authorities have implemented a responsible fiscal policy – they have managed to keep public sector deficits

manageable and have swiftly reacted to avoid large fiscal deficits – thereby supporting the sustainability of the CBA. In addition, the fiscal policy has been used for stabilisation purposes between 1997 – mid-1998 to reduce an overheating of domestic demand.

#### ***4.2. The Flexibility of the Real Sector of the Estonian Economy***

Given the fixed exchange rate regime, real sector flexibility (especially labour market flexibility) is an important prerequisite for the sustainability of the CBA. As the authorities cannot implement a discretionary exchange rate policy, the adjustment processes in the Estonian economy can happen only via changes in prices and wages. The importance of the flexibility of the real sector is also stressed by the fact that as a small open economy, Estonia is exposed to external shocks.

After the monetary reform, the authorities have set relatively few restrictions and regulations upon the functioning of the labour market (a review of the institutional aspects of Estonian labour markets and comparisons with OECD countries and EU accession countries is provided by Rõõm (2002)). When compared to labour markets in the EU, the unemployment benefit and minimum wage in Estonia have been considerably lower. In addition, the role of labour unions in the private sector has been quite insignificant.

During the last five years, the unemployment benefit has been less than 10% of the average gross salary. The period a person is eligible for the unemployment benefit is currently 270 days. However, starting from 2003, workers who have become unemployed are entitled to unemployment insurance, which is equal to 50% of the previous pay for the first 100 days and 40% of the previous pay for the next 80 days.

During the last 10 years, the minimum wage has accounted for 22–36% of the average gross salary. Currently the minimum wage is slightly over 30% of the average wage. When compared to OECD countries and other transition economies the minimum wage in Estonia is below the average level.

The share of workers who are members of labour unions has decreased significantly during the last decade. Currently, private and public sector employees who are members of the labour unions amount to 8 and 20 per cent of the

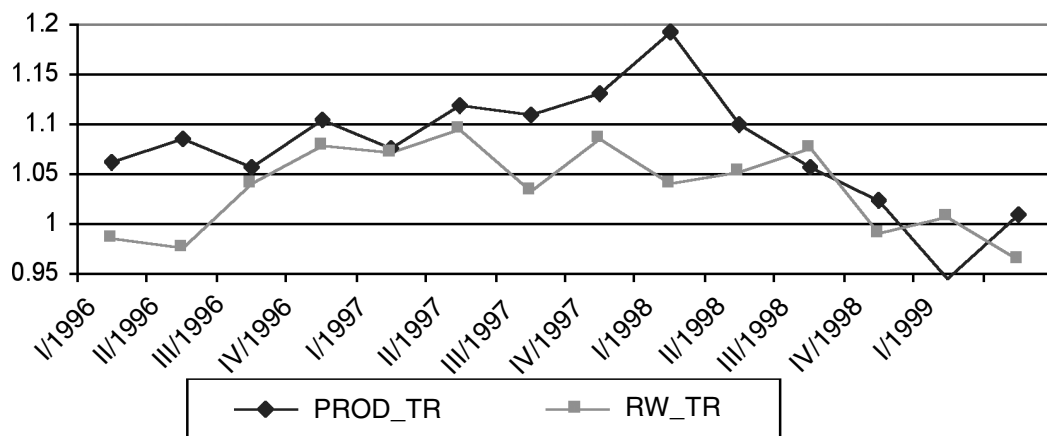
workforce, respectively (Rõõm, 2002). Similarly to the minimum wage and unemployment benefit levels, union membership in Estonia is among the lowest when compared to EU members and other accession countries.

The main factors that may have decreased the flexibility of the labour market have been relatively high severance payments and long employer notice periods. The severance payments in the private and public sector are equal to between 2–4 months and 2–12 months of the previous monthly pay (depending on the length of employment with the employer), respectively. The employer notice period is usually between 2–4 months depending on the length of employment.

Most of the studies that have directly or indirectly analysed the flexibility of the real sector have concluded that Estonian goods and labour markets are fairly flexible.

