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Working Paper

Does finance cause growth? Evidence from the origins of banking in Russia

BOFIT Discussion Papers, No. 10/2012

Provided in Cooperation with:
Bank of Finland, Helsinki

Suggested Citation: Berkowitz, Daniel; Hoekstra, Mark; Schoors, Koen (2012) : Does finance cause growth? Evidence from the origins of banking in Russia, BOFIT Discussion Papers, No. 10/2012, ISBN 978-952-462-741-2, Bank of Finland, Institute for Economies in Transition (BOFIT), Helsinki, https://nbn-resolving.de/urn:nbn:fi:bof-201408071989

This Version is available at:
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BOFIT Discussion Papers
10 • 2012

Daniel Berkowitz, Mark Hoekstra and
Koen Schoors

Does finance cause growth?
Evidence from the origins of banking in Russia

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Bank of Finland, BOFIT
Institute for Economies in Transition

BOFIT Discussion Papers
Editor-in-Chief Laura Solanko

BOFIT Discussion Papers 10/2012
27.4.2012

Daniel Berkowitz, Mark Hoekstra and Koen Schoors:
Does finance cause growth? Evidence from the origins of banking in Russia

ISBN 978-952-462-741-2
ISSN 1456-5889
(online)

This paper can be downloaded without charge from
http://www.bof.fi/bofit.

Suomen Pankki
Helsinki 2012

Contents

Abstract 4

1 Introduction 5

2 Banking in the former Soviet Union and in Russia 8

3 Identification strategy and methodology 12

4 Data 14

5 Test of the exogeneity of Spetsbank concentration 19

6 Results 21

6.1 The effect of Spetsbanks on banking capacity in the modern banking era 21

6.2 The effect of Spetsbanks on investment, per capita income, unemployment, and small business activity 22

7 Interpretation and discussion 23

8 Conclusions 28

References 30

Figures 33

Tables 34

Daniel Berkowitz*, Mark Hoekstra# and Koen Schoors¥

Does finance cause growth?
Evidence from the origins of banking in Russia

Abstract

This paper examines the effect of banking on economic growth in modern Russia. To overcome simultaneity and selection, we exploit regional banking variation induced by the creation of ―specialized banks" (spetsbanks) in the last years of the Soviet Union (1988-1991). Consistent with the qualitative work of Joel Hellman [1993] and Juliet Johnson [2000], we show that these reforms generated an ideal natural experiment in that the concentration of spetsbanks is jointly uncorrelated with 15 predictors of future growth, including pre-banking income, education, anti-market sentiment, institutional quality, and government interference in the economy. Results indicate that while the presence of one additional spetsbank per million inhabitants increased total within-state lending to private firms and individuals by 14 to 26 percent in the early 2000s, it had no effect on investment or per capita income. In contrast, we find that spetsbanks increased employment. Additional results indicate that spetsbanks increased growth in regions in which they were less connected to government and were generally more similar to non-spetsbanks, as well as in regions that were better at protecting property rights. Our results thus strongly suggest that bank origins, political connections, and property rights are important determinants of effective finance.

JEL:O4, F3, G2, P3
Keywords: finance, growth, banking, Russia

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We would like to thank Daron Acemoglu, Lee Alston, Dave DeJong, Dave Denis, Sergei Guriev, Joel Hellman, Juliet Johnson, E. Han Kim, Pete Leeson, Nathan Nunn, Tom Remington, Olga Tkacheva, Katya Zhuravskaya, and seminar participants at the EPRU-AUEB Symposium at the University of Leicester, the Higher School of Economics, the Journal of Comparative Economics Conference at the University of Pittsburgh, the Tor Vergata Conference on Money, Banking and Finance in Rome, Baylor University, University of Ghent, University of Missouri, Georgetown Public Policy Institute, and the Workshop on Legal Order, the State and Economic Development in Florence for helpful comments and suggestions.

1 Introduction

There is a large body of cross-country evidence showing that financial development promotes economic growth.[1] In their pioneering study of 77 countries during 1960-1989, King and Levine [1993] show that increasing the size of the financial intermediary sector[2] from the mean of the slowest quartile of countries to the mean of the fast growing quartile would increase per capita growth by almost 1 percent per year. However, as those and other researchers have noted, cleanly identifying the impact of finance on growth is challenging because of the potential for bias due to selection and simultaneity. For example, countries with developed financial systems may also have strong enforcement of property rights and rule of law, making it difficult to distinguish the effect of one factor versus another [La Porta, Lopez-de-Silanes, Shleifer, and Vishny et al., 1998]. Similarly, countries that grow quickly may also have ample savings available for banks to lend, or may generate high demand for financing. While subsequent studies have used instrumental variables and panel data methods in an attempt to overcome these problems,[3] there are lingering concerns that these approaches do not overcome the simultaneity and selection biases. For example, within-country changes in financial systems may not be exogenous to economic growth, and instruments such as legal origins may have their own independent effect on economic growth.[4]

In response to these concerns, several studies have exploited within-country variation in bank regulation to identify the effect of finance on growth. Jayaratne and Strahan [1996] use the variation in the state-level deregulation of intrastate bank branching in the USA that starts in the 1970s.[5] Guiso, Sapienza and Zingales [2004] estimate effects using both OLS and an instrumental variable strategy exploiting a 1936 bank regulation in Italy as a source of exogenous variation in local financial development in the 1990s. These within-country studies largely support the findings of the cross-country literature: for example, Guiso, Sapienza and Zingales [2004] find that between 1989 and 1997, moving

[1] For a survey of these findings, see Demirgiuc-Kunt and Levine [2008].
[2] Their original measure is currency plus demand and interest-bearing liabilities of bank and nonbank financial intermediaries. However, their results also hold for alternative measures that are more precisely specify the sources and users of finance.
[3] e.g., see Beck, Levine, and Loayaza [2000].
[4] See La Porta et al. [2008].
[5] Deheja and Lleras Muney [2007] conduct a similar analysis of branching and deposit insurance in the American states during 1900-1940.

from the least to most financially developed region would boost GDP per capita by 1.2 percentage points per year.

This paper uses an approach similar to these papers to study the effect of finance on growth, albeit in a much less financially developed country. Specifically, it exploits the plausibly exogenous variation in banking across regions within Russia induced by the top-down creation of ―specialized" banks, herein denoted ―spetsbanks", in the last years of the former Soviet Union (1988-1991). According to Soviet reform documents, these banks were supposed to provide external finance to state owned enterprises. The decision to create spetsbanks was made by high level Soviet administrators on the basis of their own preferences, as was the typical approach to decision-making in the now defunct Soviet System. Because the preferences of Soviet administrators were largely divorced from forces shaping organizations in market economies, reforms of economic organizations in the classic Soviet system were ―exogenous" to market forces (see Kornai [1992] chapter 7 and Ickes [1990]), an assertion that we will carefully document with both qualitative and empirical evidence.[6] In a study of banking in Soviet Union and Russia, Hellman [1993] describes how the creation of spetsbanks in 1988 was yet another case of top down institutional tinkering.

> ―Like previous reform efforts in the Soviet Union, the reorganization of the banking system was a true exogenous reform. The new banking institutions were not designed by bankers or other economic actors in response to the problems and incentives of the centrally planned financial system. Instead, a small group of so-called economic reformers crafted an entirely new institutional structure based on external models, political interests, and their beliefs about economic efficiency. The new structure was imposed on the banking system in a series of decrees and internal instructions that caught most Soviet bankers by surprise… " [Hellman [1993], p.101]

Importantly, we find powerful empirical support backing up the argument that the locations of spetsbanks were exogenous to economic factors. Specifically, we show that the concentration of spetsbanks that were created between 1988 and 1991 and survived till at least October of 1995 is jointly uncorrelated with 15 variables one might expect to be cor-

[6] One powerful explanation for organizational reform is that would serve to increase the number of privileged administrative and managerial positions. Another explanation is the spetsbanks were created as part of a bank war between powerful administrators in the former Soviet Union and the former Russian Socialist Republic (which became subsequently became Russia). Regardless, one advantage of this variation in banking capacity

related with future economic growth, including per capita income in 1996, education and other demographics, anti-market sentiment, the quality of economic and political institutions, and government interference in the economy.

The spetsbanks created between 1988 and 1991 began to function as commercial banks for state owned enterprises circa 1991. During 1991 many of the spetsbanks were informally and spontaneously privatized.[7] After the breakup of the USSR the formal privatization of spetsbanks successors was part of the broad package of large-scale market reforms. While many of their spetsbank successors went bankrupt during the financial crisis of 1998 – as did many other banks – their presence did have a lasting impact on the regional banking market. By the end of 1999, when banks were beginning to make loans to firms and households,[8] 130 of the 1351 registered banks in Russia were spetsbank successors, and they accounted for roughly 11.4% of loans to firms and households.

Moreover, this increased regional bank capacity caused by spetsbank successors resulted in a significant net increase in regional loans. Results indicate that regions that have one more spetsbank per million population – approximately a ½ standard deviation increase – have a 14 to 26 percent increase in lending to private firms and individuals during the period 2002-2006. This result is robust to the inclusion or exclusion of controls, consistent with exogenous spetsbank location.

