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*Tenuous Financial
Stability*

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Tenuous Financial Stability

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Abstract

Many countries fix their exchange rate in order to bring financial stability. Usually, inflation declines and output expands but contractual agreements retain their short time frame, investment is sluggish, and economic growth slows down a few years later. This outcome is often attributed to persistent doubts on the part of agents in the commitment and ability of the government to maintain the peg. Yet direct evidence for credibility is difficult to obtain. Unique survey data from Bulgaria reveal that expectations of devaluation were indeed very much present three, four, and five years after that country achieved financial stability under a currency board regime.

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Tenuous Financial Stability

1. Introduction

Stabilization in developing countries follows a typical pattern. After a period of high inflation and rapid depreciation, the exchange rate is fixed, public finances are tightened, and measures are taken to increase confidence in the banking system. Inflation usually declines to lower levels and a consumption boom generates economic expansion in the initial years. Investment, however, remains low, as agents seem reluctant to make long-term commitments. An economic slowdown a few years later raises doubts about the sustainability of the fixed exchange rate and some negative shock often proves sufficient to bring devaluation.¹

In the literature, the negative outcome is often explained by persistent doubts in the governments' commitment and ability to maintain the peg. There are several factors that may contribute to that. First, expectations may adjust slowly and the memory of the dramatic experience that led to the stabilization program may linger for a long time. Second, it is typical that financial instability is a chronic problem. Since agents have experienced several failed stabilization efforts in the past, it may take a long time to convince them that the current effort will have a different outcome. Third, negative economic developments may raise new concerns about the sustainability of a stabilization regime. For example, with high unemployment, the political pressure to devalue the currency, to increase government spending or to decrease taxes could be substantial.

All of those contribute to what Calvo (1986) refers to as expectations of "temporary stabilization," expectations that usually are correct in countries with chronic financial problems. In fact, an analytical framework incorporating such expectations is quite successful in accounting for much of the stylized facts of stabilization programs.²

As convincing as the credibility argument is, credibility is difficult to observe empirically when markets are not well developed and the usual measure of credibility -- the spread between domestic and international interest rates -- may reflect factors other

¹ For a summary of the stylized facts of inflation stabilization see Calvo and Vegh (1994) and Bruno (1993).

² This framework has been further developed by Calvo and Drazen (1998), Mendoza and Uribe (1999) among others.

than expectations of devaluation. For example, using data from Argentina, Mexico and Israel in the 1980's Kaminsky and Leiderman (1998) show that liquidity tightening which is typical at the time of stabilization may be an additional factor for high interest rates in those countries. Brock and Rojas Suarez (2000) and Catao (1998) present evidence that intermediation spreads in Latin America in the 1990's can be largely explained by institutional characteristics of their banking system such as high operation costs, high credit risk, backlogs of non-performing loans, and market segmentation between domestic and foreign currency borrowers. These problems are not uncommon in other developing countries. Similarly, inflation and short-term interest rates do decline in some countries, which may be interpreted as full credibility although longer-term, less visible, concerns may still persist.

Because of those factors, there is very little we know about the formation of expectations during stabilization regimes. Most research has focused either on the initial adjustment of expectations during disinflation or on expectations before a crisis. At those episodes, expectations are reasonably well revealed by dramatic movements in economic variables such as interest rates, capital flows, and exchange rates. What about the tranquil period after disinflation and well before a crisis? If longer-term credibility remains low, it may translate into low investment and slow growth and thus contribute to the ultimate demise of the stabilization program. Credibility in a period of apparent financial stability is the subject of this paper. The analysis is aided by unique survey data from Bulgaria.

A currency board introduced in Bulgaria in 1997 delivered rapid disinflation followed by stable prices. Along with the currency board, the government embarked on a wide-scale economic restructuring, shifting much of the GDP into the private sector. The environment of the first years with a currency board was one of low inflation, large restructuring, rising unemployment, and low but rising investment. Three national surveys were conducted in 2000, 2001, and 2002, asking a representative sample of Bulgarians about the likelihood of devaluation.

Despite several years of financial stability, about a quarter of all agents persistently believed that the currency board would collapse and devaluation would occur in the next year. Only about a fifth of all agents believed that this is a probability zero event. Credibility is strongly influenced by perceived economic performance. Agents

who believed that the currency board contributed to the high level of unemployment had heightened expectations of devaluation.

Political factors also played an important role. The 2001 national elections were associated with increased short-term concerns about the currency board although not as much as standard political economy models would predict. In terms of external influences, the Argentine currency board crisis did not create a substantial increase in expected devaluation in Bulgaria, although it did generate greater uncertainty, as indicated by larger percentages of respondents giving no answer.

