



BULGARIAN NATIONAL BANK

**Banks – Firms Nexus under the
Currency Board: Empirical Evidence
from Bulgaria**

**Nikolay Nenovsky
Evgeni Peev
Todor Yalamov**

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DISCUSSION PAPERS

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Send your comments and opinions to:

Publications Division

Bulgarian National Bank

1, Alexander Battenberg Square

1000 Sofia, Bulgaria

Tel.: 9145/1271, 1351, 1906

Fax: (359 2) 980 2425

e-mail: Dimova.L@bnbank.org

Web site: www.bnb.bg

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SUMMARY. THIS STUDY ANALYZES BANK LENDING IN THE LARGER CONTEXT OF BANK – FIRM RELATIONSHIPS WITHIN THE BULGARIAN SPECIFICITY OF THE CURRENCY BOARD. IT FOCUSES ON THE ‘INTERSECTION’ OF CREDIT SUPPLY AND DEMAND ON THE SIDE OF BANKS AND FIRMS SIMULTANEOUSLY. WE SUGGEST BOTH TRADITIONAL AND NEW HYPOTHESES CORRESPONDING TO THE SPECIFIC CONDITIONS OF THE BULGARIAN OWNERSHIP CHANGE, TRANSITIONAL CORRUPTION AND OTHER INSTITUTIONAL AND POLITICAL FACTORS. THE MODEL IS BASED ON A SURVEY ON BULGARIAN BANKS AND A UNIQUE DATABASE ON FIRMS. THE STUDY FOUND THAT THE DYNAMICS AND STRUCTURE OF CREDIT IS AFFECTED MAINLY BY THE FEATURES OF THE INSTITUTIONAL ENVIRONMENT, WHEREAS THE ‘RESOURCE’ AND TRADITIONAL FACTORS BECAME SECONDARY. DURING THE PERIOD 1998–2001, THERE WAS SEPARATION OF THE BANKING SECTOR ACTIVITY FROM THE ACTIVITY OF THE REAL SECTOR IN BULGARIA. IN THE NEW CONDITIONS OF THE CURRENCY BOARD, THE DUAL SECTOR OF ENTERPRISES AND THE SPECIFIC INSTITUTIONAL ENVIRONMENT CONTINUE THEIR EXISTENCE. DESPITE ITS DISCIPLINING EFFECT, THE CURRENCY BOARD BY ITSELF IS NOT SUFFICIENTLY EFFECTIVE TO OVERCOME THE REMAINING INSTITUTIONAL OBSTACLES, ASSOCIATED MAINLY WITH THE INEFFICIENCY OF THE JUDICIAL SYSTEM, CORRUPTION, STATE CAPTURE, UNCERTAIN PROPERTY RIGHTS, ETC.

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Author to be contacted: Nikolay Nenovsky, Bulgarian National Bank, University of National and World Economy, Sofia and University of Orleans, France, e-mail: nenovsky.n@bnbank.org.

Evgeni Peev: Institute of Economics, Bulgarian Academy of Sciences, e-mail: idea@mail.orbitel.bg

Todor Yalamov: Sofia University, Faculty of Economics and Business Administration, e-mail: todor@online.bg.

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I. Introduction

Five years after the introduction of the currency board (CB) the relationship ‘banks – firms’ is still in the centre of economic discussions. In the period 1990–1996 banks accumulated many bad loans, supporting ‘crony’ firms, which led to the bank crisis in 1996/1997. At the end of 2001 banks were accused of the opposite – their unwillingness to give credits and their tendency to invest abroad. Some time ago, the unprecedented increase in credit was blamed for being a cause of the loss of financial stability (OECD, 1999). At the end of 2001 the low credit activity of banks was conceived as one of the essential obstacles to economic growth (*Feyzioglu and Gelos, 2001*).

Usually the discussion in Bulgaria is focused on the question whether the credit is supply-restricted or demand-restricted. Traditionally, the dynamics of credit is associated with the stability of the currency board. It is assumed that overlending constitutes a danger to every fixed-rate regime since at certain trajectories of demand for money, of the balance of payments, and of domestic credit, it is possible to have reduced foreign currency reserves, and consecutively an attack on the fixed rate.

The banks – firms relationships have other aspects apart from bank lending. However, the credit market model allows incorporating the new vector of variables apart from the ones used traditionally. The credit market model, where there is a logical linking of credit supply with the bank system, and of credit demand with firms, is very operational and gives the opportunity to extend it depending on the specific characteristics of the country studied. We see the novelty of this paper in the construction of a *cross sectional* model based on both bank and firm empirical database, and including a set of variables reflecting not only traditional factors, but also a large range of new ones – institutional and political factors, factors linked to CB regime, corruption, ownership and control, *etc.* This helps us to investigate and to check our theoretical hypothesis about the link between the different factors in the large context of Bulgarian transition. The key objective of this study is to explain the credit shrinkage after the introduction of the CB. The following specific tasks of the article should be highlighted:

- (i) examining the role of traditional factors on bank and firm activity;
- (ii) analyzing the effect of the CB, and generally larger institutional and political factors on the bank – firm relationships;

- (iii) examining the common influence of the corporate governance structures, and the corruption environment on the bank – firm relationships.

This study has applied an original methodology. It comprises:

- (i) a survey of all Bulgarian banks in the first half of 2002 and
- (ii) a survey and database of the largest nonfinancial firms in Bulgaria.

This allows us to ‘intersect’ the factors determining the supply and demand of credit both by the banks and the firms. The paper has the following structure. The second section presents briefly the evolution of the bank – firm relationships in Bulgaria between 1990 and 2001. In the third section, we make a short synopsis of the literature on the models of credit, present the basic theoretical hypotheses, as well as the cross sectional model of the credit supply and demand. The fourth section presents the data and discusses the methodology. The fifth section presents the statistic and econometric results of the data analysis. Finally, in the conclusion, we summarize the theoretical results of the study, and outline the possible perspectives for further research.