However, our results indicate that this increase in banking did not cause economic growth. Specifically, we find that this additional lending did not increase investment in 2007 or per capita income or GNP growth from 1996 to 2007. In contrast, the additional lending induced by spetsbanks did significantly increase employment in the regions. Consistent with this finding, we show that despite being privately owned, on average spetsbanks appear to act like government-owned banks in that they remained significantly more connected to government and government-owned firms than their non-spetsbank counterparts (see La Porta et al. [2002]).[9] Furthermore, we find substantial heterogeneity in the

is that it is less susceptible to concerns regarding endogeneity than variation in state- or region-level banking policy.

[7] See Abarbanell and Meyendorff [1997] and Schoors [2003].

[8] See Berkowitz and DeJong [2011] and sources cited therein. See Klapper et al (2011) for a description of how bank finance accelerates starting in 2001.

[9] One reason why the spetsbanks likely continued to behave like government owned banks long after the fall of the Soviet Union and long after they were privatized is that former Soviet managers remained on their boards. Using personnel data, we find that four to five years after the creation of the Soviet spetsbanks and after their privatization, the boards of directors at spetsbanks successors contained significantly more former managers at the Soviet spetsbanks than did the boards of directors at non-spetsbanks.

effectiveness of spetsbanks in causing economic growth based on both the behavior of the spetsbanks, as well as the institutional environment in which they operated. Specifically, we show that spetsbanks did cause positive regional economic growth when they had a weaker relationship with the federal government and when they operated in a region with a recent history of good protection of property rights. More generally, spetsbanks promote growth in regions where they are similar to non-spetsbanks in terms of lending and deposit behavior.

Collectively, our findings suggest that banking origins (history) matters for finance. Moreover, our results highlight the importance of breaking political connections between banks and governments, and establishing good property rights in regions where banks operate.

The next section contains a brief description of Soviet banking and spetsbanks. Section 3 describes the identification strategy, and section 4 describes the data. Section 5 documents that the location of spetsbanks at the end of 1995 is as good as random, and is a strong predictor of regional bank capacity during 2002-2006. Section 6 presents our mains results on the impact of regional bank capacity on growth and other economic outcomes in 2007; section 7 interprets our findings and section 8 concludes.

2 Banking in the former Soviet Union and in Russia

Before 1990, physical plans set by central administrators were more important than financial constraints in the socialist economies in Eastern Europe and the former Soviet Union. In the former Soviet Union, the mono-bank Gosbank issued credits to state owned enterprises so that they could fulfill administered plan targets. State owned enterprises typically had –soft" financial budget constraints, which meant they could get credits from the bank for fulfilling plan targets even if their projects were unprofitable and served no particular consumer or firm need.[10] Banks collected taxes from state owned firms and monitored the extent to which these firms were fulfilling centrally administered plan targets.[11]

During 1987-1991, the Soviet banking system underwent significant changes. On the one hand, after the passage of a law on state owned enterprises in 1987 that was designed to harden their budget constraints, commercial banks spontaneously and informally

[10] See, e.g., Kornai, Maskin and Roland [2003].

emerged. These new commercial banks took advantage of profit opportunities created by the breakdown of the system of enforced planning quotas, the large spreads between state and market prices, and the ability to set up cooperative ventures in state-owned enterprises. Many of these commercial banks flourished and continued their activities after the collapse of the Soviet Union.

The Gosbank mono-bank system that had previously been the only source of banking in the Soviet Union also underwent significant changes from 1987 to 1991, though we note that these changes were driven entirely by the Soviet authorities rather than market forces. In 1987 a working group with representatives from Gosbank and Stroibank (the Construction Bank which was a subsidiary of Gosbank) divided the Soviet banking system into a central bank and five kinds of spetsbanks. This division went into effect January of 1988. The old Soviet foreign trade bank and the old Soviet savings bank were renamed, but they remained under the control of the Gosbank and no substantial changes were made in their personnel or organizational structure or assets. The rest of Gosbank and its subsidiary Stroibank (the Soviet bank for construction), however, was divided up into three spets-banks including the Agromprombank (agricultural-industrial banks), Zhilsotsbank (the banks for housing and social development) and Promstroibank (the banks for industrial-construction). These three kinds of spetsbanks were supposed to provide finance to the re-forming state-owned enterprises on the basis of criteria that were more market-based than under the previous system. However, while Gosbank transferred assets and cash reserves, control over the interbank clearing system, and control over personnel policy to these three spetsbanks, initially Gosbank did not give these spetsbanks control over their credit and interest rate policies.

There are several explanations for why the Gosbank system was transformed in this way. One is that spetsbanks were created in order to increase the number of privileged management positions within the old Soviet command system. A complementary explana-tion is the spetsbanks were established as part of a bank war between powerful administra-tors in the former Soviet Union and the former Russian Socialist Republic (which subse-quently became Russia). After Soviet leaders created spetsbanks and the Soviet Union Central Bank in 1987, in an effort to be independent of the former Soviet Union and its central bank, the leaders of the Russian Republic subsequently created the Central Bank of

[11] See Garvy [1997].

Russia (CBR), which then gave spetsbanks additional autonomy from the Soviet Central Bank to serve as commercial banks for state owned enterprises. Specifically, the CBR worked to transfer all of the assets and liabilities of the spetsbanks to its local branches, and then gave the bank managers in each branch the power to form a small bank or join with other branches in a larger bank (Abarbanell and Meyendorff [1997], p.70). Many regional branches did separate from these three banks and established new regional banks within the regional branches of the Central Bank of Russia (Schoors [2003]). This informal and spontaneous privatization of spetsbanks deprived the Soviet Union Central Bank control over Russian bank branch managers. Thus, while the Agprombank, Zhilsotbank and Promstroibank and their successors initially "had few incentives to operate in a market-oriented way" (Johnson [2000], p.30) in time and, in particular, after the disintegration of the former Soviet Union, they learned to behave like commercial banks. We consider these three banks and their successors as spetsbanks.

Importantly for our research design, while these spetsbanks were given additional autonomy by the Central Bank of Russia, the location of the banks themselves was based on pre-existing Soviet banking capacity. And as discussed above, that capacity had been built according to the preferences of Soviet bureaucrats, independent of economic conditions one might expect to affect future economic growth.

The former Soviet Union officially ceased to exist on December 25, 1991, and the Russian Federation emerged as a new country the next day. The Russian government instituted market reforms in January 1992 when it released price controls on a broad set of goods and then subsequently instituted several sweeping programs that formally privatized state owned enterprises. Spetsbanks that operated as private banks in the former Soviet Union were formally privatized when the Soviet Union was dissolved and large scale privatization was implemented.

From 1992 to 1998 the successors of the spetsbanks and the other commercial banks continued to perform many tasks that they performed under socialism, including providing credit to state firms, financing state-related programs, and financing government debt (see Tompson [1997]). Spetsbanks and commercial banks made substantial profits transferring central bank credits to state owned enterprises and exploiting negative real interest rates on bank deposits up till 1995, and invested in foreign currencies and precious metals in a variety of ways throughout the 1990s. Similarly, banks made a great deal of money issuing high-interest bearing government bonds known as GKOs starting around

1995 (Johnson [2000] and Shleifer and Treisman [2001], chapter 4). Because banks made so few loans, private firms had to finance projects with either internal funds or funds raised from internal sources, even though they could earn an unusually high return on their capital (see Johnson, McMillan and Woodruff [2002]). In return for providing finance to the government, some commercial banks were able to buy up state assets at very low prices.[12]

Overall, from August of 1992 through 1998 spetsbanks and commercial banks were profitable without serving as a source of finance to private firms and households. And, as Juliet Johnson [2000] argues, they were profitable largely because of their political connections.

> ―These banks could be profitable without being productive by relying on central bank credits at negative real interest rates, conducting foreign exchange operations, facilitating export-import operations and capital flight, handling government monies, developing the interbank credit market, and granting expensive short-term loans. All of these activities exploited their ties to government ministries, the CBR[13], and state-run enterprises". [Johnson [2000], p.8]

The dysfunctional behavior of the banks, along with falling world oil prices and the Asian crisis likely contributed to the near collapse of the Russian financial system in August of 1998. Following the crisis the Russian government defaulted on its domestic and international debts, GDP fell almost 5%, there was a massive outflow of capital from Russia, and hundreds of Russian banks went bankrupt.

After the financial crisis, there was a large increase in growth of exports due in part to the massive devaluation of the ruble and in part to the large increase in world oil prices. It was during this period that banks began making loans to private firms and households: between 1999 and 2007 bank-issued loans to firms as a share of GDP went from 10.5% to 37.3%. Moreover, during this period real income overall grew rapidly and there was also substantial variation in the growth in bank finance and income across the regions (see Berkowitz and DeJong [2011]). Thus, the period after the financial crisis is a good testing ground for whether or not bank finance matters for growth and other indicators of economic welfare.

[12] The most famous case is the ―loans for shares" deal in 1995 in which the Yeltsin government effectively sold interests in lucrative nickel, oil and steel companies to bankers.
[13] CBR stands for the Central Bank of Russia.

