Financial Development and Economic Growth in Bulgaria

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Abstract

Bulgaria has experienced a boom in credit market activity during the last several years. This project uses detailed panel data to investigate whether and to what extent the growth in credit has contributed to investment and economic growth. Furthermore, the project uses interviews with a wide range of commercial bank officials to determine how well the banking system: 1) produces information ex ante about possible investments and allocates capital; 2) monitors investments and exerts corporate governance after providing finance; 3) facilitates the trading, diversification, and management of risk; and 4) mobilizes and pools savings. The effective performance of these functions ensures a lasting positive impact of the financial system on economic growth.

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Summary of Results

Quantitative Empirical Results Using Credit Aggregates across Economic Sectors

Credit in Bulgaria has been expanding rapidly, by about 24 percent per year, in the last several years. The growth of credit has been especially strong in the service sectors and in the construction and real estate sectors. The aggregate credit to the service sectors has become larger than the credit to the manufacturing sector. Credit to the agriculture sector is a small fraction of the credit portfolio of the banking system.

The expansion of credit has had a positive and statistically significant effect on investment and economic growth. For every 1000 leva (the national currency, where 1 lev exchanges for about 0.5 euro) borrowed, investment increases by about 200 leva. For every 10 percentage points increase in the ratio of credit to GDP annual economic growth increases by about 0.3 percentage points. The effect of credit on investment is particularly strong in the manufacturing sector and the transportation sector.

Credit maturity has become longer over the years. In 1999, short-term credit with maturity of one year or less was about 74 percent of total credit. By June 2006, short-term credit had decreased to about 31 percent.

The growth in credit activity has come primarily from the growth of the number of loans extended rather than from the growth in the sizes of loans. Credits in the smallest size category, up to 5000 leva, have experienced the fastest growth in numbers. Thus, the average size of credits in Bulgaria has decreased over time.

The maturity and size composition of credits influence the effect of credit on investment. Long-term credits and larger-size credits have a particularly strong positive effect of investment, especially in the manufacturing sector.

Qualitative Results from Interviews with Bank Officials

Produce information ex ante about possible investments and allocate capital

Having a relatively long (2-3 years or more) history with a bank is an important determinant of whether that bank will extend credit to a borrower. This is true particularly at the branch level from where banks channel financing to micro, small, and medium size firms.

The evaluation of borrowers in Bulgaria is hampered to some extent by the widespread tax evasion. Yet, many banks have found ways to incorporate information from firms' unofficial records into their decision making process. The extension of credit

to a firm that officially reports negative or small profits is justified by preparing a favorable "economic potential" valuation for the borrower.

The banking sector does not provide a strong incentive for the reduction of tax evasion in the country. Instead of the firms adjusting to the practices in the banking system, many banks are adjusting their practices to the conditions in the real economy.

A major difficulty in the credit evaluation process is that potential borrowers have little or no experience in the projects for which they need funding.

Every level in the banking system faces limits in terms of the maximum size of a credit they are allowed to extend. These limits may differ across the various branches of the same bank depending on the location of the bank branch and the experience of the branch officials. The size limitations were introduced after the 1996 crisis. Before the crisis, branch managers had discretion with large credits which lead to corruption and the misallocation of resources.

A common theme that emerged in the interviews is that after 15 years of transition many credit inspectors know the firms in their towns. Therefore, evaluating the individual borrower is not a major problem. Many credit inspectors complained that obtaining information about the economic sector in which the borrower operates is more problematic. These difficulties can be attributed to the lack of timely and reliable data as well as to the rapidly changing economic structure of Bulgaria's economy.

Despite these information challenges, overall banks seem to make prudent decisions when it comes to firm credits. The culture in the banks is different from that before 1997 – banking officials operate with the attitude that lending decisions are made on the basis of prudent credit evaluation and not on the basis of connections and corruption. The influx of foreign banks has contributed significantly to this change.

Monitor investments and exert corporate governance after providing finance

Banks have procedures in place for monitoring the use of funds after the extension of credit. The procedure includes periodic inspections of financial documents as well as site inspections. Often, credit instruments are structured so that stages of financing are released only after the borrower presents proof of the effective use of funds thus far.

When a firm experiences difficulties servicing its credit, banks request significant amounts of information about the business and start spending time with the management on the premises of the firm. The collection and analysis of information can take months. Eventually, the loan may be restructured usually extending its maturity. The bank also encourages the borrower to secure funding from other sources. If agreement cannot be reached, then the bank proceeds to selling the collateral. However, this is done only as a last resort.

The monitoring of the use of funds is hampered to some extent by the rapid growth of turnover and overdraft credits. Unlike investment credits which are extended for a particular purpose, e.g. for the purchase of office space or machinery, the overdraft and turnover credits are extended on the basis of evidence for the sales of the firm and its current financial situation. The concern is that the banking system is extending too many overdraft and turnover credits which are used for investment purposes at the discretion of the borrower without prior approval by the bank.

A similar problem with monitoring exists with household credits which are also used to fund business investments without prior justification of the investment before the bank.

Facilitate the trading, diversification, and management of risk

Many of the interviewees attributed the 1996 banking crisis in Bulgaria to the lack of diversification of the banking system. Many banks had significant exposure to one economic sector and often to one firm. The legacy of the crisis, the Basel capital adequacy standards, and the better portfolio allocation practices that have become the norm in the banking system contribute to greater attention paid to cross sectional diversification.

Banks prefer to extend short-term credits in order to reduce the maturity mismatch on their balance sheets. Often the bankers brought up their experiences during the 1996 banking crisis when demand deposits and short-term time deposits fled the banking system and the banks were left holding long-term illiquid assets.

At present investment credits have a maximum maturity of about 5-7 years but some banks already offer 10 year maturity. The prevalent view in the banking industry is that competition between banks will lengthen the maturity of investment credits. If some banks offer loans with long maturity, other banks will be compelled to do the same.

Mobilize and pool savings

There are two major deterrents to participating in the official financial system. One is the low income level of many Bulgarians which leaves little or no savings. The second reason is tax evasion. Banks are required to submit information about large bank transactions to the Bulgarian National Bank (BNB). Therefore, savers with illegitimate savings prefer alternative assets, mostly real estate. There also appears to be a thriving unofficial lending market which operates with these funds.

Bank officials agreed that most credits in Bulgaria are small in size but emphasized that the statistical data on credit size must be considered with caution since one borrower might have several credits from the same bank. Therefore, a banks may have a large exposure to a borrower comprising of several small loans.

There are several reasons brought forth to explain the small credit sizes. First, lending to a greater number of borrowers increases the diversification of the credit portfolio. Second, most banks in Bulgaria are relatively small in size and make small credits. Third, the size of the overwhelming majority of firms in Bulgaria is small. These firms apply for and are approved for small loans. The increasing access of small and medium sized firms to the financial market leads to a reduction in the average size of loans.

Nonetheless, larger Bulgarian firms do have access to large credits. However, these credits are generated by banks outside Bulgaria.

Aggressiveness vs. prudence

All credit inspectors in the banking system walk a fine line between trying to extend credits that are well justified and extending as many credits as possible. The banks in Bulgaria are in strong competition for market share, which translates into incentive schemes motivating bank officials to generate credits. It is common to base bank officials' pay partly on the size of their credit portfolio and its rate of growth (adjusted for some measure of credit quality such as the percent delayed payments).

Issues of trust

Although trust in the banking system seems strong, there are some curiosities. For example, several bankers complained that business owners who request credit are reluctant to provide information about their business. They are concerned that the banks will pass this information to their competitors or that the bank inspector him/herself will take advantage of the project idea. Also, business owners are reluctant to approach consulting companies that specialize in the preparation of business plans for fear that the consultants will take advantage of the information about their business.

Financial Development and Economic Growth in Bulgaria

1. Introduction

Bulgaria experienced a dramatic increase in credit market activity in the last few years. According to data from the Bulgarian National Bank (BNB) bank credit to private non-financial enterprises increased by about 360 percent from 1999 to 2005. In some sectors of the economy the credit growth was even faster. For example, the credit to firms in the construction industry increased 14 times during that period!

Although the speed of the increase in credit raised some concerns related to the large current account deficit, the credit growth is perceived as a positive change from the early years of transition from communism when the private sector experienced a severe shortage of financing. Indeed, the claim that credit has a positive effect on the economy seems obvious because now firms can expand and improve their operations using external financing. Similarly, households can obtain credit and increase their consumption stimulating the economy. The short-term positive impact of buoyant credit markets on income is not in doubt.

The question, however, is whether the credit growth of the last few years will have a similarly positive effect on long-run economic growth. As we know well from the theoretical and empirical literature, it is productivity growth and not factor accumulation that drives long-term growth. Along these lines, Levine (2005) discusses five main functions that the financial system has to perform in order to have a positive effect on long-term growth: 1) Produce information ex ante about possible investments and allocate capital; 2) Monitor investments and exert corporate governance after providing finance; 3) Facilitate the trading, diversification, and management of risk; 4) Mobilize

and pool savings; and 5) Ease the exchange of goods and services. Unless these functions are performed well by the financial system, the effect of the credit growth will be limited to a short-term stimulus. In fact, the development of a financial system can be defined as the degree to which it performs these functions well. Therefore, an increase in credit activity is a necessary but not a sufficient condition for the financial system to exert a positive effect on long-term growth.

Unfortunately, it is difficult to measure empirically how well a financial system performs the functions using available data. One option is to look at the percent non-performing credits but usually this measure reveals problems too late when a crisis is imminent. For lack of better proxies, most of the empirical literature on finance and growth has used credit aggregates to proxy for the degree of development of the financial system.

Therefore, this study makes an attempt to determine how well the banking system performs the functions summarized by Levine by interviewing a large spectrum of banking and government officials in Bulgaria during the course of several months. The interviews with officials revealed interesting information about how the financial system fulfills the functions summarized by Levine. Some of the insights revealed by the interviews are general, some are specific to the transition countries, and some are specific to Bulgaria.

The analysis for this project began by reviewing the theory of the relationship between finance and growth. It then proceeded to review the literature on finance and growth in the transition countries and on the financial system in Bulgaria. Following that, I collected data on credit by economic sector and matched them with data on investment and growth to investigate empirically the relationship between credit and the real

economy. There are three innovations in that part: 1) the paper tests empirically the effect of credit on investment and growth by economic sector; 2) it studies the effect of credit maturity; and 3) it studies the effect of credit size. Overall, the results suggest that larger credits and those with longer maturity have a particularly strong effect on investment and growth. Furthermore, the positive effect is particularly strong in the manufacturing sector.

The literature review and the empirical investigation provided the background for designing the interview questionnaires and conducting the interviews. The structure of the paper follows the steps taken during the analysis. The reader who is familiar with the theory and the literature on finance and growth in the transition countries may skip a few sections and continue with section 4 describing the Bulgarian financial system. A reader who wants to proceed directly to the interviews may go on directly to section 7.

2. Theoretical Foundations of the Finance and Growth Relationship

Theoretically, as with many other topics, economists disagree about the relationship between financial development and the performance of the real sector. Among the first ones to question the idea that financial development may lead to growth was Robinson (1952) who wrote that "where enterprise leads, finance follows." Despite the voluminous literature on this topic, Nobel Laureate Robert Lucas refers to financial development as an "over-stressed" determinant of growth (Lucas, 1988). Conversely, another Nobel Laureate Merton Miller (1998) believes that the question whether "financial markets contribute to economic growth is a proposition too obvious for serious discussion."

On balance, the preponderance of the empirical literature reviewed by Levine (2005) shows that there is a positive, and statistically and economically significant effect

of financial development on economic growth; on its sources: capital accumulation and productivity; and even on income inequality and poverty. How does finance exert such an influence? Examining the channels through which finance influences the real economy, Levine identifies the functions of the financial system listed in the introduction. The following subsections briefly describe the importance of each of the functions. The reader is referred to Levine (2005) for a detailed discussion of the five functions along with a summary of the literature that relates to them.

Two important points made by Levine must be reiterated before proceeding. First, as mentioned earlier, economic research has identified productivity growth and not physical capital accumulation as the main long-run engine of economic growth. Therefore, if finance is to exert a positive long-term effect on the real economy it must do so through its effect on the allocation and use of capital. Second, there is ambiguous empirical and theoretical evidence that saving rates are influenced by the returns on savings assets. Greater returns produce an income and a substitution effect working in the opposite direction canceling each other. Hence, the implication again is that the positive effect of finance on long-run economic growth comes from more efficient allocation of capital instead of from increasing savings and funding physical capital accumulation.

In what follows I focus on the role of commercial banks and do not discuss stock markets, bond markets, and other non-bank financial institutions as they are only a small portion of the Bulgarian financial system. Furthermore, I focus on the relationship between banks and private non-financial firms to the exclusion of household credits and public sector credits.

