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## Lending of first versus lending of last resort: The Bulgarian financial crisis of 1996/1997

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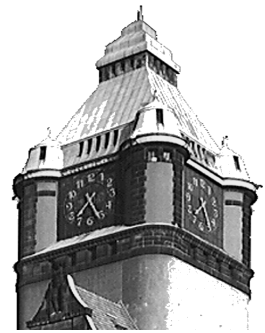
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*Dresden Discussion Paper Series  
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**The Bulgarian Financial Crisis of 1996/1997**

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# Lending of First Versus Lending of Last Resort

## The Bulgarian Financial Crisis of 1996/1997

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### Abstract:

In 1996/1997 Bulgaria was hit by a severe financial crisis, spreading from a banking crisis to a currency crisis. However, in comparison to the Asian, the Russian or the recent Tango Crisis the Bulgarian Crisis did arouse relatively low international interest. We argue that the Bulgarian Financial Crisis might serve as an illustrative example of a twin crisis involving both a currency and a banking crisis. While the Bulgarian Crisis had some properties of so-called fundamental crises, as explained by first generation models of currency crises, the severity of the crisis was primarily due to systematic moral hazard behaviour of the banking sector. Special attention is paid to the crucial role the Bulgarian National Bank played in the pre-crisis and during the crisis period when acting more as a lender of first than a lender of last resort. We also show how Bulgaria managed to overcome the crisis by introducing a second generation currency board allowing the central bank to act as a strictly limited lender of last resort thereby making the country less prone to a financial crisis in the future.

JEL-Classification: E42, E5, F02, P34

Keywords: Lender of Last Resort, Financial Crises, Twin Crises, Currency Boards, Bulgaria

## 1. Introduction

During the last decade a considerable number of countries experienced some sort of financial crises. That is why the crisis problem is often seen as one of the dominant problems of the 1990's (Bordo et al. (2001), p. 53). It is thus not surprising that both public and well as scientific interest in financial crises recently increased considerably. In this paper we deal with a crisis that has aroused relatively low interest in the (international) financial crisis literature up to now: <sup>1</sup> the Bulgarian Financial Crisis of 1996/1997.<sup>2</sup> We suggest this to be a shortcoming since it might serve as an illustrative example for a so-called twin crisis (i.e. an almost simultaneous occurring banking and currency crisis), as studied by many third generation crisis models. While most of these models were inspired by the Asian Crisis of 1997, recently some doubts evolved in how far these models are capable of explaining important features of the crisis (see e.g. Krugman (1999)). We think that moral hazard models in the tradition of Dooley (2000) and especially Krugman (1998) are nevertheless quite useful since they explain important features of crises like the one in Bulgaria in 1996/1997.

We argue that the Bulgarian Crisis has some features of a fundamental crisis since Bulgaria's authorities followed an inconsistent policy mix by monetizing fiscal losses while trying to stabilize the exchange rate. However, the severity of the Bulgarian Crisis was primarily due to

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<sup>1</sup> One of the major reasons for the relatively low degree of international interest in the Bulgarian Crisis surely is that Bulgaria is a small country that neither was nor actually is part of the European Community. In addition to that Bulgaria is not an important trade partner of major European countries and did not even receive significant foreign direct investments. Thus, international investors did neither worry very much about a possible Bulgarian crisis nor did they fear that such a crisis could infect other economies of international investors' interest. Last but not least the Asian Crisis started to evolve soon after the Bulgarian Crisis and attracted almost all public and scientific interest.

<sup>2</sup> The complexity of the Bulgarian Crisis has rarely been subject to special analyses. The detailed crisis chronology can be found only in a limited number of publications; it is broadly covered by BNB annual reports (1996, 1997), OECD (1999), Balyozov (1999), Enoch et al. (2002), and partially by Filipov (1998), Sgard (1999), Mihov (1999), Nenovsky (1999), Dobrinsky (2000), Vutcheva (2001) and Roussanova (2002). In their review of banking crises in

*substantial moral hazard behaviour* of the banking sector. This behaviour was partially the result of the former political system and partially induced by the Bulgarian National Bank (BNB) which acted more like a *lender of first* than a *lender of last resort*.

The Bulgarian example is also useful with respect to learning about the possibilities to overcome a financial crisis and the design of a financial system in a transition country that is less prone to financial crises. Bulgaria decided to introduce a *second-generation currency board* (CB) arrangement. Different from orthodox CB arrangements the Bulgarian CB allows for a strictly limited lender of last resort function of the central bank. Thus, Bulgaria's experiences with the 1996/1997 crisis finally led to a switch from a system with a lender of first resort to a system with a strictly limited lender of last resort.

The paper is organized as follows: the second section briefly reviews the theoretical literature on financial crises. In the third section we describe the development of the Bulgarian economy since 1990 which finally culminated in the crisis of 1996/1997. We also make an attempt at classifying the Bulgarian Crisis with respect to the theoretical literature and come to the result that the crisis is very close to a mixture of the stories of first generation models and third generation moral hazard models in the tradition of Dooley (2000) and especially Krugman (1998). Section 4 describes the second-generation currency board, Bulgaria introduced in the aftermath of the crisis. Special attention is attached to the peculiarities of the Bulgarian currency board arrangement that retained some flexibility in order to be able to fulfil a strictly limited role as a lender of last resort. The paper closes with a summary of the main arguments and some conclusions.

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transition economies Tang et al. (2000) point out that Bulgaria is the only transition country where a banking crisis was combined with a currency crisis.

## 2 Theoretical models of currency crises

Principally there are at least two different sorts of financial crises: currency and banking crises.<sup>3</sup>

It is standard now to distinguish between so-called first, second and third generation models of currency crises. To be able to classify the Bulgarian Crisis of 1996/1997 it is necessary to give a brief overview on the existing theoretical literature on crises, first. We will thereby focus on first and especially third generation models of the moral hazard type.

In *first generation models* of Krugman (1979) and Flood and Garber (1984) countries face currency crises when governments finance their fiscal deficits by monetary expansion and at the same time try to peg their currency against a foreign one, e.g. to enhance trade with major trade partners or to import low inflation from abroad. Since demand for domestic money does not change individuals will exchange domestic currency against foreign currency assets. Thus, to hold the exchange rate constant the central bank will be forced to sell its foreign currency reserves until they are finally exhausted and the currency peg has to be abandoned. This kind of crisis is often called “fundamental crisis” since it is a fundamental reason – the existence of a large fiscal deficit – that makes it impossible for a government to fix the exchange rate. *Second generation models* with *multiple equilibria* in the tradition of Obstfeld (1994) underline that currency devaluations should be understood as a political decision rather than an unavoidable result of policy inconsistencies. A country will adopt a fixed exchange-rate regime when the

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<sup>3</sup> In this paper we make use of the term “currency crisis” whenever an exchange rate heavily devalues in a short period of time. Often such currency devaluation happens as the result of a so-called speculative attack, i.e. the sudden purchase of large volumes of the referring currency. We will use the term “banking crisis” whenever a substantial number of banking institutions goes bankrupt and/or a substantial amount of bank deposits are lost by failing banks. Often banking crises are inducing also solvent banks to fail because of illiquidity problems.

arguments in favour of a currency peg (e.g. import of credibility in fighting inflation) outweigh those against the peg (e.g. the ability to pursue an independent monetary policy to react on asymmetric shocks) at some point in time. However the cost benefit relation might change in the course of time and might lead to the decision to abandon the currency peg. This might for example happen if a public lack of confidence in the government's (or central bank's) interest (or ability) to fix the exchange rate itself decreases the chances to succeed in this task. While market expectations on the future exchange rate are obviously influenced by news on fundamentals, second generation models also allow for currency crises caused by *contagion* or some sort of *herding behaviour*.<sup>4</sup>

*Third generation models*<sup>5</sup> typically consider the fact that currency crises and banking crises often (but not always) occur together (this phenomenon is also called *twin crises*). While some of the third generation models predict a currency crisis to occur as the result of a banking crisis, others imply a reverse causation. But there is also the possibility that a currency crisis is the result of preventing a banking crisis or the other way round.<sup>6</sup> Two basic types of third generation models evolved. A first strand of the literature,<sup>7</sup> so-called *random withdrawal models*, builds up on some open economy version of the Diamond and Dybvig (1983) model. A second strand of the

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<sup>4</sup> See e.g. the contagion models by Eichengreen, Rose and Wyplosz (1996) and Drazen (1999) or the herding model by Calvo (1999).

<sup>5</sup> See e.g. Dooley (2000), Krugman (1998), Chang and Velasco (1998), Buch and Heinrich (1999) or Flood and Marion (2000).

<sup>6</sup> For example a central bank might decide to give liquidity assistance to banks suffering from temporary illiquidity problems thereby increasing domestic money supply aware of the fact that the exchange rate peg has to be abandoned at the same time because foreign currency reserves are exhausted. See e.g. Chang and Velasco (1998).

<sup>7</sup> See e.g. Chang and Velasco (1998).



literature,<sup>8</sup> so-called *moral hazard models*, relies on the idea of policy inconsistencies developed in first generation models. We will focus solely on moral hazard models in the following.