3 Identification strategy and methodology

The purpose of this study is to determine whether increased banking capacity leads to higher economic growth. However, estimating the causal impact of banking on growth is difficult because of the potential for simultaneity and selection biases. That is, one might worry that countries that grow quickly may have more capital available for lending, or that fast-growing countries have more demand for loans, which may lead one to infer incorrectly that additional lending causes growth. Similarly, selection bias may arise if those countries or regions that have well-developed banking sectors are also those that have better legal and judicial institutions to protect property rights, in which case one may misattribute higher income or growth to better banking rather than to better institutions generally.

To overcome these identification problems, we exploit the variation in the number of spetsbanks per million inhabitants across the Russian regions in 1995. The identifying assumption is that regions with many spetsbanks would have grown at the same rate as regions with few spetsbanks in the absence of the additional banking. This assumption appears broadly consistent with the existing views of the reforms discussed in the previous section, in which the location of the spetsbanks was determined largely on the basis of bureaucratic reasons, rather than economic ones.

Nonetheless, we test this identifying assumption empirically in two ways. As a starting point, we ask whether the concentration of spetsbanks predicts either the log of per capita income in 1996 or the annual growth rate in personal income from 1993 to 1996, both of which were prior to modern banking in Russia. In addition, to compare the exogeneity of spetsbanks to that of non-spetsbanks that did not have their origins in the Soviet Union, we also examine whether the number of non-spetsbanks predict income or growth in 1996. Formally, we estimate the following:

$$(1)\quad preBankingOutcome_i = \theta_0 + \theta_1 LnPop1996_i + \theta_2\, Spetsbank_i + \theta_3 NonSpetsbank_i + \varepsilon_i$$

where i denotes the ith region, PreBankingOutcome measures either log income per capita in 1996 or the growth rate in real income per capita from 1993 to 1996, LnPop1996 is the log of the regional population in 1996, Spetsbank is the number of spetsbanks per million

population in 1995, and Non-Spetsbank is the number of non-spetsbank banks per million population operating in 1995. The coefficient of interest is θ_2, though we also expect that θ_2 should be smaller in absolute value than θ_3, as non-spetsbanks arose in an endogenous fashion.

In addition, we test whether spetsbank concentration was uncorrelated with a host of other exogenous pre-banking variables that one would expect to predict economic growth. Thus, we examine whether the concentration of spetsbanks in 1995 is conditionally correlated with other variables expected to cause economic growth, such as income and demographics, anti-market sentiment, quality of institutions, and government interference in the economy circa 1996. We do so by estimating the following:

$$(2) \quad Spetsbank_i = \alpha_0 + \alpha_1 LnPop1996_i + \alpha_2 LnRinc1996_i + \alpha_3 X_i + \varepsilon_i$$

where subscript i denotes the ith region, $LnRinc1996_i$ is the log of real income in 1996, and X_i is a vector of covariates measured circa 1996 including demographics, the political environment and preferences, institutional quality, and government interference in the economy, and ε_i is a stochastic error term.

We test the null hypothesis that log of real income in 1996 is insignificant, and we also test the null that log of real income in 1996 and the vector of covariates X_i, are jointly insignificant. These are powerful tests of whether regional spetsbank concentration is orthogonal to other observed factors known to predict growth. To the extent that we fail to reject these nulls, it provides some assurance that our measure of bank capacity is also uncorrelated with unobserved determinants of economic growth.

After empirically assessing the exogeneity of the spetsbank variation, we turn to whether additional spetsbanks increased the banking capacity in the 2000s. That is, we examine whether regions with higher concentrations of spetsbanks in October of 1995—a period when there was almost no lending in Russia—have more lending in the 2000s than regions with lower concentrations of spetsbanks in 1995. Formally, we estimate the following:

$$(3)\quad Bank\,Outcome_i = \beta_0 + \beta_1 LnPop1996_i + \beta_2\, LnRinc1996_i + \beta_3 X_i + \beta_4 Spetsbank_i + u_i$$

where the variable Bank Outcome$_i$ can denote log of lending per capita by region of lender, log of lending per capita by region of borrower, log of the bank Herfindahl index, and the interest rate charged. Bank outcomes are measured from 2002 to 2006.

Finally, we examine whether the increased lending caused by having a higher concentration of spetsbanks in 1995 leads to differences in regional economic outcomes including investment, per capita income, unemployment, and the share of small business activity years later in 2007. To do this we replace the variable Bank Outcome$_i$ in equation (3) with variables measuring regional economic outcomes in 2007.[14]

We estimate all models controlling for real income and population in 1996, and each specification is estimated with and without controls for the vector of covariates, X_i. To the extent that our estimates are unaffected by the inclusion of covariates X_i that predict growth in a significant way, we gain some confidence that including unobserved determinants of investment and economic growth would also not matter.

One important implication of our research design is that the coefficient of interest is a local average treatment effect that captures the effect of the increased lending induced by successors to the old spetsbanks (Angrist, Imbens, and Rubin [1996]). Thus, while these results are informative regarding the impact of additional banking capacity induced by the top-down creation of spetsbanks in the final years of the Soviet Union, they may be less informative of the causal impact of other types of banking on growth. We return to this question of interpretation later in the paper.

4 Data

Data on spetsbank status come from ―A Guide to Russian Bank Data" (Karas and Schoors [2010]), as collected from various publications from the Central Bank of Russia. This source contains the registration records of all Russian banks from August 1988 through April 2007. Banks are classified as old spetsbanks if they were registered as an Agprom-

bank and/or a Zhilsotbank and/or a Promstroibank no later than December 30, 1991, as Russia instituted market reforms shortly after this date. These old spetsbanks are measured in each region of Russia per million inhabitants of a region at the beginning of 1992. The average region has almost 2 spetsbanks per million inhabitants; 6 regions have no spetsbanks, and the Altai Krai has more than 15. We report data on spetsbanks for 78 of Russia's 83 regions.[15]

The bank registry contains records only for those banks that survived until October 1, 1995. Some spetsbanks that registered before December 30, 1991 subsequently were absorbed primarily by the agricultural spetsbanks (Agprombank) and some may have gone out of business. Of the 250 spetsbanks that were in operation on October 1, 1995, 236 spetsbanks were registered before December 30, 1991 and an additional 14 spetsbank were registered after December 30, 1991. Thus, our measure of old spetsbanks is conditional on survival as a spetsbank through October 1, 1995. This is reasonable since there was little bank lending activity to private firms and households as of October 1, 1995. Moreover, we show in the next section that the location of these spetsbanks that survive until October 1, 1995 is orthogonal to a host of covariates that predict future economic growth.

We use four measures of regional bank capacity including lending per capita by the region of the lender, lending per capita by the region of the borrower, the concentration of regional banks, and the loan interest rate charged by the banks. These variables are measured during the period 2002 through 2006, and allow us to test whether having additional spetsbanks increases lending or bank competition in the years preceding 2007, when we measure economic outcomes of interest. All lending variables are deflated by a regional consumer price index (April 2007=100) acquired from Roskomstat (Web site: www.gks.ru) and expressed in thousands of deflated rubles per capita.

The source for lending per capita by region of lender, bank concentration and loan interest rate charged by the regional banks is ―A Guide to Russian Bank Data" (Karas and Schoors [2010]), as meticulously collected from quarterly reports put out by a Moscow-based information agency ―Interfax" (www.interfax.ru). Interfax publishes quarterly an extensive list of items from the financial statements and regulatory ratios of all Russian

[14] Here we are using a reduced form instrumental variables approach. This estimation strategy is more flexible than a two-stage least squares approach in which the spetsbanks concentration in 1995 must influence economic outcomes in 2007 exclusively through one particular measure of bank outcomes.

banks. Loan interest rate is calculated as the volume-weighted annualized rate charged to firms and individuals. Bank concentration is computed using a weighted average of the Herfindahl indices for the firm and consumer markets.[16] Lending per capita by region of lender is computed as the total stock of loans to private firms and households made by the banks in a region during the period 2002 through 2006. While the advantage of these data is that they include the entire population of banks, the downside is that they may capture lending to firms and individuals in other states. This is a problem primarily for Moscow and St. Petersburg, because banks registered in these cities often make loans throughout Russia. Consequently, we complement these data with data on aggregate lending per capita by region of the borrower during the period 2003-2006, the source of which is the Bulletin of Banking Statistics: Regional Supplement (Central Bank of Russia, various years).[17]

Our primary economic outcomes of interest include per capita income growth from 1996 to 2007, per capita GNP growth from 1996 to 2007, and investment, employment and unemployment rates, and the number of small and medium enterprises per capita in 2007. All measures were collected by the Russian official statistical agency (Sources: Goskomstat Rossii, 1996, 2001, 2008a, 2008b, 2010)

Our data allow for the inclusion of many important control variables, which we use both to show the exogeneity of the concentration of spetsbanks as of 1995 as well to test the robustness of the main results. We measure these variables in 1996 or earlier, which is well before the period when bank finance emerges. Education in a region is taken from 1994 Russia micro-census and is measured as the share of the population that is at least fifteen years old as of 1994, completed secondary school, and has at least some post-secondary education (source: Goskomstat [1995]). Another important potential determinant of future growth is ethno-linguistic fractionalization, which is related to levels of trust, corruption and financial depth (see, for example, Alesina et al [2003]). We use the standard measure[18] using data from the All Union Census of 1989 (Goskomstat RSFSR

[15] We drop three small regions for which data is limited including the Jewish Autonomous oblast, the Komi-Perm Autonomous oblast and Taimyr Autonomous district; and, we drop the war-torn Chechen Republic and Ingush Republic for which data are also limited.