Produce information ex ante about possible investments and allocate capital

Evaluating the technological plan, the management, and the economic conditions of a proposed investment project is an expensive task that requires the collection and processing of much information. If the information costs are prohibitively high relative to the size of expected returns accruing to individual investors, then investors would prefer assets that have lower returns but are also easier to evaluate. Many high value projects will not be undertaken and the rate of economic growth will be smaller.

In this environment, financial intermediaries emerge as institutions that specialize in the acquisition, processing, and production of information. Their function is to collect deposits from numerous small investors and to direct them to investment projects. The value added from their expertise is that the savings of the economy are directed to better projects leading to faster economic growth. Boyd and Prescott (1986) is a seminal paper that shows how financial intermediaries reduce information costs. Various other models predict that even in the absence of financial systems individuals would group together to share the large fixed cost of acquiring, producing and processing information (e.g. Greenwood and Jovanovic 1990).

Monitor investments and exert corporate governance after providing finance

In addition to their role to collect, analyze and produce information about investment projects and to allocate savings, banks also monitor the use of funds after credit is extended. If the funds are not used as intended the bank must have a mechanism to assume a stronger control over the project and the firm. Also, the bank may reevaluate the needs of the borrower depending on the economic environment and adjust the conditions of the original loan contract. For example, it may extend the maturity of the

credit if the borrower experiences temporary difficulties or it may provide additional financing that had not been deemed necessary at the beginning of the project. The bank can also provide expert opinion and guidance during the execution of the project.

In its function as a "delegated monitor" (Diamond 1984) the banking system uses economies of scale to reduce the cost of monitoring firms that would otherwise have to be incurred by the individual investors. Furthermore, it reduces the free-rider problem that arises when small individual investors rely on others to monitor the firms. Hence, well developed financial systems improve individuals' ability to monitor and influence the use of capital. Such ability in turn may influence saving behavior and investment decisions, both of which can be beneficial for growth.

Facilitate the trading, diversification, and management of risk

Well functioning financial systems provide opportunities to trade, pool, and diversify risk increasing the risk-adjusted return on savings and improving the allocation of resources. In particular, Levine (2005) describes how the financial system provides opportunities for (1) cross sectional risk diversification, (2) intertemporal risk sharing, and (3) lowering liquidity risk.

Cross sectional risk diversification: The advantages of cross sectional diversification are straightforward. Imagine an economy where individual investors can invest either in relatively safe projects with a low return or in high-return/high-risk projects. As savers are assumed to dislike risk, many of the high-return projects will be unattractive and will not be funded. If, instead, individual investors can hold stakes in a pool of projects that includes a mix of low-risk and high-risk projects (e.g. a mutual fund or the credit portfolio of a bank), more high–risk/high-return projects will be funded

leading to faster economic growth. Similarly, more innovation activities that are inherently risky will be undertaken leading to faster technological progress.

Intertemporal risk sharing: Some shocks are systemic (e.g. a macroeconomic shock) and affect all projects in the economy. Such shocks cannot be diversified away by cross sectional diversification. A well functioning financial systems, and especially banks, can spread the risk of systemic shocks over time. Investing with a long-term perspective, the financial system provides relatively low returns in prosperous times and relatively high returns during recessions.

Lowering liquidity risk: Liquidity risk arises because of uncertainty associated with converting assets into medium of exchange. Consider an economy where individual investors can choose to invest in two types of projects: short-term projects with a low return and high-return projects that have long gestation. The latter project type does not produce substantial returns until after a significant period of time has passed since its initiation. Furthermore, imagine that investors can experience liquidity needs at any time. Despite the high return on long-term projects, many of them will not be undertaken in this environment because they are illiquid.

In a well functioning financial system individual investors will hold assets that are liquid but the financial system will transform the resources into high-return/less-liquid assets. As a result, more funds will be directed toward long-term/high-yield projects leading to faster economic growth. Levine quotes Hicks (1969), where he contributes much of what England experienced during 18^{th} century to this factor. Namely, while the technical innovations that fueled the industrial revolution had been achieved decades earlier, the implementation of those ideas became possible only as a result of the "financial revolution" when individuals could invest in the new enterprises while being

certain that they could convert their savings into medium of exchange without much trouble.

Mobilize and pool savings

The pooling of savings function refers to the ability of the financial system to overcome the transaction costs of attracting the savings of economic agents into the formal financial system and to agglomerate the savings of numerous small investors into larger funds. To attract savings, the financial system must offer an array of savings assets that suit the needs of various investors and an easy route for the purchase of these assets. It must also enjoy the trust of the population.

Furthermore, being able to agglomerate savings, the financial system can have a profound effect on the economy as it can fund projects that need large injections of capital and cannot be completed with staged financing. Such large projects cannot be funded by individual investors but, through economies of scale, they have a strong positive effect on productivity growth and economic growth.

Ease the exchange of goods and services

As Adam Smith (1776) explains, barter trade is very expensive. This is especially the case when specialization is extensive, as it is today. A well developed financial system will decrease substantially the cost associated with transactions thereby stimulating the division of labor, specialization, technological progress, and ultimately growth. This function of the banking system will not be investigated in this paper since, by all indications, the payment system in Bulgaria functions well.

3. Finance and Growth in the Transition Countries

The previous section described the ways in which the development of the financial sector leads to output growth. Many empirical papers find that indeed finance leads to faster economic growth and faster growth in its sources: productivity and capital accumulation (e.g. Levine, 1997; Thiel, 2001; and Wachtel, 2001). This section looks at the empirical evidence on the finance and growth relationship in the transition economies specifically. As Bolton (2002) points out, most of the literature has focused on countries where well-developed financial systems already exist. However, even for the transition countries, the literature has grown rapidly during the past few years as many new techniques and measures have been applied to these countries.

Mehl, Vespro, and Winkler (2006) is a recent paper that investigates the relationship between finance and growth in South East Europe during the past two decades. They focus on the more recent period:

> "…reform efforts in the first half of the 1990s failed to prevent inflationary finance in many countries, ultimately contributing to crises and large output losses. Only since the late 1990s, have tightened regulations and supervision as well as the opening of domestic banking sectors to foreign investors changed the environment of the financial sector in Southeast Europe positively."

Their results suggest that financial deepening (reflecting the size of the financial sector) did not have a significant impact on economic growth in the last decade, which stands in sharp contrast with the standard findings from the literature. Mehl et. al. suggest that more emphasis needs to be placed on the system as a whole, rather than on financial deepening per se. Increasingly important to economic growth are better creditor rights

protection and increasing the penetration of foreign banks. They conclude by saying that since 2000 financial development in a proper sense may have just started.

The additional empirical evidence of the finance and growth relationship in all transition economies can be best categorized according to the empirical model employed to establish such a relationship. Among the most popular ones are the Barro regression, the growth accounting regression, and the production function style regression.[1]

Barro regressions

Jaffee and Levonian (2001) examine the finance and growth relationship in 23 transition economies using cross sectional data. They find a positive and statistically significant relationship between bank sector development and economic growth. In addition, they find a positive and statistically significant relationship between bank sector reforms and economic growth. Drakos (2002) uses a smaller sample (21 countries) of transition economies but, in addition to cross section analysis, Drakos also employs panel data analysis. He finds similar results to the ones offered by Jaffee and Levonian (2001). In addition, he finds that competition in the financial sector has a positive effect on economic growth. Koivu (2002) also employs panel data analysis for 25 transition countries showing that the interest rate margin is negatively related to economic growth. However, somewhat surprising was the result that an increase in the amount of credit did not translate into output growth.

[1] Barro regressions follow the specification of Barro (1991). Growth accounting regressions follow the specification of Benhabib and Spiegel (2000). The production function style regression follows the specification of Fink and Haiss (1999) and it is based on the neoclassical production function which allows substitution of physical for financial capital.

Growth accounting regressions

Fink, Haiss, and Mantler (2005) examine the finance and growth relationship for 22 market economies and 11 transition economies, where transition economies include Central and East European countries. They use panel data analysis to establish a relationship between growth and the banking sector, the stock market, and the bond market. They find that the financial sector induces positive growth effects. However, these effects are not uniform across countries. The effects differ for countries whose financial sectors are at different stages of development, and they also differ across financial structures. Namely, the effect is much stronger in transition countries when compared to well-developed market economies. In addition, they find evidence that the development of the financial sector is much more beneficial to short-run growth than to long-run growth.

Mehl and Winkler (2003) examine the finance and growth relationship for 8 transition countries of South East Europe. Their analysis investigates the banking sector and employs panel data covering the period from 1993 to 2001. Their main finding is that financial depth did not have a significant impact on economic growth during the time period they considered. Although they acknowledge many reasons for such a finding, their main concerns are institutions. Namely, the development of the financial sector will not lead to growth when the legal and institutional framework does not meet some reasonable prerequisites.

Production function style regressions

Fink and Haiss (1999) examine the finance and growth relationship for 10 countries in Central and East Europe. Their cross sectional analysis looks separately at

the relationship between growth and the banking sector, the stock market, and the bond market. While there is a clear positive and statistically significant relationship between the development of the banking sector and economic growth, this relationship becomes somewhat ambiguous when stock markets or bond markets are considered.

Fink, Haiss, and Vukšic (2004) use a production function approach to investigate the relationship between financial development and economic growth in 9 EU accession countries. They look at the aggregate indicators of financial development, but also separately at the banking sector, the stock market, and bond markets. Stock markets do not seem to explain much of the growth, while the bond market and the banking sector have a positive impact on growth.

Much of the work surveyed above includes more recent periods during which most countries entered the late transition stages. The relationship between finance and growth during the early transition stages is even less clear. Namely, at the beginning of the transition period (prior to or during the 1990s) most banks in the transition countries were state owned. Such banks were forced to extend loans to state owned enterprises. As state owned enterprises were inefficient, loans turned out to be nonperforming (Drakos 2003; Eller and Haiss, 2003; Fink et al, 1998). Nevertheless, state owned banks were forced to extend loans to inefficient companies for political reasons. Credit was increasing during that period but it did not go to productive uses. We may, therefore, see the largest volume of credit at the times when economic performance was the worst. Giannetti and Ongena (2005) suggest that, instead of looking only at the volume of lending, one also needs to focus on the quality of lending since the efficiency of capital allocation is much more important for growth than credit volume.

As the transition progressed, almost all transition countries increased the share of foreign owned banks in their financial systems, hoping that the foreign ownership will improve the efficiency of the banking sector. Berglof and Bolton (2002) find that foreign owned banks have indeed contributed in this regard. Similarly, Engerer and Schrooten (2004) show that the foreign ownership of banks has a stabilizing influence on the economic performance of the transition countries.

Eller, Haiss, and Steiner (2005) extend this work by focusing on transition countries at various stages, ranging from the ones already admitted to the EU to the ones still at relative early stages (i.e. the candidate countries). They find that foreign direct investment (FDI) in the financial sector has a positive effect on financial development and on economic growth. They believe that FDI in the financial sector contributes to "efficiency, credit volume, corporate governance and institution building." Naaborg et. al. (2003) also find that a relatively weak banking system benefits from the presence of foreign banks, as such presence can constitute a commitment and transparency device and reduce the probability of self-fulfilling speculative attacks. This in turn should contribute to long-run economic growth.

A similar increase in efficiency of the banking sector is also documented by Drakos (2003). He finds that the banking sector has improved its efficiency from 1993 to 1999. In that paper, however, efficiency is not measured by ownership structure; rather, efficiency is measured by the net interest rate margins. Nevertheless, an increase in the efficiency of financial sector contributes to an increase in output growth.

4. The Bulgarian Financial System – Overview

Following a pure Soviet communist model in organizing the state from 1944 to 1989, Bulgaria had a typical monobank financial system (Koford and Tschoegl, 2003; Pindak, 1973). Given such a system, neither domestic private banks nor foreign banks existed in Bulgaria. The central bank was in charge of almost all capital allocation, with the only exception being the collection of individuals' private savings which was done through the State Savings Bank (Miller and Petranov, 2001).

The overthrow of communism affected all Bulgarian institutions and the financial system was not an exception. Koford and Tschoegl (2003) note that "in creating its financial system, Bulgaria has been faced with the challenge of creating institutional *structures* that will perform … necessary *functions*." The creation of such institutions had begun almost immediately and the first changes were being introduced in the early 1990s.

The adoption of the Law on the BNB in 1991 gave the BNB the role of a typical central bank. The law established the monetary and regulatory powers of the BNB and made it responsible to Parliament. In the following year the Law on Banks and Credit Activity was passed. This law authorized the licensing of subsidiaries of foreign banks but not branches and required any acquisition of more than 5 percent of the shares of a bank to be approved by the BNB (Dobrinsky, 1994). Now, the legal framework for the banking system was established. As a result the number of private banks grew rapidly.