Vesilind and Rell (2000) used the period 1996–1999 to estimate the flexibility of wage setting in the economy. They found that wages were quite flexible in the tradable sector of the economy – changes in productivity had a strong impact on wages (see Figure 4). In the sheltered sector of the economy, the relationship between productivity and wages was less evident. In the public sector, however, changes in economic activity had a negligible effect on the wages of the public sector employees.

**Figure 4.**  
**The real wage and productivity growth in the tradable sector in 1996–99**



Faggio and Konings (1999), Haltivanger *et al.*, (1999) and Eamets (2001)<sup>15</sup> have concluded that when compared to Central European transition economies labour mobility in Estonia is higher. This tendency was especially evident in the first half of the 1990s, which was characterised by large-scale restructuring of the economy. Therefore, the relatively low unemployment rate in Estonia during the first half of the 90s has been attributed to high labour mobility. However, preliminary findings by Rõõm (2002) suggest that the increase in the unemployment rate in Estonia in the late 1990s was associated with a decrease in labour mobility.

The developments during the last years, however, indicate that the flexibility of the Estonian labour markets should not be overestimated either – during the last 4 years the unemployment ratio in Estonia has been constantly over 10% (in the first quarter of 2002 it was 11%). The main reason for that is structural unemployment, especially in rural regions.

In addition to directly analysing the flexibility of the labour and goods markets, the flexibility of the Estonian economy can be assessed indirectly by looking at the deviations of the actual real effective exchange rate (REER) from the equilibrium level. In this way one can gain insight into the flexibility of the economy by looking at whether the actual REER has deviated from the equilibrium level and how quickly the actual REER has returned to its equilibrium path. It could be said that the smaller the deviations and the quicker the return of the actual REER to its equilibrium level the higher the flexibility of the economy.

After the monetary reform in 1992, Estonia has witnessed a strong real exchange rate appreciation. As the Estonian kroon was undervalued in the first years after the monetary reform, part of the appreciation was therefore just the normal path towards equilibrium, driven by the existing price differential with western trade partners. Calculations done in the Bank of Estonia (Filipozzi (2000), Randveer and Rell (2002)) suggest that in addition to the appreciation of the real effective exchange rate its equilibrium level also appreciated. But the appreciation of the equilibrium REER has been slower than that of the actual REER (see Figure 5). According to Randveer and Rell (2002), the actual REER

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<sup>15</sup> Faggio and Konings (1999) used enterprise level data on labour mobility and Haltivanger *et al.*, (1999) and Eamets (2001) used data from labour market surveys.

of the Estonian kroon was undervalued by approximately 20% in 1994 and fluctuated around its equilibrium value between 1996–1997. Because of the Russian crisis, the actual REER appreciated rapidly and became overvalued by around 5%. According to these calculations, due to the marked deceleration of inflation in Estonia and weakening of the euro, the REER had attained its equilibrium value by the beginning of 2000. During 2000–2001, the REER did not significantly deviate from its equilibrium value (Randveer and Rell, 2002).

In addition, the dynamics of economic growth in Estonia can be considered indirect proof that the appreciation of the REER has been an equilibrium process. Between 1995–2001, the annual economic growth has averaged 5%.

**Figure 5.**  
**The difference between REER and equilibrium REER**



*Notes: Positive values of the difference indicate that the actual REER was undervalued with respect to equilibrium REER and vice versa.*

*Source: Randveer and Rell (2002).*

From this we can conclude that in the period between 1996–2001 the REER of the EEK was not overvalued. The fact that during the last 6 years the equilibrium real exchange rate and actual exchange rate have not differed significantly for a longer period indirectly demonstrates the flexibility of the economy.

The argument that the actual REER has not exceeded the equilibrium exchange rate level or, put differently, that the actual REER has not been overvalued is also supported by trends in Estonian foreign trade. Between 1998–2001, annual exports growth has exceeded imports growth – during that period the average annual exports growth rate was 17%, the corresponding figure for imports was 14%. These foreign trade developments provide indirect evidence that the continual real appreciation of the REER has not negatively affected Estonia's external competitiveness.