[16] The Herfindahl Index is calculated as the sum of squared market shares (in percent) for all firms in a market, and thus can theoretically range from 0 (least concentrated) to 10,000 (monopolist).

[17] We measure 2003 loans as the average of the stock of loans held by private firms and households in October 2002 and October 2003, and in 2006 average the stock of loans for October 2005 and October 2006.

[18] $\text{ETHNO} = 1 - \sum_{i=1}^{J} (g_{i,reg} / POP_{reg})^2, \quad i = 1,\ldots,J$

[1990]), where higher values represent more ethnically fragmented regions. We also have data on urban population share and migration inflows per 10,000 inhabitants (source: Goskomstat [2008a and 2010]). Finally, since Moscow was and is the financial capital of the Former Soviet Union and Russia, respectively, we also include distance to Moscow.

We also have several political measures in order to capture popular sentiment regarding market reform, as these preferences may well predict future growth after the fall of the Soviet Union. One such measure is the urban Jewish population in areas occupied by the Nazis during World War II measured just prior to their invasion. As argued by Acemoglu, Hasan, and Robinson [2010], this variable predicts the extent of the destruction of the Soviet urban middle class during World War II and the subsequent anti-market and pro-Communist sentiment that persists long after the fall of the Soviet Union. In addition, our data also contain a measure of the regional importance of powerful elites inherited from the Former Soviet Union, which we proxy using voter participation rates in the Russian regions in 1989.[19] In what was considered to be the first open elections in Soviet history, Soviet citizens were allowed to vote for some representatives to the national legislature. However, these elections for the first time allowed opposition candidates to compete with Communists for power. Thus, in regions where the Communist Party remained strong and well organized, the Communists used their traditional administrative structures to mobilize voter turnout from traditional bases of support including state farms and state owned enterprises. Thus, high voter turnout in these elections is a reasonable indicator of the strength of the old Communist party.

Our last measures of the political environment are proxies for pro-reform sentiment among the general population, in that they measure the share of the regional population that voted for then President Yeltsin in the presidential election in June of 1991, and the share of the regional population that supported Yeltsin again in June of 1996 in the first round of a presidential runoff election.[20] In both elections, Yeltsin stood for economic and political reform and his opponents wanted a return to the socialist past; therefore, pro-market sentiment is stronger when vote shares for Yeltsin are higher.

To proxy for the quality of political institutions, we use an indicator variable that equals 1 if the appointed regional executive in 1991 was an insider and 0 if he/she was out-

Where $g_{i,reg}$ is the number people in ethnic group i in a region, POP_{reg} is the total population of the region, and J is the total number of ethnic groups.

[19] This argument is taken from Berezkin et al. [1989] and Berkowitz and DeJong [2011].

sider (source: Remington [2011]). This variable then picks up roughly the extent to which entrenched Soviet elites could remain in power after the fall of the Soviet Union.

Finally, our data include four direct measures of government involvement in market circa 1997 including the share of production subsidies in regional budget expenditures in 1995; the share of agriculture subsidies in the regional budget in 1995; the share of enterprises in commerce, public catering and public services owned as state or municipal property as of July 1, 1997 and the weighted average of goods and that had regulated prices in 1996 (source: Remington [2011]).

Summary statistics are shown in Table 1. Figures are shown in 1995-1996, when there was very little banking in Russia. In addition, we show statistics separately for regions with more and fewer than 1.4 spetsbanks per million, which is the median number of spetsbanks across the regions. This was done to enable evaluation of the identifying assumption that these groups should otherwise trend similarly over time.[21]

As shown in Table 1, by construction these two groups have significantly different levels of banking. This highlights the relatively high degree of variation in the full sample, where the number of spetsbanks per million people ranges from 0 to 15, averages 2, and has a standard deviation of approximately 2.[22]

However, there are no other statistically distinguishable differences between regions with high and low concentrations of spetsbanks. Even more, the similarities along most dimensions are quite striking: the two groups have similar levels of education, urban population share, political environment, institutional quality, and government involvement in the economy. While this is somewhat surprising given that politics and institutions in particular have been shown to be drivers of finance,[23] it is consistent with what we would expect based on our understanding of how spetsbanks were created by Soviet bureaucrats.

There are only a few dimensions along which the two groups are less similar, though still not statistically so. Regions with more spetsbanks per million inhabitants have somewhat lower population.[24] This makes some sense; one spetsbank might have been able

[20] We obtain basically the same results if we use the second round of election in July of 1996.
[21] In the main analysis, we exploit the continuous variation in spetsbank concentration. Here, for ease of illustration, we simply categorize regions into two groups based on spetsbank concentration.
[22] None of the results in the paper are qualitatively different when excluding the region with 15 spetsbanks per million population, which is substantially more than the next-highest region has (7.8).
[23] See Malmendier [2009].
[24] We note that this difference is not statistically significant, and that there is no such difference in the urban population share. Moreover, the correlation between our spetsbanks measure and population is mechanical because our spetsbank measure is calculated as the number of spetsbanks per million population. Thus, when

to serve more state-owned enterprises in an area with higher population density. Migration is also somewhat different, although the difference of 35.5 migrants per population of 10,000 is small. Distance to Moscow is also somewhat different, with high-concentration regions located an average of 900 kilometers further away than regions with fewer spetsbanks per million population.

Table 2 also contains summary statistics for regions with low and high concentrations of spetsbanks for variables available both circa 1996 and 2006. Thus, these results offer a glimpse into the primary results of the paper on the impact, as well as a way to see whether other plausibly exogenous covariates are changing systematically over time.

As shown in Table 2, banking in Russia took off quickly between 1996 and 2007. While real loans per capita were only 40 and 110 rubles for the two groups in 1996, this increased to over 5,000 and 17,000 rubles per capita in 2007. This increase in banking, however, was not accompanied by a systematic change in other plausibly exogenous variables such as percent urban or population, which is consistent with the assumptions of our research design. It also appears that the divergence in banking did not cause a divergence in real income per capita growth. Specifically, while real per capita income went up by 96 percent on average in states with below-median spetsbank concentration, it went up by only 66 percent in states with above-median spetsbank concentration. These patterns are also apparent from Figures 1 and 2, where Figure 1 shows the positive relationship between the log of per capita lending during 2002 - 2006 and the number of spetsbanks in 1995, and Figure 2 shows the lack of such a relationship between the annualized increase in real income per capita from 1996 to 2007 and the number of spetsbanks in 1995.

In contrast, the increased presence of spetsbanks did appear to increase the employment rate, as shown in Table 2. This is intriguing, as it gives some indication of what the spetsbanks might be doing with their private lending, if not funding productivity-enhancing projects.

5 Test of the exogeneity of Spetsbank concentration

Before estimating the effect of spetsbanks on both banking capacity and economic outcomes, we first test whether spetsbank concentration in October of 1995 is uncorrelated

we estimate regressions we include population as a control to allow for flexible estimation, but we do not

with other variables (shown in Table 1) that predict future income. Specifically, we first ask whether spetsbanks predict pre-banking per capita income in 1996 or annualized growth in per capita income from 1993 to 1996. For comparison purposes, we also include the number of non-spetsbanks per million population at the end of 1995.

Results are shown in the first two columns of Table 3. Consistent with the qualitative evidence described earlier, there is little correlation between spetsbank concentration and 1996 income: one more spetsbank per million population is associated with per capita income that is 0.3 percent lower. There is also little relationship between spetsbank concentration and the real per capita income growth rate from 1993 to 1996; one more spetsbank is associated with a growth rate that is a statistically insignificant 0.18 percentage points higher.

It is not surprising that the concentration of non-spetsbanks in 1996 is more closely correlated with these pre-banking economic outcomes, though estimates are imprecise. We estimate that one more non-spetsbank per million is associated with income that is 2.9 percent higher, and an annual growth rate that is 0.3 percentage points higher.

Next, we ask whether spetsbank concentration is predicted by any of 15 covariates measuring income and demographics, political environment, institutional quality, and government involvement in markets. Results are shown in column 3 of Table 3. Of the 15 covariates included in the regression, only one is statistically significant at the 5 percent level, which is consistent with a random process. Furthermore, at the 10 percent level we cannot reject the null hypothesis that spetsbanks are uncorrelated with the income and demographic variables, or with the political environment and institutions variables, or with the government involvement in the economy variables. In fact, we also cannot reject the null hypothesis that the coefficients on all 15 variables are equal to zero at the 5 percent level (F = 1.64). In short, the empirical evidence is consistent with the qualitative evidence of Hellman (1993) and Johnson (2000) in suggesting that the location of spetsbanks across Russian regions is exogenous to economic factors.