At present, almost the entire banking system is privately owned and most banks are foreign owned. However, this was not always the case. Miller and Petranov (2001) remind us that at the beginning of transition foreign banks were not allowed to open branches in Bulgaria. This changed in 1994 when the Greek Xios Bank and the Dutch ING-Bank opened their first branches in Sofia. The privatization continued and, with the

sale of Biochim Bank in July 2002, the percent foreign ownership of the banking system reached almost 80 percent (Koford and Tschoegl, 2003).

Most of the serious reforms in the financial sectors were implemented after the financial meltdown in 1996-1997. For a number of years Bulgarian banks, both private and public, channeled funds to inefficient but politically important enterprises. Corruption in lending was rampant. As could be expected, eventually the rate of non-performing loans escalated and the banking system collapsed wiping out the savings of the population. The exchange rate entered a freefall and prices spiraled out of control. According to Tang et al. (2000), Bulgaria lost about 42 percent of its GDP.

These events were a sufficient reason to start more serious reforms in 1997. A newly elected government of the United of Democratic Forces introduced numerous measures to limit its own power. To limit its support to bankrupt firms the government introduced a new privatization plan for the banking system. This new approach to privatization gave favored position to foreign banks (Ševic, 2000).

The most crucial reform in the financial system was the introduction of a currency board, which finally stabilized the currency and again reformed the role of the BNB. Nenovsky and Rizopoulos (2003) believe that Bulgaria's switch from a regime of discretionary money supply management and a floating exchange rate to a passive and static form of monetary rule may be considered an "extreme institutional change." The notion that the change was extreme is well supported by the fact that the BNB became independent, while in the early 1990s the BNB had little independence from the government (Christov, 1997).

Currently the BNB operates a currency board which is designed to reduce the discretion over money supply by linking the changes in the monetary base to Bulgaria's

balance of payments. Duenwald, Gueorguiev, and Schaechter (2005) summarize the three broad goals of the BNB: 1) a fixed exchange rate to the euro; 2) automatic convertibility, i.e. a commitment on the part of the BNB to buy and sell foreign currency at the fixed rate; and 3) a prohibition on domestic credit creation by the BNB. Therefore, to control money supply the BNB can only change the reserve requirements of commercial banks. Although such policy has not been practiced frequently, Duenwald, Gueorguiev, and Schaechter (2005) note that the recent credit boom prompted some adjustments to reserve requirements in an effort to reduce commercial bank liquidity.

The currency board lowered inflation to single digits within a few months and inflation has remained low since 1997. Along with introducing the currency board, the government accelerated the privatization of banks and non-financial enterprises. By the time reforms subsided in 2000, close to 80 percent of the GDP in Bulgaria was produced in the private sector and economic growth picked up. Bulgaria has enjoyed about 5 percent annual growth in the last several years.

As Walko (2004) notes, despite the rapid increase in credit discussed in the next section, the degree of financial intermediation in Bulgaria remains low compared to the euro area or the five new Central European EU member states. In addition to the lower activity in the financial sector, Duenwald, Gueorguiev, and Schaechter (2005) also note that the legal environment and financial supervision in Bulgaria are far from the EU standards. Nevertheless, the authors acknowledge many improvements.

Although the discussion has focused mainly on the banking sector, it is worth to mention briefly the other financial institutions in Bulgaria. The reader is referred to Miller and Petranov (2001) for a detailed description of the financial system.

? *Stock Market*: As Miller and Petranov (2001) note, a clear attempt to enhance the stock market was the establishment of the State Securities Commission (SSC). The SSC was established to ensure the protection of investors' interests and to promote the development of the securities market. At present, the stock market in Sofia lists several dozen companies. There are a number of mutual funds, as well as specialty funds such as the ones specializing in real estate. However, stocks have not been recognized as an alternative to bank deposits by many Bulgarians. Similarly, the stock market is not a major source of funding for Bulgarian firms.

? *Bond Market*: Although the issuance of bonds and their trade in the secondary market has increased substantially since the 1990s, bond market activity is still very low. Commercial banks remain the major source of credit.

? *Insurance Market*: Miller and Petranov (2001) point out that the increased financial stability and the low inflation since the establishment of the currency board made it easier for a private insurance market to develop. Asides from standard insurance, there is also additional unemployment and voluntary pension insurance. The passage of the Law on Additional Voluntary Pension Insurance in 1999 made it possible for individuals to obtain defined contribution pension insurance on the open market from licensed pension insurance companies.

5. The Credit Boom of the Last Several Years

The improvements in the institutional factors, together with a successful macroeconomic stabilization, robust growth, capital inflows, and foreign ownership of banks, contributed to a rapid credit growth in Bulgaria. This section discusses the main characteristics of the credit growth in Bulgaria using data on credit volumes obtained

from the BNB. The data are semiannual and span the period from 1999 to 2006 where available. Some of the series are available only until 2005. Then Section 6 presents econometric evidence on the relationship between bank credit, and physical capital accumulation and economic growth.

Table 1 shows that credit to private non-financial enterprises expanded by 361 percent during the past six years, or nearly 24 percent a year. Credit increased from about 6.2 billion leva in 1999 to about 22.6 billion leva in 2005.[2] To put these developments into context, we should note that credit growth has been a region-wide phenomenon. As Cottarelli, Dell'Ariccia, and Vladkova-Hollar (2005) describe, credit has been growing at similar rates in most transition economies.

Table 1 reveals that the credit expansion varied substantially across economic sectors. Of the main economic sectors in terms of size, credit grew especially rapidly in the construction sector (1406%), the real estate sector (3446%), the hotels and restaurants sector (506%), and the trade sector (510%). Credit to manufacturing grew less rapidly (192% for the period). By 2005, the credit to the manufacturing sector was smaller compared to the total credit to the service sectors whereas the relative sizes were reversed in 1999 when the manufacturing sector was the largest recipient of credits. Agriculture also lagged behind in terms of credit growth with an increase in credit by about 277 percent during the period. To some extent, these dynamics of the sectoral distribution of credit reflect the declining shares of manufacturing and agriculture in the economy and the increasing importance of services. Nonetheless, the share of agricultural credit seems small as Figures 1a and 1b show. Agriculture accounts for about 10 percent of Bulgaria's GDP but receives only about 2 percent of the bank credits.

[2] The lev is fixed to the euro at about 1 euro = 2 leva rate (leva is the plural of lev in Bulgarian).

Credit Maturity

Table 2 and Figure 2 present the percentage of credit that is short-term with maturity of one year or less and the percentage of long-term credit with maturity longer than 5 years. The remaining category is medium-term credit with maturity between 1 year and 5 years. Recall that one of the important functions of the banking system is to transform the liquid bank deposits into long-term credits that finance long-gestation projects.

We can observe from Table 2 that the percent short-term credit has decreased, while the percent long-term credit has increased in the last several years. In 1999, short-term credit was about 74 percent of total credit while long-term credit was only 1.7 percent of total credit. By June 2006, short-term credit had decreased to about 31 percent, while long-term credit had increased to 24 percent of total credit.

As can be expected, the sector with the highest percentage of short-term credit (around 98 percent) is financial intermediation since the bulk of this credit represents the interbank market activity. The highest percent long-term credit is in the utilities sector, the hotels and restaurants sector, and in the transportation sector, which probably reflects the stronger demand for long-term assets in those sectors. The manufacturing sector and the agriculture sector are about average in terms of credit maturity.

The Average Size and the Number of Loans

Recall from theory that one of the important functions of the banking system is to agglomerate the relatively small-size deposits of individual savers into larger credits. The larger credits can fund projects characterized by investment indivisibilities where economies of scale lead to productivity and output growth.

It is clear from the data presented in Tables 3 and Figure 3 that the growth in credit activity in Bulgaria has come primarily from the growth of the number of loans extended rather than the growth in the average size of a loan. The number of loans above 500,000 leva has grown by about 5 times from 701 in 1999 to 3541 in 2005. The average size of a credit within that category has increased but not by much from about 1.9 million leva in 1999 to about 2.2 million leva in 2005. During the same time period, the number of loans in the 5000 leva or less category has grown by almost ten times from 3394 in 1999 to 30166 in 2005. Furthermore, the average size of the loans in that category has declined from 1923 leva to 968 leva. While the banking system is extending more loans in every size category, the tendency is to extend a disproportionately large number of small loans. This has been particularly the case after 2002 when the growth in small credits took off.

It would be rushed to interpret these observations as an indicator that the banking system is not performing well its function to aggregate bank deposits into large credits. It is possible that, while primarily large firms had access to bank financing in the early years of transition, an increasing number of small and medium size firms are gaining access to bank credit. This would be reflected in a disproportionate growth in small bank credits.

The Currency Composition of Bank Loans

Table 4 shows that, aside from what appears to be a temporary decline during the middle of the sample period, looking across all sectors combined, the percent bank credit denominated in foreign currencies has stayed the same during the 1999 to 2006 period. About 60 percent of bank credits are denominated in foreign currencies.

From Table 4 we also see that although the differences between sectors tend to decrease over time, the percent of foreign currency credit varies a lot across sectors. In June of 2006, the sectors with the highest percentage of foreign currency denominated credits were *Electricity, gas, and water supply, Hotels and Restaurants,* and *Health and Social Work*, all having above 80 percent foreign currency credit. *Manufacturing* had 61.8 percent foreign currency credit which is about average. *Agriculture*, however, had 31.1 percent foreign currency credits which is the second smallest percentage of foreign currency credits across all sectors.

Overall, the data reveal that credit has been expanding rapidly, especially in the service sectors and in the construction and real estate sectors. The maturity of credits has lengthened during the period. The number of credits has increased dramatically while the average size of credits has decreased. The currency composition of credits has remained fairly stable.

6. Econometric Analysis

This section uses the data described above to investigate the relationship between bank credit and investment and growth in the real economy. There are two sets of results. In one set of results the analysis uses panel data from the 14 economic sectors discussed in the previous section. The BNB and the National Statistical Institute (NSI) provide time series on investment for each of the sectors but not on economic growth rates. Then, in the second set of results the analysis is performed using data on three broad sectors: manufacturing, services, and agriculture for which the BNB and the NSI provide data on both investment and growth. Appendix 1 provides a description of the three sectors.

We can be certain that credit extensions and economic performance are correlated. However, is not clear whether credit extensions cause economic growth or vice versa. To address this endogeneity problem several authors (e.g., Levine et al. 2000 and Beck et al. 2000) who investigate the relationship between financial development and economic growth have suggested using the dynamic panel GMM technique. This technique became popular as it allows us to use previous realizations of a dependent variable as an instrument for the current realization of the same variable providing valid instruments that control for endogeneity.[3]

For brevity, the paper presents only the main results of the estimation procedures. However, the following robustness checks yielded similar results: 1) fixed effects OLS estimations of all models; 2) instrumental variable estimations using employment in the financial sector as an instrument; 3) panel data estimations allowing for spatial correlation of the residuals across economic sectors; 4) including additional control variables such as FDI and institutions; and 5) models where we exclude some sectors and focus on the sectors with greater importance (size) in the economy. These results are presented in Valev and Tasic (2007) and are available on request.

The effect of credit on investment

The models presented in this section explain investment by economic sector using commercial bank credit to that sector and GDP growth in the overall economy. GDP growth is included to proxy for the anticipated profitability of investments: a rapidly growing economy would be associated with more positive expectations.

[3] Appendix 2 discusses the technical details of the procedure.

Table 5 presents the effect of credit on investment when the GMM technique is used with data from the 14 economic sectors. Column 1 shows that credit has a positive and statistically significant effect on investment. The size of the effect, however, is not very large. The estimated coefficient 0.196 implies that an increase in bank credit by 1000 leva leads to an increase in investment by 196 leva. In other words, only about a fifth of the borrowed funds translate into physical capital growth.

The second column of Table 5 shows that credit maturity has an important impact on the extent to which bank credit is used for investment. The positive and statistically significant coefficient on the interaction term of credit with the percent long-term credit (maturity longer than 5 years) suggests that it is primarily long-term credits that are used to fund investment. A ten percentage points increase in the percent long-term credit leads to an increase of 126 leva in the amount of leva that funds investment out of every 1000 leva borrowed. For example, if 10 percent of credit to an economic sector is long-term, then (0.055 + 0.10*1.216) * 1000 leva = 176 leva will be used for investment out of every 1000 leva borrowed from a bank. If, however, the percent long-term credit were to increase to 20 percent, then (0.055 + 0.20*1.216) * 1000 leva = 299 leva will be used for investment out of every 1000 borrowed leva.

The third column in Table 5 shows that large credits have a disproportionately strong effect on investment. To obtain the effects reported in the table, I defined large credit as credit that is larger than 200,000 leva. Since this is arbitrary, the equations were reestimated with alternative size definitions but the results were qualitatively similar. Unfortunately, the data do not provide the size distribution of credits by economic sector and therefore I assumed that the size distribution is the same across sectors. Hence, while one can interpret the results as suggestive of a stronger positive effect of large credits on

investment, one must be cautious making numerical inferences about the economic importance of the effects.