As mentioned, the overvaluation of the REER just after the Russian crisis was quite short-term. In addition to the flexibility in the labour market, support was also provided by the rapid reorientation of Estonian trade from CIS to Western European markets. In 1997, the share of Estonian goods exports to Russia amounted to 14%, two years later (in 1999) it had decreased to only 5%. During the same period, the share of exports to the EU increased from 58% in 1997 to 70% in 1999. In addition to the shift of Estonian exports to Western Europe, growth of exports to Europe generally was also quite strong (27% in 1998 and 6% in 1999). Together with the rapid reorientation of Estonian trade, there were also significant changes to the role of manufacturing and commodities within exports.

As a result of the Russian crisis, the importance of the food-processing industry declined considerably; at the same time, against the background of overall decline, there was rapid growth in the manufacture of machinery and equipment. These trends also brought on changes to the structure of foreign trade – the share of foodstuffs in exports decreased from 16% in the first half of 1998 to 6% in the first half of 2000; the share of machinery and equipment increased during this period from 19% to 33%. The rapid reorientation of trade and changes in the structure of the economy also points to the flexibility of the economy.

#### ***4.3. The Resilience of the Financial Sector – The Estonian Financial Sector during the Asian and Russian Crises***

In addition to the fiscal discipline and flexibility of the real sector, the resilience of the financial sector is the third important factor for the sustainability of the CBA. In order to analyse the financial sector, we will discuss how this sector reacted to two external shocks – the Asian crisis in 1997 and Russian crisis in

1998. It should be stressed that both of these shocks had a significant impact on the Estonian economy. Because of these crises, the Estonian economy recorded four consecutive quarters of negative economic growth starting from the fourth quarter of 1998. The decline was steepest in the first half of the 1999 when output and exports contracted by 2% and 6% respectively as compared to the first half of 1998.

In conclusion, both the Asian and Russian crises could be considered a good test of the sustainability of the CBA (particularly from the perspective of the viability of the financial sector).

The beginning of these turbulent times in international markets coincided with a peak in the economic cycle. In 1997, Estonia experienced a rapid increase of domestic demand and a prompt widening of the current account deficit. The reasons for such developments stemmed from an unsustainably high foreign capital inflow, while net capital inflow peaked at 17% of GDP in 1997. This was triggered by portfolio inflows into the Tallinn Stock Exchange (opened in 1996), as well as access to foreign borrowing attained by the banking sector.

The portfolio inflows along with optimistic behaviour among domestic investors yielded a rapid growth in stock prices – the Talse index increased about five times between the III quarter of 1996 and the III quarter of 1997. These developments entailed overly optimistic behaviour and expectations on the part of economic agents. At the same time, the banking sector was willing to take higher risks in financing domestic credit demand (and banks' stock-market activities) via extensive foreign borrowing. Consequently, developments such as an increasing money supply, falling interest rate levels and rises in financial asset prices resulted in rapidly increasing economic activity and a widening current account deficit.

The Asian and Russian crises substantially shrunk capital flows oriented to emerging markets and tested several countries against foreign investor confidence. Most emerging markets, including Estonia, were hit by increases in interest rates and the perceived country risk level. Due to the currency board based monetary system and the small volume of the money market, short-term interest rates in Estonia respond rapidly to changing foreign capital flows and speculative attacks against national currency since the central bank does not intervene in money or forex markets (Lepik, 1999).

The first influences of the Asian crisis were felt in the form of discontinued capital flows, sharp decreases in stock prices (two times during the last quarter of 1997) and in speculative pressure against the Estonian kroon. This resulted in increasing interest rates and decreasing economic activity. The influence of the Russian crisis was somewhat different, as the banking sector was already experiencing modest foreign capital inflow and decelerating growth of monetary aggregates. The impact from the Russian crisis affected the banking sector mainly through a deteriorating liquidity position (although, the effects varied between the different banks). The speculative pressures against the Estonian kroon were, however, less existent than during the Asian crisis. Also, diminishing real sector activity after the Russian crisis can be attributed both to a negative exchange rate shock as well as decreased credit supply.