II. The Banks – Firms Credit Relationships: Some Background Information

The evolution of the ‘bank – firm’ relationships in Bulgaria in the period 1990–2001 bears both the stamp of the past of a planned economy and some specific features of the transition. Two periods are clearly outlined even at the first glance – before the introduction of the CB (1990–1996) and after it (1997–2001).¹

During the *first period* (1990–1996) the dynamics of the demand and supply of credit matched the general framework of weak financial micro- and macroeconomic discipline. This dynamics were subject to the logic of accumulation of loss in the firms (which were transferred to the banks) or accumulation of loss directly in the banks. However, in both cases, the interference of the government and the central bank was expected, which increased the moral hazard and in different ways alleviated and monetarized the losses. To a great extent this process (which had a certain cyclic recurrence) could be accounted for by:

- (i) the fast growth of the banks (especially giving independence to the

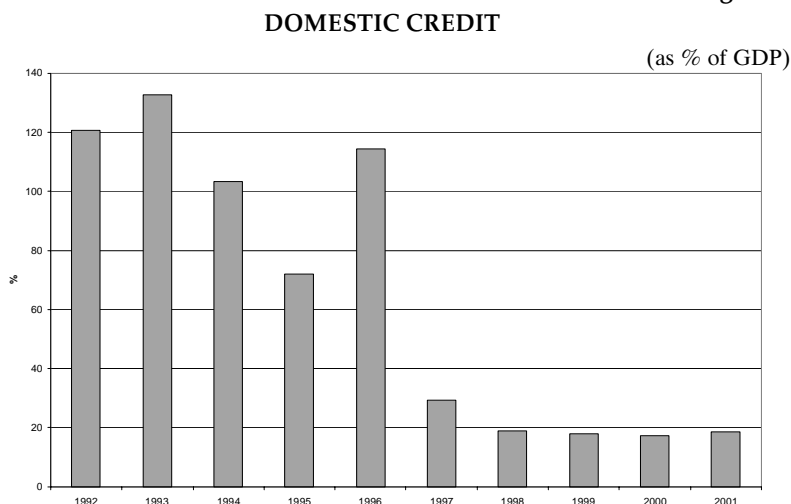
¹ For details about the Bulgarian transition and the crisis of 1996/1997, see *Berlemann and al.* (2002) and *Vitcheva* (2001). For the functioning of the CB, see *Nenovsky and Hristov* (2002). *Caporale and al.* (2002), *Miller and Petranov* (2001) give a thorough analysis of the financial system in Bulgaria.

branches of the former monobank) and the lack of relevant bank regulations and bank supervision. The arrival of foreign banks at the Bulgarian market was purposefully limited;

- (ii) the fast process of corporatization and delay of privatization of the state sector, the establishment of private firms *de novo* with political ‘connections’;
- (iii) lack of a country corporate governance system development (inadequate legal system protecting investors and creditors, a low degree of law enforcement, *etc.*);
- (iv) the different schemes and mechanisms for decapitalization and ‘assets stripping’ of the state-owned firms and banks.

In the period 1990 – 1996 both the size and the structure of the credit entirely reflected the enumerated factors. The domestic credit, correlated to the GDP, reached unprecedented levels for the economies in transition (*Figure 1*). The domination of claims on the public sector (over the credit for the private sector and particularly for households) was another specific feature.

Figure 1



Source: BNB.

The gradual accumulation of losses, of bad credits and their monetization quite naturally led to a crisis in 1996/1997, when part of the bank system went bankrupt, the national money lost its basic functions and a currency board was introduced.

The new monetary regime (CB) introduced in the mid of 1997 could be viewed as a *systematic* hard budget restriction on the top of the financial system. Its basic function, which in no case is automatically provided, is the creation of conditions for the spreading of the restrictions down the whole chain, getting to every agent. Due to the lack of discretion in the CB, its start was accompanied by the building of a new modern system of bank supervision with the requirements for capital adequacy and liquidity going up higher than the internationally accepted norms (total capital adequacy ratio should not be lower than 12% and the primary capital adequacy should not be lower than 6%). The reserve required ratios were fixed at high levels (initially at 11%, later at 8%). The function of the lender of last resort is strictly limited to the presence of a systemic risk. Thus, the very monetary regime, the new bank regulations, and the improvement of the legal liquidity procedures created a *new* institutional and legal framework for the functioning of banks and firms.

The four years long CB (July 1997–2001) led to significant macroeconomic changes and to meaningful change in the size and structure of credit (see *Table 1*). As a whole, the credit shrank. The claims on the public sector were almost indiscernible in the structure of the whole credit. The credit for the private sector at the end of 2001 was still at a low level. At the end of 2001, 75% of the bank capital was in foreign hands. Banks were overcapitalized, far beyond the regulations, bad loans were insignificant, and the banks invested abroad. Under the regime of the CB (in contrast to other monetary regimes) the dynamics of bank assets abroad is anti-cyclical (see *Barajas and Steiner, 2001*). It is possible that this anti-cyclical behavior of the foreign positions of commercial banks should be related to the traditional presence of foreign banks in the countries with a CB.

The credit demand is another factor explaining domestic credit movement. Since 1996 the changes of property-rights structures and corporate governance have been some of the basic features of the enterprise sector transformation. Since 1996 there has been acceleration of the privatization process. The basic forms applied were a Czech-like voucher privatization (named in Bulgaria ‘mass privatization’) and management-employee buy-outs (MEBO). In 2001, about 80% of the state assets subject to privatization was privatized. The private sector (privatized and newly established private firms) accounted for about 70% of the value added in the Bulgarian economy. A significant characteristic of the emerging enterprise sector is its duality – the existence of firms with market orientation and firms established with specific financing by state sources and predominantly rent-seeking behavior (*Peev et al., 1999*). The key bearers of the so-called ‘corruption’ in the enterprise sector are the firms with specific ‘connections’, which capture the state. State cap-

Table 1

**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, author's calculations.

ture is defined as the specific capacity of firms (captor firms) to shape and affect the formation of the basic rules of the game (i.e. laws, regulations, decrees, *etc.*) through private payments to public officials and politicians (Hellman *et al.*, 2000).