It has long been known that governmental guarantees for financial intermediaries' liabilities might cause serious moral hazard problems. Such intermediaries have a strong incentive to pursue highly risky investment strategies. Within a class of investments with the same net present value and one good and one bad outcome a protected intermediary will choose the one with the lowest probability of success (Freixas and Rochet (1999), p. 267-268). More generally, guaranteed intermediaries will prefer investments with "*fat right tails*" (Krugman (1998), p. 4) thereby neglecting the expected returns of these investments might be low or even negative.<sup>9</sup> This behaviour is due to the fact that, whenever a bad outcome of the investment project is realized, losses are "nationalized" while profits under the good outcome are going to the owners of the intermediary. The reason why intermediaries can pursue these risky strategies is that depositors of financial intermediaries carry no interest in monitoring their deposit institutions when they are protected from losses by governmental guarantees. Thus, whenever the government wants to stick to its politics of guaranteeing financial intermediaries' liabilities it should choose some appropriate system of banking regulation and banking supervision.

One of the first models where moral hazard plays an important role is the one by Dooley (2000). In his model governments on the one hand are interested in holding reserve assets (for example in order to self insure against shocks to national consumption), on the other hand governments are interested in protecting the domestic financial sector via acting as a lender of last resort (which

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<sup>8</sup> See e.g. McKinnon and Pill (1996), Dooley (2000), Corsetti, Pesenti and Roubini (1999) and Krugman (1998).

<sup>9</sup> It should be noted that this strong form of moral hazard only applies to the case where intermediaries do not invest on their own and thus have nothing to loose when going bankrupt.

demands for holding reserve assets, too). Dooley (2000) assumes that governments are credit-constrained, i.e. they can not borrow money on international capital markets without providing collateral in the form of reserve assets (like foreign exchange or lines of credit from other governments or international organizations). In such a situation a country can not credibly promise liquidity insurance to the domestic banking sector if the country's net assets are not positive (net assets equal gross assets minus noncontingent liabilities).

Dooley (2000) illustrates his model with an example of a country with initially negative or zero net reserves. He argues that a macroeconomic shock like a decrease of international interest rates might substantially increase the country's reserve holdings by reducing the value of noncontingent government liabilities. This enables the country to credibly insure the banking sector's liabilities. As it was already pointed out in the beginning of this section, this will induce moral hazard behaviour on the part of domestic banks. Whenever there is no well working system of banking supervision banks have a strong incentive to seek new deposits by promising above-market yields to investors. Even if investors know that the domestic banks will not be able to pay back their full investments they are willing to invest in the country since they expect to be compensated via governmental reserve assets. The situation is stable as long as governmental net reserves are positive. The problem is that net reserves decline in the course of time since banks will have to ask the government for liquidity assistance to be able to fulfil their deposit liabilities. As soon as net reserves are zero all profits from realizing the government's insurance option are realized and investors start to draw back their money from the country. This is because they know that domestic banks cannot stick to their promises to pay above market yields because the insurance option is not credible anymore. Thus, the attack on governmental reserves itself is generated by competition to avoid losses.

Different from the earlier mentioned models, Dooley (2000) shows that an attack on a country's reserves can also happen as result of promises of providing liquidity assistance and without country's attempt to fix the exchange rate. Nevertheless it is obvious that a country which is running out of reserves will not be able to credibly commit to a fixed exchange rate regime.

Similar to Dooley (2000), Krugman (1998) argues that the collapse of a fixed exchange rate regime might occur as the result of moral hazard due to governmental guarantees to the financial sector without an adequate system of banking regulation and supervision. Krugman (1998) assumes a stochastic production function with decreasing returns to scale with respect to invested capital. Whenever the government decides to guarantee liquidity insurance in such an environment it is profitable for intermediaries to invest into risky investments as long as the return on capital equals the world safe rate of interest in the case of the most favourable outcome of the project. Thus, when deciding on investments, intermediaries take into account the so-called *pangloss values* (Krugman (1998), p. 6), thereby increasing the capital stock to an inefficiently high level and causing the governmental stock of reserves to decrease via honouring bank's losses from overly optimistic investments. Different from Dooley (2000) and first generation models of currency crises, Krugman (1998) argues crisis not to necessarily be triggered by an exhausted stock of reserves but simply by market participant's expectation that the government will not stick to its promise to bail out private banks in the case of bankruptcy. Thus, Krugman (1998) ends up with a story that is somewhat similar to second generation models of multiple equilibria.

### **3 The Bulgarian Crisis of 1996/1997**

We will now turn to a description of the Bulgarian Crisis of 1996/1997 and an attempt at classifying it with respect to the theoretical literature summarized in the previous section. We basically argue that the Bulgarian Crisis can best be described by some mixture of first and third generation models of currency crises. The crisis had some first generation features since the Bulgarian Government's policy to (indirectly) monetize the subsidies to the ailing state-owned enterprises was inconsistent with the attempts of BNB to stabilize the exchange rate. However, the Bulgarian Crisis was a twin crisis and the banking sector played an important role herein. As in third generation moral hazard models, implicit (and later on explicit) prudential guarantees caused massive moral hazard behaviour of the banking sector. As in mid of 1996 doubts arose whether the authorities would be able to continue bailing out the banking sector's losses a first wave of bank runs occurred. The attempt to stop the banking crisis by introducing a deposit insurance scheme was unsuccessful due to a lack of credibility resulting from low foreign currency reserves. By the sudden change towards a highly restrictive monetary and banking policy, i.e. BNB's attempt to switch from a *lender of first resort* to a *lender of last resort* strategy, the banking crisis was reinforced and Bulgaria finally ended up with a twin crisis. When analysing the Bulgarian Crisis in the following in more detail, special attention will be paid to the crucial role of BNB in both the pre-crisis and the crisis period.

#### **3.1 The pre-crisis period 1990-1996**

Let us first focus on the first generation part of the crisis story. There is little doubt that the Bulgarian Crisis of 1996/1997 was a logical consequence of the development of the Bulgarian economy in the 1990–1996 period. The “bad” dynamics of the process of transition in Bulgaria

has been reported in many studies (OECD (1999), Dobrinsky (2000), Koford (2000), Vutcheva (2001), Mihov (2002) among others). One of the most important problems was the very slow process of privatization in Bulgaria. Up to 1997 only 20 percent of the state's assets were privatized. On the one hand, *state-owned enterprises* accumulated enormous losses (see table 1).

**Table 1: Financial results of state owned firms (1992-1997) in percent of balance sheet's assets**

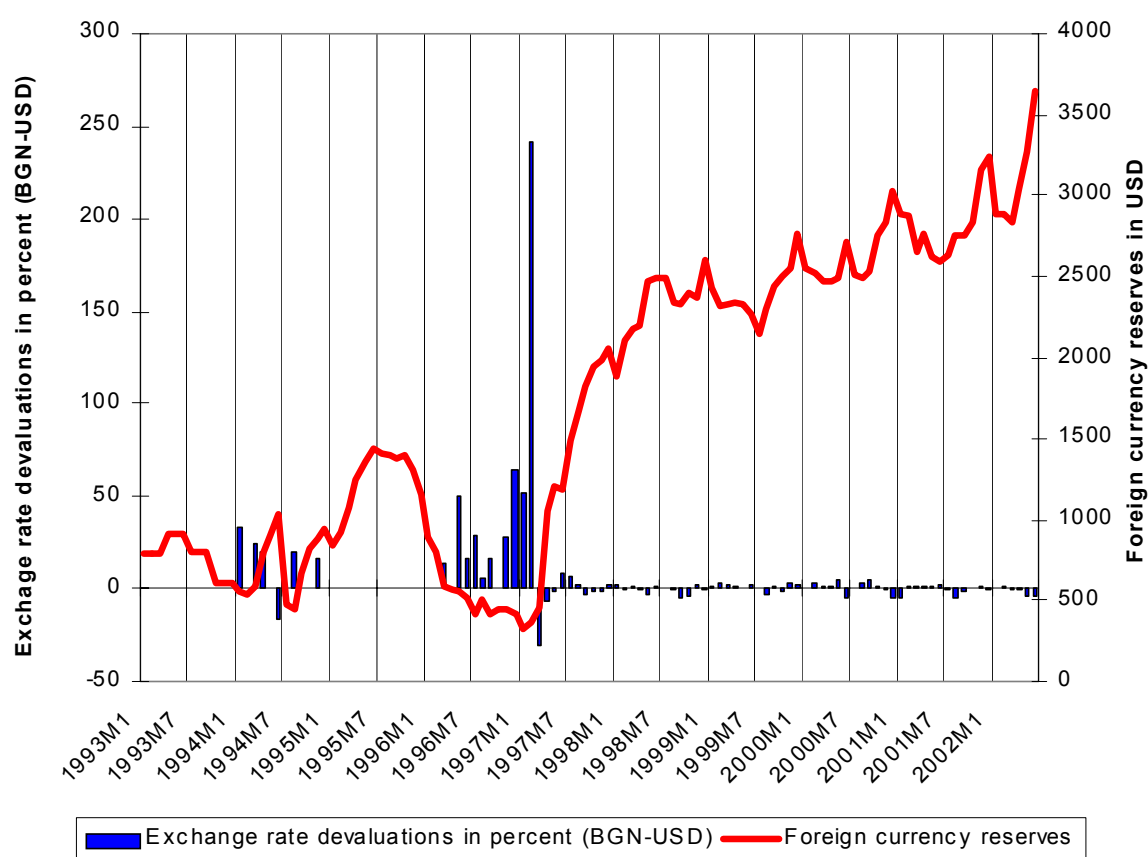
Net profit					
Year	Industry	Construction	Transport	Trade	Others
1992	-7.87	0.26	0.08	-1.62	0.00
1993	-12.74	-2.17	-6.99	-1.14	-4.96
1994	-4.89	-2.14	-3.28	0.43	5.37
1995	-4.24	-1.14	-5.23	-1.31	1.10
1996	-5.54	-1.18	-5.85	-1.78	-6.71
1997	2.89	0.99	3.43	2.30	2.50

Source: OECD (1999, p.79).