The surveys from Bulgaria support the results of Schmukler and Serven (2001) using (short-term, up to one year) interest rate data from Argentina and Hong Kong, two countries with currency boards (Argentina until 2002). The differential between similar assets denominated in local and foreign currency had been consistently positive since the inception of those currency boards, particularly in Argentina.

This is a case study of Bulgaria and extra caution must be taken to place the results into context. We provide such background in the next section. We then proceed to present the data and discuss the various influences on credibility in sections 3 and 4. In section 5 we consider possible linkages between incomplete credibility and economic performance. We conclude with final remarks in section 6.

2. The Bulgarian currency board

Bulgaria introduced a currency board on July 1st 1997 after a severe financial crisis late in 1996 and in the first half of 1997 when price increases touched hyperinflation levels, the currency devalued sharply, and several banks failed. The crisis led to a large-scale civil unrest and early parliamentary elections.³ Introducing the currency board, and fixing the domestic currency unit (lev) to the German mark, was one of the first policies of the new government.

The financial crisis that led to the introduction of the currency board was the third high inflation episode since transition began. The price liberalization in 1991 and the correction of an overvalued exchange rate in 1994 led to sharp increases in prices and

³ For a discussion of the crises that lead to the introduction of the currency board in Bulgaria, see Balyozov (1999), Dobrinsky (2000), and Gulde (1999).

rapid devaluations. The periods between crises were characterized by relative financial stability. In other words, agents' experience over the last ten years was one of repeated failures to keep prices and the exchange rate stable. The more distant history, which encompasses almost five decades of controlled economy, however, is characterized by stable prices.

A currency board is a fixed exchange rate regime that operates like a gold standard. The authorities forego discretionary control over the money supply and replace it with an automatic mechanism that links money supply changes to the balance of payments. The amount of foreign exchange reserves that the currency board stands ready to exchange for domestic money is sufficient to cover the monetary base. The currency board has no responsibilities to react to unemployment, to finance the budget or to provide liquidity to commercial banks.⁴ The currency board contributes to the credibility of the fixed exchange rate by removing the possibility for monetizing budget deficits and thus forcing the government to take necessary fiscal adjustments. The associated cost is the loss of discretionary monetary policy.

As Table 1 shows, with the introduction of the currency board inflation declined very rapidly into single digits. Aside from occasional spikes and short periods of deflation, inflation has remained relatively low and stable since 1997.⁵

The currency board, like any other monetary regime, can be removed if the perceived benefits of such a move outweigh the potential political and economic costs. Those benefits are usually associated with 1) the reactivation of monetary and exchange rate policy, i.e. the government may choose to remove the currency board in order to stimulate economic activity; and 2) reducing the real value of government debt by money creation.

⁴ Schwartz (1993), Williamson (1995), Kopcke (1999), Ghosh, Gulde, and Wolf (1998), and Schmukler and Servén (2001) discuss the operation and history of currency boards.

⁵ For a study of the currency board and macroeconomic developments in Bulgaria since 1997, see Gulde (1999), Nenovsky and Hristov (2000), and Miller (1999).

2.1 *Origins of high inflation and sustainable long-run adjustments*

As many other economies in the former Eastern bloc, Bulgaria was plagued by large spending needs and a significant drop in revenues after the start of transition in 1989. Loss-making state-owned enterprises operated on soft budget constraints, which led to a continued drain on tax money while the tax base was shrinking and tax evasion widespread. Stop-and-go privatization policies with frequently changing governments prolonged this state of affairs by failing to force enterprise restructuring or liquidation.⁶

Not surprisingly a policy of tight money and financial stability was not maintained. As Table 1 shows, until the introduction of the currency board, the government ran large budget deficits, which were generally monetized. In the year when the crisis erupted, the budget deficit escalated to 10.4 percent of GDP. The hyperinflation episode early in 1997 was fueled by a credit from the Bulgarian central bank to the government in December 1996, which equaled 6 percent of GDP (Dobrinsky, 2000). Sustained financial stability after 1997 required that those subsidies be reduced dramatically. The government that introduced the currency board embarked on such reforms.

With accelerated privatization between 1997 and 2001, the percentage of Bulgaria's GDP produced in the private sector rose from 45 percent in 1996 to 70 percent in 2001, which is well in line with the private sector shares in advanced transition countries (EBRD, 2001). Direct and implicit subsidies to enterprises were drastically cut (Braxi, Shatalov, and Zlaoui, 2001). Almost all banks, which until 1997 were used to direct subsidized credit to public enterprises, were privatized. Additional revenues came from improving tax collection and accelerated privatization, which generated privatization receipts (Table 1). Most of the fiscal adjustment however was achieved as a result of the hyperinflation episode, which had wiped out much of the domestic debt of