By comparison, column 4 shows results from similar regressions, except using instead *non*-spetsbanks in October of 1995. As shown, this banking measure is highly correlated with variables expected to predict future growth. Two of the 15 coefficients are significant at the 5 percent level (income and budget subsidies), and two more are significant

report or interpret the population coefficient due to ―division bias."

at the 10 percent level. This is also reflected in the F-tests shown at the bottom of the table, where at the 5 percent level one can reject the null hypothesis that all the coefficients are jointly equal to zero. Thus, while the concentration of non-spetsbanks is likely endogenous, the concentration of spetsbanks appears to be orthogonal to other relevant determinants of finance and growth.

6 Results

6.1 The effect of Spetsbanks on banking capacity in the modern banking era

We now examine whether the concentration spetsbanks in 1995 increases banking capacity once modern banking takes hold in Russia. The raw data are shown in Figure 1, while the estimation results are shown in Table 4. There are three specifications corresponding to each outcome. The first controls for log 1996 population, while the second additionally controls for all other pre-banking characteristics from Table 1 to examine whether the spetsbank measure appears to be orthogonal to other important determinants of banking and income. The third column excludes the regions containing the capital cities of Moscow and St. Petersburg, which are outliers in terms of foreign investment, growth, and finance.

The first three columns of table 4 estimate the effect of spetsbank concentration on the log of per capita lending in 2002-2006, as measured by the state of the lender. As described earlier, these are the most reliable data we have, as they come from banks' administrative records and include the entire population. Results indicate that having one more spetsbank per million population – or about a ½ standard deviation increase in spetsbanks – causes between an 18 and 26 percent increase in per capita lending, with all estimates statistically significant at the 1 percent level.

In columns 4 through 6 of Table 4, we show results using a second measure of regional lending compiled by the Central Bank of Russia. While this measure falls somewhat short of the gold standard of administrative data, the advantage is that regional lending is defined at the level of the borrower. Results indicate that having one more spetsbank in a region increases lending during 2003-2006 by 14 to 19 percent, all of which are statistically significant at the 1 percent level.

In columns 7 through 9, we ask whether having the presence of spetsbanks affects bank competition, as measured by the Herfindahl Index. Results indicate that having more spetsbanks reduces the Herfindahl Index by 6 to 9 percent, suggesting that their presence makes the banking industry more competitive.

Finally, in columns 10 through 12 we estimate the effect of spetsbanks on the (volume-weighted) average interest rate charged on loans in each region. Here, while point estimates are negative – as one might expect given the results on loan quantity and bank competition – most are economically small and only some are marginally significant. The largest estimate implies that having one additional spetsbank per million population reduces the interest rate charged by 0.15 percentage points (s.e. = 0.13), which is relatively small relative to the average annual rate in 2006 of 16.6 percent.

6.2 The effect of Spetsbanks on investment, per capita income, unemployment, and small business activity

Next, we turn to whether the increase in private banking induced by spetsbanks affects investment, per capita income growth, per capita GNP growth, employment rates, unemployment rates, or the number of small and medium enterprises per capita. Results are shown in Table 5. As shown in Panel A, there is no evidence that additional spetsbanks increase real per capita income growth or real per capita GNP growth. For example, in our preferred specification in column 2, results indicate that one additional spetsbank reduced annualized per capita income growth from 1996 to 2007 by a statistically insignificant 0.11 percentage points, with a corresponding 95 percent confidence interval of [-0.22, 0.11]. This is also clear from Figure 2, which graphs the percent increase in real per capita income from 1996 to 2007 against spetsbank concentration.

In contrast, we do find evidence that additional banking increases employment rates and reduces unemployment; results in column 5 of Panel B indicate that having one additional spetsbank increases the employment rate by 0.54 percentage points.

Importantly, none of our estimates except for unemployment are sensitive to the inclusion of controls, and none are affected by the exclusion of Moscow and St. Petersburg.

7 Interpretation and discussion

Our findings are somewhat surprising given the consensus in the literature that banking increases economic growth. For example, Guiza, Sapienza, and Zingales (2004) estimate that moving from the least to the most financially developed region in Italy (which was twice as developed, by their measure) would increase growth by 1.2 percentage points per year. In contrast, we show that while the presence of an additional spetsbank induced a 14 to 26 percent increase in lending over the following 10 years, it did not increase growth in GNP or personal income. Our estimates are also precise; even the upper bound of our largest estimate on annual real per capita income growth implies an effect of no more than 0.18 percentage points, which is small relative to the average of 5.8 percent.

This pattern of results is intriguing, as it is appears more consistent with what one might expect of a government owned bank, as opposed to banks that had been privatized and competing in a market with other privately owned banks (see La Porta et al. [2002]). For example, in governments such as the old Soviet regime, the role of the ―banks" was often to help traditional large firms retain workers, in part to build popular support for the regional political elites and in part because these firms provided public goods such as health services and education to the populace and thus helped maintain social stability (see Remington [2011]).

We use two approaches in order to assess whether the Soviet origins and corresponding connections to the federal government persisted after bank privatization. First, we check whether employees in the original spetsbanks tended to hold powerful positions in spetsbank successors.[25] In 1996, for example, 77 percent of the membership of the board of directors of an average spetsbank successor had worked in one of the original spetsbanks. At the same time, in the non-spetsbanks only 25 percent of the board members had worked in an original spetsbank. These findings suggest that political connections established in the original spetsbanks were persistent through at least the mid-1990s.

In our second approach for determining whether spetsbank successors appear to have remained connected to the government, we perform two empirical exercises. We ask

[25] The sampling procedure is to use all of the banks for which the relevant personnel data is given. Thus, we obtain data for 120 spetsbanks and 149 non-spetsbanks in 1996. We obtain similar findings with a similar sample size for 1995. We also obtain qualitatively similar findings when we calculate the number of general directors, vice directors and accountants in 1995 and 1996 who had worked in the original spetsbanks during 1988-1991.

whether spetsbank successors charge similar interest rates as non-spetsbanks of similar size who operate in the same region. We also ask whether spetsbank successors generate a greater share of their interest income from government and government owned firms than their non-spetsbank counterparts. Specifically, using bank-level data, we regress the outcome of interest (interest rate charged or share of income) on regional fixed effects, log of bank assets, and an indicator for whether the bank had its origins as a spetsbank.

Results are shown in Table 6. Using data from the period 1999-2006, we find that the biggest difference between spetsbanks and non-spetsbanks is that spetsbanks receive significantly more of their interest income from federal and sub-federal government (0.89 percentage points) and from firms owned by the government (1.39 percentage points). These are large differences, representing 152 and 101 percent increases over the averages for all Russian banks.[26] Spetsbank successors also receive significantly less of their income (0.75 percentage points, or 51 percent) from foreign banks, which is also consistent with what one might expect from a government bank, as these banks are outside the political sphere of government and the banks. These differences are striking, as these banks and all other commercial banks had been privatized since at least the early 1990s. Thus, in principle, the spetsbank successors should not be receiving additional financial support from the government. Evidence consistent with this assertion is that during 1999-2006 spetsbank successors do not hold significantly more government deposits and do not reap significantly higher profits from government owned firms than their counter-parts. Moreover, while spetsbank successors receive somewhat more transfers from federal and regional governments 1999-2006, this difference is not statistically significant.[27]

In addition, we find evidence that spetsbanks charge individuals an interest rate that is 2 percentage points lower than non-spetsbanks, which is relative to an average rate of 16.5 percent. This could suggest some form of insider or nepotist lending where the spetsbank successors lend to friends at beneficial prices, though it is also consistent with spetsbanks making lower risk loans than their non-spetsbank counterparts.

[26] We emphasize, however, that in previously showing that spetsbanks induced lending, we counted *only* lending to private firms, as that is the lending likely to induce growth. In contrast, here we ask whether spetsbanks also make more loans to government and government-owned firms than their non-spetsbank counterparts.

[27] These numbers are available upon request. Our measure of profits from government owned firms is interest payments received net of expenses paid to government owned firms. Our measure of transfers from the government is interest payments from the government net of expenditures paid. In making these calculations we control for bank assets and region fixed effects and quarter fixed effects during 1999-2006.

Thus, we find considerable evidence that while spetsbanks do induce an increase in private lending, they remain more connected to government than other banks. This relationship exists despite the fact that spetsbank successors are operating in markets as private firms, and, to our knowledge, free from any financial support from the government. The persistence of a relationship with government may help explain why spetsbank lending does not increase growth; perhaps spetsbanks are unable to develop the culture and capabilities necessary to make productivity-enhancing loans, or perhaps they are pursuing other objectives that have persisted due to their origins, such as increasing employment.

To the extent that spetsbank successors lend to inefficient firms—either intentionally to increase employment,[28] or unintentionally due to poor capital allocation skills[29]—it raises questions about the impact of this lending on the private sector. For example, Caballero, Hoshi, and Kashyap (2008) present compelling evidence that by keeping credit flowing to otherwise insolvent borrowers nicknamed ―zombies" by the authors, Japanese banks suppressed job destruction and creation and lowered productivity.

However, while poor capital allocation is one explanation for why spetsbank lending does not cause positive growth, another explanation is that the institutional context in Russia makes it difficult for any lending to lead to investment and economic growth. For example, if firm owners do not believe their property rights will be protected after they take risks to expand and grow their business, they may not be willing to invest.