In the field of country corporate governance structure since the start of the accession negotiations with the EU in 2000, Bulgaria has significantly reformed and aligned its commercial legislation with the European Community legal framework. Recent surveys reveal that the Bulgarian commercial laws have been improved consistently and may be characterized as reasonably good for supporting investment and other commercial activities (see *EBRD*, 2001). This has led to increased public confidence in the rule of law. The commercial law of Bulgaria is perceived as being at the same level as that of other transitional countries. However, the legal reform introduced is merely a necessary condition for corporate governance development but not a sufficient one and there still exists a gap between law development and law implementation and enforcement.

The development of country external capital market determines financial constraints to firm investment performance regardless of the efficiency of ownership and governance structures (Gugler *and al.*, 2002). In Bulgaria,

after 1997 basic institutions to regulate the market were established and a new law on public offering of securities came into effect. However, for the time being the Bulgarian capital market is fragile in comparison with the securities markets developments in other post-communist countries. The total market capitalization of all the listed companies amounted to about 5% of GDP in 2001. Despite the regulatory framework establishment, striking traits of the Bulgarian securities market are low credibility of the market, low liquidity, lack of efficient governance mechanisms.

The lack of development of the equity market turns bank finance into a basic source of investment for enterprises. The policy of stimulating a high saving rate and financing business expansion could have been a foremost task. However, the real availability of the external finance in the Bulgarian transition in the 1990s was decreasing. The gross savings and gross fixed capital formation as a share of GDP declined in the 1990s and reached 12.8%, respectively 17.8%, in 2001. The domestic credit sharply fell from 119% in 1991, and 115% in 1996 to 18.5 % of GDP in 2001. The availability of the external finance is perceived by Bulgarian firms as a key issue for their development. In the BEEP survey by the World Bank and EBRD in Bulgaria in 1999, over 52 % of the firms considered that insufficient external financing was a major obstacle to their growth (*Hellman et al.*, 2000). In the 2000 Report of the Agency for SMEs in Bulgaria, over 61.8% of the dynamic SMEs considered the lack of financing a key problem to innovation activities and technological development. In another survey, carried out for the Annual Report on the Competitiveness of the Bulgarian Economy in 2001, 85% of the firms declared that the financial markets in Bulgaria were at a low level of development and according to 84% of the respondents, it was difficult, if not impossible, to obtain a loan by presenting a good business plan.

III. Theoretical Base of the Study

1. A Brief Outline of the Traditional Models

Two new important perspectives can be outlined in the studies of credit (as a focus of the bank – firm relationships) in the last twenty years. The first perspective is largely *microeconomic* and is related to asymmetric information, transaction costs and agency problems of external capital markets, and the whole range of microeconomic relationships between banks and firms. It is supposed that there exists a hierarchy of finance and the investment decisions of the firm are not independent of the way of their financing because outside and inside financing are not substitutes for each other (*Fazzari et al.*, 1988).

The second perspective, closely related to the first, is *macroeconomic*, in a connection with the so-called credit channel of monetary policy. Following its logic, it is suggested that in the conditions of asymmetric information on the financial markets, the supply of credit by commercial banks is an important transmission mechanism by which the monetary policy exercises an influence on investment and growth.

There are many studies using the disequilibrium credit models: Barajas and Steiner (2001) and Agenor and al. (2000) for the whole of Latin America, Catao (1997), Braun and Levy-Yeyati (2000) and Canonero (1997) for Argentina, Ghosh and Ghosh (1999) for Asia, Gourinchas and al. (2001) for Latin America and the world, Pazarbasioglu (1997) for Finland. An outline of these models was made by Barajas and Steiner (2001). The studies mentioned above use time series model and rarely panel models.

The European Central Bank also carried out numerous empirical credit analyses both of the whole zone and the separate countries. The work of Loupias and al. (2001), Mojon and Peersman (2001), Worms (2001), Kaufman (2001), De Haan (2001), Hernando and Martinez-Pages (2001), Topi and Vilmunen (2001) analyze different aspects of the credit market in different countries in the Eurozone with the aim to register the asymmetry of the monetary policy of the ECB. The study of Calza and al. (2001) is focused on defining the factors influencing the credit demand and modelling this demand in the frame of the Eurozone as a whole.

The basic limitation in almost all models quoted comes, to a certain degree, from the usage of *traditional 'mechanical' factors* when modelling the credit demand and supply, like bank lending capacity, interest rates, income *etc.* It is doubtless that the above type of modelling cannot reflect the whole range of relations between banks and firms, especially in a transition economy characterized by significant changes in the *institutional environment*.

The studies of credit in transition economies are mostly concerned with the attempts at theoretical explanation and empirical measurement of soft budget constraints (*SBC*).² In the same line are several empirical studies of credit in *Bulgaria*. They present analysis either only of banks or only of firms. In a panel study of *firms* in Bulgaria and Romania for the period 1995–1999, Everaert and Hildebrandt (2001) include bank finance when measuring the *SBC* of firms. In one of the models the authors associate *SBC* with ‘soft bank

² A review of the literature about the soft-budget constraints was made by Maskin and Xu (2001) and Vahabi, M. (2001). See also Li (1992), Dewatripont and Maskin (1995), Berglof and Roland (1998).

credit' which is then approximated with bad loans. They discover that SBC can be described by the index of such variables as: the firm ownership structure (there are six types of ownership), the progress of the bank reform, credit market competition, and the effect of the bank crisis. Dobrinsky and al. (2002) presented a model of the supply of credit by commercial banks and the demand of soft loans by firms for the period 1994–1999, based on the data from balance sheets of firms.³ The financial restrictions of firms and the level of interest rates are included in the model of small and medium-sized enterprises in Bulgaria and Russia described by Pissarides and al. (2000).