#### *4.3.1. Speculations against the Estonian Kroon over Foreign Currency Swap and Forward Markets*

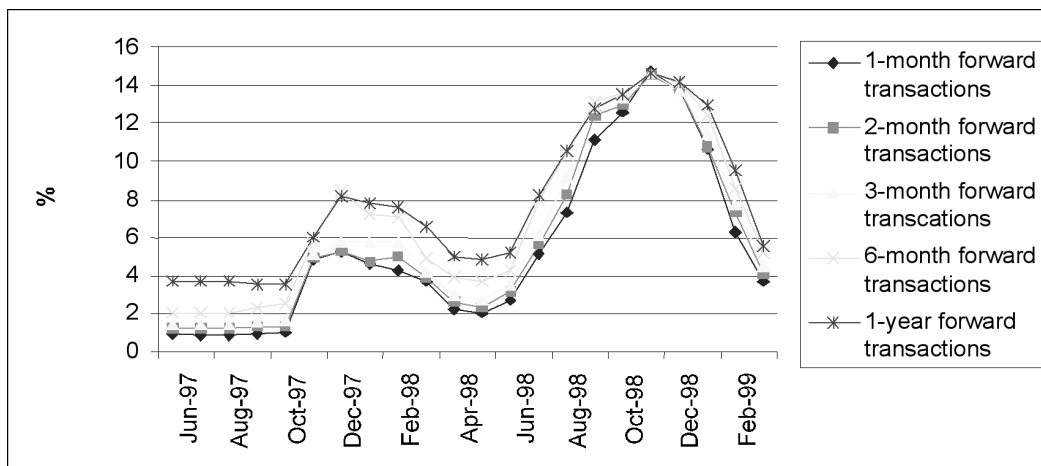
The Asian crisis engaged a sharp increase in speculative positions over foreign currency swaps and the forward market, culminating at the end of October 1997. The German mark-Estonian kroon forward and swap transactions (as well as spot transactions) increased during the last ten days of October by more than 4 billion Estonian kroon. Consequently, the banks' open net positions against the German mark became negative for the first time during the currency board era. As a result, forward quotations climbed, pulling money market rates up also.

The speculative pressure against the Estonian kroon reflected a growing uncertainty among foreign investors with regard to the sustainability of the fixed exchange rate policy. This was caused by a deepening uncertainty towards emerging markets in general and about the economic situation in Estonia in particular. Because of the increased cost of forward transactions and the stabilisation of the overall situation, the volume of forward transactions calmed down in early November 1997 and thereafter displayed a steady falling tendency.

During the Russian crisis in 1998, the foreign currency swap and forward market also experienced a substantial rise in price quotations (see Figure 6). Unlike October 1997, the rise in quotations was not followed by a notable increase in trading volumes, as the speculative pressures were smaller. Therefore, pressure on the currency was felt mainly as a result of high forward rates (Lepik, 1999). In addition, Estonian commercial banks were less inclined to take risks during

the Russian crisis. On the one hand, position taking was restrained by the availability of bank funds and commercial banks reduced limits related to forward transactions. On the other hand, a huge bid-offer spread in foreign currencies and high interest levels made speculations expensive.

**Figure 6.**  
**Interest rates of forward transactions (one month to one year) from June 1997 to March 1999**



Because of the consolidation process in the banking sector and the involvement of foreign capital, foreign bank short positions in the Estonian kroon started to decrease on the forward market from November 1998 and with them also forward price quotations of the Estonian kroon. By December 1998, forward market conditions had returned to pre-crisis levels.

#### 4.3.2. Decreases in Money Supply, Capital Flows and Market Liquidity

The Asian crisis restrained capital inflows into Estonia in August-September 1997 and the growth of money supply calmed down. In addition, foreign currency deposits held by Estonian residents as a share of the broad money supply, which had sustained a level of 10–12% throughout 1997, rose up to 15%. The higher preference for foreign currency deposits by economic agents was caused by uncertainties on the money market and stock markets in the last quarter of 1997 and growing speculation about the credibility of the Estonian kroon.