Table 6 presents the effect of credit on investment using the GMM procedure on a panel of three aggregate sectors: manufacturing, agriculture and services. The results of these estimations are very similar to the results using the panel of 14 sectors. Credit affects investment positively, and especially so if credit is longer term and larger size. In fact, the results on credit size from these estimations may be a bit more reliable compared to the results in Table 5 because here we work at a higher level of aggregation. The results reveal a puzzling effect of credit size on investment. Small size credits have a negative effect on investment whereas large-size credits have a positive effect on investment. Nonetheless, the difference in the absolute sizes of the estimated coefficients on credit and credit interacted with credit size in column 6 suggest that a relatively small increase in the proportion of large credits leads to a positive effect of credit on investment. In fact, credit affects investment positively if only 14 percent (3.426/23.368 = 0.14) of credits are larger than 200,000 leva.

Table 7 investigates further the effect of credit on investment by allowing the effect to differ across the 14 economic sectors. To reduce the number of sectoral dummies that are interacted with credit, I combined several small sectors of the economy in the reference group. These estimations were performed using OLS with sector-specific fixed effects. Looking at the results across the various columns in the table, we see that credit has a disproportionately strong positive effect on investment in the manufacturing and the transportation sectors and to a lesser extent also in the real estate sector. This is true for overall credit as well as for long-term credit and large-size credit. Therefore, the shifting structure of credit away from manufacturing and towards services over the last

few years may be associated with a gradual reduction of the effect of credit on investment.

The rest of the results in Table 6 are qualitatively similar to those in Tables 5 and 6 but the sizes of the coefficients are generally smaller. This is not surprising since the inclusion of sector dummy variables reduces the degrees of freedom and also captures much of the cross-sectoral variation in the data.

The effect of credit on growth

Table 8 presents the effect of credit on economic growth for the three broadly defined sectors – manufacturing, agriculture, and services using the GMM procedure. In this estimation, the measure of credit activity is the level of credit to a sector divided by the gross product of that sector. This is the usual approach in the literature. The dependent variable is the rate of growth of the value added by economic sector.

The estimations show that credit has a differential effect on growth across the sectors with a positive and statistically significant effect in the manufacturing and the services sectors and a statistically not significant effect in the agriculture sector. In terms of economic importance, the effect of credit is as follows. An increase in the ratio of credit to value added for the manufacturing sector by 10 points, e.g. from 0.37, which is the current level, to 0.47, would lead to 0.076 percentage points of added growth in that sector every quarter.[4] This translates into a 0.34 percentage points faster growth on an annual basis.[5]

[4] The calculation is as follows: (ln(0.47)-ln(0.37))*(0.982-0.664)=0.076.

[5] The results of the Sargan test in all specifications tell us that we can reject the hypothesis that the instruments are not valid. However, note that as the number of sectors is small relative to the number of time periods, the test may have low power.

The effect in the services sector is similar to that of the manufacturing sector. It is interesting to observe that credit has a positive and statistically significant effect on growth in the services sector even if it does not seem to have an effect on investment in that sector. Perhaps, the effect in the services sector obtains through improved productivity.

7. Qualitative Analysis - Interviews

The statistical analysis of the previous sections shows that credit is important in stimulating physical capital accumulation and economic growth. Furthermore, it seems that particular types of credit have a stronger effect, namely long-term credit and larger size credit. While these results are consistent with theory and suggest that the banking system in Bulgaria contributes to economic development, we must acknowledge that the time series on which the estimations are based are very short, only 7 years. This time period is not sufficiently long to reveal whether banks perform well the functions discussed earlier in the paper. Furthermore, it is not clear whether the growth in credit during that time is not a temporary spike produced by the combination of low international interest rates that spurred credit growth throughout the global economy, the completion of the major structural reforms in the economy around 2001, the entry of foreign banks trying aggressively to secure a market share, and the impending EU entry in 2007 that generated optimism about future incomes and convinced banks to lend more and borrowers to borrow more.

To gain insight into the mechanics of the credit process and to investigate how banks perform the functions discussed by Levine, I interviewed 25 officials from the banking system and the government as well as a number of analysts in academia and

NGO's. The interviewees included bank officials from a wide variety of banks in the capital Sofia and outside Sofia. Some interviewees were from small banks that do not have a large branch network and specialize in particular financing while other interviewees were employed by the largest banks in Bulgaria. The sample of interviewees also ranged across positions within the banking system. I interviewed credit inspectors for small and micro enterprises at bank branches as well as branch managers, and the chief economists at several banks. Some interviewees specialized in corporate credits while others had significant experience in the largely dormant but developing credit market for agriculture activities. Many of the bank officials had working experience at other banks since the turnover in the banking system is very high and many had experience in several positions, e.g. micro credits, corporate credits, mortgages, research and even board of directors. The richness of this sample proved extremely helpful as it allowed me to draw on the insights of people with varied experiences and viewpoints.

The interviews explored how the banking system fulfils the functions summarized by Levine (2005): 1) Produce information ex ante about possible investments and allocate capital; 2) Monitor investments and exert corporate governance after providing finance; 3) Facilitate the trading, diversification, and management of risk; and 4) Mobilize and pool savings. The interviews usually took about 1 hour during office hours or after work.[6]

Produce information ex ante about possible investments and allocate capital

How successfully financial intermediaries are able to perform their function to collect, analyze and produce information about investment opportunities depends on a

[6] Appendix 3 shows the interview guide used in the interviews.

number of factors. First, banks must be able to verify and trust the financial documents provided by the firms requesting credit. There are a number of practical impediments in this area in Bulgaria and in other less developed countries. For example, many businesses in Bulgaria show negative or zero profits in their official accounting because of widespread tax evasion. This is particularly true among small and medium sized firms. Fake business receipts and other documents are not uncommon.

Second, banks must have access to information about the current indebtedness of a potential borrower. Furthermore, credit evaluation would be easier if banks can observe the credit history of a borrower. A relatively long and unproblematic credit history can be an important indicator for the future dependability of a borrower. However, most firms in Bulgaria and in other transition economies do not have a long history simply because private firms did not exist until recently.

Third, banks must be able to evaluate the economic conditions in the geographical region and the economic sector in which the firm operates. Yet, the process of transition from communism is characterized by dynamic structural changes during which the economy is continuously reorganizing. It is difficult to determine the economic conditions in a given sector or a region especially in the medium to long-term.

So, how do banks differentiate between good and bad risk in this environment in order to allocate resources toward the projects with the best potential? According to the interviewees, having a relatively long (2-3 years or more) history with a bank is an important determinant of whether that bank will extend credit to a borrower. This is true particularly at the branch level from where banks channel financing to micro, small, and

medium size firms.[7] If the borrower is not known to the bank (and in some banks this is the procedure with all borrowers regardless of whether they have history with the bank) the application goes through a special risk department which is charged with investigating the borrower. These are frequently law enforcement officers who, in addition to all else, check for connections to organized crime, illegal activities, etc. The risk department does not get in touch directly with the borrower but uses documentation and site inspections. Only after the borrower is cleared through the risk department, the procedure for extending the credit can be completed.

Credit history

A credit register started operating in Bulgaria only a few years ago. Only then banks could become informed about the borrowers' credit exposure to other lenders. Although the credit register is not yet complete, e.g. it does not include information on leasing credit, it nonetheless provides much valuable information about indebtedness. For example, when it looked up his indebtedness in the newly opened credit register, a bank discovered that one of its borrowers had altogether 18 credits from 16 different banks!

While the credit register provides information about the current indebtedness of a borrower, it does not provide information about the credit history of a borrower. Hence, banks do not know if a firm had obtained credit in the past and how well it had serviced this credit unless, of course, the firm is a long-time client of the bank. One interviewee attributed the absence of credit history from the register to the following reason. Larger banks with a longer standing in the economy and a large client base were reluctant to share their proprietary information about the history of a borrower. Having proprietary

[7] The definition of a small firm varies across banks. However, what is considered in Bulgaria to be a medium sized firm with 20-30 employees would be considered small in more developed economies.

access to information about the credit history of a firm reduces the ability of that firm to obtain financing at another bank. Sharing the information with other banks would make it easier for the firm to shop around for offers from other institutions. Hence, larger banks pressed for excluding this information from the credit register when it was being designed. Of course, the absence of credit history records is a major impediment in the credit evaluation process. It is probably also one of the reasons why banks compete aggressively to attract credit inspectors from competitor banks who have developed a large client base. The clients and information about them often come along with the bank official when he or she makes a transfer to a new institution. Attracting a bank official from another bank is a way to gain access to the information held at that institutions.

Tax evasion and credit activity

The evaluation of borrowers in Bulgaria is hampered to some extent by the widespread tax evasion. It is estimated that more than half of the activities of small firms are undocumented. For large firms, this percentage is estimated by bankers to be around 15 percent. The overwhelming majority of firms, if not all, keep two sets of books – the official set of books for tax purposes and a second set of "black" books. The official books often show losses or negligible profits whereas the black books show positive and sometimes very healthy profits.

Many banks have found ways to incorporate information from the black books into their decision making process. All banks study the official books but some banks have specialized in working with the real information about the enterprise. They look at the black books and do site inspections. Then the credit is extended on the basis of this observation albeit at a higher interest rate (about 14 percent at one bank compared to

about 8-9 percent interest on other firm credits). For official purposes, the extension of the credit is justified by preparing a favorable "economic potential" valuation for the borrower, i.e. the firm may be losing money at present but its potential is very strong.

A priori, one might suppose that financial development would provide a strong incentive for firms to reveal positive profits on the official books – if taking credits and participating in the banking system becomes more important relative to the savings from tax evasion, then firms would prefer to reduce the shadow portion of their activities. This logic does not seem to be at work in Bulgaria so far. Instead of the firms adjusting to the practices in the banking system, many banks are adjusting their practices to the conditions in the real economy. The banking sector does not provide a strong incentive for the reduction of tax evasion in the country.

A relevant question that arises in this line of thought is how the banks justify the extension of these credits to the bank supervision authorities. I should point out that the use of information other than the official books in the evaluation process is not a secret to anyone in the industry or the central bank. Indeed, the bank inspectors from the central bank notice that credits are extended to firms that do not seem to have the financials necessary to justify the extension of that credit. In those cases, the bank inspector discusses the credit with the bank inspector who generated the credit and, in some cases, with the firm itself. A credit is not reclassified as a problem credit by the supervisor if there is evidence that that borrower is doing well even if the official financials do not support this.

The system has adapted to the conditions on the ground to be able to base the evaluation of the borrower on real information. Yet, the discrepancy between official and unofficial information is a problem because unofficial information is costly to verify.

Furthermore, not all banks use unofficial information in their evaluation process which puts them at a disadvantage because it limits the range of borrowers who approach them for credit.

Lack of experience on the part of borrowers

Another difficulty in the evaluation process is that bankers often receive requests for credit for activities that are far removed from the current business activities of the applicant. A typical example is someone who owns, say, a restaurant in Sofia or a wholesale store for food products and requests funds to build a condo building in one of the resorts in Bulgaria. The applicant has no experience in the construction business and, as can be expected, the business plan is not well done. Nonetheless, the borrower wants to participate in the construction boom because the profit margins are reportedly high.

While this may sound strange in an economy where the major players in most sectors are already established, in a new market economy like the Bulgarian one, many sectors are not yet dominated by established firms. This leaves space for newcomers. Furthermore, the profit margins in the booming sectors are indeed high enough to attract a number of inexperienced entrepreneurs who may obtain a positive profit even if the execution of the project is not very efficient. Many bankers complained about the lack of experience and expert knowledge of the firms requesting credit.

Credit size limitations

Every level in the banking system faces a limit in terms of the maximum size of a credit they are allowed to extend. The limits are determined at the headquarters of the banks and may differ across the various branches of the same bank depending on the

location of the bank branch and the experience of the branch officials. For example, in one bank, a new branch starts with 20,000 leva limit and the limit can increase up to 500,000 leva. Furthermore, the credit inspectors within the same branch have different limits on maximum credit size. Any credit with size greater than what can be decided at the branch level is decided in the central office in Sofia and, when the bank is foreign owned, the largest credits are decided in the headquarters abroad. It is interesting to note that the size limitations were introduced in many banks after the 1996 crisis. Before the crisis, branch manages had discretion with large credits which lead to corruption and the misallocation of resources.