There are several studies of credit from the *bank perspective*. Fezyioglu and Gelos (2001) try to answer the question: why after the introduction of the CB the private credit in Bulgaria is so low? They find the answer in some traditional factors and in some new ones such as the bank crisis, the inefficient institutional and legal framework (especially the lack of law adoption), and competition in the financial mediation, *etc.* The authors build (and measure econometrically) the productive function in the bank system, concluding that the Bulgarian bank system has an oligopoly structure.

A study close to our conception was carried out by Koford and Tschoegl (1999). They studied the bank practice and crediting in Bulgaria before the crisis of 1997 on the basis of interviews with bank managers. They detected widely spread transition practices like inside crediting, interest groups influence, vague legal environment, corruption, *etc.* Recently, Nenovsky and Rizopoulos (2003) stressed the specific features of credit activity in their model of extreme monetary regime change in 1996/1997.

In the line of the credit channel are two studies by Nenovsky and Hristov (1998) and Nenovsky and al. (2001). The first one empirically tests the presence of a specific credit channel in the conditions of the CB. The changes in the deposit of the government in the liabilities of the Issue Department have an effect on the dynamics of the size and structure of the domestic credit. The second one goes further and finds out the presence of liquidity effect. This effect is realized through changes in the deposit of the government which influences the reserves of the banks and the reserve money.

In spite of some new moments in the latter studies, they lack two basic aspects:

³ Some of the variables employed in the model are: from the supply side: firm profit, investment expenditure, firm size, firm discipline, firm ownership (four categories are highlighted); from the demand side: income and turnover of the firm, investment profit, liquidity, firm ownership.

- (i) analyzing credit in the larger institutional context of bank – firm relationships, with the specificity of the Bulgarian situation and
- (ii) the ‘intersection’ of demand and supply of credit on the side of banks and firms simultaneously. Our model tries to overcome these two weaknesses.

2. Some Hypotheses and the Research Model

The logic of our approach is the following. The demand and supply of credit focus in themselves, to a large extent, the whole scope of bank – firm relationships which, on their part, reflect the social and economic environment. The basic groups of factors (without our being able to completely discern them) are:

- (i) traditional factors (bank resource capacity, firm size, firm profit, *etc.*) which also include internal rules, and the organizational bank/firm structure,
- (ii) institutional and legal framework, mostly the CB restrictions and the bank,
- (iii) corruption, state capture and political influence, and
- (iv) ownership structure, bank control, and firm control.

Concerning *credit demand* (L^{ED}) by firms, the hypotheses are the following:

Attracting strategic investors, establishing majority control, having long-term interests in the firms after their privatization, is considered an efficient ownership transfer. It could be expected that this type of new private owner would have a high reputational capital and credibility in bank – firm relationships.

Hypothesis 1. Firms with strategic majority owners after privatization would have higher access to bank credit.

The search of external financing depends on how active the firm is, more specifically on the increase in business projects. The quality of business projects and the financial viability of the firm is another factor, determining the potential for acquiring a bank credit. The third significant factor for bank credit is the current financial debts of the firm which limit the opportunities for additional debt finance. Thus, in general:

Hypothesis 2. There would be a positive relationship between the increase in business projects (company activity) and bank credit.

Hypothesis 3. There would be a positive relationship between efficient business projects (company profitability) and bank credit.

Hypothesis 4. There would be a negative relationship between financial constraints (company leverage) and bank credit.

Practice in Bulgaria and other countries shows that there is asymmetry between crediting small and large companies. According to the evaluation of the experts we interviewed, there is competition among banks in Bulgaria in attracting large credit-receivers.

Hypothesis 5. There would be a positive relationship between company size and bank credit.

A peculiarity of the business environment in the Bulgarian transition is the emergence of a dual enterprise sector and asymmetry in the relations between the state institutions and the private sector. There are firms closely connected to political circles and interest groups, having a privileged position in society at public procurement, access to external funds (e.g. EU funds), *etc.* It could be inferred that these firms maintain their own specific relations with banks both after bank privatization and in the conditions of the CB.

Hypothesis 6. There would be a positive relationship between affiliation to business groups and bank credit.

Another particularity of the enterprise sector in Bulgaria is ownership heterogeneity. There exist specific transitional structures of ownership after the enterprise privatization, generating inefficient managerial discretion, and creating conditions for a secondary privatization and ownership of holdings, firms privatized through MEBO, offshore companies, *etc.*) The emergence of ‘transitional’ ownership structures based on the state ownership transformation is a significant feature of the Bulgarian transition. We test for differences in debt finance for these firms and the other firms.

This way of formulating the hypotheses allows us to present the variables and the model like this:

The extended function of *demand for credit* (L^{ED}) by firms is:

$$(1) \quad L^{ED} = L^{ED}(X1, X2, X3, X4, X5, X6, \epsilon1),$$

where the variables are:

X1 – vector for ownership structures of the firms,

X2 – vector for firm activity,

X3 – vector for firm profitability,

X4 – vector for firm leverage,

X5 – vector for firm size,

X6 – vector for state capture, corruption and political influence,

$\epsilon1$ – unaccounted factors for credit demand.

Hypotheses about credit supply (L^{BS}) by banks are as follows:

Hypothesis 1. After the CB introduction, within the framework of the traditional factors, the internal rules of crediting become dominant, as well as the requirements before the firms. The resource characteristics related mostly to bank lending capacity, are not determinant. It is not so much the capacity to lend, but the willingness to lend that dominates decision-making at crediting.