In spite of halting growth in their liabilities, banks also continued expansive crediting of the real sector in August and September 1997. Due to expectations in the financial sector remaining optimistic, the longer-term interest rates remained low. Moreover, banks used short-term reserves for extending credit, hoping to attract additional foreign capital. Consequently, delay in foreign emissions as well as mismatch of credit and money supply growth resulted in a deteriorating liquidity position for the banks. Therefore, shorter-term money market rates started to increase in September. An interest rate hike was further fostered by increased speculative pressures on the forex market in October.

Imbalance in the development of the credit market and the gradual deterioration of external conditions forced the banks to promptly restrict the expansion of loan portfolios leading to an increase in loan interest rates in the fourth quarter of 1997, in turn inhibiting credit demand. The effect on banking sector liquidity during the Asian crisis remained, however, more modest than during the Russian crisis. In addition, banks were partly able to cover their stock market losses using the higher income from the forex forward market stemming from speculative pressures against the Estonian kroon in 1997.

The impact of the Russian crisis affected the banking sector mainly through deteriorating liquidity positions. Several factors had a disturbing impact on bank cash flows and liquidity positions in the second half of 1998.

Firstly, the banking sector was affected by unusually modest foreign capital inflows and by a decreasing money supply throughout 1998. The decline in money supply was due to several factors. First of all the Asian and Russian economic crisis decreased the credibility of emerging economies which, in turn, triggered a decline of foreign capital inflows to those countries (including Estonia). These developments were also exacerbated by a slowdown in the Estonian economy. As a result of these developments the foreign capital inflows decreased from 11 billion EEK in 1997 to 7 billion EEK in 1998. Also, the nature of capital flows changed, displaying a significant shift from debt instruments towards equity based financing except in the refinancing of the banks' short-term liabilities (Lepik, 1999).

Secondly, the Russian crisis raised concerns about possible banking sector exposure in Russia, both directly through financial investments and indirectly through the worsening quality of real sector loans. In addition, due to problems

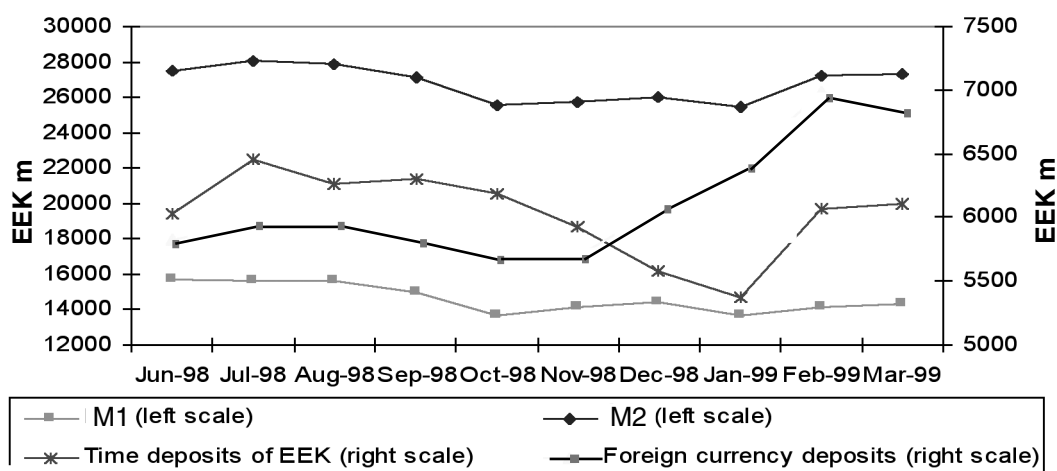
related to the Asian crisis (stock-market losses), one medium-sized bank was closed in June 1998, just a few months prior to the Russian crisis. This decreased the credibility of the banking sector and amplified concerns about the strength of smaller banks. Therefore, the decreased credibility of the banking sector and subsequent problems with smaller banks brought about a withdrawal of deposits from Estonian banks (especially from the smaller banks) in autumn 1998. In addition, although the total exposure of the banking sector in Russia was small, this exposure was concentrated in the smaller banks. Consequently, two small banks were closed and the third largest bank in Estonia was rescued by the central bank in autumn 1998.