On the other hand, the government was not willing to close down these enterprises since this would have had caused excessive unemployment. Thus, the government forced state-owned commercial banks to subsidize ailing enterprises by granting excessive credit lines. Since most of these credits *ex post* turned out to be noncollectible, the banking system accumulated losses, too (Koford and Tschoegl (1999), Caporale et al. (2002)). State-owned enterprises and banks were rescued in several waves by issuing Government securities (ZUNK bonds), which led to internal debt increase (see for extensive details Vutcheva (2001)). Due to the fact that despite its *de jure* independence BNB was *de facto* totally dependent on the government, BNB subsidized

the government's strategy.<sup>10</sup> Even if there was no formal promise of the central bank or the government to bail out illiquid or insolvent banks until 1996, Bulgarian National Bank always provided the necessary refinancing. Moreover, BNB in some cases granted direct credits to ailing state-owned enterprises, gave credits to the Ministry of Finance or bought government securities. Thus, the enormous losses of the enterprises owned by the state were quickly nationalized via monetization.

**Figure 1. Foreign exchange reserves and devaluations of BGN against USD**



Source: International Monetary Fund, IFS

<sup>10</sup> Similarly, Hochreiter and Kowalski (2000) argue that the legal independence of central banks in Eastern and Central Europe did not automatically led to *de facto* independence. In most cases the Governments found ways to impose its fiscal interests by surmounting legal restrictions.

At the same time BNB engaged in attempts at stabilizing the exchange rate. As first generation models of currency crises have shown such an inconsistent strategy cannot succeed in the long run. In the short run, BNB was quite successful in stabilizing the exchange rate (see figure 1). However, when foreign currency reserves decreased to 500 mil. USD at the end of 1994, BNB allowed for several devaluations of BGN, thereby increasing international competitiveness. Consequently, in the second half of 1994 foreign exchange reserves started growing again up to a level of approximately 1500 mil. USD in late 1995. Early in 1996 foreign exchange reserves again started decreasing, thereby indicating that the devaluations in 1994 had only a temporary effect.

However, this is only one part of the story explaining the 1996/1997 Bulgarian Crisis. In line with the basic line of argument in the third generation models of Dooley (2000) and Krugman (1998) we argue that the severity of Bulgaria's Twin Crisis was primarily due to systematic moral hazard behaviour of the banking sector. While in Dooley (2000) and Krugman (1998) moral hazard behaviour is caused by explicit governmental bailout guarantees, such formal guarantees did not exist in Bulgaria (at least not before introduction of the deposit insurance scheme in mid of 1996). The main reason for the moral hazard behaviour which penetrated the Bulgarian economy comes from Bulgaria's history as a former communist country with a centrally planned economy. This system was characterised by a monobank system, monetary and credit planification. The process of transition towards a market economy started in Bulgaria in 1991 and suffered heavily from *soft budget constraints*.<sup>11</sup> Although the process of privatization was very slow, price liberalization began as early as in February 1991. While the market institutions changed quickly, the inherited behaviour of market participants remained. In

Bulgaria's previous economic system losses were nationalized and socialized either within the country or within CEMA. Thus, in the early years of transition there was still a climate of being fully insured against losses or bankruptcy. We might therefore talk of some kind of *moral hazard path dependence* of economic agents' behaviour. While this moral hazard behaviour penetrated the *whole* Bulgarian economy, it was very pronounced in the banking sector.

The large-scale restructuring of the Bulgaria's financial and banking system began at the end of 1989, reflecting the need to shift to a modern two-tier banking system. The sector-specific banks were transformed into classical commercial banks, accepting deposits from individuals. The existing 59 branches of BNB were transformed into autonomous commercial banks. By early 1991 the banking system comprised BNB, State Saving Bank and 69 commercial banks organized as joint stock companies. In March 1992 the Law on Banks and Credit Activity was adopted, establishing a regulatory framework for activities of banking institutions. Under this law commercial banks were granted either a restricted license or a full license. Banks with a restricted license were allowed to operate only within national boundaries while banks with a full license were permitted to operate both domestically and internationally. In the 1990-1996 period BNB adopted a liberal licensing policy BNB which led to the appearance of a great variety of financial agents, most of which turned out to be ponzi pyramids. In addition, bankers often lacked sufficient training and internal controls on bank loan decisions were weak. While banks were required that moral hazard behaviour could easily flourish in Bulgaria's to collateralize their loans, the system did not work well. Poor communication among bankers and inadequate data made it difficult to identify poor credit risks. It is thus not surprising banking sector.

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<sup>11</sup> According to Kornai (2000), soft budget constraints in Bulgaria in transition can be grouped as: (i) inherited from



Although there was no formal law guaranteeing bank deposits before 1996, the population expected to be compensated in cases of losses. As we argued earlier, this belief was primarily driven by the experiences with the previous economic system in Bulgaria.<sup>12</sup> Consequently there was only a low interest of depositors in monitoring commercial banks. Thus, the banking sector could take over excessive risk without having to pay higher risk premiums to depositors. It is well known that moral hazard effects for banks which are close to illiquidity or insolvency are especially high since they try to “gamble for resurrection”. Even more problematic, bank managers of both state-owned and private banks themselves heavily relied on help of the authorities in the case of illiquidity or insolvency problems. The implicit public beliefs on being fully insured were reinforced by factual behaviour of the government and Bulgarian National Bank. *Commercial banks* were refinanced by BNB (see table 2) on a completely subjective and discretionary basis.<sup>13</sup> The various forms of refinancing in BGN and foreign currency included discount refinancing (private securities collateral), Lombard refinancing (government securities collateral) and uncollateralized refinancing (deposit facilities and later arrears) (see position “deposits & other” in table 2).<sup>14</sup> Uncollateralized refinancing was prevailing on a large scale during some periods; at the end of June 1996 uncollateralized refinancing in BGN was 80 percent of total refinancing in BGN. At the same time uncollateralized refinancing in foreign currency reached 80 percent of total refinancing in foreign currency. DSK bank was also active in

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socialism and (ii) specific for the transition process.

<sup>12</sup> A curious fact is that many financial “ponzi” pyramids (offering unusually high interest rates) collapsed, and although the public had been repeatedly warned not to place its money in these “ponzi” pyramids, after their defaults people claimed the government to pay back the lost money as it had been the time before.

<sup>13</sup> According to Balyozov (1999) during the whole period of 1995 to 1996 two big state-owned banks regularly obtained refinancing in order to prevent shocks to the payments system.

<sup>14</sup> Revised monetary data are available since 1995. The data before 1995 are not compatible with the newly revised data.

refinancing the other commercial banks, as well as on the interbank market. In essence, it carried out functions close to those of BNB.<sup>15</sup> State-owned banks' losses were always and quickly nationalized.<sup>16</sup> This Bulgarian pre-crisis setup in which commercial banks were directly and almost automatically supported by the central bank without having to care about other types of funding (including the interbank market) is what we allegorically call *lending of first resort*.

**Table 2. Domestic credit and refinancing to commercial banks (1995 – 1997)**

(Thousand BGN)	12/ 1995	03/1996	06/1996	09/1996	12/1996	03/1997	06/ 1997	09/1997	12/ 1997
DOMESTIC ASSETS (NET)	72 030	88 870	115 107	134 814	157 660	200 241	-1095 231	-1251 067	-1042 559
CLAIMS ON CENTRAL GOV. (NET)	25 976	35 936	28 066	82 142	155 007	404 375	88 991	-13 468	178 180
of which Government securities	50 558	48 707	57 089	123 497	201 535	509 296	0	0	0
CLAIMS ON COMMERCIAL BANKS	43 383	58 294	105 171	132 600	238 758	487 317	311 604	315 059	334 617
in foreign currency	19 137	21 282	38 589	53 349	113 388	348 232	159 057	159 622	181 888
Deposits	14 911	16 404	30 785	41 061	72 896	226 561	24 562	24 856	49 954
Credits	4 226	4 878	7 804	12 288	40 492	120 718	114 652	111 150	110 483
Shares and other equity	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	953	19 843	23 616	21 451
Deposits + Other	14 911	16 404	30 785	41 061	72 896	227 514	44 405	48 472	71 405
in levs	24 246	37 012	66 582	79 251	125 370	139 085	152 547	155 437	152 729
Deposits	11 419	29 176	52 937	54 379	12	12	12	18	20
Credits	9 548	5 801	11 676	22 862	123 387	56 172	53 827	53 757	53 404
Shares and other equity	1 469	1 838	1 838	1 838	1 838	1 838	1 838	1 838	1 838
Other	1 810	197	131	172	133	81 063	96 870	99 824	97 467
Deposits + Other	13 229	29 373	53 068	54 551	145	81 075	96 882	99 842	97 487
OTHER ITEMS (NET)	2 671	-5 360	-18 130	-79 928	-236 106	-691 452	-1495 826	-1552 658	-1555 356

Source: BNB Analytical reporting

In consequence, the interest rates on loans (although they were very high at times) did not reflect the true risk of a credit. In addition to that most of the loans were granted being aware that they would not be paid back and that banks would not cover the losses (Koford and

<sup>15</sup> For DSK refinancing volumes see OECD (1997).