Hypothesis 2. The institutional and legal environment acquired crucial importance at the decision of crediting, especially after the crisis in 1996/1997. The more stable, predictable, and simplified this environment is, the more credits are likely to be lent, especially in the private sector. The tighter legal regulations and their better adoption lead to a better and healthier structure of credit (directed at more efficient and less risk-taking investment projects). It could be assumed that within the framework of the general environment, the greater competition among banks leads to increase in credit (especially for the private sector).

Hypothesis 3. Regarding CB effects, there is a direct connection between the CB (monetary regime) and the credit development. The empirical survey could answer the question whether and to what extent the CB acts restrictively on credit and what the type of restriction is. It can be inferred that after the introduction of the CB, banks are liable to lend more credits to the private sector after serious examination of investment projects. As we stated above, before the introduction of the CB the structure of credit was dominated by the public sector (the basic part of credits was ‘political’ and ‘forced’) which was one of the reasons for the accumulation of big losses in the bank sector. Because of the deep bank crisis in 1996/1997, banks now are much more conservative when lending credits.

Hypothesis 4. There is a direct connection between hypothesis 3 and the supposition that the CB decreased (and changed the forms of) corruption and inside lending. The CB itself as a mechanism, as well as the accompanying regulations, created a more ‘strict’ environment for the bank – firm relationships. The CB changed substantially the conditions for refinance of the commercial banks by the central bank, therefore it changed the banks – firms ‘crony’ relationships.

Hypothesis 5. Bank ownership and bank corporate governance are particularly important when analyzing credit. We can assume that bank ownership concentration is associated with higher bank profitability, and with higher bank lending activities.

Hypothesis 6. We will test for systematic effect on credit of different firm ownership structures by type of owner: state, foreign, *etc.* On the basis of the predominant foreign bank participation in the Bulgarian credit market, it could be supposed that there is a positive relationship between firm ownership by foreign investors and debt finance. It could also be supposed that close bank – firm relations in board of directors’ structures influence debt finance.

The extended function of credit supply (LBS) by banks is:

$$(2) L^{BS} = LBS(Y1, Y2, Y3, Y4, Y5, Y6, \epsilon2),$$

where variables are as follows:

Y1 – vector for traditional factors, including organizational one,

Y2 – vector for general institutional and legal framework,

Y3 – vector for factors related to CB and banking crisis,

Y4 – vector for corruption, political influence and state capture,

Y5 – vector for ownership and control (banks),

Y6 – vector for ownership and control (firms),

$\epsilon2$ – unaccounted factors for credit supply.

IV. Description of Data and Methodology

To make the above formalization of credit demand and supply operational, we have to transform it into an econometric form, where the theoretical variables are approximated with concrete data (original and constructed). The suggested empirical models of credit-demand differ from those of credit-supply mostly in the way data is constructed. Whereas when processing credit-demand (on the part of firms) we use statistic database, when analyzing credit-supply we combine both ‘objective’ statistic data from balance sheets of banks and the ‘subjective’ evaluations in a survey. This approach is justifiable. *First*, our task in the article is formulated quite generally – to detect the factors that determine the dynamism of demand and supply, but not so much the strength of these factors. *Second*, especially in the case of credit-supply, there is a very strong argument in favor of the combination of the two data sources. It is the fact that credit lending is a direct result of the decision-making of people whose subjective evaluation is in the scope of our questionnaire.

1. Data on Firms

We have collected a unique database on the 118 largest Bulgarian firms listed on the Bulgarian Stock Exchange (BSE). The sample period for the data is from 1998 through 2001. This data set contains: accounting data (balance sheets, income statements), ownership and control structures information, data on firms – government relationships (tax payments, security payments), affiliation to interest groups, other data (board of directors, *etc.*).

The basic variables that are included in the groups of factors mentioned above are the following:

L^{ED} – average for 1998–2001 of three indicators: total bank credit to assets, long-term bank credit to assets, and short-term bank credit to assets.

X1 – ownership structures is measured by different indicators. Ownership concentration is measured by the percentage of shares of the largest shareholder. Ownership structures stability over the period 1998–2001 is measured by a dummy variable that is 1 if there is no change of company ownership structure in 1998–2001. Strategic investors presence is measured by a dummy variable that is 1 if there is no change of company ownership structure in 1998–2001 and there is company private majority control in 2001.

X2 – company activity is measured by the average of changes in year-to-year sales over the period 1998–2001.

X3 – company profitability is measured by the ratio of net income to total assets.

X4 – company capital structure is measured by company leverage defined as the ratio of debt to equity.

X5 – firm size is measured by a natural logarithm of total assets.

X6 – ownership structures of firms with ‘connections’ and ‘transitional’ ownership structures are measured by different indicators. Firms affiliated to business groups are determined as crony firms by a dummy variable that is 1 if owner is affiliated to interest groups.⁴ We also include a dummy variable to capture ownership structures with offshore companies that is 1 if the firm has any offshore owner and when the largest owner is an offshore company, and a dummy variable for ‘transitional’ ownership structures pulling ‘crony’ firms, offshore firms and MEBO firms. MEBO is defined as a company whose largest shareholder is a firm established by MEBO privatization scheme and owned by managers and employees.

⁴ As a proxy for affiliation to business groups we use the affiliation to the Business Club ‘Vazrazhdane’, organization of the big business in Bulgaria whose members have belonged to communist-capitalist ‘web’ established since the beginning of transition in 1989.