To test more directly for whether our finding of no growth on average is caused by spetsbank behavior or regional institutional context, we exploit the heterogeneity of both across the different regions of Russia. Specifically, we use measures of bank behavior taken prior to 2001, and ask whether different types of spetsbanks have different effects on economic growth from 2001 to 2007.

The first measure of bank behavior captures how closely spetsbanks are connected to the federal government. Spetsbanks that are highly connected receive federal government transfers, which are measured as interest income received from federally owned firms net of payments to these firms as a share of total loans. In each region, then, we can compute these transfers to spetsbanks during 1999-2001 and use banks assets as weights. How-

[28] We attempted to acquire data on employment at the regional level at firms that were formerly state-owned—that is, firms known to be less efficient—in order to examine whether spetsbanks increased employment at those firms, but we were unable to do so.

ever, one might worry that the level of government involvement by spetsbanks within a region is endogenous to current and future expected growth, or that there are region-specific differences that cause both high government involvement by *all* banks as well as future growth. Consequently, we ask whether regions in which spetsbanks are less connected to government *than their non-spetsbank counterparts in the same region* experience higher growth as a result.[30]

Our second measure captures spetsbank similarity to nonspetsbanks in their region more directly. Specifically, we regress spetsbank status on a set of variables describing sources and share of deposits and loan activity as well as log assets from 1997 to 2001, and then calculate an F-statistic for each region testing whether the coefficients on the deposit and loan variables are jointly equal to zero. We normalize the F-statistics to have mean zero and standard deviation one. This variable thus measures the degree of to which spetsbanks deposit and loan behavior is different from non-spetsbanks of similar size in their region that do not share the Soviet history of the spetsbanks.

To measure the institutional context of each region, we use a measure of property rights protection constructed by experts at the Moscow Carnegie Center under the direction of Nikolai Petrov and Alexei Titkov. It is measured on a scale of 1 to 5, where higher numbers mean that greater protection of property rights.

Results are shown in Table 7, where the first four rows contain coefficients, while the last three rows use those coefficients to estimate the marginal effects of spetsbanks that have different levels of government involvement, similarity with non-spetsbanks in their region, or operate in regions with differing protection of property rights. Importantly, the marginal effect of spetsbanks on lending does not vary significantly by these three factors, as shown in Appendix Table A1. This means that any differential effects on economic outcomes are not due to differences in the magnitude of the first stage on the quantity of lending. We examine three outcomes: annual growth in real personal income from 2001 – 2007, annual real GNP growth from 2001 – 2007, and log investment in 2007.

Several patterns emerge. First, spetsbanks that operate in regions with better institutions – namely, better protection of property rights – have a significantly more positive

[29] We did compare the rate of non-performing loans across spetsbanks to non-spetsbanks as a way of measuring loan quality. However, non-performing loan rates are small across all banks in Russia, which we suspect is due in large part to loan restructurings that would make it hard for us to infer much from those data.
[30] The analysis is thus necessarily limited to regions that have both spetsbank origins and successors and non-spetsbank origins and successors.

effect on growth. For example, columns 7 – 10 indicate that operating in a region where protection of property rights are classified as one point better (i.e., just over one standard deviation) causes the marginal spetsbanks to increase growth by between 0.76 and 1.01 percentage points. This suggests that the institutional context of banking matters.

There is less clear evidence that having connections to the federal government is bad for growth. While these connections appear to lower growth in real personal income, there is no evidence that it lowers real annual GNP growth, and it somewhat counter-intuitively appears to increase investment.[31] However, there is much stronger evidence to suggest that spetsbanks most different from non-spetsbanks are bad for growth.

The net impacts of these factors shown in the last three rows of Table 7 suggests that while there is no effect of spetsbanks on economic growth or investment on average (see columns 1, 6, and 11), there is substantial heterogeneity depending on both the behavior of the spetsbank as well as the institutional environment. For example, the marginal effect of spetsbanks that are most connected to the federal government or are the least similar to non-spetsbanks in their region is to reduce economic growth and investment, when they operate in a region with bad institutions. For example, none of the twelve point estimates for the effect of these banks are positive, while four are significant at the one percent level, two more are significant at the five percent level, and one more is significant at the ten percent level. In contrast, spetsbanks that are not connected to government, or that appear to behave similarly to their non-spetsbank counterparts, increase economic growth by between 0.4 and 1.2 percentage points. For example, the estimate in column 3 suggests that one additional spetsbank increases growth by 1.1 percentage points when it has little relationship to the federal government and operates in a region offering substantial protection of property rights.

In summary, two interesting findings shed light on our result that lending by spetsbank successors does not increase growth or investment, but does increase employment. We show that despite having been privatized and subject to market competition, spetsbank successors have retained some of their historical relationships with government. This provides a potential explanation for why spetsbanks lend to increase employment, rather than productivity. In addition, the impact of spetsbank-induced lending on economic

[31] One potential explanation is that while spetsbanks with close connections to the federal government may induce additional investment, it may be investment aimed primarily at increasing employment, rather than

growth depends on both the behavior of the spetsbank and the institutional environment in which they operate.

8 Conclusions

This paper examines whether additional banking capacity causes increases in per capita income, investment, unemployment, and the share of small business activity. To overcome biases due to selection and simultaneity, we exploit variation induced by the creation of old banks created to function as clearinghouses under the former Soviet Union. Existing qualitative research on these banks characterizes the locational decision as bureaucratic and exogenous to economic factors, which we confirm by showing the concentration of spetsbanks is uncorrelated with 15 covariates that predict economic growth. Despite their Soviet origins, however, these banks have become an important source of lending in Russia: in 2006, privatized spetsbank successors accounted for nearly 14 percent of all lending to firms and households in Russia.

Results indicate that while having one additional spetsbank per million population increases private lending up to 10 years later by 14 to 26 percent, this increase in lending does not cause an economically meaningful increase in investment or per capita growth in real income or GNP. Rather, we find that spetsbank-induced lending increases employment. This is consistent with other findings that spetsbanks are significantly more connected to the federal government than their non-spetsbank counterparts who lack the historic connections to the Soviet financial and political system. This is also consistent with the finding that even after the privatization of banks, employees of the original Soviet spetsbanks were much more likely to hold powerful positions in spetsbank successor banks than in the non-spetsbanks.

Furthermore, we find evidence that the effectiveness of spetsbanks in causing economic growth was determined by both the behavior of the spetsbanks, as well as the institutional environment in which they operated. Specifically, we find that a one standard deviation in the regional index of protection of property rights increases the marginal effect of a spetsbank on annual economic growth by nearly one percentage point. Similarly, our results suggest that spetsbanks that are either less connected to government, or are more

productivity growth. This would be consistent with the findings of Caballero, Hoshi, and Kashyap (2008) in

similar to their non-spetsbank counterparts, subsequently increase economic growth. These latter findings are roughly consistent with the conclusion of Jayaratne and Strahan [1996], who argue that lending quality, rather than volume, is responsible for growth.

Thus, on the one hand, we view our finding that the spetsbank-induced lending did not cause growth as an important counterexample to the existing literature. On the other hand, we emphasize that unlike the United States and Italy examined by previous researchers, our findings are in the context of a country that lacked the long history of modern banking, and that attempted to transform these banks relatively quickly through privatization and the corresponding incentives.

Consequently, our results indicate that the origins of financial institutions can have persistent effects on behavior and growth years afterward. Additionally, our findings suggest that the quality of institutions and the weakening of political connections between banks and government are necessary for banking to cause economic growth.

Japan.

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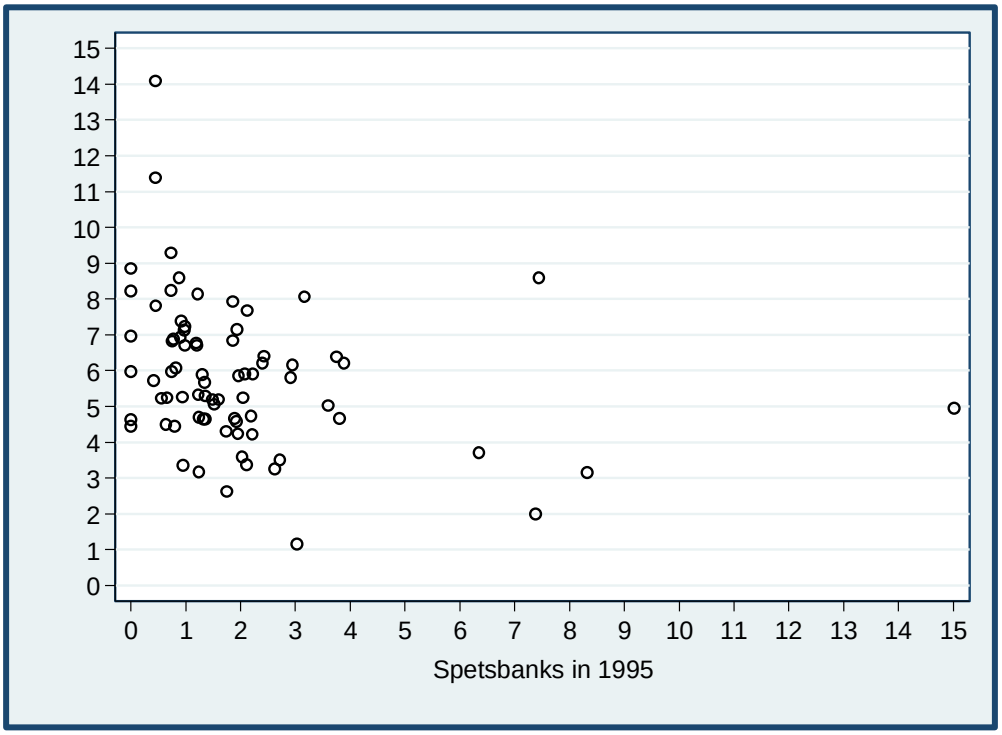
Figures