Bank officials felt that the size limitations at the branch level do not pose a problem. Similarly, very few expressed concern that the big decisions are made abroad. In fact, one official expressed the view that this is good for the country because the headquarters of international banks have a lot of experience from their own countries and from other transition countries. Overall, my feeling was that the new managerial structures and the incentive schemes introduced by foreign banks are received well by the banking system. All bank officials were eager to point out that banks now function very differently from the pre-crisis period. In large part, this is due to the new managerial practices.[8]

[8] Other examples of new managerial practices include bonuses for the sale of credits adjusted for the quality of credit portfolios; long-term contracts with a higher salary as an effort to retain top performers; salaries based on the performance of the credit department rather than on the performance of the individual member of the department to stimulate team work and internal monitoring; various team building activities and seminars throughout the year; and emphasis on the hiring of young bank officials at some banks. Overall, bankers seem to work in a highly structured environment. The overwhelming majority expressed satisfaction with their jobs although the level of compensation is still relatively low (a top credit officer can be on a 500-600 leva salary) and the working hours are long and often extend beyond the official 9 to 5 hours. The officials feel that there is potential for professional growth in the banking system primarily through frequent mobility between banks. In fact, banks compete to hire strong performers who bring with them a large Rolodex of satisfied clients since clients tend to follow the bank official (assuming that the new bank is of similar reputation).

Evaluating the environment of the borrower

One common theme that emerged in the interviews was that by now after 15 years of transition many credit inspectors know most of the firms in their towns. Bulgaria is a relatively small country and the history of many firms and their owners is known by bankers who have been in the industry for quite some time. Therefore, several bankers at the local branches stated that evaluating the individual borrower is less of a challenge compared to obtaining information about the sector in which the borrower operates. Obtaining sound information about the region of the country in which the borrower operates is also a challenge. These difficulties are due partly to the lack of data that can be used to analyze sectoral and regional dynamics and partly to the rapidly changing economic structure of Bulgaria. The economy still experiences dramatic structural changes because of continuing reforms, the rapid growth of some sectors, large internal migration, approaching EU accession, and large influx of foreign capital into some regions and sectors. Nonetheless, recognizing the need for such information, the economics research department of at least one of the large banks in Bulgaria has started a project for sectoral and regional analysis.

It should become clear by now that deciding whether or not to extend credit to a particular borrower in the current conditions in Bulgaria is more art than science because hard data on the history of the borrower, the sector, and the region are hard to come by. It comes as no surprise then that few institutions have implemented a point rating system to evaluate firms. In the cases where such systems have been implemented, the bank often relies heavily on products developed and tested abroad. Furthermore, it comes as no surprise that banks have expanded their household credit portfolios, mostly mortgages, faster than their credit to firms because household borrowers' income and their collateral

are easier to evaluate. Also, in terms of firm credit, banks have expanded rapidly their turnover credits that are based primarily on evidence for the volume of sales of the firm as opposed to investment credits which are based on a much more comprehensive evaluation of the borrower and the project. Last but not least, banks seldom extend credits for new projects or new firms but mostly for project or firms that are already operating, have evidence of success, and need further financing.

Despite the information challenges, overall my impression is that banks make prudent decisions when it comes to firm credits. The banking system has accumulated significant experience during the transition years undergoing radical reforms and a crises. Many bank officials have much experience in the system and with particular borrowers. Overall, many bank officials point out that the culture in the banks is very different from that before 1997 – by and large banking officials operate with the attitude that lending decisions are made on the basis of prudent credit evaluation and not on the basis of connections.[9] The Bulgarian National Bank also ensures a high level of prudential supervision. At present the level of delayed payment in the system is low.

I should remind the reader that banks exist *because* information is costly to collect and process. Perhaps banks are especially important in informationally difficult environments such as the transition countries. The question is whether banks manage to resolve these information difficulties and to improve the allocation of capital in the economy. The interviews suggest that despite the challenges commercial banks navigate the environment well and provide an important value added to the economy in this regard.

[9] Curiously, several bankers explained how prior to 1997, if a firm wanted to obtain credit, it strived to get in touch with the branch manager who was often not a banking specialist. Only after the credit was arranged, the credit inspector was called to complete the necessary documentation.

Monitor investments and exert corporate governance after providing finance

After a bank makes a decision to extend credit to a firm, the bank enters into its role as a monitor of the use of the funds. Monitoring is needed to ensure that the recourses are used as prescribed in the loan agreement. In communication with the borrower, the bank has to detect early if the circumstances of the borrower or the funded project have changed. Then, the bank acts on the new information. It is instructive to discuss this process in two parts – first, how the banks monitor the current conditions of borrowers and, second, what actions are undertaken when the conditions have changed.

To understand the process of monitoring, one must distinguish between the two general types of credits extended by the banking system to non-financial firms – investment credits and turnover/overdraft credits. Investment credits are extended for a particular purpose. They have maturity that reflects the time schedule of implementing the investment project. The disbursement of transhes of the investment credits is for particular purposes as well. For example, if a firm has obtained an investment credit to build a hotel, then a transh of funds would be disbursed for the purchase of cement, another for bricks, another for the purchase of furniture, etc. Each disbursement has a particular purpose and is agreed upon at the negotiation of the credit. When the project begins to generate revenues, the proceeds are committed to paying down the interest and principal of the credit. Often the bank has the right to 100% of the generated revenues and only after the principal is paid off the borrower can keep the residual stream of revenues. Obtaining this type of credit is advantageous for the borrowers because they have access to resources for the duration of the implementation of the project. The advantage for the banks is that they have a clear idea what the resources are used for.

This clarity makes it easier for the bank to perform its function as a monitor. The disadvantage of the investment credit is that its extension is cumbersome and costly for the borrower and for the bank. The borrower has to produce a detailed business plan, all the necessary documentation and to provide strong argumentation for the need for financing.

In contrast, the overdraft and turnover credits (which can best be described as business lines of credit) are extended on the basis of evidence for the turnover (sales) of the firm and its current financial situation. The credit limit of the turnover credits is set as a percent of the turnover of the firm, e.g. 30% of the turnover. The advantage of this credit for the bank and for the firm is that it is easier to justify and extend. There is no lengthy justification procedure. Furthermore, the borrower has greater discretion over the use of the borrowed funds. The credit line can be used as intended to meet the liquidity needs of the firm or it can be used for investment purposes. If the latter is the case, then the borrower can fund investment projects without a preliminary agreement with the bank. The turnover credits are more risky for the borrower because they are short-term (usually with one year maturity) and have to be used with caution for financing long-term investment. At the same time, however, they give the borrower greater discretion over their use.

The concern of many of the interviewed bank officials is that the banking system is extending too many overdraft and turnover credits which are then used for investment purposes. The effectiveness of the monitoring of the use of funds is diminished and the risk of imprudent investment decisions by the borrowers increases. It is difficult to determine how widespread is this practice but more than half of the bank officials brought this up. As far as I am aware, the BNB or other government institutions do not

provide a breakdown of commercial credits into investment, turnover, and overdraft credits.

Many bank officials revealed that household credits, particularly mortgages but also consumer loans (which can reach 10,000 leva or more per person) are also used for investment purposes. Often, they are cheaper in terms of interest rates and easier to obtain in terms of documentation using personal real estate property as collateral.

A couple of interviewees mentioned that the biggest problem in the process of monitoring is the monitoring of the collateral. Despite all the proper documentation by the borrowers, site inspections sometimes reveal that the collateral does not exist. For example, a machine that was used as collateral to obtain a loan was sold. Or perhaps, it turns out that part of the firm has been transferred in the name of a relative. A careful inspection can also reveal that the firm has a number of other formal and informal creditors who claim ownership of the collateral. By law and by contract, borrowers have to inform banks of such changes in their ownership structure or other important circumstances but in practice this information is not submitted promptly.

Now, assuming that the bank is aware of the actual use of funds and it has correct and timely information about the financial condition of the firm, what actions does it take when the borrower starts to experience difficulties? First and foremost, all interviewees stated that selling the collateral is done only as a last resort. All of the interviewees stated that banks have a strong incentive to work with the borrower to resolve the problem situation. What usually happens is that officials from the bank will start spending quite a bit of time with the firm officials on the premises of the firm. A lot of information about the business is generated and analyzed. I was told that these discussions can take a few months. If the firm and the bank can reach an agreement, the loan is restructured usually

extending its maturity. The bank also encourages the borrower to secure funding from other sources. If agreement cannot be reached, then the bank proceeds to selling the collateral.

This last step is actually not done by banks but by credit collection agencies which purchase the loan from the bank at a discount. Usually, the procedure for selling the credit and selling the collateral takes 6-9 months but it can also take more than a year when the borrower refuses to cooperate. From the perspective of at least one interviewee, the collections process is difficult, lengthy and costly and this sometimes deters banks from extending credits in more risky situations.

Facilitate the trading, diversification, and management of risk

Many of the interviewees attributed the 1996 banking crisis in Bulgaria partly to the lack of diversification of the banking system. Many banks had significant exposure to one economic sector and often to one firm. The interviewees stated that the legacy of the crisis, the Basel capital adequacy standards which require diversification, and the better portfolio allocation practices that are generally the norm in the banking system these days all contribute to greater attention paid to cross sectional diversification. However, I could not obtain concrete information on the models, rules or principles followed by the banks in evaluating the effectiveness of their cross-sectional diversification. Overall, I was left with the impression that currently banks are more concerned with growing their market share and less so with overextending themselves in certain sectors. However, as we discussed earlier, much of the credit growth can be attributed to the rapidly growing number of small loans which naturally contributes to the diversification of bank portfolios across economic sectors.

Moving beyond cross-sectional diversification, spreading risk over time and reducing the liquidity risk faced by savers requires that the banking system transforms the liquid short-term deposits into less liquid long-term assets. Furthermore, as the econometric results of the previous section suggest, long-term credit has a disproportionately large positive effect on investment. Therefore, the interviews inquired more pointedly about the determinants of credit maturity and specifically what, if any, factors prevent the lengthening of credit maturity.

First of all, I should note that some interviewees explained that the statistical data are misleading. For example, often one-year credits are extended as a control device in the sense that evidence of success with the project must be present for the credit to be rolled over for another year, and then another year, and so on. Therefore, what is essentially a long term credit will appear as a succession of short-term credits. As some bankers put it, there are no short-term credits.

Furthermore, as I explained earlier, obtaining turnover credit to meet the liquidity needs of a firm is much easier than obtaining an investment credit. A turnover credit is extended on the basis of evidence for a certain volume of the activity of a firm, e.g. up to 30 percent of the annual turnover. An investment credit needs to be justified with a business plan and leaves less discretion for the borrower. Hence, funding investment with turnover credit may be advantageous assuming that the banking system is expected to roll over these credits. In the end, a long-term investment is funded by short-term turnover credit.

The above arguments suggest that in practice credit maturity is longer than that observed from the banking statistics. Nonetheless, with these caveats about the statistical data, most bankers agreed that short-term credits are preferred by the banking industry

because banks dislike the maturity mismatch on their balance sheets. Often the bankers brought up their experiences during the 1996-1997 banking crisis when demand deposits and short-term time deposits fled the banking system and the banks were left holding long-term illiquid assets. It is understood that one of the functions of the banking system is to transform short-term liabilities into long-term assets but the dislike for this function is strong, particularly at smaller institutions that face more uncertainty on the liabilities side of their balance sheets.

As with other issues, there was disagreement among bankers about the role of past and expected future instability on the decision to extend (or not) long-term credits. Some bankers felt that the 1996-97 crisis has conditioned the banking system to avoid long-term exposures. Others pointed out that macroeconomic and political uncertainty is very seldom an issue at discussions even at the highest levels of the banking system where the general rules and guidelines for credit activity are generated. Nonetheless, overall, many bankers brought up the 1996 crisis and the view that one cannot be absolutely sure of the sustained stability in Bulgaria. It is more likely to hear these opinions at the higher levels of the banking system where bankers have to take a broader and more long-term view. At the lower levels where bankers are in direct contact with the borrowers the concerns are related more to understanding the individual borrower rather than the macro environment.

At present the maturity of investment credits has a possible maximum of about 5-7 years[10] but some banks already offer 10 year maturity. The prevalent view in the banking industry is that competition between banks will lengthen the maturity of

[10] One of the interviewed banking officials stated that they had done analysis of the average lifespan of the Bulgarian firms. Since the lifespan was about 5 years, they placed their maximum investment maturity at 5 years.

investment credits. If some banks start offering loans with long maturity, other banks will follow suit since the demand for such credits exists.

Nonetheless, at present even the demand for long-term credit is not all too strong. Much of the credit demand comes from the construction industry to build hotels and residential buildings in the cities and in Bulgaria's main tourist destinations along the Black Sea coast and the ski resorts in Southwest Bulgaria. A large influx of foreign investment in real estate as well as the booming market for mortgages is fueling the tremendous growth in construction and the high profit margins. Many buildings sell off even before they are completed so the average life of a project in the building industry spans less than 3-4 years. Hence, much of the available capital and much of the demand for bank financing is directed to these present opportunities. Over time, with the slowdown in construction and the closing of short-term profit opportunities, capital will have to be directed to more long-term projects. It remains to be seen if investors will be willing to seek funding for long-term project and if banks are willing provide the resources at reasonable interest rates.