2. Data on Banks

The main source of information about the bank system was a questionnaire survey of all 35 commercial banks in Bulgaria realized in the early 2002 and covered the period for the end of 2001. The questionnaires were sent through the Bulgarian National Bank and the International Banking Institute. The rest of the data was taken from the balance sheets and income statements of the commercial banks (BNB statistics). Bank lending capacity was constructed as the sum total of the acquired bank system resources (plus the undistributed profit and the equity capital) minus the minimal compulsory reserves, and the bank notes and coins in the cash registers of commercial banks. Credit data was taken from the questionnaires and corrected after being compared with the bank balance sheet data. An index was constructed about the fluctuation (volatility) of bank excess reserves as a proxy for the CB 'restrictiveness'. In some case, there were formed composite indexes, uniting several answers from the questionnaires. Such is the case with the index, uniting the evaluations of the institutional and legal environment.

The basic variables that enter the separate groups of factors are:

L^{BS} – firms credits as a share of the total bank credit. Credits as a share of total assets, public credits, private credits and private credits as a share of total assets.

Y1 – bank lending capacity, factors determining decision-making about refusal to lend credit (firm feasibility and liquidity, firm management quality, provision, project quality, finance transparency), long-term bank – firm relationships, credit-lending internal rules efficiency, bank credit strategies. We constructed a general index of the answers about the factors which banks consider major ones for the quality of the projects.

Y2 – judgments on the state of the institutional and legal environment (such as requirements for capital adequacy and credit provision, required reserves, deposit guarantee system), judgments about the degree of competition among banks (when attracting resources and credit lending), judgments about the tax environment and regulations, judgements about legal protection, about owner's right protection, judgements about the functioning of the law system, about the dependence of the law system on political pressure, judgements about the state of the infrastructure. There is a synthetic index built on the judgments given by banks about the general state of the institutional environment, including bank legislature, the legal environment as a whole, court procedures, and political factors.

Y3 – this group of factors are closely interwoven with Y2. Apart from some of the variables in Y2, the effect of the CB on crediting may be assessed by direct bank evaluations and some quantitative proxy of CB (fluctuations of the bank excess reserves, exchange rate,⁵ inflation). Besides these, here belong the investment motivation abroad, the impact of the 1996/1997 crisis, the probable adoption of the euro, *etc.*

Y4 – judgements about the noneconomic considerations at credit lending, corruption, the organized crime, the efficiency of the legal system in fighting corruption, and the corruption in the very legal system, the bank pressure at changes in the legal system, *etc.*

Y5 – variables for the type of the largest bank shareholder (national or foreign, a physical person, a corporate body, a nonbank firm or a bank), as well as for the percentage of equity held by the largest shareholder.

Y6 – judgments about the relationships between banks and firms, about the influence of banks on firms (on managers, information about the firm, participation of the bank in firms' boards of directors), about inclinations to lend credits depending on the type of firm ownership (state, public on the stock exchange, Bulgarian private, Bulgarian privatized, foreign private, foreign privatized), the attitude of banks to the type of connection 'bank – firm' (a basic partner or competitive partner), the influence of bank representatives on firms' boards of directors, opinions about the stability of the bank system if banks are allowed to possess shares in firms, *etc.*

V. Empirical Results

The large number of variables, explicating the dynamics of credit at a restricted number of observations, does not allow us to test a general model of the demand and supply of credit, encompassing all factors. This results from the loss of degrees of freedom. Therefore, we proceed in the following way. First, we give the tables of correlations of the dependent variable with the basic factors. Hence, we can judge about the type of relationship, positive, negative, or none. Second, in other tables, we show part of the regressions (a result of table processing), which have the best technical characteristics. Consequently, we have four tables, two of credit demand (Tables 2 and 3), and two of credit supply (Tables 4 and 5).⁶

⁵ It is often claimed that the characteristics of the exchange rate (nominal and real), as a basic feature of the CB, is an obstacle (or a stimulus) for lending.

⁶ We used SPSS software for estimations.

Table 2

CREDIT DEMAND (CORRELATIONS)

X/L ^{ED}	Total credit	Long-term credit	Short-term credit
X1	(+) Stable ownership*	(-) Share of largest shareholder*	(+) Stable ownership*
	(+) Private majority largest owner**		(+) Private majority largest owner**
			(+) Share of largest shareholder **
X2		(-) Sales growth*	
X5	(+) Size (total assets)**		(+) Size (total assets)***
X6	(+) Offshore owners**	(+) Crony firms**	(+) Offshore owners**
	(+) Big debtors*	(+) Offshore largest owner**	
		(+) Transitional owners**	

* Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

*** Correlation is significant at the 0.10 level (2-tailed).

Table 3

CREDIT DEMAND (REGRESSIONS)

X/L ^{FD}	Total credit	Total credit	Long credit	Long credit	Short credit
Coef.	{-0.775}	{-1.175}	{-2.053}	{2.135}	{-1.934}
Share of largest shareholder Stable ownership					
Majority largest owner		[(0.162),(1.686)]*			[(0.164),(1.862)]*
Private majority largest owner	[(0.225),(2.587)]**				[(0.147),(1.670)]*
Average growth					
X2					
X5	[(0.149),(1.707)]*	[(0.195),(2.025)]**	[(0.241),(2.649)]***	[(0.156),(-1.784)]*	[(0.194),(2.193)]**
X6	[(0.247),(2.831)]***	[(0.261),(2.830)]***	[(0.301),(3.308)]***	[(0.339),(3.880)]***	[(0.175),(1.981)]**
Offshore largest owner					
R2	0.147	0.159	0.156	0.138	0.131
Adj R2	0.124	0.134	0.140	0.123	0.1
Std.err.	8.380E-02	7.373E-02	2.199E-02	4.441E-02	7.361E-02
ANOVA F	6.469	6.344	9.443	9.028	4.247

{t-statistics}

[st.coef.B),(t-stat)]

***Significant at 0.01 level.

** Significant at 0.05 level.

* Significant at 0.10 level.