<sup>16</sup> We may recall the purchases of some bankrupt banks for 1 Lev only and rescue operations when finally the budget took over all losses (for instance Agrobiznesbank, TB Yambol).

Tschoegl (1999)).<sup>17</sup> Especially private banks engaged in expanding credits to the many newly created private companies. Quite often these loans violated the regulatory framework, which was designed to maintain bank solvency by restricting the size of loans and limit loans to bank officers. An OECD (1999) analysis points out that “[u]ntil 1996, commercial credit was expanded to the non-financial sector in Bulgaria to a degree that was unprecedented relative to any other European transition economy”. As it is shown in table 3, the structure of these credits was not “healthy” and led to the accumulation of a large amount of bad loans. In consequence, at the end of June 1994 35 of 44 Bulgarian banks generated losses (Vutcheva (2001)).<sup>18</sup>

**Table 3. Dynamics of uncollectible credits (in percent of total credit) (1993-1996)**

	1993	1994	1995	1996*
Standard exposures	7.61	17.69	25.91	43.67
Doubtful exposures (group A)	82.75	66.88	54.55	33.89
Doubtful exposures (group B)	2.19	3.46	4.18	10.67
Uncollectible exposures	7.45	11.97	15.35	11.77
Reported / required statutory provisions	7.18	23.58	23.84	105.42

Source: BNB, Banking Supervision Department. \*Banks in liquidation are excluded.

It is well known that moral hazard effects resulting from deposit insurance or lender of last resort guarantees can be eased by an efficient system of bank regulation and supervision.

<sup>17</sup> The process of lending and monetizing losses should be seen in the broader context of redistribution of assets, liabilities, and wealth among individual economic agents.

<sup>18</sup> The Bulgarian accounting practice in that period was guided by the intention to show better bank results. However, even with these standards in the beginning of 1996 only one or two of the banks had positive net worth (Enoch et al., 2002). See also Roussanova (2002) for a discussion of accounting standards in Bulgaria.

However, Bulgaria lacked such a system of efficient bank supervision, enforcement mechanisms and bankruptcy proceedings<sup>19</sup>.

### 3.2 The crisis period

The basic story of most second and third generation models is that there are two types of equilibriums and that a crisis is the result from switching from the “good” equilibrium to the “bad” one. In the Krugman (1998) model the crisis is finally caused by the market participants’ expectation that the government will not (be able to) stick to its prior made promises to bail out private banks in the case of bankruptcy. We argue that it was exactly this change in public expectations triggering the Bulgarian Twin Crisis of 1996/1997.

Chronologically, the first wave of the crisis came from the *banking system* when in May 1996<sup>20</sup> BNB took 5 commercial banks, 3 of which were private, under conservatorship.<sup>21</sup> The runs on these banks were triggered by depositors’ expectations that their foreign deposits would be confiscated or frozen by the government in order to allow it to meet its interest payments on external debt due in July. At that time Bulgaria was unable to get loans in financial markets because of the lack of foreign currency reserves that could be used as collateral. In addition information about the unhealthy state of several banks spread out and the population was worried whether these banks would be closed. The fact that Bulgaria had no agreement with the International Monetary Fund (IMF) in 1996 reinforced this fear (note that the government at that

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<sup>19</sup> BNB's limited possibilities to initiate bankruptcy, coupled with the cumbersome bankruptcy proceedings in that period, are major reasons for the delayed banking reform (Enoch et al., 2002).

<sup>20</sup> There were already some signs of the upcoming crisis in late 1995 when liquidity shortages occurred and several rumours of bank failures were reported (Enoch et al. (2002)).

<sup>21</sup> Conservatorship is a legal procedure (introduced in May 1996) allowing BNB to suspend the operation of a bank close to insolvency. In that case BNB appoints a conservator which (temporarily) manages the bank.

time was a socialist one). The deposits from bankrupt banks were transferred to sound ones (for details see Enoch et al. (2002)).

In order to stop the panic two strategies were implemented in parallel. On the one hand a law on Bank Deposit Guarantees was introduced according to which the government had to repay the full amount of individuals' deposits with bankrupt banks and 50 percent of enterprises' deposits (BNB (1996)).<sup>22</sup> However, the introduction of the deposit insurance scheme was hardly credible at that time since reserves were already on a comparatively low level, internal and external debt increased considerable and still no IMF agreement had been reached. On the other hand BNB started to pursue a restrictive policy towards banks (after a period of large-scale refinancing) via increasing minimum reserve requirements,<sup>23</sup> raising interest rates<sup>24</sup> and at once selling US Dollars to protect the BGN exchange rate. In May 1996 the base interest rate was 108 percent (simple annual); in September 1996 it rose to 300 percent, while it decreased twice in October 1996 and reached 240 percent and 180 percent, respectively (see figure 2).<sup>25</sup>

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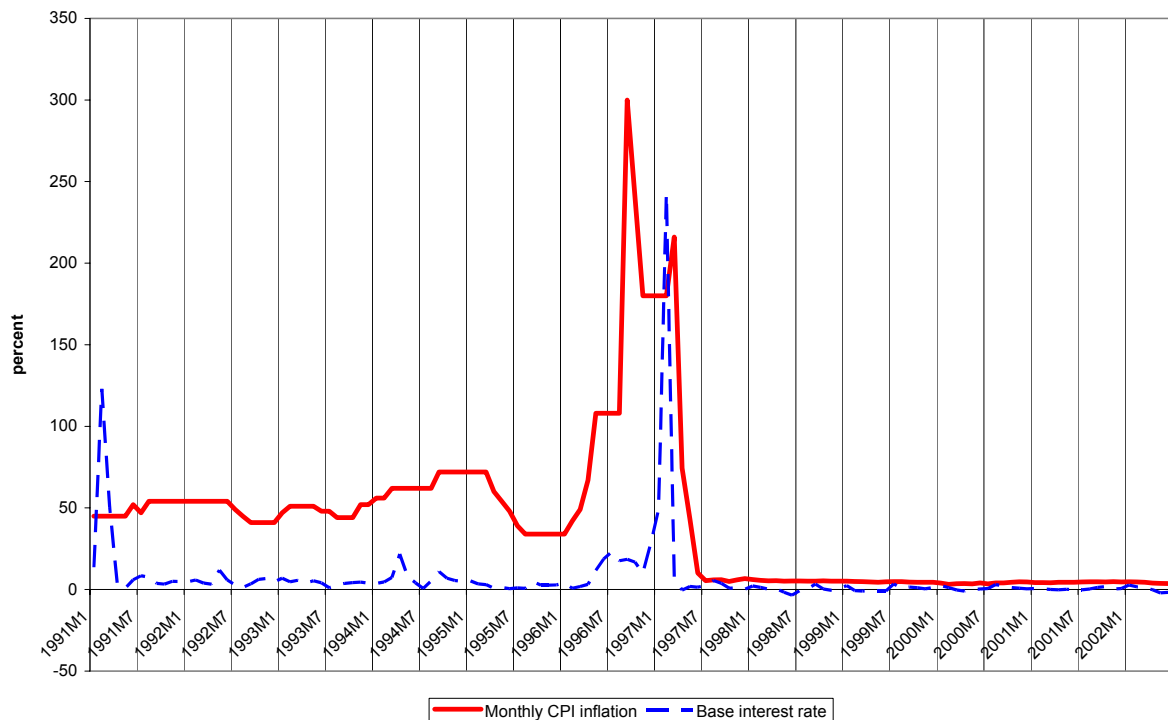
<sup>22</sup> At first, individuals were allowed to draw their deposits in BGN before the court declared its decision on closed banks (withdrawals of foreign currency deposits were in portions). Money withdrawn was quickly directed to the foreign currency market where BGN got under pressure. Later on, this permission was abolished and BGN deposits were also blocked.

<sup>23</sup> BNB changed the minimum reserve requirements in opposite directions. First, it lowered them from 9.5 percent to 8.5 percent; in December 1996 BNB began raising them up to a level of 11 percent.

<sup>24</sup> It should be noted that the decision to raise the base interest rate was suggested by IMF although the negative side-effects have already been recognized during the former crises in Latin America.

<sup>25</sup> The increase of the base interest rate was partially caused by BNB's active open market operations (primarily reverse repurchase agreements) in order to withdraw liquidity (Balyozov (1999)).