In addition, the Russian crisis caused a slowdown in the growth rate of consumer incomes and corporate profits as well. It is reasonable to assume that private individuals temporarily used part of their deposits for consumption smoothing and enterprises used their cash balances to cushion the growing problems with external financing. On top of this, the increased proportion of bad loans in certain economic sectors (for example food processing industries), which had experienced a sharp drop in their exports due to the devaluation of the Russian rouble, meant a further decrease in cash flows in the banking sector.

Consequently, for the first time since the beginning of 1993, money supply (both M2 and M1) contracted in absolute terms in the second half of 1998. Broader money supply decreased from 28 billion EEK at the end of July 1998 to 25.5 billion EEK by the end of January 1999. Shifts in the broader money supply reflected also a decrease in Estonian kroon components and an increase in foreign currency deposits (see Figure 7).

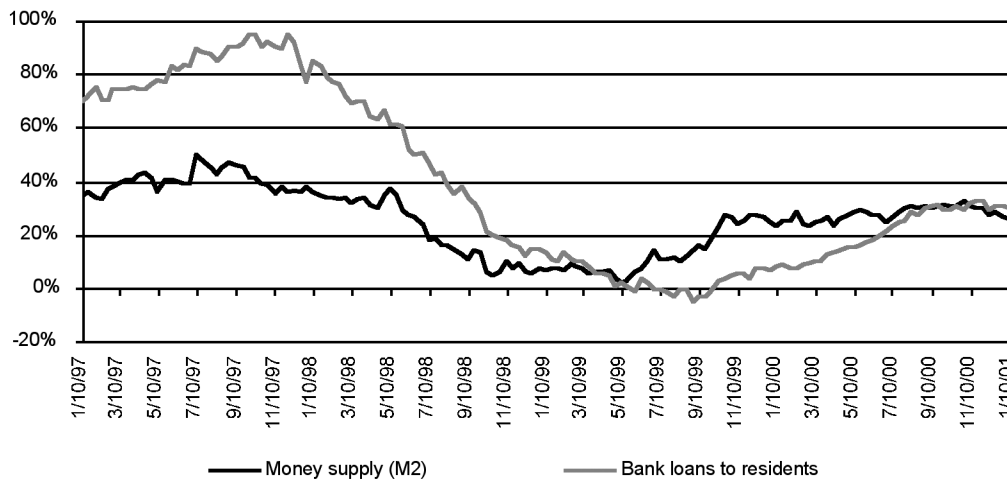
The proportion of liquid assets in bank balance sheets also decreased under the impact of the Russian crisis. Nonetheless, bank liquidity buffers were on average, bigger in the second half of 1998 than they had been during the first liquidity crisis in October 1997. During 1998, banks extensively used the standing deposit facility, which marked a higher demand for reserves stemming from international uncertainty (Lepik, 1999).

**Figure 7.**  
**The dynamics of the components of money supply from June 1998 to March 1999**



In real sector credit markets, the influence of the Russian crisis reinforced the already prevailing trend – a decline in credit growth (see Figure 8). In the fourth quarter of 1998, credit to residents started to decline (this trend continued until the third quarter of 1999). On the one hand, the Russian crisis decreased the corporate sector investment demand and thereby reduced the demand for loans; on the other hand, it caused the commercial banks to adopt a more conservative lending policy. An important aspect is that in 1998 banks substantially decreased credit availability for the real sector, as they were concerned about possible real sector exposures in Russia. As uncertainty about the consequences of events in Russia on real sector developments was high, restricting loan availability was the easiest way to protect themselves from possible further losses.