The results confirm the hypothesis that the presence of a strategic private investor has a positive effect on bank credit access. The stability of company ownership structure during the period 1998–2001 also has a positive relationship with bank lending.

The increase in firm activity, however, is negatively correlated to the bank crediting of firms. This could be explained by the conservative policy of banks after the introduction of the currency board. In the period 1998–2001, firm activities and business projects were financed without bank loans.

The study shows that there is no direct relationship between company profitability and bank crediting. There was no connection established between the financial health of enterprises (measured by company leverage) and the bank lending. These results confirm the observations above about the severing of the relationship between bank finance and company performance in the Bulgarian economy in 1998–2001.

Further, the results confirm the hypothesis that large firms have a wider range of access to credit. The other hypothesis that the firms affiliated to business groups would have a larger access to bank credits is also confirmed. This means that in spite of the introduction of the currency board, these firms find a specific way of accessing bank crediting.

Firms with an offshore owner also have higher bank crediting. We could assume that this is connected with potential capital flight of these companies. However, this assumption should be a subject of further research.

In short, not only strategic private investors and stable owners have access to bank credits, but also offshore owners with a dubious origin of capital, and firms known for their political connections. These results show that the emerging dual enterprise sector has continued its existence since currency board introduction in 1997.

In general, the results confirm our theoretical hypotheses. The traditional positive link of bank lending capacity with credit is negative here, i.e. the increase in bank resources leads to decrease in credit. A positive correlation is traced only in private credits as part of the total assets of banks. This indicates that not so much the resources, but the willingness to lend credits are decisive in the dynamism of credit as a whole. This result fits the behavior of banks (at least till the end of 2001) of investing their resources from abroad. It seems that only private credit (considered more effective) is more closely related to the dynamism of available resources.

Table 4

CREDIT SUPPLY (CORRELATIONS)

Y/L ⁵	Firms credits as a share of total credit	Credits as a share of total assets	Public credits	Private credits	Private credits as a share of total assets
Y1	(-) Bank lending capacity*** (+) Low firm profits and liquidity was a decisive factor to not approve a credit** (a) (+) Management quality was a decisive factor to not approve a credit* (a) (+) Low quality ¹ of proposed firm projects was a decisive factor not to approve a credit**	(-) Bank lending capacity* (+) Management quality was a decisive factor to not approve a credit*** (a) (+) Lack of adequate collateral was a decisive factor to not approve a credit** (a) (+) Inflation was a serious obstacle for bank's activity* (d) (+) Low quality of proposed firm projects was a decisive factor not to approve a credit****	(+) Effectiveness of the internal rules for payment and career schemes for credit decision makers based on bank performance* (b) (+) Low quality of proposed firm projects was a decisive factor not to approve a credit *	(+) Bank lending capacity**	(-) Bank lending capacity* (+) Management quality was a decisive factor to not approve a credit** (a) (+) Low quality of proposed firm projects was a decisive factor not to approve a credit**
Y2		(-) Taxes and regulations were serious obstacles for bank's activity*** (d) (-) Infrastructure was a serious obstacle for bank's activity** (d) (-) Banking regulations are effective** (c) (-) Legal system protects contractual and property rights in business disputes** (c) (-) Synthetic index for institutional and legal environment****		(-) Banking regulations are effective* (c) (-) Synthetic index for institutional and legal environment*	(-) Taxes and regulations were serious obstacles for bank's activity** (d) (-) Infrastructure was a serious obstacle for bank's activity* (d) (-) Banking regulations are effective** (c) (-) Legal system protects contractual and property rights in business disputes** (c) (-) Synthetic index for institutional and legal environment****
Y3		(+) Exchange rate is a serious obstacle for bank's activity* (d)			

¹ Synthetic index summing up three indicators: low firm profitability and liquidity, management quality and lack of adequate collateral.

² Synthetic index summing up three indicators: effectiveness of banking regulations, independence of judiciary from political influences and protection of contractual and property rights in business disputes.

Y4	(-) A bank typically influences new laws and regulations* (f)	(-) Corruption is a serious obstacle for bank's activity** (d) (+) Frequency of political cronomism and other not economic reasons in credit approval* (e)	(-) A bank typically influences new laws and regulations* (f)
Y5	(+) Majority foreign owner* (g)	(+) Readiness to provide credits to state firms*** (f) (+) Readiness to provide credits to foreign firms* (f) (-) Readiness to provide credits to Bulgarian firms* (f) (-) Firms prefer long-term relationships with a single bank* (c) (+) Firms prefer banking relationships with more than one bank* (c) (-) Index of firms preferences for commitment to a single bank services** (+) The banking system will be destabilized if banks are allowed to have shares in firms** (c)	(+) Majority owner share*
Y6	(+) Bank's strategy is its clients to use other banks' services as well** (c) (-) Bank strategy is to provide full-scale service for its customers' **		

*** Significant at the 0.01 level (2-tailed)
** Significant at the 0.05 level (2-tailed)
* Significant at the 0.10 level (2-tailed)

- (a) Values from 1 (not decisive factor) to 5 (decisive factor)
- (b) Values from 0 (no such rules) and 1 (low efficiency) to 5 (high efficiency)
- (c) Values from 1 (not true) to 5 (true)
- (d) Values from 1 (very strong obstacles) to 5 (no obstacles)
- (e) Values from 1 (very frequent) to 5 (never)
- (f) Values from 1 (never) to 5 (very frequent)
- (g) Values: Foreign owner – 1, domestic owner – 0

¹ Index is based on answers of two questions (value of the first minus value of the second): first, the bank is aimed at maintaining relationships with firms where the bank is the major financial service provider and second, the Bank is aimed at maintain relations with firms, where its clients use services of other banks. Values are as in (c).