**Figure 2. Base interest rate and monthly CPI inflation 1991-2002**



Source: Datastream

The sharp increase in interest rates in the second half of 1996 (suggested by the International Monetary Fund<sup>26</sup>) further intensified the crisis.<sup>27</sup> The sudden change in BNB's banking policy was *unexpected* to both commercial banks and the government. High nominal interest rates caused an avalanche-like increase in internal debt and suspicions about the government's ability to service it arose. Internal debt became a classic example of "ponzi" financing where new government securities had to be issued in order to make interest payments on previous issues of government securities. As investors' interest in these new issues was low, BNB was compelled

<sup>26</sup> The rise of interest rates in order to preserve the exchange rate was typical for emerging markets regardless of this measure was suggested by IMF or not (see Chang and Velasco (2001)).

to buy them. In addition commercial banks suffered from increased interest rates and a new round of 9 banks became bankrupt, thereby further increasing the panic. Facing the threat of a moratorium on internal debt, BNB began to provide extensive monetary financing of the budget deficit (forced by the government and the parliament)<sup>28</sup>. BNB also continued to grant direct loans to the Ministry of Finance. One of these credits, granted at the end of 1996 under a parliament decision, had a volume of 115 billion BGN (7 percent of GDP)<sup>29</sup>. This *asymmetry* of monetary policy (restrictive to banks and expansionary to the budget) made it ineffective and even more dangerous.

The funds withdrawn from commercial banks and obtained from sales of government bonds were quickly converted into USD because a harsh depreciation of BGN was getting the more likely the less reserves BNB retained to defend the exchange rate. Thus, foreign currency was increasingly used as a store of value. While Bulgaria was not officially maintaining a fixed exchange rate, it was trying to keep the value of BGN by selling foreign currency when BGN got under pressure in 1996. As in the Dooley (2000) model BNB's foreign currency reserves had two functions – to protect the exchange rate against devaluation and the banking system against a lack of liquidity. In addition to that (and as in first generation models of financial crises) BNB had still to finance a large part of the budget deficit. Thus, the central bank had to juggle among three nominal commitments. In consequence BNB's balance sheet completely altered – net foreign reserves dropped to 483 mil. USD (see figure 1) while domestic credit

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<sup>27</sup> One referee of this paper suggested that an interesting parallel could be drawn with the Federal Reserve's behaviour during the Great Depression. While we principally agree with this view, we do not further explore this idea in this paper.

<sup>28</sup> According to the then BNB Governor Lubomir Filipov, BNB was subject to an assault by both the Bulgarian government and Parliament in mid 1996. At that time the Parliament passed a law allowing to remove Managing Board members with qualified majority (Filipov (1998)).

increased considerably. Late in 1996 internal and external debt reached alarming levels (60 percent (internal debt) respectively 243 percent (external debt) of GDP; see table 4).

**Table 4: Dynamics of government and government guaranteed debt (1991-2000)**

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Dom. debt/GDP	13%	19%	37%	52%	39%	60%	16%	14%	14%	7%	7%
For. debt/GDP	168%	127%	109%	129%	73%	243%*	91%	72%	78%	72%	67%

Source: BNB, Fiscal Services.

\* Lev devaluation should be taken into account

After several devaluations of BGN in 1996 (altogether BGN was depreciated by 590 percent in 1996), the exchange rate totally collapsed in February 1997 when BGN depreciated by almost 250 percent (see figure 1). The harsh devaluation of BGN was accompanied by a short period of hyperinflation (see figure 2). The monthly chain CPI reached values of 44 percent in January and 243 percent in February and annual inflation for 1997 was 578 percent (BNB (1997)). This hyperinflation, which melted away the government's internal debt and liabilities to banks, was accompanied by the classic separation of the two money functions as a unit of account and a medium of exchange.<sup>30</sup>

Since Bulgaria (in contrast to other countries in transition) was characterised by a considerably high level of bank intermediation, the costs of the 1996/1997 financial crisis, which included a severe banking crisis, were very high (26 percent of GDP for the period of 1991 to 1998; compare Zoli (2001)). Altogether, 14 commercial banks (out of 46) were closed in 1996, which

<sup>29</sup> According to the then BNB Chief Economist, the BNB Managing Board expressed disagreement with this credit in a special letter to the Government and the Parliament (Roussanova (2002)).

<sup>30</sup> The first function was performed by the US Dollar which was used to fix the prices while BGN carried out the second one by serving as medium of exchange (although a lot of trade was orientated to the US Dollar or Deutsche Mark). US Dollar and Deutsche Mark became major stores of value.



represented 24 percent of the banking system's assets. It is interesting to note that 90 percent of the uncollateralized refinancing in the time before the 1996/1997 crisis was concentrated in the bankrupt banks. During 1996 the population withdrew 42 percent of its foreign currency deposits and 21 percent of the deposits in BGN, equalling almost 70 percent of Bulgaria's foreign currency reserves. Altogether, throughout 1996 depositors lost more than 50 percent of their savings.

The financial crisis was accompanied by a deep *political crisis* and mass demonstrations. The social turmoil culminated on 10th January 1997 when the Parliament was attacked.<sup>31</sup> On 4th February 1997 major political parties took a principle decision to introduce a Currency Board (CB) arrangement.<sup>32</sup> The new President took office on 20th January 1997, the socialist party abdicated from power and a caretaker government was appointed. The Bulgarian Crisis came to an end when the exchange rate stabilized at the end of February 1997 when de facto the Bulgarian CB started to operate (formally the CB started in July 1997). In March 1997 the inflation rate dropped drastically. Parliamentary elections were held on 19th April 1997. In April 1997 a new agreement with the IMF was reached. In the course of time economic agents started to adjust their behaviour to the forthcoming formal establishment of the CB in July 1997. Altogether, it is important to underline that the Bulgarian Twin Crisis was mainly a crisis in a closed economy environment. In contrast to the Asian Crisis where foreign capital outflows were a significant element, such massive capital outflows could not be observed in Bulgaria. This is due to the fact that over the entire transition period of 1990-1996 foreign capital inflows

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<sup>31</sup> At that time information on the possibility of blocking deposits and internal debt default leaked out (Roussanova (2002)).

<sup>32</sup> At some point all political forces competed with each other for IMF liking and to be the ones to introduce the CB arrangement. For a more detailed discussion of this aspect see Nenovsky and Rizopoulos (2003).

(particularly portfolio investments) were on a comparatively low level. Significant portfolio investments (primarily from Japanese banks) were observed not before the de facto introduction of the Currency Board arrangement in March 1997. In fact, only 204 million USD might be qualified as some kind of capital flight at the end of 1996 (BNB, 1996).<sup>33</sup>

#### **4 Second generation currency boards and lending of last resort**

As we argued in the last section, the Bulgarian Crisis was caused by a combination of excessive monetization of fiscal debt and massive moral hazard behaviour of the banking sector resulting from the belief that BNB would always provide refinancing in the case of losses. When the crisis culminated in early 1997 a new monetary system had to be implemented. The new system had to fulfil two requirements. On the one hand it had to be suitable to stop the crisis in the short run. Thus, monetary strategies like *inflation targeting*, requiring considerable periods of reputation building were less suitable. On the other hand the new monetary system had to be less prone to the problems occurring in the 1990-1996 period thereby providing a higher long-term degree of stability. It was also clear that Bulgaria would hardly be able to succeed in the process of E(M)U-accession without stabilizing exchange, interest and inflation rates.

Bulgaria chose to establish a *currency board arrangement*, thereby strictly restricting the possibility to monetize fiscal debt. However, the second generation currency board introduced in Bulgaria differs significantly from *orthodox currency boards*.<sup>34</sup> On the one hand, the

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<sup>33</sup> Komulainen (2001, p. 23) did not include Bulgaria in the table described capital account reversals during the financial crises in emerging markets (Asia, Latin America, Eastern Europe, Russia and Turkey) thereby de facto confirming the insignificance of capital outflows in the Bulgarian case. “Resident capital flight” could be considered as still another form of capital flight; the term was introduced by BNB to denote the outflow of capital from the banking system (see also Dobrinsky (2000))

<sup>34</sup> The features of orthodox (or “first generation”) currency boards, typical of the colonial system are well known in broad outlines (compare Schuler (1992) and Schwartz (1993)). An orthodox currency board completely rejects

currency board arrangement enables BNB to conduct limited monetary policy operations thereby retaining some discretion to stabilize the Bulgarian Economy. On the other hand the Bulgarian Currency Board allows BNB to act as *strictly limited lender of last resort* thereby contributing to stabilize the banking sector. Our following expositions concentrate on BNB's role as a strictly limited lender of last resort (for a detailed description of the Bulgarian Currency Board see Miller (1999), Nenovsky and Hristov (2002) and Nenovsky et al. (2002)). We also briefly summarize the experiences during the first years under the currency board arrangement in Bulgaria which were quite encouraging. Expectations quickly adjusted to the new monetary policy strategy which was formally introduced on 1<sup>st</sup> July 1997.

## 4.1 Strictly limited lending of last resort

In contemporary financial systems lending of last resort is considered as a narrow part of the *safety net* system (Freixas and Rochet (1999)). Thus, even under currency board arrangements, defined as antitheses to discretionary monetary policy and excessive use of LOLR-functions, it seems to be hard to imagine to go to the opposite extreme and to eliminate LOLR functions completely. However, the Bulgarian experience showed that it is very important to distinguish between the two tasks of conducting monetary policy and lending of last resort.<sup>35</sup> Currency boards provide such an opportunity to return to some *traditional* forms of the LOLR.