⁶ To some extent, those policy decisions can be considered endogenous to Bulgaria's initial conditions in the transition process. Unlike other transition countries, Bulgaria had not implemented almost any market reforms until the very end of communism in 1989. A large part of its trade was with the former Soviet Union and much of the industry operated on old technologies dependent on cheap Soviet energy. Thus, reorientation of the economy required massive enterprise restructuring and liquidations, and therefore substantial layoffs. Naturally, the opposition to such policies was strong and reforms were delayed. Analyzing the 1996-97 crisis, Dobrinsky (2000, p. 600) writes: "owing to the endogeneity of political-economic interactions, it is not possible *ex post* to either assert or to deny that the crisis was unavoidable or that it was mostly policy provoked, or that there were feasible, crisis-free transition paths."

the government. In 1996, interest payments on domestic debt had reached 17 percent of GDP. Two years later, in 1998, they were 1.2 percent. With those measures, the short-term budget situation was stable.

Bulgaria inherited from communism the largest foreign debt burden of any Central and Eastern European economy, which in 2000 stood at 86 percent of GDP (Svejnar, 2002). According to Brixi, Shatalov, and Zlaoui (2001, p. 13) foreign debt service is projected at about 10 percent of GDP on an annual basis or at 21-22% of exports, which is “uncomfortably close to the empirical crisis threshold of 25 percent”. Much of the debt is denominated in dollars at a floating interest rate and thus presents interest and exchange rate risks. The large debt burden leaves little room for discretionary spending.

In addition to continued large foreign debt service the long-term presents other fiscal problems. Programs such as social security and medical care are under strain, as the number of employed contributors to these state funds is roughly equal to the number of beneficiaries. Education and infrastructure programs are under-funded while projected outlays for compliance with EU environmental standards will be substantial. By 2001 most of the large-scale privatization was completed, which implied declining privatization receipts in the near future. According to the Bulgarian Privatization Agency, 79.8 percent of assets destined for privatizations will be sold off by the end of 2002.⁷ Thus longer-term fiscal concerns persisted, as the government’s ability to react to potential negative shocks, to increase public investment or to experiment with tax reform did not appear to improve. The obvious solution to those problems is economic growth.⁸

Although growth was faster after the currency board was introduced, by 2001 it was not sufficient to reverse the output decline in 1996-97. In 2001 GDP was still at 70 percent of 1989 GDP, the last year before transition (Svejnar 2002). A 2001 IMF report concluded that: “Despite the remarkable turnaround since 1997, conditions for self-sustained growth appear not fully to be in place. Aggregate demand growth in recent

⁷ Data on privatization for Bulgaria is available at www.priv.government.bg.

⁸ EBRD (1995) estimates that in 1995, the effective enterprise tax rates in Bulgaria averaged an astounding 83 percent close only to Ukraine’s in Central and Eastern Europe. Given that government size has remained roughly similar, the tax burdens has probably not declined significantly.

years has been driven primarily by the rebound from the 1996-97 crisis”.⁹ By 2001 unemployment had increased to 17.3 percent (Table 1) while real incomes had stagnated.

2.2 *The currency board policies and economic performance.*

As our surveys asked agents whether the currency board contributed to unemployment, it is important to discuss briefly the effect of the stabilization policies on economic performance. Austerity policies are never popular. Yet, the preponderance of evidence from transition economies (e.g. Wyplosz, 2000, Svejnar, 2002, and de Melo et al., 1997), strongly suggests that although not a sufficient condition, financial stability is a necessary condition for growth. Few policymakers or academics advocate policies that are certain to lead to high inflation. Therefore, the question is not whether low inflation is desirable but whether the policies used to achieve it are not an overkill and counterproductive. Many highly visible researchers (e.g. Stiglitz, 1998) have criticized the drastic fiscal adjustments associated with IMF stabilization policies.

The reasons advanced to explain sluggish growth and even output declines in transition economies are a mixture of initial conditions and policy choices. Privatization and market disorganization (Blanchard and Kremer, 1997), sectoral shifts in the presence of labor market imperfections (Atkeson and Kahoe, 1996), or the dissolution of old trading arrangements may all lead to output decline. Transition economies, including Bulgaria, also suffer from a number of political and institutional problems, which make the creation and expansion of enterprises difficult. In Bulgaria, exports were depressed by the crisis in Russia in 1998 and the war in neighboring Yugoslavia, which disrupted trade routes to Western European markets.

Is the elimination of discretionary policy under the Bulgarian currency board an overkill? In our opinion, the answer is no. From the earlier discussion it is clear that the scope for discretionary fiscal policy is severely limited by the present fiscal situation rather than by a preoccupation with fiscal discipline under the currency board.¹⁰

⁹ International Monetary Fund (2001), page 5.

¹⁰ Brixi, Shatalov, and Zlaoui (2001, p. 11) show that “government expenditures are dominated by social protection programs, debt service, and wages” and that leaves only “7 percent of GDP in total for defense and capital expenditure.” They conclude that the “government faces a constraint on both the revenue and the expenditure side.”