² Index is based on answers of two questions (value of the first minus value of the second): first, firms prefer single bank services and second, firms prefer being serviced by more than one bank. Values are as in (c).

Table 5

CREDIT SUPPLY (REGRESSIONS)

Y/L ⁵		Firms credits as a share of total credit	Credits as a share of total assets	Private credits	Private credits as a share of total assets	Private credits as a share of total assets	Public credits
Y1	Bank lending capacity	[(-0.381), (-2.418)]**	[(-0.509), (-4.80)]****	[(0.853), (8.793)]****	[(-0.508), (-4.524)]****	[(-0.509), (-4.659)]****	
	Low quality ¹ of proposed firm projects was a decisive factor not to approve a credit	[(0.489), (3.336)]****				[(-0.166), (-1.200)]	
	Inflation was a serious obstacle for bank's activity		[(0.413), (2.068)]*				
Y2	Synthetic index ² for institutional and legal environment		[(-1.122), (-7.076)]****	[(-3.72), (-3.408)]****	[(-1.139), (-7.278)]****	[(-6.510), (-6.510)]****	
Y3	Exchange rate is a serious obstacle for bank's activity		[(-0.281), (-1.639)]				
Y4	Bank typically influences new laws and regulations		[(-0.524), (2.759)]**		[(0.278), (1.830)]	[(0.365), (2.216)]*	
	Corruption is a serious obstacle for bank's activity						[(-0.612), (-3.365)]****
Y5	Majority foreign owner		[(0.250), (1.474)]				
	Majority owner share			[(-0.068), (-0.567)]			
Y6	Bank strategy is to provide full-scale service for its customers						
	Index of firms preferences for commitment to a single bank services						[(-0.512), (-2.817)]**
	R square	.883	0.951	0.927	0.911	0.926	0.636
	Adjusted R square	.844	0.893	0.905	0.877	0.884	0.570
	Std. Error of the Estimate	9.7949	4.935E-02	21993.4173	5.432E-02	5.288E-02	7620.3394
	ANOVA F	22.682	16.300	42.320	27.242	21.917	9.006

¹ Synthetic index summing up three indicators: low firm profitability and liquidity, management quality and lack of adequate collateral.

² Synthetic index summing up three indicators: effectiveness of banking regulations, independence of judiciary from political influences and protection of contractual and property rights in business disputes.

³ Index is based on answers of two questions (value of the first minus value of the second): first, firms prefer single bank services and second, firms prefer being serviced by more than one bank. Values

Everywhere there is a positive correlation between the good quality of projects on the side of firms, the efficiency of internal rules of banks and the growth of credit. The results indicate that the state of the institutional and legal environment, as well as the tax and regulatory environment, are still an obstacle to credit. There is a negative correlation between the evaluation of their state and the dynamics of credits. The same negative signs appear in the efficiency of the legal system, as well as in the property rights protection. The CB (directly through the index of the institutional environment) and approximated with the exchange rate and inflation has a positive influence upon credit activities. This shows that by itself the CB is not an obstacle, on the contrary the rest of the environment is an obstacle to credit. Corruption, non-economic considerations, and organized crime are also obstacles to credit.

As far as the bank ownership structure is concerned, the more concentrated the ownership is and the share of the major owner, the more credit is lent. The significance of firm ownership and the role of the link 'banks – firms' at credit lending are more difficult to interpret. As a whole, the close relationships between banks and firms affects 'adversely' credit decision-making, and the evaluations of banks show that this could have a destabilizing effect. This result could be seen as a reaction to the former system of crediting (before the CB), when inside and directed lending occupied the whole system. This result is also an additional consequence of the phenomenon observed at credit demand, of separating the activity of the banking sector from the real sector in Bulgaria.

VI. Conclusion and Discussion

In this article, we have tried to:

- (i) overcome the restrictions of traditional credit models, conceiving it in a broad institutional environment (including the currency board) and the context of the specificity of the transition (corruption, the change of ownership rights),
- (ii) analyze credit as focusing in itself the whole range of bank – firm relationships. In the model, we have tried to 'intersect' the factors of credit both on the part of supply (banks) and on the part of demand (firms), and finally,
- (iii) on the basis of a unique empirical database and questionnaires we have tested the empirically presented hypotheses.

The results of the study lead to several general conclusions.

First, the study confirmed our conception that credit could not be seen in the framework of the traditional ‘mechanistic’ models, especially in the context of transitional economies. The ‘resource’ factors do not have significant influence on the credit dynamics and structure and become secondary, whereas the features of the institutional environment become primary.

Second, in 1998–2001 in Bulgaria, there is separation of the activity of the financial sector, the banking system, from the activity of the real sector. Lending bank credits to the enterprise sector during this period is not related to:

- (i) bank sector resources;
- (ii) activity, profitability, and financial health of enterprises;
- (iii) close bank – firm relationships in board of directors structures.

Third, in the new conditions of the CB after 1997, the existence of the dual enterprise sector and the specific institutional environment continues. Bank credits are statistically significantly higher with private strategic investors, but they are such with ‘crony’ firms and firms with offshore owners as well. On the side of credit supply by banks, the corruption environment is a halting factor, but on the side of the credit demand by firms, ‘crony’ firms have an advantage over independent firms.

Four, in spite of the observed separation, the CB could not be viewed as an obstacle to credit, but rather as a simplified and stable framework which places the firm – bank relationships on a new ‘healthy’ foundation. For example, in the regime of the CB, banks become more cautious, they build serious systems of credit project selection and demand good credit practices. The supposition that banks prefer to lend credits to the private sector is confirmed. In spite of the disciplining role of the CB, it, by itself, is not sufficient to overcome the other ‘institutional’ barriers, connected with the inefficiency of the legal system, corruption, state capture, the insecurity of property rights, *etc.* It is difficult to claim that the currency board could dramatically decrease corruption, it could only change its forms.

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