Figure 1 Spetsbank concentration and per capita lending from 2002 to 2006

Figure 2 Spetsbank concentration and per capita income growth from 1996 to 2007



Tables

Table 1 Descriptive statistics for states in 1995-1996 with above- and below-median number of Spetsbanks

	Low Spetsbank	High Spetsbank	Difference in Means	Observations
Banking:				
Spetsbanks Per Million Population in 1996	0.78	3.25	2.469***	76
	(0.43)	(2.62)	(0.43)	
Demographics:				
Population (millions), 1996	2.10	1.75	-0.35	76
	(1.33)	(1.76)	(0.36)	
Share of 15 + year olds with at least some tertiary education, 1994	13.3	14.0	0.706	76
	(3.4)	(3.9)	(0.83)	
Ethno-linguistic fractionalization, 1990	0.30	0.31	0.01	76
	(0.22)	(0.19)	(0.05)	
Urban population share, 1996	68.7	69.7	1.027	76
	(11.6)	(14.3)	(2.98)	
Migration per 10,000, 1996	20.6	-14.7	-35.24	76
	(56.1)	(123.4)	(21.8)	
Distance to Moscow (km)	1765.0	2675.9	910.90	76
	(1749.3)	(3277.7)	(598.40)	
Political Environment:				
% of Urban Jewish Population in 1939 in regions subsequently occupied by the Nazis during WWII	0.09	0.07	-0.01	76
	(0.22)	(0.23)	(0.05)	
Strength of Communist Party, 1989 (proxied by participation in Soviet elections)	87.5	87.0	-0.5	76
	(6.1)	(6.2)	(1.4)	
Support for Yeltsin, 1991	54.4	51.1	-3.3	76
	(10.4)	(12.8)	(2.7)	
Support for Yeltsin, 1996	32.1	33.2	1.1	76
	(9.0)	(11.1)	(2.3)	
Institutions:				
Appointed Governor, 1991, Insider or Outsider	0.28	0.18	-0.10	76
	(0.40)	(0.35)	(0.09)	
Government Involvement in Markets:				
Budget subsidies, 1995	16.7	13.3	-3.4	76
	(14.9)	(4.7)	(2.6)	
Agricultural subsidies, 1995	8.9	10.0	1.2	76
	(4.8)	(6.1)	(1.3)	
Share of municipal and state enterprises, July 1, 1997	18.8	23.0	4.2	76
	(15.1)	(21.2)	(4.2)	
Weighted average of goods and services with regulated prices, 1996	16.2	14.5	-1.7	76
	(10.3)	(7.0)	(2.0)	

Notes: Figures represent the average across all states during that time period. Robust standard errors are in parentheses. Standard errors for differences in means assumes that variances are equal. Low Spetsbank refers to regions in which there were fewer than the median of 1.4 spetsbanks per million population, while high Spetsbank refers to regions in which there was an above-median number of spetsbanks per million population.

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Table 2 Descriptive statistics before and after modern banking, by presence of old Spetsbanks

	Prior to Modern Banking in Russia (circa 1996)		2007	
	Low Spetsbank	High Spetsbank	Low Spetsbank	High Spetsbank
Spetsbanks Per Million Population	0.8	3.3	0.6	1.6
	(0.4)	(2.6)	(0.5)	(1.8)
Bank Loans to Households and Firms	0.04	0.11	5.31	16.74
Thousands of Rubles Per Capita	(0.04)	(0.37)	(17.03)	(74.09)
Real income per capita in rubles	4334	5547	8504	9233
April 2007=100	(1830)	(4048)	(2834)	(4724)
Employment Rate (%)	93.7	92.1	89.8	90.2
	(7.6)	(6.7)	(5.9)	(6.3)
Unemployment Rate (%)	10.7	10.4	7.2	6.5
	(4.6)	(3.7)	(4.0)	(3.2)
Herfindahl Index for Household	3381	3252	5249	4945
Loans	(2315)	(1852)	(2426)	(2397)
Herfindahl Index for Firm Loans	3606	2808	4820	4490
	(2321)	(1398)	(2436)	(2518)
Migration	20.6	-14.7	-1.9	-9.2
	(56.1)	(123.4)	(36.0)	(39.9)
% Urban	68.7	69.7	68.7	70.0
	(11.6)	(14.3)	(11.5)	(13.9)
Population, millions	2.10	1.75	2.00	1.70
	(1.33)	(1.76)	(1.32)	(1.90)

Notes: Standard deviations are in parentheses. Low Spetsbank refers to regions in which there were fewer than the median of 1.4 spetsbanks per million population, while high Spetsbank refers to regions in which there was an above-median number of spetsbanks per million population. Bank loans to private sector prior to modern banking are from the last 2 quarters of 1997, as this is the earliest time for which reasonable data coverage is available.

Table 3 Correlation between spetsbank concentration and other pre-banking region characteristics

Dependent Variable:	Log 1996 Income	Annual Growth Rate 1993-96	Spetsbanks per Million Pop.	Non-Spetsbanks per Million Pop.
	1	2	3	4
Spetsbanks per Million Population, 1996	-0.003	0.183	-	-
	(0.041)	(0.423)		
Non-Spetsbanks per Million Population, 1996	0.029	0.314	-	-
	(0.023)	(0.292)		
Income and Demographics				
Log of real per capita income, 1996			1.66	6.45**
			(1.40)	(2.59)
Share of 15 + year olds with at least some tertiary education, 1994			0.08	0.01
			(0.09)	(0.20)
Ethno-linguistic fractionalization, 1990			0.16	4.44*
			(1.22)	(2.48)
Urban population share, 1996			-0.05	-0.04
			(0.06)	(0.08)
Migration per 10,000, 1996			0.00	0.02*
			(0.01)	(0.01)
Distance to Moscow (1000s of kilometers)			0.04	0.42
			(0.16)	(0.25)
Political Environment:				
% of Urban Jewish Population in 1939 in regions subsequently occupied by the Nazis during WWII			-0.37	-1.83
			(0.88)	(1.66)
Strength of Communist Party in 1989			-0.07	0.15
			(0.06)	(0.12)
Support for Yeltsin, 1991			-0.01	-0.04
			(0.03)	(0.04)
Support for Yeltsin, 1996			-0.01	0.06
			(0.04)	(0.05)
Institutions:				
Appointed Governor, 1991, Insider or Outsider			-0.10	0.31
			(0.45)	(1.13)
Government Involvement in Markets:				
Budget subsidies, 1995			-0.01	-0.06**
			(0.01)	(0.03)
Agricultural subsidies, 1995			-0.02	0.03
			(0.05)	(0.10)
Share of municipal and state enterprises, 1997			-0.01	-0.06
			(0.02)	(0.03)
Weighted average of goods and services with regulated prices, 1996			-0.04**	-0.04
			(0.02)	(0.04)
Observations	76	74	76	76
F-Test of Joint Significance (Income & Demographics)	-	-	1.36	2.81**
F-Test of Joint Significance (Politics & Institutions)	-	-	0.30	0.76
F-Test of Joint Significance (Govt. Involvement)	-	-	1.47	3.12**
F-Test of Joint Significance (All Covariates)	-	-	1.64*	2.21**

Notes: Each column represents a different regression. Robust standard errors are in parentheses. Each specification also controls for logged population, though the coefficient is not reported or included in the F-test due to division bias caused by also having population in the denominator of the dependent variable.

* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Table 4 The effect of Spetsbank presence on banking capacity

	1	2	3	4	5	6	7	8	9	10	11	12
	Log Per Capita Lending 2002 - 2006, by State of Lender			Log Per Capita Lending 2003 - 2006, by State of Borrower			Log Herfindahl Index 2002 - 2006			Loan Interest Rate Charged in 2002, 2006		
Spetsbanks per Million Population	0.26***	0.18***	0.18***	0.19***	0.14***	0.14***	-0.09***	-0.06**	-0.06**	-0.09	-0.13	-0.15
	(0.07)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)	(0.18)	(0.13)	(0.13)
Observations/Regions	76	76	74	76	76	74	76	76	74	73	73	71
Includes additional controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Capital cities are dropped (Moscow and St. Petersburg)	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Notes: Each column represents a separate regression. Each specification controls for logged 1996 population. Household lending is deflated by the CPI where April 2007=100, and the first two quarters of 2007 are included. Loan interest data in 2006 is missing for three regions including the Kursk, Magadan and the Republic of Kalmykia. Additional controls include the log of per capita income in 1996 as well as all of the pre-banking characteristics shown in Table 1.