Mobilize and pool savings

One of the main functions of the financial system is to pool the savings of the individual savers and use these pooled funds to finance large high-productivity projects. According to the statistical data discussed in the previous sections, the credit growth in Bulgaria originates from a rapid increase in the number of borrowers more so then from an increase in the size of credits extended to the average borrower. I asked the banking officials whether this impression is correct, and if so, why credit size remains relatively small.

In general, the officials agreed that most credits in Bulgaria are small in size but emphasized that, like the data on credit maturity and sectoral composition, the statistical data on credit size must be considered with caution. First of all, one borrower might have several credits. Investment credits have specific use and if, for example, a firm wants to build a new facility with equipment all financed by a bank, it will receive one credit for the construction of the building, another for the acquisition of some machinery, another for turnover expenses, etc. Therefore, what appear to be several small credits is in fact a relatively large credit (exposure) to one firm. Similarly, on occasion several banks in Bulgaria have provides collected (syndicated) lending to a firm where, again, several smaller credits are in fact one larger one. However, this practice of collective lending is not widespread.

With these caveats, bankers agreed that most credits in Bulgaria are relatively small in size. There were several reasons brought forth to explain why. First, lending to a greater number of borrowers increases the diversification of the credit portfolio. The portfolios of banks were heavily concentrated until 1996 when the banking crisis erupted. Hence, now diversification is a goal of the banking institutions. Second, most banks in Bulgaria are small in size. Despite the credit expansion during the last few years and the healthy profits of banks, bank capital has not grown much. At the same time, the Basel accord limits the exposure of a bank to a particular borrower in relation to the size of the capital of that bank. Therefore, the sizes of the credits are limited not only by the pool of available savings (deposits) but also by the prudential restrictions on credit exposure related to bank capital. A third explanation for the small size of credits is that the size of the overwhelming majority of firms in Bulgaria is small. These firms, which are gaining access to the financial system over time, apply for and are approved for small loans.

Having said that, it is important to add that Bulgarian firms do have access to large credits. However, these credits are generated by banks outside Bulgaria. A prime example that floats in the banking circles is the credit for Maritza Iztok, a major foreign-owned electricity company in Bulgaria which has arranged a credit of several hundred million euro (I've heard numbers ranging from 400 and 800 million euro) from a consortium of foreign banks. Larger firms, particularly those with foreign participation, can access the international capital markets for financing where they obtain larger credits at better terms. Therefore, ideally any discussion of credit availability in Bulgaria (and in other countries) should incorporate international as well as domestic credit.[11]

Bankers almost unanimously claimed that trust in the banking system is strong and that the population is not concerned when depositing their savings in the variety of assets offered by the banking system. Depositors can choose between demand deposits, as well as time and savings deposits with various maturity structures and denominated in Bulgarian leva, in euro and in dollars. Casual observations from the big cities and even the small towns suggest that banks operate numerous branches making it physically easy for people to go to a bank. Banks also offer innovative products. For example, banks offer a deposit whose return is linked to an investment into a portfolio of stocks but with a guaranteed return minimum. Some banks offer high deposit interest rates. So, banks compete for the deposit base and in the process appear to be effective in attracting the savings of the population.

The interviews suggested that there are two major deterrents for participating in the financial system. One is that many people in Bulgaria have no savings because their incomes are too low. The second reason is tax evasion. Banks are required to submit

[11] There is little evidence that Bulgarian banks finance projects outside Bulgaria. The interviewees explained that profit margins in Bulgaria are higher than what can be obtained elsewhere.

information about large bank transactions to the BNB. Therefore, savers with illegitimate savings prefer alternative assets, mostly real estate. There also appears to be a thriving unofficial lending market which operates with these funds.

8. Additional Observations

Aggressiveness vs. prudence

All credit inspectors in the banking system walk a fine line between trying to extend credits that are well justified and have a low risk of going bad and extending as many credits as possible. The banks in Bulgaria are in extremely strong competition for market share, which translates into incentive schemes motivating bank officials to generate credits. It is common to base bank officials pay partly on the size of their credit portfolio and its rate of growth adjusted for some measure of credit quality such as the percent delayed payments. Time will tell if these incentives have diluted credit quality.

Issues of trust

Although trust in the banking system seems strong, there are some curiosities. For example, several bankers complained that business owners who request credit are reluctant to provide information about their business. They are concerned that the banks will pass this information to the competitors or that the bank inspector him/herself will take advantage of the project idea. Also, many of the business plans presented to justify a credit application are not justified and written well. However, business owners are reluctant to approach consulting companies that specialize in the preparation of business plans for fear that the consultants will take advantage of the information about their business.

One banker gave an interesting account of the different attitude to credit in the urban and rural locations. Their bank tries to introduce farmers to credit products by traveling around rural areas in a so called Creditmobil, a minivan with the bank logo on the side equipped with the necessary paperwork to extend credits. On several occasions, the farmers applying for credit (for example, 1 cow can be used as collateral for 1,000 leva credit) requested that the Creditmobil does not park in front of their house. Apparently, for many people in rural areas, obtaining credit is a sign of financial difficulties. Therefore, people don't want their neighbors to know that they have obtained credit. In contrast, having a bank credit does not carry a stigma in urban areas where credit is often a topic of conversation. One wonders to what extent these attitudes influence the decision of individuals to participate in the financial system and to take full advantage of its services.

Measuring credit activity

Figuring out the volume of credit to non-financial firms is not as straightforward as one would anticipate. There are a few adjustments that need to be made to the credit aggregates discussed earlier in the paper to arrive at a more correct number. First, one must include the loans from banks outside Bulgaria to firms in Bulgaria. As I discussed earlier, large firms access international capital markets to obtain large size funds. Second, the measure of credit must include credit from non-bank finance companies. For example, a number of bankers mentioned that leasing companies are becoming increasingly important for funding the acquisition of various equipment and machinery. The leasing companies specialize in extending medium to long-term credits using the equipment as collateral. Third, one must add the domestic and the international bond

markets. Fourth, although this would be impossible to measure, one must at least acknowledge that part of the household credit is used for business purposes and also that a number of small firms access the unofficial credit market.

9. Conclusions and policy recommendations

The analysis of the statistical data and the interviews suggest that the recent and continuing credit growth in Bulgaria has a positive effect on the economy in the short-run and in the long-run. In the short-run, the banking system directs funds where opportunities abound and internal recourses are not sufficient. This stimulates the demand for goods and services and expands the scope and scale of production. The banking system also performs the functions discussed by Levine thereby producing a positive effect on long-run growth as well. Banks manage to overcome the information difficulties associated with allocating capital reasonably well given the uncertain environment of a transitioning economy. They have developed procedures and practices for monitoring borrowers that also do a reasonably good job. Banks pay attention to cross sectional diversification and increasingly lengthen the maturity of credits providing funding for longer-term projects. Banks have also made an effort to develop a branch network as well as products that are designed to attract the savings of economic agents. Aggregating the savings into larger size credits seems to be lagging behind the other functions at this time but larger firms can access international markets within the EU and even further. In the long-run, performing these functions well means that capital in the country is directed to better uses raising productivity and economic growth.

This general conclusion is not without caveats. As the paper discusses, banks face challenges when investigating the conditions of economic sectors and various regions

within the country. More comprehensive and timely data from state agencies would go a long way easing this challenge. Also, although banks have accumulated experience evaluating individual borrowers, they don't have access to a unified system revealing the credit history of a credit applicant. As a result, credit is directed to firms that already have history with the bank. One unfortunate result of these difficulties is that banks do not provide financing for new firms but only for the expansion of established ones.

The monitoring and control over investment projects funded with bank financing is diminished when turnover and overdraft credits as well as household credits are used to finance investment projects. Furthermore, although this may change as the Bulgarian banking system continues to consolidate, at this point Bulgarian banks seldom finance large projects either individually or in syndicated lending groups. Finally, although I have left this discussion outside the scope of the paper, it is important to add that many of the interviewees were concerned that lending to households is too frivolous. According to the interviews, many household borrowers are overextended and are starting to slow down payments.

The interviews suggested an additional role of the banking system that does not seem to fit into any one of the financial system functions discussed by Levine. I was told at several banks that if they wanted to have customers, they had to create them. Many Bulgarian business owners do not have experience with producing business plans, determining the type of credit they need or using other financial services. At the same time, banks are implementing financial innovations and are introducing financial assets developed in countries where the financial literacy is high. Hence, bank officials often have to educate their clients before they take full advantage of finance. Similarly, banks are implementing hybrid products that transition their customers into less known and

more complicated financial instruments such as stock market investments. Banks are also instrumental in resolving the business challenges of the borrowers who experience difficulties. In short, banks strive to bridge the information gap between what the financial system can offer and what bank customers are ready to take advantage of. This educational role of banks is probably particularly important in transition economies where the population has little experience with finance.

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Table 1: Commercial Bank Credit (in thousands of BGN)

Sector	1999	2000	2001	2002	2003	2004	06/2005	Total Growth	Yearly Growth
Real estate, renting and business activities	11019	25535	59974	102306	107795	254453	390800	3446.60%	73.95%
Financial intermediation	3428624	4407517	4772322	4366511	3589001	5592031	6338815	84.88%	9.09%
Transport, storage and communication	117706	117860	235602	313236	256886	435969	591591	402.60%	26.40%
Hotels and restaurants	135569	171344	288979	376581	459074	748937	822090	506.40%	33.58%
Trade	710749	833163	1361423	2069236	2974955	4008647	4335534	510.00%	33.93%
Construction	46122	62533	97692	173583	259566	482427	694618	1406.04%	45.72%
Electricity, gas and water supply	105263	37732	67621	70437	301507	355353	368586	250.16%	60.26%
Manufacturing	942392	1275285	1237539	1651510	2125068	2622819	2753627	192.20%	18.86%
Mining and quarrying	57286	55111	56809	76310	85851	107745	117366	104.88%	10.57%
Agriculture, hunting, forestry and fishing	127320	124723	164474	167353	263338	376242	480561	277.44%	18.35%
Education	587	431	1661	1728	7066	11455	8780	1395.74%	110.72%
Public administration	4214	4483	6947	10133	43748	79078	111722	2551.21%	81.75%
Community, social and personal service activities	69503	173552	191457	400916	691674	1120641	1431817	1960.08%	63.71%
Health and social work	1609	3377	18212	35128	65324	98678	152105	9353.39%	123.99%
Total	**6270688**	**7894123**	**9357511**	**10784409**	**13012547**	**19735855**	**22647412**	**361.17%**	**23.89%**

Table 2: Credit Maturity: Percent short-term (maturity 1 year or less) and percent long-term (maturity longer than 5 years) debt

Sector	1999	2000	2001	2002	2003	2004	2005	06/2006
Real estate, renting and business activities	50.6%	14.5%	44.4%	57.5%	39.7%	38.4%	22.8%	24.5%
	0.0%	5.8%	11.9%	2.8%	10.1%	10.5%	30.5%	26.7%
Financial intermediation	97.5%	96.8%	99.2%	99.0%	96.2%	96.4%	-	-
	0.5%	0.0%	0.1%	0.1%	0.1%	0.2%	-	-
Transport, storage and communication	48.9%	49.1%	34.9%	55.2%	34.6%	33.6%	24.3%	23.1%
	1.0%	0.7%	6.7%	0.4%	1.6%	4.1%	15.7%	30.2%
Hotels and restaurants	31.6%	16.8%	26.7%	29.6%	14.3%	15.9%	6.2%	7.2%
	11.7%	6.2%	1.0%	3.2%	16.2%	26.3%	55.1%	55.1%
Trade	59.2%	56.5%	54.1%	52.5%	46.8%	48.3%	38.6%	36.8%
	0.2%	1.5%	6.9%	3.1%	5.4%	8.8%	19.5%	20.7%
Construction	52.7%	52.1%	65.6%	49.8%	38.1%	38.7%	24.3%	25.9%
	0.0%	0.2%	0.4%	2.9%	5.6%	10.9%	19.1%	13.8%
Electricity, gas and water supply	64.4%	35.1%	31.6%	44.2%	17.5%	31.1%	22.1%	13.5%
	0.0%	1.5%	0.7%	0.7%	51.6%	47.1%	60.6%	71.6%
Manufacturing	54.9%	58.8%	53.1%	54.7%	48.6%	48.8%	34.3%	33.2%
	0.2%	3.5%	3.5%	4.6%	7.8%	10.3%	18.2%	18.2%
Mining and quarrying	51.9%	27.9%	25.8%	67.7%	57.2%	33.6%	52.1%	59.6%
	0.0%	0.0%	7.4%	10.8%	15.3%	0.0%	6.0%	13.6%
Agriculture, hunting, forestry and fishing	44.9%	56.8%	51.3%	51.2%	50.9%	47.4%	27.2%	29.8%
	0.5%	1.6%	8.1%	1.4%	1.8%	3.7%	16.5%	20.8%
Community, social and personal service activities	24.7%	37.9%	23.2%	24.5%	13.4%	16.8%	19.5%	18.5%
	0.7%	4.8%	17.8%	17.5%	11.8%	21.3%	34.9%	33.2%
Health and social work	58.1%	79.9%	34.6%	43.8%	20.7%	34.3%	23.9%	37.6%
	0.0%	0.0%	1.6%	6.8%	20.0%	31.5%	41.2%	31.2%
Education	29.6%	36.9%	41.5%	22.7%	14.5%	69.9%	6.6%	7.5%
	70.2%	0.0%	0.0%	18.7%	6.1%	1.1%	16.6%	21.3%
Public administration	75.4%	89.0%	62.7%	54.5%	13.8%	63.7%	-	-
	0.0%	0.0%	0.0%	0.0%	30.2%	20.5%	-	-
Total	**73.7%**	**74.6%**	**71.3%**	**65.7%**	**52.0%**	**52.6%**	**31.0%**	**30.7%**
	1.7%	**2.2%**	**3.4%**	**3.8%**	**8.7%**	**13.7%**	**23.9%**	**24.0%**