Since a currency board is a rule there are obviously analogies to the gold standard. It is well known that under the gold standard monetary system there were different forms of lending of

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monetary policy. A currency board is backed by a simple and clear rule which determines the relationship between balance of payments, reserve money (or money supply) and interest rate dynamics (compare Hanke and Schuler (1991) and Williamson (1995)).

<sup>35</sup> Some economists think that such a separation is impossible (Goodfriend and King (1988)), although in the 18th-century Thornton and Bagehot tried to distinguish between them.

last resort (for surveys see Bordo (1989) or Denise (2001)): (i) in the private banking sector the LOLR function was carried out by *private* clearing house associations (White (1999)) or by so-called branch banking (in the case of the US); or the LOLR was imported by a foreign central bank (Goodhart (1987) argues that this was the case in the period of free banking in Scotland), (ii) under the centralized gold standard international LOLR was performed by a *temporary suspension of the rule of convertibility*; it was intended that after the operations the rule would be restored<sup>36</sup> (Bordo and Kydland (1996)) and (iii) that a central bank could rely on *support from abroad* (Denise (2001)).<sup>37</sup> Thus, introducing a currency board system does not automatically imply the abolishment of any form of LOLR functions. The existence of branches and affiliates of major foreign banks in Bulgaria is thus an opportunity for importing LOLR from abroad. Similarly, the strategy of most currency boards is to open the domestic market for the entrance of foreign banks. Argentina as well as Estonia decided to open their markets for foreign banks. Argentina is a particular case where the central bank agreed upon bilateral credit lines for financial support from American and other foreign banks.

Second generation currency boards allow to perform LOLR functions in at least two additional and more direct ways: (i) by *balance sheet positions* that are *not typical* for currency boards (we might think of monetary instruments that will appear as internal assets in the currency board's balance sheet, as for instance the deposit certificates in Estonia and the repo operations in

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<sup>36</sup> In order to guarantee the restoration of the gold parity before 1866 the Bank of England for instance issued the so-called *letters of indemnity*.

<sup>37</sup> In this case the help may come from a foreign central bank (for example the Bank of England was supported by the Banque de France in 1890, and several more times in the beginning of the 19th century) or from foreign private banks (like the Barings's crisis in 1889/1890). It is possible that European Central Bank will carry out the LOLR function for Bulgaria (the country is currently in the process of EMU accession).

Lithuania, or as some monetary rule within the framework of the central bank) and (ii) by a *separate independent fund* (Caprio et al. (1996)).

In the case of Bulgaria, BNB may extend loans in BGN to banks through the Banking Department *up to the level of central bank excess reserves* (for details see Nenovsky and Hristov (2002)). In the event of a liquidity risk affecting the stability of the banking system BNB can grant loans only to solvent banks experiencing an acute need of liquidity that cannot be provided from other sources. Such loans could be extended only against collateral of liquid assets and the loan repayment term shall not exceed three months. BNB's Regulation N6 defines liquidity risk as a situation where the amount of the ordered but unpaid payment documents in the Banking Integrated System for Electronic Transfer (BISERA) exceeds 15 percent of its total amount for both the last two days. In addition, the liquidity risk for the banking system is a condition caused by a bank delay or announcement that the bank is going to postpone the settlement of the submitted payment documents for more than three days, and if the bank has at least eight percent share of all interbank payments for each of the last five business days prior to filing a request for a loan with BNB (BNB (1999)).

We will now turn to a discussion of the peculiarities of the LOLR function within second generation currency board arrangements. We shall consider the four classic features of LOLR defined by Bagehot (1866)<sup>38</sup> as well as some of their contemporary characteristics (Freixas and Rochet (1999)).

In contrast to Bagehot's definition, lending of last resort under modern currency boards does not imply free (freely) refinancing and imposing a penalty rate, but rather limited refinancing at a penalty rate. According to Bagehot a LOLR should announce in advance a policy of free

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<sup>38</sup> See also Bordo (1989) and Humphrey (1986).

lending in the case of a crisis. In most contemporary currency boards, the conditions under which refinancing is possible are legally determined and strictly limited (as in Bulgaria). In line with Bagehot's proposal, LOLRs under second generation currency board arrangements stick to the principle to grant credits only against good collateral. Bagehot's advice to support only solvent banks with liquidity problems is realized in most currency board arrangements while it is often hard to judge whether a certain bank asking for liquidity assistance is solvent or not. This information problem is even harder to solve in the short period of time the central bank has to decide on LOLR assistance (Goodhart and Huang (1999), p. 6).

Under second generation currency boards, banking supervision, bank regulations and banking court proceedings are vital parts of the safety net. Such a system of efficient bank regulation is both a prerequisite for the central bank to be able to serve as a lender of last resort without creating moral hazard behaviour and to compensate for the somewhat limited function of the central bank as a LOLR. It is not surprising that in most of the countries under a currency board arrangement, capital adequacy, liquidity and even equity requirements are significantly higher than those in countries with other monetary regimes.

A well-designed system of deposit guarantees is of crucial importance as an additional part of the safety net. This system should not stimulate moral hazard and it should be more restrictive than it is in countries with discretionary acting central banks.<sup>39</sup> Deposit guarantees are necessary to avoid panics, even if they not always led to a total contraction of the monetary base (as it was experienced under the gold standard). Panics usually move deposits from "suspicious" and weak banks to ones of sound reputation (information based bank runs rather than random-

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<sup>39</sup> This conclusion is drawn in a review by Garcia (1999). Experience showed that the optimal amount of guarantee is in between once and twice the annual GDP per capita. For details about the specific features of deposit

withdrawals). Such runs were observed during the Bulgarian crisis when depositors transferred their funds to healthy banks like Bulbank and State Savings Bank. There were similar runs throughout the banking crisis in Argentina in 1994/1995 with a currency board in operation but no safety net (Schumacher (2000)).<sup>40</sup> As soon as the crisis evolved depositors reallocated their money to big Argentine and foreign banks.

Under a currency board the *interbank market* is of particular significance for liquidity control and an important element of the currency board mechanism. Taking a closer look at the Bulgarian practice, we observe that the interbank market does not function very well. Banks set up internal regulations for transferring liquidity to other banks case by case. In fact, there is no dialogue among the banks which is an important precondition of providing mutual aid in the case of a crisis (Freixas et al. (1999)). Above all, this phenomenon could be explained by the lack of trust among commercial banks induced by the 1996/1997 crisis.

As it was demonstrated earlier, it is possible to provide a central bank with LOLR functions even under a currency board arrangement (thereby fulfilling the set of requirements set up by Thornton and Bagehot). But it should be taken into account that any suspension of currency board principles might have severe negative consequences with respect to the credibility of the arrangement (Ho (2001)). Therefore, the Bulgarian currency board is designed to perform LOLR functions up to a certain limit without violating the basic rules for such an arrangement. LOLR functions can be financed via the Banking Department deposits, i.e. the net value of the currency board.

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guaranteeing in transition countries see Hermes and Lensink (2000); details for Bulgaria are given in Nenovsky and Petrov (2001).

<sup>40</sup> See also Caprio et al. (1996).

Obviously, currency boards do not allow for any temporary drift from the predefined rules. As the basic objective of second generation currency boards is monetary stabilization and in most of the cases these arrangements are put into practice after a period of hyperinflation or a financial crisis, any break of the currency board rules (reserve money backing and fixed exchange rate by law) will likely be considered as a return to financial instability and inflation (with respect to the theoretical models we might think of this to be the cause of a change in market expectations causing the economy to jump from a “good” equilibrium to a “bad” one). The situation under currency boards is thus hardly comparable to the operation of the era of the gold standard which has worked for quite a long period of time and did not collapse in consequence of short-term deviations from the rules. Different from currency board arrangements the gold standard was a multilateral agreement and surely had educational purposes (for both monetary authorities and the public<sup>41</sup>). Currency boards have operated for considerably short periods of time<sup>42</sup> and are typically put into practice because of national instabilities. In addition to that only a few countries work with a currency board arrangement.

## **4.2 Development of the Bulgarian Economy since July 1997**

As argued earlier in this paper, the newly introduced monetary strategy had to fulfil two tasks: to stop the crisis in the short run and to stabilize the Bulgarian Economy in the medium and long run. The first task was obviously solved by the establishment of the Bulgarian Currency Board. The simple fact that the currency board arrangement survived shows that the credibility of the new regime was sufficiently high. External stabilization also allowed restoring internal stability.

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<sup>41</sup> For the importance of the rule of the game during the gold standard see Dornbusch and Frenkel (1984).