Expansionary fiscal policy would likely lead to unsustainable growth in government debt. With a history of high inflation a monetary expansion would probably lead to a sharp decline in money demand and devaluation rather than an increase in credit activity. Devaluation for competitive purposes would likely have a similar effect on money demand. In other words, in practical terms the scope for expansionary fiscal policy is very limited and there is little that the government would be able to do if the monetary regime allowed more discretion. As the next sections reveal, however, a non-trivial part of the population does not share our views on this issue.

Finally, in addition to persistent fiscal risks and sluggish growth, the deteriorating external balances of the country presented additional sources of concern. Export growth was slow and current account deficits grew to 6.7 and 6.3 percent of GDP in 2000 and 2001. Most of that was financed by foreign direct investment inflows.¹¹ Those inflows however are tightly linked to privatization, which, as we pointed out earlier, was close to completion.

Officially, a change in the monetary regime is considered a possibility only after joining the European Union and the euro zone, which is not expected to occur any time soon. A proposal sometimes floated in the public domain is to adopt the euro unilaterally even before joining the euro zone. That option however is being dismissed as unnecessary by the government partly because of their perception that the currency board has created full credibility in the domestic currency. The survey results reported next reveal the extent to which that perception is correct.

3. Survey data.

We use data from three surveys of households, which were conducted by a national polling organization in Bulgaria in August 2000, October 2001, and June 2002. The sample of 1000 respondents and its demographic structure are representative of the population. The surveys were conducted by personal interviews. Agents answered several questions.

¹¹ Dobrinsky (2001) argues that the deterioration of the current account balance is partially explained by wage rigidities and loss of competitiveness under the fixed exchange rate.

First, the surveys asked respondents what was the likelihood that the currency board would collapse and that there will be a sharp devaluation of the local currency in the next (6 months/12 months/5 years)? They could choose an answer ranging from “very big” to “none” (zero probability of devaluation) or choose to provide no answer.

Second, the surveys asked whether respondents strongly agreed, agreed, disagreed, or strongly disagreed with the statement that the currency board contributed to high unemployment.

Third, the 2000 survey asked about the extent to which an agent follows economic news and developments. They could answer that they do not follow such information or that they do because of a general interest or because their job requires it.

Fourth, agents provided information about their gender, education level, age, and voting behavior. The surveys also asked about income but many agents chose not to report that.¹²

The timing of the surveys is of significant importance. The 2000 survey was conducted several months before national elections and the 2001 survey several months after the elections. Comparison of expectations from those two surveys highlights the effect of uncertainty associated with the elections. The 2002 survey was done a few months after the collapse of the Argentine currency board. Expectations at that time, in combination with expectations from the 2001 survey before the collapse, can be used to observe the effects of that event on the credibility of the currency board in Bulgaria.

We proceed as follows. In the next section, we present responses about the likelihood of devaluation from the three surveys, and we assess the effect of elections and the Argentine crisis. Then, we use the 2000 survey to examine cross-sectional differences in expectations using the additional questions described above.

4. Expected Devaluation

Table 2 shows respondents’ expectations of devaluation from the three surveys. It is immediately clear that the currency board is not fully credible. In 2000, a substantial

¹² The 2000 also included several questions about agents’ attitudes toward economic policies in general. They were asked about their preferences over the distribution of state and private sector involvement in the

part of the respondents, 31.3 percent believed that the currency board is likely or very likely to collapse in the next six months. This percentage is higher, 36.4 percent for 12 months and 39.0 percent for 5 years. There was a related drop in certainty about the sustainability of the currency board. The percent of those who were certain that the currency board would be maintained was 20.6 for 6 months, 15.3 for 12 months, and 12.9 for 5 years.

4.1 Political uncertainty preceding the 2001 national elections.

Much has been written about political dynamics and the sustainability of reform programs in transition economies (e.g. Hellman, 1998, Aslund, 2002, Roland, 2002). The traditional view holds that reform policies (in the case of Bulgaria: hardening budget constraints under the currency board, reduced government spending, enterprise privatization and liquidation, all of which lead to higher short term unemployment) are challenged at the ballot box by concentrated groups of losers from the reform process (e.g., the unemployed). If the backlash is sufficiently strong, the policy may be reversed.

On the surface, the sweeping loss in the June 2001 national elections of the government that introduced the currency board looks exactly like a backlash against painful reforms. The new government however continued the policies of the previous government with a strong commitment to the currency board. One source of uncertainty in late 2000 was the lack of clarity about who would challenge the current government even though it had lost public support. The movement that won was organized only a few months before the elections. This political vacuum however could have catapulted someone else to power.¹³ In addition, as Aslund (2002, p. 385) points out, a policy reversal would not have been an isolated event in the transition history of Bulgaria as Bulgaria illustrates the “danger of patently inconsistent policies and erratic policy reversals.”