**Figure 8.**  
**The growth of money supply and credit 1997–2000**



The Russian crisis also had an effect on long-term interest rates (the average long-term interest rates increased from 12% in the third quarter of 1998 to 14% in the fourth quarter of 1998). However, this increase in long-term interest rates might underestimate the tightening in the loan market as credit rationing increased after the outbreak of the Russian crisis (Pikkani, 2001).

#### 4.3.3. *The Result of the Crisis*

The two-year period starting from the second half of 1997 demonstrated the Estonian financial system's ability to cope with rapid changes in the environment. In spite of the difficult environment, the larger commercial banks did not have major difficulties and were able to withstand losses from non-performing loans. However, as the burden of adjustment remains with banks, two years of turbulence resulted in a wave of consolidation in the banking system. The number of banks fell from 12 in 1997 to 6 in 1999<sup>16</sup>. This restructuring did not involve remarkable loss for depositors or serious deterioration in asset quality. The financial sector proved its performance efficiency in the face of severe external shocks (Lepik, 1999).

<sup>16</sup> There were three mergers; one of them was a rescue operation of the third largest bank in Estonia, and three bankruptcies.

It could be said that the Estonian financial sector emerged stronger from this turmoil. The capitalisation and liquidity of the banks increased and the involvement of Nordic banking groups from the end of 1998 increased the credibility of domestic banks. A remarkable change was the way activities shifted from the domestic market to the broader inter-bank money market, with the main counterparts being Nordic banks. Due to rapid consolidation and the involvement of strategic investors the banking sector is highly capitalised, the banking groups are the largest in the Baltic States and have become acceptable players for the markets of central Europe (Lepik, 1999).

In 2000, Estonia participated in the IMF pilot project – the Financial Sector Assessment Program (FSAP). The FSAP mission also found that the financial sector vulnerability had reduced substantially and banking sector had strengthened considerably during 1999–2000 (IMF, 2000). Therefore, one can conclude that the sustainability of the Estonian financial sector has increased during last years, which upholds the argument that it strongly supports the sustainability of the CBA itself.

## **5. Conclusions**

We conclude that, although the Estonian CBA is sometimes regarded as a currency-board like system; its practical set-up is rather orthodox. The currency stability objective is tied up with the anchoring role of the exchange rate, and all necessary adjustments are left to the market. There exists neither discretionary monetary policy instruments nor other monetary policy targets in Estonia.

We analysed the most essential preconditions for the sustainability of the Estonian CBA, namely fiscal policy stance, the flexibility of the real sector and resilience of the financial sector.

First, fiscal discipline is an essential prerequisite for sustainability, as the CBA eliminates or limits the capability of the monetary authorities to monetise fiscal deficits. The government can still run an expansionary fiscal policy via excessive borrowing, which, in turn, may undermine the stability of the economy and create political pressures against the CBA. In Estonia, there has been relatively strong consensus for a responsible fiscal policy since the monetary reform. The government has avoided large fiscal deficits; consequently, Estonian public debt

both external and internal – has been very small (less than 10% of GDP), thereby supporting the sustainability of the CBA.

Second, as the authorities cannot implement discretionary monetary policy under the CBA, more adjustments should take place through the real sector – especially via wages and prices. In Estonia, factors that are usually attributed to labour market flexibility – strong trade unions, wage indexation, unemployment benefits and so on – are not so binding on the development of the labour market. In addition, most of the studies that have analysed the flexibility of the real sector have concluded that Estonian goods and labour markets are fairly flexible. The rather high unemployment ratio at the same time reflects high structural unemployment, especially in rural areas.

After the monetary reform in 1992, Estonia has witnessed a strong real exchange rate appreciation. This has led to discussions about a possible misalignment of the real effective exchange rate with a subsequent negative impact on competitiveness. However, empirical studies show that the actual REER has not exceeded the equilibrium exchange rate level and thus has not negatively affected Estonian external competitiveness.