Soon after introduction of the currency board arrangement inflation rates as well as inflation expectations fell steeply. In how far the new monetary regime will be able to solve the second and more important task, i.e. to induce long-term stability, can not be judged definitely after (only) five years of operation of the currency board system.<sup>43</sup>

**Table 5. The performance of the Bulgarian Economy (1997 – 2001)**

	1997	1998	1999	2000	2001
GDP real growth (%)	-7	3.5	2.4	5.8	5
Unemployment rate (%)	13.7	12.2	16	17.9	17.3
Inflation (% eop)	578.5	1.0	6.2	11.3	4.8
Budget deficit (% of GDP)	-3	1	-1	-1.1	-1.5
Current account (% of GDP)	10.1	-0.5	-5.0	-5.6	-6.2
Foreign direct investment (% of GDP)	4.9	4.2	6.3	7.9	5.1
Foreign reserves (billions USD)	2474.1	3051.1	3221.6	3460.3	3580.3
Number of banks (foreign banks)	34(14)	34 (17)	34 (22)	34 (24)	35 (25)
Total capital adequacy (%)	28.9	37	41.3	35.5	31.32
ROA (ROE) (%)	5 (116)	2 (22)	2 (21)	3 (23)	3 (19)
Domestic credit (% of GDP)	29.5	18.9	17.8	17.4	18.5
Credit on private sector (% of total credit)	35.6	38.9	55.8	67.2	66.5
Credit to public sector (% of total credit)	64.4	61.1	44.2	32.8	33.5
Standard exposures (% of total exposure)	58.2	69	73.3	82.7	92.3
Broad money (% of GDP)	25.5	28.2	28.3	32.2	36.9
Foreign currency deposits (% of total deposits)	63.5	54.1	52.9	52.7	51.7

Source: BNB, NSI, own calculations

However, the development of the Bulgarian Economy over the medium-term, which will be briefly outlined in the following (a summary of the development of main economic indicators in

<sup>42</sup> The currency board with the longest „tradition“ is the one in Hong-Kong (since 1983) and even this arrangement can hardly be compared to the „century“ of the gold standard.

<sup>43</sup> The recent happenings in Argentina teach us that a strategy which worked quite well for some years must not be adequate in the long run.

the last years is given in table 5), makes us believe that the currency board arrangement is likely to be an adequate means of stabilizing the Bulgarian Economy in the long run.

The most essential changes can be observed in the development of the *banking system* over the last 5 years. First, the process of privatization was reinforced. The ownership of many banks changed; the last state-owned bank is expected to be privatised in 2003. Second, bank behaviour changed substantially – partly due to the experiences before and during the 1996/1997 crisis, partly due to the restrictions imposed by the currency board arrangement. Banks became extremely cautious in managing their portfolios (especially in lending) by maintaining capital adequacy and liquidity much above international standards. In consequence, domestic credit was restructured and became "healthier". The share of standard exposures in total exposures increased from 58.2 percent in 1997 to 92.3 percent in 2001. Third, lending to the public sector significantly decreased. While the share of public sector credits in total credits was 64.4 percent in 1997 it decreased to some 33.5 percent in 2001. These measures indicate that phenomena like direct lending and moral hazard behaviour are restricted by the new regime considerably. In the second half of 2002 a more active lending by banks was observed, which was associated with a drop of interest rates in international markets and a partial return of banks' investments back into Bulgaria.

There are also indications for a significant change in BNB's practice of the LOLR function. During the 5-year existence of Bulgaria's currency board, BNB did never made use of its LOLR function, although two banks suffered some liquidity difficulties in this period. Both banks were considerably small and failed. In the beginning of 1999 Credit Bank was declared to be insolvent (BNB (1998)) and in the beginning of the following year Bulgarian Universal Bank went bankrupt (BNB (2000)). This experience shows that a restrictive definition of the LOLR-

function might be sufficient to provide the necessary stability to the financial sector thereby preventing systematic bank runs from occurring.

The restrictions imposed by the currency board arrangement also induced the Bulgarian Government to change its behaviour towards a more conservative fiscal policy. Since introduction of the currency board in 1997 the budget deficit has been extremely small; yet, in 1998 Bulgaria experienced a budget surplus. In consequence internal debt decreased to 7 percent of GDP at the end of 2001.

Obviously, the switch from a discretionary monetary policy with an excessive use of the LOLR function and excessive monetization of government debt to a second generation currency board delivered a climate of stability which is an important precondition for Bulgaria's process of E(M)U accession. Bulgaria's balance-sheet positions currently give no reason to worry about the currency board's future. However, the development of the Bulgarian Economy also shows that the stability generated by introduction of the currency board arrangement is a necessary but not sufficient precondition for sustainable economic growth. While the dramatic decline of GDP in 1997 was followed by some years of growth, this process was accompanied by a considerable increase in unemployment (an experience other countries in transition already faced earlier). One reason for this development is that Bulgaria still does not face significant foreign direct investments. Thus, the currency board arrangement is not more than a part of necessary and more extensive institutional and legal reforms.

## **5. Summary and conclusions**

In this paper we argue that the Bulgarian Twin Crisis of 1996/1997 can best be explained by a combination of first and third generation moral hazard models of currency crises. Different from

the typical assumption of third generation currency crisis models moral hazard behaviour was (at least initially) not induced by explicit governmental guarantees but by the unchanged public belief that the government (and the central bank) will care about industries and banks facing bankruptcy problems. These beliefs, which are at least partially due to Bulgaria's history as a former communist country, were reinforced by the government's effective behaviour and resulted in systematic moral hazard behaviour. When the public started to worry about the governments' ability and willingness to continue this policy a banking crisis was triggered and reinforced by a sudden change to a restrictive banking policy by the BNB. Thus, an important cause of the Bulgarian Crisis of 1996/1997 was BNB's role as a lender of first rather than a lender of last resort in the pre-crisis and the crisis period.

The crisis was stopped by implementing a second-generation currency board. While this arrangement principally allows BNB to perform some LOLR functions, these are strictly limited. Obviously this institutional setting is the response on the experiences with a highly discretionary monetary strategy in the period of 1991-1996. While the currency board arrangement allowed Bulgaria to import the hard-nosed reputation of foreign central banks (German Bundesbank, ECB) in fighting inflation, thereby quickly reaching a situation of relative price stability, the strictly limited LOLR function provides the necessary degree of stability for the banking system.

Both, theorists and practitioners seem to have underestimated the special moral hazard risk in transition countries primarily resulting from soft budget constraints. The twin crisis in Bulgaria of 1996/1997 underlines both the importance and the vulnerability of banking systems in transition countries. On the one hand a strong banking system is needed to provide financing of investments (since a capital market based financing is often impossible) which are urgently necessary to catch up with Western European countries. On the other hand the process of

transition needs time and holds the risk to be interrupted. The transformation process is often a time of soft budget constraints that might end up in a deep financial crisis, as the Bulgarian example showed. (Not only) the Bulgarian experience showed that the set up of a new institutional structure of the banking system and especially the role of the central bank might be useful to stabilize a crisis economy.

## Bibliography

- Bagehot, Walter, "What a panic is and how it might be mitigated." *The Economist*, XXIV: 554-555, 12 May 1866, and reprinted in Michael Collins, Ed., *Central Banking in History*, Vol. I: 236-237. Cambridge: Edward Elgar, 1992.
- Balyozov, Zdravko, "The Bulgarian Financial Crisis of 1996-1997". Discussion Paper No. 7, Sofia: Bulgarian National Bank, 1999.
- Bordo, Michael, "The Lender of Last Resort: Some Historical Insights." Working Paper No. 3011, Cambridge/Mass: NBER, 1989.
- Bordo, Michael and Kydland, Finn, "The Gold Standard as a Commitment Mechanism." In Tamim Bayoumi, Barry Eichengreen and Mark P. Taylor, Eds., *Modern Perspectives on the Gold Standard*, pp. 55-100. Cambridge: Cambridge University Press, 1996.
- Bordo, Michael, Barry Eichengreen, Daniela Klingebiel and Maria Soledad Martinez-Peria, "Is the crisis problem growing more severe?" *Economic Policy*, April: 53-82, 2001.
- Buch, Claudia M., Heinrich, Ralph P., „Twin Crises and the Intermediary Role of Banks“ *International Journal of Finance and Economics*, 4: 313-323, 1999.
- Bulgarian National Bank, *Annual Reports*, Sofia: Bulgarian National Bank, 1996, 1997, 1998, 1999, 2000.
- Calvo, Guillermo A., "Contagion in Emerging Markets: when Wall Street is a carrier." Mimeo, University of Maryland, 1999.
- Caporale, Guglielmo, Miller, Jeffrey, Hristov, Kalin, Nenovsky, Nikolay and Petrov, Boris, "The Banking System in Bulgaria." In Zeljko Sevic, Ed., *Banking Reforms in South-East Europe*. London: Edward Elgar, 2002.
- Caprio, Gerard, Dooley, Michael, Leipziger, Danny, Walsh, Carl, "The lender of last resort function under a currency board: the case of Argentina." *Open Economies Review*, 7, 1 (suppl. 1): 625-650, 1996.
- Chang, Roberto and Velasco, Andres, "Financial Crises in Emerging Markets: A Canonical Model." Working Paper No. 6606, Cambridge/Mass: NBER, 1998.
- Chang, Roberto and Velasco, Andres, "Monetary policy in a dollarized economy where balance sheets matter." *Journal of Development Economics*, 66, 2: 445-464, 2001.
- Corsetti, Giancarlo, Pesenti, Paolo and Roubini, Nouriel, "Paper Tigers? A Model of the Asian Crisis." *European Economic Review*, 43, 7: 1211-1236, 1999.
- Denise, Caroline, "Les déterminants et les acteurs du prêts international en dernier ressort pendant la période de l'étalon-or classique (1890-1914). Quelques enseignements pour l'avenir." *Revue économique*, 52, 2: 415-430, 2001.
- Diamond, Douglas and Dybvig, Philip H., "Bank Runs, Deposit Insurance, and Liquidity." *Journal of Political Economy*, 91, 3: 401-419, June 1983.
- Dobrinisky, Rumen, "Transition crisis in Bulgaria." *Cambridge Journal of Economics*, 24, 5: 581-602, 2000.