From Table 2, short-run credibility improved substantially following the elections. The percent of agent who thought that the probability of devaluation was big or

economy. Many sided with a fairly strong role for the state. Summary tables are available upon request.

¹³ These elections attracted much international interest as the winning movement was organized by the son of the last czar of Bulgaria before communism who returned to Bulgaria just a few months before the elections.

very big in the next one year decreased from 36.4 percent in 2000 to 19.1 percent in 2001. Long-term credibility however improved by somewhat less. The percent of agents who thought that the probability of devaluation was big or very big in the next five years declined from 39 percent in 2000 to 29.7 percent in 2001.

4.2 *The Argentine crisis.*

The Argentine currency crisis challenged a view that had prevailed in policy circles after a series of crises in Latin America, South East Asia, and Russia in the 1990's. Since the Argentine and the Hong Kong currency board regimes seemed to hold well despite the pressure, the view maintained that countries should adopt either a floating exchange rate regime or a "hard" peg, i.e. a currency board or official dollarization. As the crisis in Argentina proved however, hard pegs are not immune to devaluations. Thus, the crisis raised doubts in the very concept that currency boards are nearly impossible to remove and may have contributed to greater expectations of devaluation in Bulgaria. At the same time, however, although the final analysis of what happened in Argentina is not yet complete it seems that the crisis merely reminded everyone that long-term financial stabilization is a function of sound policies, namely prudent fiscal policy. In this sense, it did not reveal much new information about stabilization efforts and failure relevant to the Bulgarian context.¹⁴ The crisis received substantial coverage in the media.

Table 2 reports expected devaluation in June 2002, a few months after the collapse of the Argentine currency board. One notable change in expectations compared to expectations in October 2001 before the crisis, is the increase in the proportion of agents who declined to formulate a forecast on the currency board. The percent of those agents increased from around 2-5 percent in 2000 and 2001 to around 15 percent in 2002. That increase comes primarily at the expense of the percent of agents who believe that the probability of devaluation was very small. It appears that the level of uncertainty has increased.

¹⁴ The Argentine crisis has little direct economic impact on Bulgaria's economy, as trade and investment flows are negligible.

4.3 *Cross sectional differences.*

Table 3 shows the distribution of expected devaluation in 2000 for the overall sample and for sub samples defined with the use of the survey questions. Agents who believed the probability of devaluation over the next year was big or very big as well as those who believed that the probability of devaluation was small or very small were combined. Thus, in the overall sample, 36.42 percent believed that likelihood of devaluation is big or very big, 43.78 believed that the likelihood of devaluation is small or very small, 15.32 percent: that it is zero, and 4.48 percent did not give an answer.

Before we continue with observations from the data, it is useful to formulate several hypotheses. The first hypothesis is that those who believe the currency board was responsible for the high unemployment are more likely to expect the currency board to be abandoned with a resulting large devaluation. If the currency board is perceived as causing unemployment and if the government wants to lower unemployment, then the solution is to abandon the currency board. As we discussed earlier, slow growth also contributes to long-term fiscal risks.

The second hypothesis is that political affiliation influences the perceived likelihood of a policy change. The government in 2000 was committed to maintaining the currency board. Those who support the government are more likely to believe this commitment than those in opposition.

The third hypothesis is that the extent to which agents were informed about economic developments in 2000 had an influence on the perceived likelihood of a large devaluation. Respondents who were more informed about policy and economic developments may have greater concerns about the sustainability of the currency board given the high unemployment.

The differences in expectations among various subgroups reported in Table 3 generally support those propositions. The largest difference in expectations seems to exist between agents who have different perception of the effect of the currency board on unemployment. Those who believed that the currency board contributes to unemployment had heightened expectations of devaluation. Notice that those are almost half of the respondents (in fact about a third strongly agreed with that statement), similar to 2001 and 2002. Forty-four percent of them expected devaluation compared to 29.76

percent of those who did not believe that the currency board contributes to unemployment.

As we expected, agents who followed economic news more closely also had heightened expectations of devaluation. Political affiliation also played an important role. Of the agents who supported the government, 23.12 expected devaluation compared to 38.94 percent of agents who opposed the government. Notice, however, that the supporters of the government accounted for only 17 percent of the population (173 respondents), which indicated that by the summer of 2000 the government had lost public support.

Differences also existed along education and age lines. More educated agents were more likely to expect devaluation which is a similar but smaller effect compared to the difference observed between more and less informed agents. Older agents appeared to have greater confidence in the currency board.