Third, turbulent years in financial markets during the Asian and Russian crises have provided excellent case studies for the behaviour of the Estonian CBA in a difficult environment. These years demonstrated the ability of Estonia's financial system to cope with severe external shocks. The resilience of the financial sector proved to be strong, supporting the conclusion that the CBA in Estonia is sustainable.

In conclusion, we can say that Estonian economy has fulfilled all the prerequisites for a successful development under a CBA. Economic developments during the last decade have also been rather successful, hence supporting the sustainability of the CBA in Estonia.

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## **Appendix**

### **The main developments of the monetary policy operational framework in Estonia 1992–2001**

The CBA principles were laid down through the unlimited forex window facility in 1992 (the bid-ask spreads were set up at 0.5%). In addition, a compulsory (non-averaged, non-remunerated) reserve requirement at 10% of banking sector liabilities was maintained<sup>17</sup>. The unsophisticated financial sector and simplicity of CBA features permitted the preservation of the monetary policy framework in a largely unchanged format during the first four years. The only important development was the introduction of Bank of Estonia CDs in spring 1993, the main aim of this instrument was, however, to foster money market development not to move towards discretion.

The first major set of reforms to the monetary policy operational framework was carried out in 1996 when the averaging of reserve requirements was introduced, the spreads in the forex window on German mark transactions were abolished and remuneration of excess reserves was introduced (the latter is also called the deposit facility in the Estonian framework). These steps were aimed at improving liquidity management in the banking sector as well as accommodate market-based principles into the framework.

The next set of changes was already carried out in 1997 and caused by concerns about excessive monetary developments. More concretely, increasing capital inflow as well as financial sector over-borrowing from foreign markets during 1996–97 fostered domestic demand, which resulted in a rapidly deteriorating current account deficit. As a currency board sets clear limits on the use of monetary tools for implementing restrictive policies, the ‘stabilisation package’ contained a number of strategies. These not only included the strengthening of compulsory reserves but also increased prudential capital adequacy requirements, postponing (for some months) the order for a sovereign credit rating and the formation of stabilisation reserves from the fiscal surplus. In the monetary frame-

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<sup>17</sup> In 1992, the aim was to increase the requirement from 10% to 15% (by monthly 1 percentage points increase) to improve the credibility of the banking-sector. The increase of the requirement ratio was however stopped at 12% and reversed back to 10% in October 1992, as the liquidity situation in the banking system was volatile and was making it difficult to fulfil the requirement.

work, this meant a widening of the reserve base and increases to bank reserve balances with the Bank of Estonia from 10 to 13 per cent through the introduction of an additional liquidity requirement.

Between 1999–2000, concerns about possible distortions caused by a relatively high and uncompensated reserve requirement as well as the need to start preparing operational convergence of the Estonian monetary framework with the Eurosystem, resulted in preparing major changes in the monetary framework through the further development of the Bank of Estonia's rule-based facilities. These reforms of the monetary operational framework were aimed at improving the rule-based facilities, which form the core of the Estonian CBA. The goal is to start operational convergence with the EMU and reorganisation of the required reserves' system. As a first step, in 1999 remuneration of the required reserves was introduced. This step aimed to decrease structural deviations as well as to signal that higher liquidity buffers in the financial system are still sufficient to cope with possible volatilities.

As a next major step among these changes, partial fulfilling of the reserve requirements with high quality (with at least AA-/Aa3 credit rating) euro denominated foreign securities from national governments in advanced western countries and supra-national institutions has been permitted since January 2001 (initially up to 25% of the reserve requirement, since July up to 50% of the reserve requirement). This means lowering the rate of required reserves with the central bank (in the national currency) with a simultaneous rise of the required reserves in high-rated liquid foreign assets (in an anchor currency). Such a treatment of eligible assets in fulfilling reserve requirements allows the banking system to use their liquid assets more efficiently as well as ensuring that there exists sufficient liquidity buffers in the financial system.

This reform is also future-oriented, as it helps the banking system start accumulating assets and operate with them, thereby providing a basis for Eurosystem monetary operations. It is important to note that all permissible securities belong to Tier 1 assets of the Eurosystem.