- Dooley, Michael P., "A Model of Crises in Emerging Markets." *The Economic Journal*, 110, 256-272, 2000.
- Dornbusch, Rudiger, Frenkel, Jacob A., „The Gold Standard and the Bank of England in the Crisis of 1847" In: Bordo, Michael D., Schwartz, Anna J., Eds., *A Retrospective on the Classical Gold Standard, 1880-1913*, Chicago: Chicago University Press, 1984.
- Drazen, Allan, "Political Contagion in Currency Crises." NBER Working Paper No.7211, Cambridge/Mass: NBER, July 1999.
- Eichengreen, Barry J., Rose, Andrew, Wyplosz, Charles, "Contagious Currency Crises" EUI Working Paper No. 96/2, 1996.
- Enoch, Charles, Gulde, Anne-Marie, Hardy, Daniel, "Banking Crises and Bank Resolution: Experiences in Some Transition Countries, IMF Working Paper No. 02/56, March 2002.
- Filipov, Lubomir, "BNB's sad progress from an independent central bank to a currency board (the causes & the moral)". Paper presented at Dubrovnik Conference on Central Banking in transition, 1998.
- Flood, Robert P. and Garber, Peter M., "Collapsing exchange rate regimes: some linear examples." *Journal of International Economics*, 17: 1-13, 1984.
- Flood, Robert P. and Marion, Nancy P., "A Model of the Joint Distribution of Banking and Exchange-Rate Crises." Paper presented at the ASSA-conference in New Orleans, January 2000.
- Freixas, Xavier and Rochet, Jean C., *Microeconomics of Banking*. (4th printing), Cambridge/Mass: MIT Press, 1999.
- Freixas, Xavier, Giannini, Curzio, Hoggarth, Glenn and Soussa, Frarouk, "Lender of Last Resort: A Review of Literature." Bank of England Financial Stability Review No. 7: 151-167, London: Bank of England, 1999.
- Garcia, Guliana, "Deposits Insurance: A Survey and Best Practices." Working Paper No. 54, Washington D.C.: IMF, 1999.
- Goodfriend, Marvin and King, Mervyn, "Financial deregulation, monetary policy, and central banking." *Economic Review*, 74,3: pp. 3-22, Richmond: Federal Reserve Bank of Richmond, 1988.
- Goodhart, Charles, "Why do banks need a central bank?" *Oxford Economic Papers*, 39, 1: 75-89, 1987.
- Goodhart, Charles A. E. and Huang Haizhou, "A Model of the Lender of Last Resort." Working Paper No. 39, Washington D.C.: IMF, 1999.
- Haan, Jakob, Berger, Helge and Van Fraassen, Erik, „How to Reduce Inflation: an Independent Central Bank or a Currency Board? The Experience of the Baltic Countries." *Emerging Markets Review*, 2, 3: 218-243, 2001.
- Hanke, Steve and Schuler, Kurt, *Teeth for the Bulgarian Lev: A Currency Board Solution*. Washington D.C.: International Freedom Foundation, 1991.
- Hermes, Niels and Lensink, Robert, "Financial system development in transition economies." *Journal of Banking & Finance*, 24, 4: 507-524, 2000.

- Ho, Corinne, "A survey of the institutional and operational aspects of modern-day currency boards." Working Paper No. 110, Basle: BIS, 2002.
- Hochreiter, Edward and Tadeusz Kowalski, "Central banks in European emerging market economies in the 1990s", Österreichische Nationalbank, Working Paper No 40, 2000.
- Humphrey, Thomas, "The Classical Concept of the Lender of Last Resort." In: Thomas Humphrey, Ed., *Essays on inflation*, Richmond: Federal Reserve Bank of Richmond, 1986.
- Koford, Kenneth and Tschoegl, Adrian, "Problems of Bank Lending in Bulgaria: Information Asymmetry and Institutional Learning."; *MOCT-MOST: Economic Policy in Transitional Economies*, 9, 2: 123-151, 1999.
- Koford, Kenneth, "Citizen Restraints on "Leviathan" Government: Transition Politics in Bulgaria." *European Journal of Political Economy*, vol.16, pp. 307-338, 2000.
- Komulainen, Tuomas, "Currency Crises in Emerging Markets: Capital Flows and Herding Behaviour." Discussion Papers No. 10, Helsinki: BOFIT, 2001.
- Kornai, Janos, "What the Change of System from Socialism to Capitalism Does and Does Not Mean." *Journal of Economic Perspectives*, 14, 1: 27-42, 2000.
- Krugman, Paul, "A model of balance of payment crises." *Journal of Money, Credit and Banking*, 11, 3: 311-325, August 1979.
- Krugman, Paul, "What happened to Asia?" mimeo, 1998.
- Krugman, Paul. *The Return of Depression Economics*. London: Lane, 1999.
- McKinnon, Ronald and Pill, Huw, "Credible Liberalizations and International Capital Flows: The 'Overborrowing Syndrome'." In: Takatoshi Ito and Anne Krueger Eds., *Financial Deregulation and Integration in East Asia*, pp. 7-42, Chicago: University of Chicago Press, 1996.
- Mihov, Ilian, "The Economic Transition in Bulgaria, 1989-1999", in *Transition: The First Decade*, M. Blejer and M. Screb (editors), MIT Press, 2002.
- Miller, Jeffrey, "The Currency Board in Bulgaria: The First Two Years." Discussion Paper No. 11, Sofia: BNB, 1999.
- National Statistical Institute, *Main Macroeconomic Indicators*, Sofia: NSI, 1999.
- Nenovsky, Nikolay, "Une économie en transition a-t-elle vraiment besoin d'une Banque centrale? La Caisse d'émission en Bulgarie." *Revue d'études comparatives Est-Ouest*, 30, 4: 65-96, 1999.
- Nenovsky, Nikolay and Hristov, Kalin, "The new currency boards and discretion: empirical evidence from Bulgaria." *Economic Systems*, 26: 55-72, 2002.
- Nenovsky, Nikolay, Hristov, Kalin and Mihaylov, Mihayl, "Comparing institutional and organizational design of Currency Boards in transition countries." *Eastern European Economics*, 40, 1: 6-36, 2002.
- Nenovsky, Nikolay and Boris Petrov, "Deposit insurance in Bulgaria – problems and possible solutions during the accession process", *Banks, Investments and Money*, 2002, 1:2-9.



- Nenovsky, Nikolay and Rizopoulos, Yorgos, "Extreme Monetary Regime Change. Evidence from Currency Board Introduction in Bulgaria". *Journal of Economic Issues*, forthcoming, 2003.
- Obstfeld, Maurice, "The logic of currency crises." *Cahiers Economiques et Monétaires*, **43**: 189-213, 1994.
- Organization for Economic Cooperation and Development, *OECD Economic Survey of Bulgaria*, Paris: OECD, 1997, 1999.
- Roussanova, Lena, "The 1996-1997 Financial Crisis in Bulgaria", European Institute, Sofia, 2002.
- Schuler, Kurt Alvin, *Currency Boards*, Ph.D. Thesis, Fairfax: George Mason University 1992.
- Schumacher, Liliana, "Bank runs and currency run in a system without a safety net: Argentina and the 'tequila' shock." *Journal of Monetary Economics*, **46**, 1: 257-277, 2000.
- Schwartz, Anna, "Currency Boards: Their past, present and possible future role." Carnegie-Rochester Conference Series on Public Policies, Vol. 39: 147-193, 1993.
- Sgard, Jérôme, "Crise financière, inflation et Currency Board en Bulgarie (1991-1998): Les leçons d'une transition indisciplinée." *Revue d'études comparatives Est-Ouest*, **30**, 2-3: 215-235, 1999.
- Tang, Melena, Edda Zoli and Irina Klytchnikova, "Banking Crises in Transition Countries: Fiscal Costs and related Issues.", Policy Research Working Paper No. 2484, Washington D.C.: World Bank, 2000.
- Vutcheva, Hristina. *Ikonomicheskata politika v Balgaria prez perioda 1991-2000* (Economic Policy in Bulgaria during 1991 – 2000). Sofia: UNSS Edition, 2001.
- White, Laurence. *The Theory of Monetary Institutions*. Massachusetts: Malden, 1999.
- Williamson, John, "What role for currency boards?" Policy analyses in international economics No.40, Washington D.C.: Institute for International Economics, 1995.
- Zoli, Edda, "Cost and Effectiveness of Banking Sector Restructuring in Transitional Economies." Working Paper No. 157, Washington D.C.: IMF, 2001.

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