We later turn to a multivariate ordered probit estimation to examine the effects of those variables statistically. Before that, however, we should point out that with a longer forecast horizon (five years) we observe the same patterns of differences among groups without a clear indication that the size of the differences is greater or smaller. Also, in 2001 and 2002, the differences between groups were similar. For example, in 2002, of those who believed that the currency board contributed to high unemployment (43 percent of all agents), 27.15 percent expected devaluation. Of those who did not believe that the currency board contributed to unemployment, 14.29 percent expected devaluation. The overall credibility had improved but the difference between those two groups were similar: $27.86 - 14.29 = 12.86$ percentage points in 2002 compared to $44.75 - 29.76 = 14.99$ percentage points in 2000.¹⁵

To undertake a multivariate analysis of the various effects on expectations, we start by creating a variable *Expected Devaluation*.¹⁶ The variable ranges from 1 to 5

¹⁵ Tables with the distribution of expectations in 2001 and 2002 as well as over various horizons are available on request.

¹⁶ The same estimations were performed using the 2001 and 2002 surveys and similar results obtain. The 2000 data are interesting because of the additional question about agent's interests in economic affairs and the upcoming elections, which raised concerns about potential policy reversals. Estimates using the 2001 and 2002 surveys are available on request.

where 1 stands for zero probability of devaluation in the next year and 5 stands for a “very big” probability of devaluation.

Two explanatory variables are *Unemployment_Agree* (*UA*) equal to 1 if an agent agreed or strongly agreed that the currency board leads to high unemployment, zero otherwise, and *Unemployment_Disagree* (*UD*) equal to 1 if an agent disagreed or strongly disagreed that the currency board leads to high unemployment, zero otherwise. We expect *UA* to be positively related and *UD* to be negatively related to the perceived likelihood of a large devaluation. We created two variables in order to test for symmetry of the beliefs of those who agree and those who disagree with the statement. The third option is that an agent provided no answer.

Political affiliation is measured by a variable called *Vote* (*V*), which equals 1 if an agent votes for the party in office, the party that introduced the currency board, and zero otherwise. We expect this variable to be negatively related to the perceived likelihood of a large devaluation.

We created a variable *Informed* (*I*) equal to 1 if an agent reports following economic news closely, and zero otherwise. We expect that the variable (*I*) will be positively related to the likelihood of an expected large devaluation.

To examine these hypotheses, we estimated an ordered probit model with *Expected Devaluation* as the dependent variable. The ordered probit procedure involves assigning a value v to each observation, in our case:

$$v = b_1 UA + b_2 UD + b_3 V + b_4 I \quad (1)$$

Let u be a standard normal variable (with zero mean and variance of one). Define the probabilities:

$$\Pr[\text{Expected Devaluation} = 1 \mid I, V, U] = \Pr(v + u < k_1) = \Pr(u < k_1 - v) \quad (2)$$

$$\begin{aligned} \Pr[\text{Expected Devaluation} = i \mid I, V, U] &= \Pr(k_{i-1} < v + u < k_i) \\ &= \Pr(k_{i-1} - v < u < k_i - v), \text{ for } i = 2,3,4 \end{aligned} \quad (3)$$

$$\Pr[\text{Expected Devaluation} = 5 \mid I, V, U] = \Pr(k_4 < v + u) = \Pr(k_4 - v < u) \quad (4)$$

The ordered probit produces maximum likelihood estimates of the b coefficients and the four additional “cut-point” parameters k_1 through k_4 . The estimated b coefficients indicate whether a certain characteristic of a respondent influences her/his perceived risk of devaluation upward or downward. These coefficients along with the cut-points k can

be used to calculate the probability that an agent with particular characteristics would be in any one of the groups assigned by the values of *Expected Devaluation*.

The results from estimating the ordered probit model are reported in Table 4. The results support what we observed in Table 3:

- (1) Those who associate the currency board with high unemployment are more likely to expect it to collapse. However, those who state that the currency board is not a cause for unemployment are not less likely to expect devaluation, after taking other effects into account.
- (2) Those who politically opposed the government are more likely to expect the currency board to collapse in the next six months.
- (3) The more informed observers also have a greater expectation of devaluation.

We reran the regression adding demographic variables for education, gender and age. This had little effect on the coefficients b_1 to b_4 . Older respondents tend to view the future of the currency board with more confidence. Perhaps older agents remember much better the period of socialism when the exchange rate had not changed for years while the younger generation has experienced mostly periods of stability taking turns with crises. It may therefore be more difficult for younger respondents to believe that sustained financial stability is possible.

5. Credibility and economic activity

Has incomplete credibility affected economic performance? Theoretically, uncertainty about future inflation should raise long-term interest rates and produce a dampening effect on credit activity and investment. In Bulgaria, however, this effect is difficult to observe as financial assets seldom have long maturity which, of course, can also be attributed to excessive inflation uncertainty. Before we blame sluggish credit activity on low credibility however we should make several important observations.

