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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 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, in periods of high unemployment, the political

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

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. It 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, empirically credibility is difficult to observe when markets are not well developed and the usual measure of credibility – the spread between domestic and international interest rates, may reflect factors other 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) presents 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.

In this context, survey data like the ones presented in this paper can be very informative. A currency board introduced in Bulgaria in 1997 had delivered rapid disinflation followed by stable prices. Three years later, in 2000, a representative sample of Bulgarians were asked about the likelihood of devaluation. Despite the three years of

[2] This framework has been further developed by Calvo and Drazen (1998), Mendoza and Uribe (1999)

financial stability, 31 percent of the population believed that the currency board would collapse and devaluation would occur in the next six months. Close to 40 percent believed that to be a possibility in the next five years. Only 13 percent believed that to be impossible.

Certain factors contributed to that belief. First, with the introduction of structural reforms, unemployment increased substantially. The political pressure on the government to lower taxes and/or increase spending raised doubts about the sustainability of the currency board. These doubts were reflected in heightened expectations of devaluation for those agents who were more informed about economic developments and for those who claimed that the currency board contributed to high unemployment.

Second, despite the elimination of monetary policy under the currency board, differences in beliefs about the policy-maker persisted in generating differences in expectations among agents. Those who politically supported the government were less likely to expect devaluation.

Apparently, three years of financial stability were not sufficient to engender full credibility in a country that had gone through high inflation episodes in the past and is undergoing structural reforms. 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 empirical results. We conclude with final remarks.

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among others.

2. Background

Toward the end of 1996 and in the first months of 1997 Bulgaria experienced a severe financial crisis. Several banks collapsed, inflation neared hyperinflation levels and the economy was almost completely dollarized. The exchange rate depreciated dramatically. Real savings were depleted for many and real income entered a downward spiral. The economic problems escalated into a political crisis and early parliamentary elections were held in the spring of 1997. The currency board introduced with the strong support of the International Monetary Fund on July 1st 1997 was one of the first policies of the newly elected government.

Orthodox currency boards are fixed exchange rate regimes that are designed to generate substantial credibility in a low inflation policy.[3] Discretionary monetary policy is replaced by an automatic mechanism that links money creation to the balance of payments. Full convertibility is ensured by large foreign exchange reserves. The currency board has no responsibilities to react to unemployment, to finance government spending or to provide liquidity to banks.

The financial crisis that led to the introduction of the currency board was the third one since transition from socialism began in 1989. The price liberalization in 1991 and the correction of an overvalued exchange rate in 1994 lead to sharp increases in prices and rapid devaluation. 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 was characterized by stable prices.

As Table 1 shows, with the introduction of the currency board inflation declined very rapidly into single digits. Prices on average have remained stable since then.[4]

Aside from low inflation, the picture of the health of the economy was mixed. Growth, measured by the percentage change in real per capita GDP accelerated from 1.9 percent on an annual basis in the first six months with the currency board to a respectable 5.2 percent in the first half of 2000 (Table 1). This growth was not sufficient, however, to eliminate the decline in output produced by the contraction in 1996 and the first half of 1997.

With structural reforms, unemployment started to increase. From 14 percent in the end of 1997, when the currency board was introduced, it reached 19 percent in the summer of 2000. The salaries of the employed stagnated at levels that placed a large part of the population in poverty. Therefore, despite the increasing growth rates, the general perception was one of severe economic hardship. Adding to that impression is the skepticism with which many Bulgarians generally regard the accuracy of the officially reported statistics on inflation and economic growth.

Under the pressure to address the unemployment problem, in late spring of 2000, the government started discussing a program for 10 percent *nominal* growth. The idea was to allow some inflation so that along with faster real growth wages and prices would

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[3] Schwartz (1993), Williamson (1995), Kopcke (1999), and Ghosh, Gulde, and Wolf (1998) provide a discussion on the operation of currency boards and countries' experiences with those regimes.
[4] For a study of the currency board and macroeconomic developments in Bulgaria see Gulde (1999), Nenovsky and Hristov (2000), and Miller (1999).

gradually catch up with Western European levels. The tools were infrastructure spending programs.[5]

Despite the pressure, at the time of the survey, and throughout the life of the currency board, the repeated commitment of the government has been to keep the currency board. A change in the monetary regime was considered a possibility only after joining the European Union and the euro zone, which however was not expected to occur any time soon.

A proposal that sometimes floated in the public domain was to unilaterally adopt the euro even before joining the euro zone. That option however was being dismissed as unnecessary by the government partly because of their perception that the currency board had created full credibility in the domestic currency. The survey used in this paper reveals whether that perception was correct.

3. Expectations of devaluation.

A survey of households was conducted by a national polling organization in the last week of August 2000. The sample of 1000 respondents was designed to be representative of the population. Agents answered several questions about the currency board. The survey was conducted by personal interviews.

The survey asked respondents what was the likelihood that the currency board would collapse and that there would be a sharp devaluation of the local currency in the

[5] The currency board in Bulgaria is not orthodox in design. The central bank is preserved as an institution (the Bulgarian National Bank) and the balance sheet of the currency board (the Issue Department) is part of the balance sheet of that institution. The Bulgarian National Bank maintains a lender of last resort facility and houses a substantial deposit of the central government. Increases (decreases) in government spending thus translate into a monetary expansion (contraction). There is no evidence however that by the time of

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.