Table 3: The Size Distribution of Loans: Number of Loans and Average Loan Amount (in 1000 BGN) in Each Size Category

	1999	2000	2001	2002	2003	2004	06/2005
up to BGN 5000	3394	3590	3253	4922	14541	24651	30166
	1.9239463	1.672423	2.086382	1.7369141	0.44042504	0.391172378	0.9681047
from BGN 5000 to BGN 20 000	3803	4559	5052	6730	6657	7794	8602
	22.932514	23.35561	24.03891	24.119639	12.0244072	24.19078737	11.909046
from BGN 20 000 to BGN 50 000	2792	3938	4863	5601	5638	7266	8243
	31.00918	32.1191	32.63294	33.845679	24.44388	33.85176796	34.317864
from BGN 50000 to BGN 100 000	1325	1732	1944	2818	3654	5017	5973
	145.53973	137.8408	142.3737	147.11279	74.2788153	149.5305791	74.454405
fromBGN 100 000 to BGN 200 000	859	1053	1224	1744	2412	3392	4069
	142.86107	137.7303	142.3301	145.5199	89.9351075	147.6948125	148.74919
from BGN 200 000 to BGN 500 000	637	903	1169	1526	2027	2697	3035
	652.39418	623.9233	628.9853	640.24446	334.964622	637.3726129	317.32429
over BGN 500 000	701	875	1182	1633	2381	3140	3541
	1915.6995	2067.697	2043.574	2158.0916	1008.69491	2277.111095	2185.6064

Table 4: The Currency Composition of Credits: Percent Foreign Currency Credit

Sector	1999	2000	2001	2002	2003	2004	2005	06/2006
Real estate, renting and business activities	86.4%	82.4%	70.9%	80.5%	64.2%	70.5%	79.9%	71.7%
Financial intermediation	83.5%	88.9%	87.3%	80.6%	72.3%	71.9%	-	-
Transport, storage and communication	49.9%	58.5%	41.9%	61.8%	54.8%	72.6%	67.9%	70.4%
Hotels and restaurants	51.9%	63.3%	65.8%	78.3%	83.1%	83.3%	86.8%	84.2%
Trade	52.9%	42.6%	47.0%	48.8%	52.1%	61.7%	62.9%	59.1%
Construction	40.8%	36.7%	30.6%	44.6%	51.5%	64.6%	73.0%	70.9%
Electricity, gas and water supply	58.5%	72.5%	59.6%	28.1%	61.8%	64.9%	80.2%	84.0%
Manufacturing	43.4%	44.6%	40.9%	52.6%	57.9%	62.3%	65.0%	61.8%
Mining and quarrying	89.7%	65.2%	75.3%	56.4%	73.2%	79.6%	54.6%	58.1%
Agriculture, hunting, forestry and fishing	34.9%	17.9%	16.3%	27.6%	22.8%	31.2%	35.0%	31.1%
Community, social and personal service activities	53.5%	29.2%	28.8%	23.9%	18.3%	26.1%	72.8%	69.7%
Health and social work	25.0%	7.9%	20.3%	62.0%	59.4%	77.7%	85.3%	81.4%
Education	16.5%	11.6%	75.0%	65.7%	28.4%	42.7%	21.5%	21.8%
Public administration	0.8%	20.6%	5.9%	0.3%	5.5%	34.6%	-	-
Total	**63.9%**	**66.7%**	**63.2%**	**58.5%**	**51.6%**	**55.5%**	**66.8%**	**63.5%**

Table 5: GMM System Estimation for 14 Sectors; Dependent Variable: **Investment**

	1	2	3
Credit	0.196***	0.055	-1.896*
	(0.060)	(0.060)	(0.880)
Credit*Percent Long-Term Credit		1.216***	
		(0.339)	
Credit*Percent Large Credit			2.397**
			(1.065)
GDP growth	-0.14	-2.86*	-1.38
	(1.57)	(1.53)	(1.21)
Constant	-62365	-7642	-14913
	(56864)	(50141)	(39394)
Observations	89	89	89
Sectors	14	14	14
Sargan test *p*-value	0.166	0.241	0.115
F test *p*-value	0.010	0.004	0.011

Notes: Standard errors in parentheses. ***(**,*) indicates statistical significance at the 1(5,10) percent level. F test is that all *?*=0.

Table 6: GMM System Estimation for 3 Aggregate Sectors; Dependent Variable: **Investment**

	1	2	3	4
Credit	0.196**	-9.732	0.064	-1.881
	(0.038)	(11.750)	(0.054)	(0.685)
Credit*Percent Long			1.153***	
Term Credit			(0.100)	
Credit*Percent Large				2.391
Credit				(0.832)
Credit*Industry dummy		9.958		
		(11.764)		
Credit*Services dummy		10.329		
		(11.717)		
GDP growth	4.71	8.91	-8.07	-3.68
	(1.78)	(3.53)	(5.97)	(1.52)
Constant	-336946	-720002	-103161	-131891
	(154127)	(282227)	(126445)	(90521)
Observations	21	21	21	21
Sectors	3	3	3	3
Sargan test *p*-value	1.000	1.000	1.000	1.000
F test *p*-value	0.065	0.077	0.008	0.115

Notes: Standard errors in parentheses. ***(**,*) indicates statistical significance at the 1(5,10) percent level. F test is that all *?* =0.

Table 7: Fixed Effects Regression Results for 14 Sectors; Dependent Variable: **Investment**

	1	2	3	4
Credit	0.11***	-0.08	0.08***	-0.87**
	(0.02)	(0.06)	(0.02)	(0.40)
Credit*Percent Long Term Credit			0.38** (0.18)	
Credit*Percent Large Credit				1.13** (0.46)
Manufacturing		0.06 (0.19)		
Agriculture		0.13 (0.62)		
Mining and Quarrying		1.06 (4.39)		
Real Estate		0.27 (0.27)		
Construction		0.01 (0.26)		
Trade		-0.17 (0.18)		
Hotels and Restaurants		0.19 (0.92)		
Transportation		0.88*** (0.31)		
Financial Intermediation		-0.30* (0.18)		
GDP growth	-48.73*	-130.64	-126.74	-109.00
	(18.10)	(141.00)	(180.51)	(176.54)
Constant	11007.63*	-9987.23	14887.23	30925.21
	(22453.96)	(30855.01)	(22005.57)	(23126.00)
R^2	0.0296	0.424	0.074	0.0541

Table 8: GMM System Estimation for 3 Aggregate Sectors; Dependent Variable: **Log of Growth by Sector**

	1	2	3	5
Credit	0.357	-0.664	0.413	4.02
	(0.154)	(0.273)	(0.171)	(1.669)
Credit*Percent Long			-1.036	
Term Credit			(0.755)	
Credit*Percent Large				-4.256
Credit				(1.788)
Credit*Industry dummy		0.982***		
		(0.075)		
Credit*Services dummy		1.082**		
		(0.123)		
GDP growth	0.017	0.012	0.022	0.021
	(0.011)	(0.008)	(0.010)	(0.010)
Constant	4.501*	7.363**	4.304*	4.432*
	(1.465)	(1.203)	(1.293)	(1.437)
Observations	33	33	33	30
Sectors	3	3	3	3
Sargan test *p*-value	1.000	1.000	1.000	1.000
F test *p*-value	0.000	0.002	0.253	0.062

Notes: Standard errors in parentheses. ***(**,*) indicates statistical significance at the 1(5,10) percent level. F test is that all *?*=0.

Figure 1a. The Sectoral Composition of Bank Credit (1000 BGN)

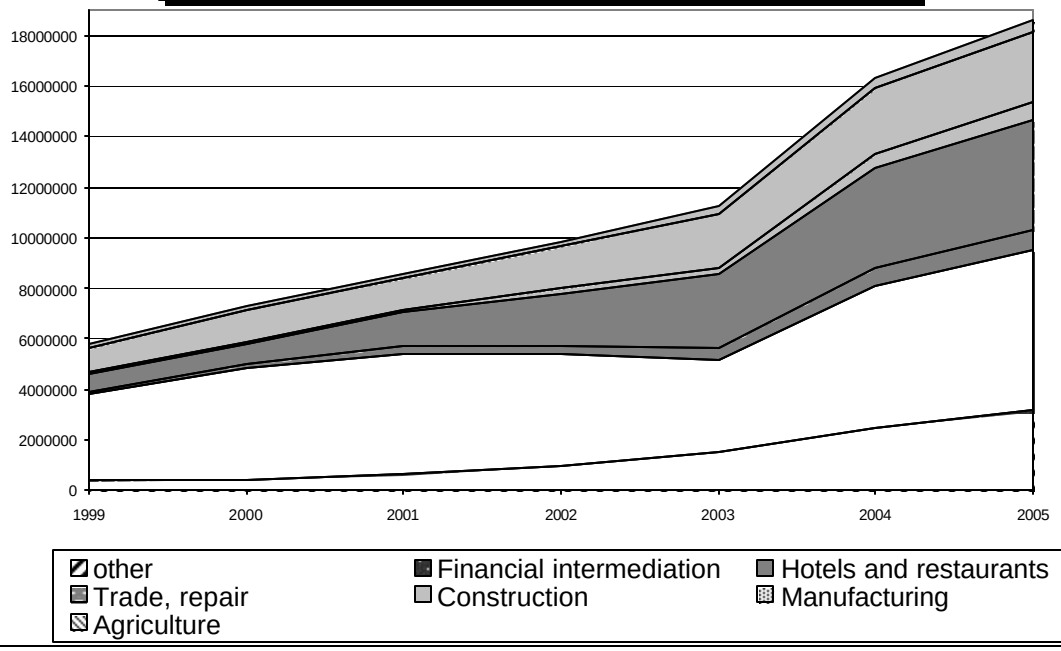


Figure 1b. The Composition of Bank Credit; June 2005

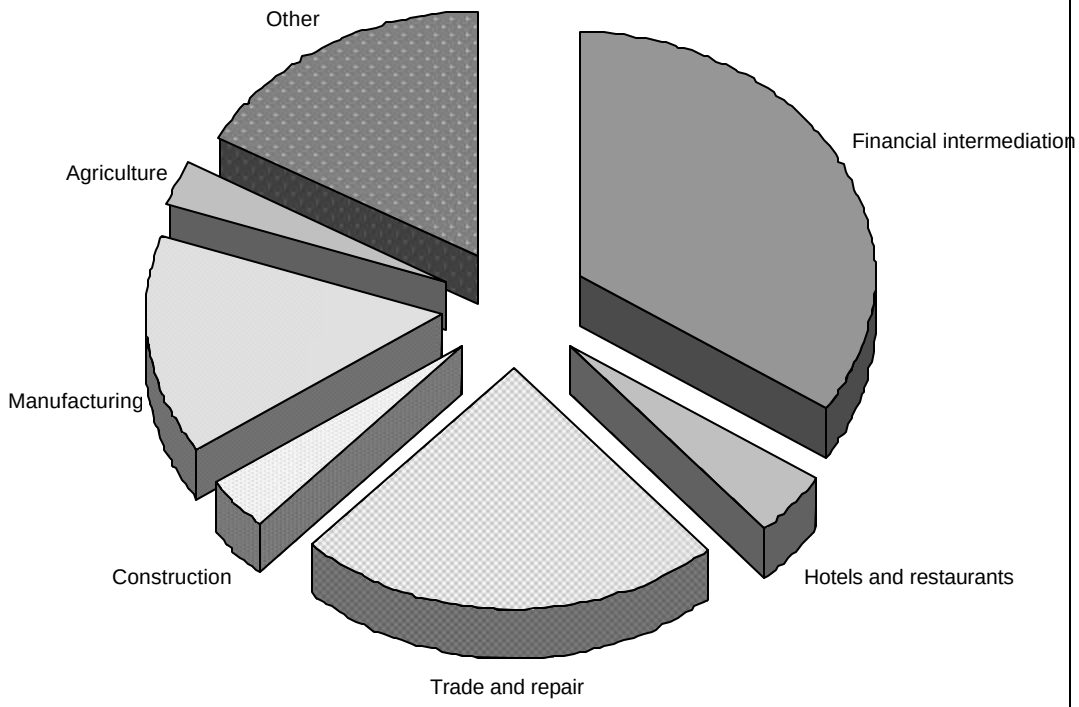


Figure 2. Percent Short-Term and Percent Long-Term Credit (All Sectors)