First, there are numerous factors that explain the underdevelopment of the financial market in Bulgaria. Domestic credit to households and enterprises is still around 15 percent of GDP (Berglof and Bolton, 2002). Distinguishing between good and bad risk is difficult in an environment where borrowers have little or no credit history and banks are still poorly equipped to evaluate projects. In addition, inefficient bankruptcy

procedures force lenders to lend with great caution. The market for land and real estate, as well as the secondary markets for various technology items and machinery, is illiquid, which rules out their widespread usefulness as collateral. It is difficult to determine the extent to which credit activity is restrained by those institutional factors or by low credibility. Few of the transition economies have so far been very successful in developing their financial markets despite varying degrees of success in economic transition (Berglof and Bolton, 2002).

Second, under the currency board, agents are free to convert local into foreign currency and to use foreign currency in many transactions. As the costs of doing business in foreign currencies are very small, currency substitution is prevalent. In 2000, fifty nine percent of deposits in the banking system and 84.7 percent of domestic credit to the private sector were in foreign currencies. Those numbers have not changed much throughout the currency board life and are very similar to earlier years. In fact they are very similar to the Argentine statistics. In June 2000, 63.3 percent of bank deposits in Argentina were in foreign currency similar to previous years.¹⁷ In this environment, it is possible that incomplete credibility leads to de facto dollarization (euroization) and the use of foreign currencies in longer-term transactions rather than to transactions not being executed. With this, the output effect of incomplete credibility may not be as large as it would be if currency substitution were not allowed. The rising level of investment (Table 1) can be suggestive of that, although it may also be a transitory phenomenon related to accelerated privatization and foreign direct investment.

The results from the surveys suggest that although incomplete, the perceived likelihood of devaluation have been fairly stable. This is consistent with with recent research on money demand under the currency board (Savova, 2002) and with the stable proportion of foreign to local money in savings portfolios. This low sensitivity of expectations is important because, under the currency board, shifts in money demand can translate directly into interest-rate volatility. The relative stability also suggests that it is long-term issues such as growth and employment that have lasting influences on credibility.

6. Final remarks

We use unique survey data from Bulgaria to examine whether expectations of devaluation persisted after that country achieved low inflation under a currency board system and to examine the various influences on those expectations. The question is of interest since many theoretical models that explain the failure of stabilization programs assume lack of full credibility, yet the empirical evidence is very limited.

There are a number of results reported in the paper but in broad terms, we can conclude that 1) credibility, particularly longer-term, remains incomplete despite years of low inflation and signs of economic revitalization; we would not have been able to observe that using economic variables as inflation and short term interest rates in Bulgaria declined rapidly and have remained low; it appears that, as in Mehlum (2001), credibility and output performance are jointly determined; 2) while political and external events have some role, credibility seems tied to more fundamental developments and therefore rapid gains are not likely; the persistent positive interest rate differentials observed in Argentina and Hong-Kong (Schmukler and Serven, 2001) give little hope that incomplete credibility would soon cease to be an issue in Bulgaria; and 3) there is substantial heterogeneity among agents in terms of their expectations although more research is needed to understand if such heterogeneity has important economic effects.

There are a number of questions that this paper raises and that need to be examined further. First, our conjectures of the previous section that currency substitution may mitigate the negative consequences of credibility should be examined more systematically. The evidence here suggests that this is necessary as the low credibility observed in the surveys did indeed lead to persistent currency substitution. Second, future observations on expected devaluation in Bulgaria will reveal whether credibility improved with improvements in economic performance or the other way around. So far the results suggest that credibility is closely linked to economic performance and we suspect that output gains are necessary in order for credibility to improve. Third, future observations on expectations should reveal at what point (presuming steady improvement in credibility over time) would assets with longer maturity denominated in local currency start to be more common in the country. So far, after five years with low inflation, assets

¹⁷ See IMF (2000, p.69) and Bulgarian National Bank, various years.

still have short maturities. Fourth, there is much current interest in the effect of agent heterogeneity and segmented markets on economic activity. A further look at the data and economic developments in Bulgaria may be revealing in that area.

Serious long-term problems continue to fuel devaluation concerns despite the success with disinflation. Apparently, even a currency board regime, which features complete backing of local money, full convertibility, and large political costs of devaluation and is set in a country with fairly positive prospects as a future member of the European Union cannot eliminate concerns. Having achieved disinflation is apparently not sufficient and stabilization is a process rather than an event.

Despite similar credibility problems, Bulgaria has more fortunate circumstances compared to Argentina as Bulgaria is expected to join the euro zone. In this sense, the exit from the currency board is visible and clear and maintaining stable finances meanwhile is a priority. One has to wonder however why adoption of the euro needs to be delayed until then.