Table 2 shows respondents' expectations of devaluation. Ninety five percent of the agents gave an answer. A substantial 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 was 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. What factors contributed to these beliefs? We address that question in the next section.

4. Factors contributing to expectations of devaluation.

We are interested in the characteristics that influence the likelihood that a respondent would believe in the imminent demise of the currency board. We start by creating a variable *Expected Devaluation* based on the question discussed above. The variable ranges from 1 to 5 where 1 stands for zero probability of devaluation in the next six months and 5 stands for a "very big" probability of devaluation.[6] Given the additional questions in the survey and our discussion of economic developments in Bulgaria, we propose the following hypotheses about the factors influencing agents' beliefs.

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

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the survey, the government had deliberately engaged in inflation management using those tools. See Nenovsky and Hristov (2000).

[6] Similar results were obtained with expectations of devaluation in one or five years.

with a resulting large devaluation. The idea is that 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.

Data were obtained from a question that asked respondents whether they think that the currency board leads to high unemployment. Agents could answer with "strongly agree", "agree", "disagree", "strongly disagree" or provide no answer. We created two dummy variables: *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 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.[7]

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

[7] Seventy six percent of the respondents gave an answer. Of those who answered, a large proportion, 62 percent either agreed or strongly agreed that the currency board leads to unemployment. In fact 33 percent strongly agreed with that statement.

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

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

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

$$\Pr[\textit{Expected Devaluation} = 1 \mid I, V, UA, UD] = \Pr(v + u < k_1) = \Pr(u < k_1 - v) \qquad (2)$$

$$\Pr[\textit{Expected Devaluation} = i \mid I, V, UA, UD] = \Pr(k_{i-1} < v + u < k_i) =$$

$$= \Pr(k_{i-1} - v < u < k_i - v), \text{ for } i = 2,3,4 \qquad (3)$$

$$\Pr[\textit{Expected Devaluation} = 5 \mid I, V, UA, UD] = \Pr(k_4 < v + u) = \Pr(k_4 - v < u) \qquad (4)$$

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*.

5. Empirical results.

The results from estimating the ordered probit model are reported in Table 3. With one exception, the hypotheses are supported:

(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.

(2) Those who politically oppose the government are more likely to expect the currency board to collapse in the next six months.

(3) The more informed observers also had 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. A puzzling additional result is that 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.

6. Final remarks

We use unique survey data from Bulgaria to examine whether expectations of devaluation persisted three years after that country achieved financial stability under a currency board system. 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.

Currency boards are the most difficult fixed-exchange-rate regimes to reverse and are designed to engender a high level of credibility. The data show however that expectations of devaluation were not eliminated. One third of agents expected a collapse of the currency board in the next six months while only 20 percent thought that was completely unlikely. And this was at a time when no domestic or international economic crisis was unfolding aside from the high unemployment and some corruption scandals.

The high unemployment did appear to create doubts in the currency board as it placed political pressure on the government to implement an easier policy, not necessarily consistent with the rules of the currency board. Possibly, an additional factor is that agents experienced much uncertainty in their individual economic affairs and that created a general feeling of uncertainty that spread to the currency board as well.

Is it possible to detect those expectations using readily available economic data? By the time of the survey, lending interest rates in Bulgaria had remained at around 13.5 percent since the currency board was implemented, bank credit to private nonfinancial institutions as percent of GDP was low at around 10 percent, and about half of the savings deposits in banks were in foreign currency.[8] All of those are suggestive of doubts in the currency but they could possibly be explained by a host of other factors.

It appears clear that full credibility is difficult to ensure even under a rigid system like a currency board. That may contribute to the reluctance of investors to make long-term financial commitments and may therefore lead to slower economic growth. If the

[8] Bulgarian National Bank, various years.

country is clearly committed to European Union integration, then early adoption of the euro may not be such a bad idea in order to remove those concerns.

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Table 1
Macroeconomic developments. Bulgaria 1995 – 2000

	1995	1996	1997	1998	1999	2000 (first half)
Annual percentage change in real per capita GDP	2.6	-10.9	-6.9	3.5	2.4	5.2 (annual basis)
Annual percentage change in the Consumer Price Index	32.9	310.8	578.0	1.0	6.2	10.98 (annual basis)
Unemployment rate (percent)	11.1	12.5	14.0	12.8	15.9	19.0

Source: Bulgarian National Bank, Annual Reports, 1995-2000.

Table 2
What is the likelihood that the currency board will collapse in the next 6 months, 12 months, or 5 years and there will be a sharp devaluation of the local currency?
Percent of respondents by type of response.
Bulgaria, August 2000

	6 months	12 months	5 years
Very big	12.3	12.4	13.3
Big	19.0	24.0	25.7
Small	29.7	28.7	30.4
Very small	13.5	15.2	12.0
None	20.6	15.3	12.9
No answer	4.8	4.5	5.7
Total	100.0	100.0	100.0

Table 3
Perceived risk of devaluation
Bulgaria, August 2000

	Dependent variable: Perceived risk of devaluation	Dependent variable: Perceived risk of devaluation
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 k_2 k_3 k_4	1.27 0.58 -0.24 -0.67	1.24 0.54 -0.28 -0.71
Pseudo R^2 Number of observations	0.010 952	0.013 951

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.