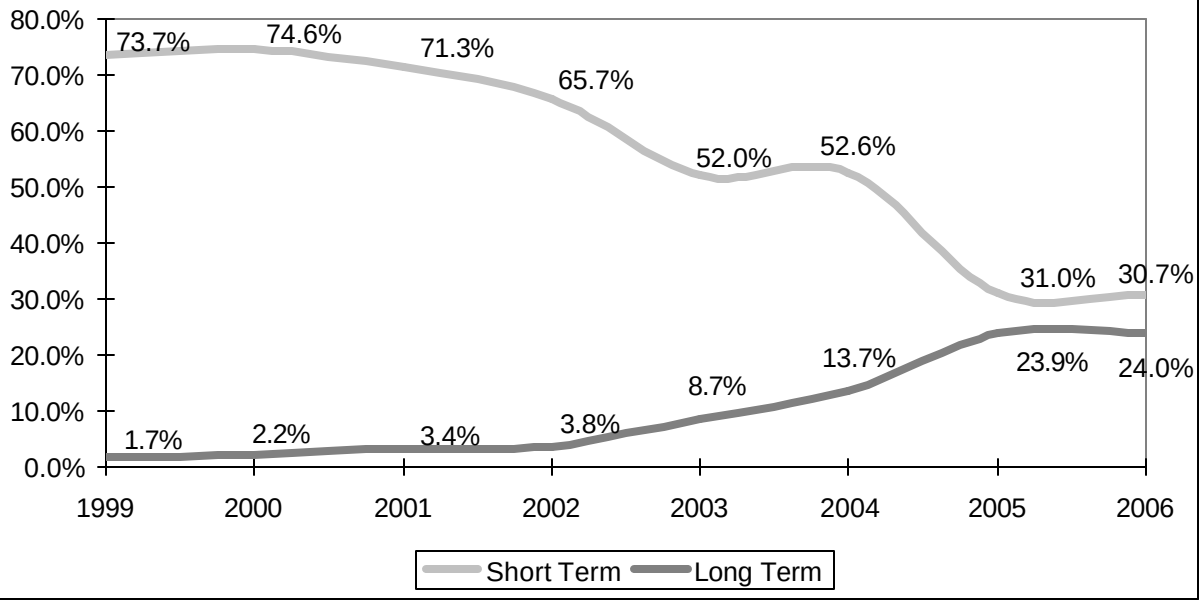
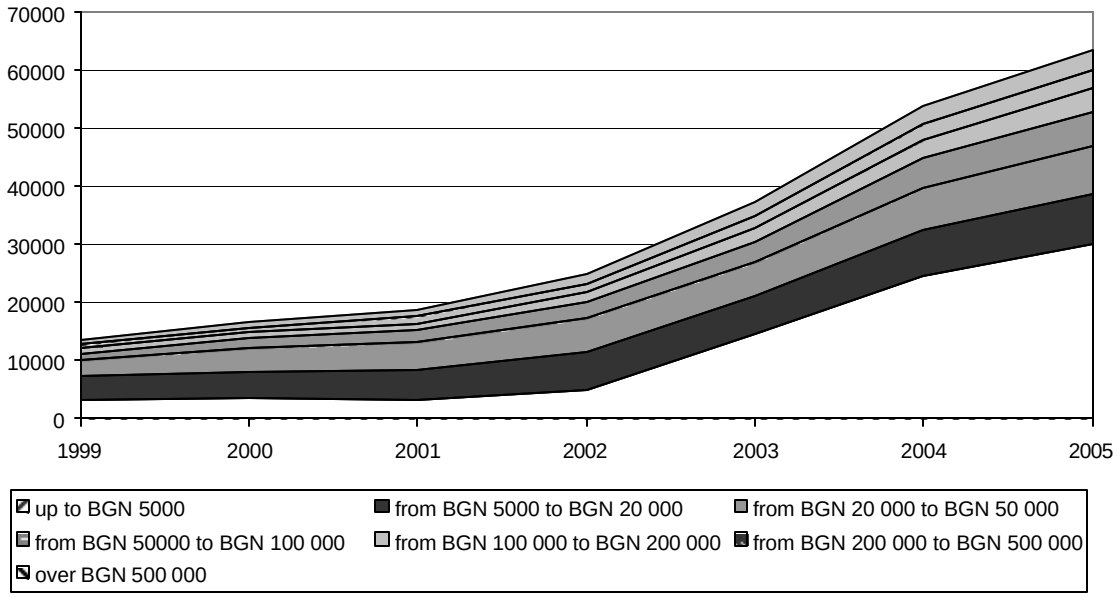


Figure 3. Number of Credits in Different Size Categories



Appendix 1. Definition of Sectors

Aggregate Sectors	Detailed Sectors
Agriculture	Agriculture, hunting, and forestry
	Fishing
Industry	Mining and quarrying
	Manufacturing
	Electricity, gas and water supply
	Construction
Services	Trade, repair of motor vehicles and personal and household goods
	Hotels and restaurants
	Transport, storage, and communication
	Financial intermediation
	Real estate, renting, and business activities
	Public administration; compulsory social security
	Education
	Health and social work
	Community, social, and personal service activities

Appendix 2. GMM Dynamic Panel Procedure

Following Levine et al. (2000) and Beck et al. (2000), we use recently developed dynamic panel generalized-method-of-moments (GMM) techniques to address potential endogeneity in the data.[12] Let y_{it} be the logarithm of real per capita GDP (or investment) in country (sector) *i* at time *t*. We are interested in the following equation:

(1) $$y_{i,t} - y_{i,t-1} = (\alpha - 1)y_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t}$$

where $y_{i,t} - y_{i,t-1}$ is the growth rate in real per capita GDP, $X_{i,t}$ is a set of explanatory variables, including our measures for financial development, η_i captures unobserved country(or sector)-specific effects, and ε_{it} is an error term. Rewrite equation (1) as:

(2) $$y_{i,t} = \alpha y_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t},$$

and take first differences to eliminate the case-specific effect:

(3) $$y_{i,t} - y_{i,t-1} = \alpha(y_{i,t-1} - y_{i,t-2}) + \beta'(X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}).$$

By construction, in equation (3), the lagged difference in per capita GDP is correlated with the error term, which along with the potential endogeneity of the explanatory variables *X*, requires the use of instruments. The GMM *difference* estimator uses the lagged levels of the explanatory variables as instruments under the conditions that the error term is not serially correlated and that the lagged levels of the explanatory variables are weakly exogenous (i.e., they are uncorrelated with future error terms). Then the following moment conditions are used to calculate the difference estimator:

[12] This method is fully described in Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998).

(4) $E[y_{i,t-s}(\varepsilon_{i,t} + \varepsilon_{i,t-1})] = 0 \quad for \quad s = 2; t = 3,....,T,$

(5) $E[X_{i,t-s}(\varepsilon_{i,t} + \varepsilon_{i,t-1})] = 0 \quad for \quad s = 2; t = 3,....,T.$

Since persistence in the explanatory variables may adversely affect the small-sample and asymptotic properties of the difference estimator (Blundell and Bond, 1998), the difference estimator is further combined with an estimator in levels to produce a *system* estimator. The inclusion of a levels equation also allows us to use information on cross-case differences, which is not possible with the *difference* estimator alone.

The equation in levels uses the lagged differences of the explanatory variables as instruments under two conditions. First, the error term is not serially correlated. Second, although there may be correlation between the levels of the explanatory variables and the case-specific error term, there is no correlation between the difference in the explanatory variables and the error term. This yields the following stationarity properties:

(6) $E[y_{i,t-p}\eta_i] = E[y_{i,t-q}\eta_i]$ *and* $E[X_{i,t-p}\eta_i] = E[X_{i,t-q}\eta_i]$ for all p and q.

The additional moment conditions for the regression in levels are:

(7) $E[(y_{i,t-s} - y_{i,t-s-1})(\eta_i + \varepsilon_{i,t})] = 0 \quad for \quad s = 1$

(8) $E[(X_{i,t-s} - X_{i,t-s-1})(\eta_i + \varepsilon_{i,t})] = 0 \quad for \quad s = 1.$

In summary, the GMM *system* estimator is obtained using the moment conditions in equations (4), (5), (7), and (8).

Appendix 3. Interview Guide

Semi-structured open-ended interview guide. Personal interviews that will be tape-recorded. The interviews will be conducted in Bulgarian by the PI and translated by an authorized interpreter.

Questions from this interview guide will be selected depending on the interviewee.

Introduction

- I will turn on the tape recorder. My name is Neven Valev, I am an associate professor at the Department of Economics at Georgia State University in the U.S. I am conducting research on bank practices in Bulgaria regarding the extension of credit to firms. I appreciate your willingness to contribute to this project.
- First, could you introduce yourself, stating your name and current position in the bank?
- How long has your bank been operating in Bulgaria?

Project Evaluation Procedures

- How does your bank evaluate potential borrowers?
    - What is the prequalification procedure?
    - Are the lending decisions made by committees or by individuals?
    - If a foreign owned bank: Is the final lending decision made from Bulgaria or the foreign office?

- On what factors do you place most emphasis when evaluating potential borrowers?
    - Do you use a point system and what are the weights on various borrower characteristics?
    - How much of the decision is based on subjective evaluation?

- Do you feel that the financial information provided by potential borrowers is reliable?
    - What can be done to increase the transparency and reliability of financial information?

Credit instruments and pricing

- What types of business credits are available through your bank?
    - Do you extend mostly credit for operating expenses or for investment purposes?
    - What new instruments do you plan to make available?
    - How are the new instruments advertised?

    - Do you actively advise clients on the types of credits suitable for their needs?

- What is the procedure for pricing a loan?
    - In term of interest rates, fees, maturity, …
    - For large borrowers, for small borrowers…
    - In domestic currency, in euro, in dollars…

Pooling funds for large projects

- What is the distribution of credits extended by your bank in terms of size?
    - What does your bank consider to be a large credit?
    - Do you have any credits in excess of … leva (or euro or dollars)
    - In what sectors of the economy has your bank made large credits?

- How does the evaluation of large credits differ from the evaluation of smaller credits?
    - If a foreign-owned bank: Is the lending decision made in the foreign office?
    - Do most large credits go to foreign-owned firms?

- Do you participate in consortia with other banks to provide large loans?
    - In what cases?

- Is it important that a borrower has credit history with you before you commit to a large loan?
    - Why is that the case?

- What regulatory and internal restrictions are in place to prevent overly large exposure to one borrower or to one sector?

Monitoring the use of funds

- Does your bank own shares in companies to which it has extended credit?
    - In what cases, sectors, what size credits, etc.

- Do officers of the bank participate in the management boards of companies with credit from your bank?

- Is there a system for regular on-site inspections and financial reports?
    - Do you use the services of credit compliance companies?

Enforcement of loan contracts

- Has your bank been involved in bankruptcy procedures to recover a loan?
    - How long do bankruptcy procedures take?

- In your opinion how effective are bankruptcy procedures in Bulgaria for households and for firms?
    - What must be changed in the legal framework to improve loan collection?
    - Do you believe that the threat of seizure is an important deterrent to loan repudiation?

- In what sectors of the economy do you believe loan collection is most problematic?

Instruments for diversification

- What financial instruments does your bank offer to lower investment risks for its clients?
    - Do you provide hedging instruments against exchange rate risk?
    - Do you provide hedging instruments against interest rate risk?

- How willing is your bank to extend long-term credit which matches the needs of long-term investments?

- How willing is your bank to extend credit with a currency composition that matches the currency composition of the receipts of the borrower?

- Does your bank facilitate the building of investment portfolios by its clients?
    - If yes, how?

Conclusion

- Thank you for taking the time to participate in this study.

- Could you recommend to me any individuals that may be able to provide additional information relevant for this study?