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Table 1
Macroeconomic developments. Bulgaria 1992 – 2000

Year	CPI inflation (percentage change in the CPI)	Budget balance as percent of GDP (- deficit)	Percentage change in M2	Gross fixed capital formation as percent of GDP	Real GDP growth (percentage change)	Unemployment rate	Privatization revenue as percent of GDP
1992	79.2	-2.9	53.7		-7.3	15.3	0.0
1993	63.9	-8.7	54.5		-1.5	16.4	0.0
1994	121.9	-3.9	76.8	9.3	1.8	12.8	0.2
1995	32.9	-5.7	39.3	14.6	2.1	11.1	0.5
1996	310.8	-10.4	117.8	8.9	-10.1	12.5	0.8
1997	578.6	-2.1	345.0	12.2	-7.0	13.7	3.2
1998	1.0	0.9	11.5	11.6	3.5	12.2	1.7
1999	6.2	-0.9	11.8	15.9	2.4	16.0	2.3
2000	11.4	-1.1	28.8	16.3	5.8	17.9	1.3
2001	10.4	-1.5	26.1	19.9	4.6	17.3	1.2

Sources: European Bank for Reconstruction and Development, *Transition Report*, various years; Bulgarian National Bank, *Annual Report*, various years.

Table 2

What is the likelihood that the currency board will collapse in the next 6 months, 12 months, or 5 years with a sharp devaluation of the local currency?
National surveys, Bulgaria, August 2000, October 2001, and June 2002.
Percent of respondents by type of response.

	6 months			12 months			5 years		
	08/00	10/01	06/02	08/00	10/01	06/02	08/00	10/01	06/02
Very big	12.3	5.5	4.6	12.4	4.7	6.7	13.3	7.4	9.9
Big	19.0	9.7	10.9	24.0	14.4	11.9	25.7	22.3	16.3
Small	29.7	28.3	28.5	28.7	31.6	29.9	30.4	29.3	27.6
Very small	13.5	23.2	14.2	15.2	24.6	15.5	12.0	20.4	11.6
None	20.6	30.7	26.7	15.3	21.7	20.5	12.9	16.8	17.7
No answer	4.8	2.6	15.1	4.5	3.0	15.5	5.7	3.8	16.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3
Perceived risk of devaluation and respondent characteristics
Bulgaria, August 2000

	What is the probability of devaluation over the next one year?			
	Big or very big	Small or very small	Zero	No answer
All respondents (1004)	36.42	43.78	15.32	4.48
With higher education (241)	41.08	44.81	13.28	0.83
With less than higher education (763)	34.95	43.46	15.97	5.63
Female (512)	36.56	43.71	14.31	5.42
Male (487)	36.34	43.75	16.43	3.49
Agents 45 years of age or older (450)	33.56	40.67	19.11	6.67
Agents younger than 45 years (553)	38.88	46.29	12.12	2.71
Political supporters of current government (173)	23.12	53.76	19.65	3.47
Political opponents of current government (827)	38.94	41.84	14.51	4.72
Agents who report following economic news closely (272)	42.28	45.59	11.76	0.37
Agents who do not follow economic news closely (728)	34.48	43.47	16.76	5.36
Currency board contributes to unemployment (476)	44.75	40.97	12.61	1.68
Currency board does not contribute to unemployment (289)	29.76	52.25	17.30	0.69
Uncertain (240) ^a	27.92	39.17	18.33	14.58

Notes: The number of respondents in each category is in parentheses. In some categorizations, the sum may not add to 1004, the total number of respondents because of no answers.

^aBeliefs about the effect of the currency board on unemployment are obtained from a survey question which asked respondents whether they strongly agreed, agreed, disagreed, or strongly disagreed with the statement that the currency board contributed to high unemployment. The strongly agree and agree answers and the strongly disagree and disagree answers are combined.

Table 4
Perceived risk of devaluation
Bulgaria, August 2000

	Dependent variable: Perceived risk of devaluation over the next year	Dependent variable: Perceived risk of devaluation over the next year
Unemployment_Agree (b ₁)	0.26*** (0.08)	0.26*** (0.08)
Unemployment_Disagree (b ₂)	0.001 (0.09)	-0.01 (0.10)
Vote (b ₃)	-0.28*** (0.10)	-0.29*** (0.10)
Informed (b ₄)	0.16** (0.08)	0.17** (0.08)
Education (1 if higher education)		-0.04 (0.90)
Female (1 if female)		-0.03 (0.07)
Age (1 if over 45)		-0.18** (0.07)
k ₁	1.27	1.24
k ₂	0.58	0.54
k ₃	-0.24	-0.28
k ₄	-0.67	-0.71
Chi2 (7), Chi2 (4)	38.29	30.70
Number of observations	952	951

Notes: Ordered probit. Standard errors in parentheses. ***(**,*) significant at the 1(5, 10) percent level. Perceived risk of devaluation is ordered from zero to very high.

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