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Table 5 The effect of banking on income growth, GNP growth, investment, small businesses, employment, and unemployment

	1	2	3	4	5	6	7	8	9
Panel A: Income and Investment	Annual Growth Rate in Personal Income Per Capita, 1996 - 2007			Annual Growth Rate in Real GDP Per Capita, 2001 - 2007			Log Investment Per Capita in 2007		
Spetsbanks Per Million Population	0.00	-0.11	-0.11	-0.04	-0.09	-0.06	-0.013	-0.021	-0.020
	(0.09)	(0.11)	(0.12)	(0.17)	(0.21)	(0.21)	(0.022)	(0.035)	(0.034)
Observations/Regions	76	76	74	76	76	74	72	72	70
Panel B: Small Enterprises and Employment	Log Small and Medium Enterprises Per Capita in 2007			Employment Rate in 2007			Unemployment Rate in 2007		
Spetsbanks Per Million Population	0.020	0.010	0.010	0.60**	0.54**	0.54**	-0.13	-0.40***	-0.42***
	(0.024)	(0.019)	(0.020)	(0.26)	(0.27)	(0.27)	(0.14)	(0.09)	(0.09)
Observations/Regions	76	76	74	76	76	74	76	76	74
Includes additional controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Capital cities are dropped (Moscow and St. Petersburg)	No	No	Yes	No	No	Yes	No	No	Yes

Notes: Each column in each panel represents a separate regression. Each specification controls for the natural log of 1996 population. Additionally, each per capita income growth specification includes logged income in 1996, while each GNP growth specification includes logged GNP in 2001. Each specification for the other four outcomes controls for the lagged level of the dependent variable in 1996. Additional controls include the log of per capita income in 1996 as well as all of the pre-banking characteristics shown in Table 1.

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Table 6 Differences between the business practices of Spetsbank successors versus Non-Spetsbanks

	Interest Rates Charged To:		The Share of Interest Income That Comes From:						
	Firms	Individuals	Government	Central Bank of Russia	Domestic Banks	Foreign Banks	Firms Owned by the Govt.	Private Firms	Households
Spetsbank Origin	-0.01	-1.98***	0.886**	0.0491	0.775	-0.745**	1.385***	0.716	-3.474***
	(0.65)	(0.66)	(0.374)	(0.190)	(0.805)	(0.357)	(0.487)	(1.616)	(0.978)
Observations	37,823	34,871	40,407	40,407	40,407	40,407	40,407	40,407	40,407

Notes: Each column represents a separate regression. Each specification includes logged bank assets, region fixed effects, and quarter fixed effects. Standard errors are clustered at the bank level. Private firms include domestic and foreign firms and registered entrepreneurs. Firms owned by the government include federal and sub-federal firms.

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Table 7 The differential impact of spetsbanks on growth and investment by relationship to government, similarity to Non-Spetsbanks, and the extent of regional property rights protection

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dependent Variable:	Annual Growth Rate in Real Personal Income, 2001 - 2007					Annual Growth Rate in Real Per Capita GNP, 2001 - 2007					Log Investment in 2007				
Spetsbanks Per Million Population	0.29	-1.74	-2.56*	-0.420	-2.13*	-0.110	-3.00***	-3.31***	-2.35***	-3.07***	-0.060	-0.29*	-0.45***	-0.060	-0.40*
	(0.37)	(1.11)	(1.27)	(1.16)	(1.14)	(0.31)	(0.71)	(0.72)	(0.77)	(0.74)	(0.06)	(0.17)	(0.15)	(0.14)	(0.20)
Spetsbanks x Property Rights Protection (higher → more protection)		0.63*	0.82**	0.26	0.72*		0.96***	1.01***	0.76***	0.91***		0.08*	0.11**	0.01	0.11*
		(0.32)	(0.37)	(0.33)	(0.35)		(0.21)	(0.23)	(0.25)	(0.24)		(0.05)	(0.05)	(0.04)	(0.06)
Spetsbanks x Difference in Spetsbank vs Non-Spetsbank Relationship with Fed Govt (higher → spetsbanks more involved)		-0.92**	-0.8				-0.11	0.01				0.08*	0.11**		
		(0.43)	(0.62)				(0.29)	(0.45)				(0.05)	(0.05)		
Spetsbanks x Within-Region Index of Differences Between Spetsbanks and Non-Spetsbanks (higher → less similar)				-0.60**	-0.82*				-0.28**	-0.47*				-0.13***	-0.08
				(0.24)	(0.46)				(0.13)	(0.24)				(0.03)	(0.07)
Est. Marginal Effect of Spetsbank on Region at:															
10th Pctile of Institutions; 90th Pctile of Fed Govt Connection/Dissimilarity with non-Spetsbanks		-1.22	-1.57*	0.27	-0.46		-1.17***	-1.28**	-0.75**	-1.11***		-0.27***	-0.42***	0.00	-0.15
		(0.74)	(0.91)	(0.59)	(0.58)		(0.42)	(0.51)	(0.34)	(0.36)		(0.10)	(0.09)	(0.07)	(0.10)
50th Pctile of Institutions; 50th Pctile of Fed Govt Connection/Dissimilarity with non-Spetsbanks		0.18	-0.07	0.50	0.22		-0.11	-0.28	-0.00	-0.22		-0.05	-0.11**	0.01	-0.05
		(0.31)	(0.40)	(0.30)	(0.36)		(0.17)	(0.27)	(0.18)	(0.25)		(0.04)	(0.05)	(0.04)	(0.06)
90th Pctile of Institutions; 10th Pctile of Fed Govt Connection/Dissimilarity with non-Spetsbanks		1.21***	1.10**	0.45	0.50		0.90***	0.72*	0.61*	0.44		0.11**	0.10*	-0.06	0.02
		(0.35)	(0.45)	(0.32)	(0.42)		(0.26)	(0.36)	(0.32)	(0.38)		(0.05)	(0.06)	(0.05)	(0.07)
Observations/Regions	48	48	48	48	48	48	48	48	48	48	45	45	45	45	45
Includes additional controls	Yes	No	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes	No	Yes

Notes: Each column in each panel represents a separate regression. Each income growth specification includes logged income in 2001; each GNP growth specification includes logged GNP in 2001; each investment specification controls for logged investment in 2001. Additional controls include the log of per capita income in 1996 as well as all of the pre-banking characteristics shown in Table 1. Property rights protection is a measure constructed by experts at the Moscow Carnegie Center under the direction of Nikolai Petrov and Alexei Titkov and is measured on a scale of 1 to 5. The difference in spetsbank and non-spetsbank relationship with the federal government is defined as the difference between the share of bank asset weighted federal transfers to spetsbanks and non-spetsbanks, where the federal transfer is interest payments net of payments from federally owned firms paid to banks divided by the value of overall bank loans. The within-region index of differences between spetsbanks and non-spetsbanks is calculated as the normalized F-statistic arising from a region-specific regressions in which an indicator for spetsbank status is regressed on a set of variables describing sources and share of deposits and loan activity.

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Appendix

Table A1 The differential impact of Spetsbanks on lending by relationship to government, similarity to Non-Spetsbanks, and the extent of regional protection of property rights

	1	2	3	4	5	6	7	8	9	10
Dependent Variable:	Log Per Capita Lending by Region of Lender, 2002 - 2007					Log Per Capita Lending by Region of Borrower, 2002 - 2007				
Spetsbanks Per Million Population	0.27**	0.42	0.33	0.42	0.11	0.10	0.71**	0.11	0.40*	-0.01
	(0.10)	(0.25)	(0.40)	(0.34)	(0.41)	(0.08)	(0.31)	(0.25)	(0.23)	(0.15)
Spetsbanks x Property Rights Protection (higher → more protection)		-0.06	-0.01	-0.07	0.05		-0.17**	-0.01	-0.06	0.05
		(0.08)	(0.12)	(0.11)	(0.12)		(0.08)	(0.07)	(0.07)	(0.05)
Spetsbanks x Difference in Spetsbank vs Non-Spetsbank Relationship with Fed Govt (higher → spetsbanks more involved)		-0.01	0.26				-0.16	-0.13		
		(0.17)	(0.15)				(0.13)	(0.13)		
Spetsbanks x Within-Region Index of Differences Between Spetsbanks and Non-Spetsbanks (higher → less similar)				0.00	0.13				0.18***	0.31***
				(0.08)	(0.14)				(0.05)	(0.05)
Est. Marginal Effect of Spetsbank on Region at:										
10th Pctile of Institutions; 90th Pctile of Fed Govt Connection/Dissimilarity with non-Spetsbanks		0.29	0.52*	0.29*	0.17		0.23	-0.01	0.21*	0.01
		(0.20)	(0.26)	(0.17)	(0.20)		(0.21)	(0.18)	(0.11)	(0.09)
50th Pctile of Institutions; 50th Pctile of Fed Govt Connection/Dissimilarity with non-Spetsbanks		0.25**	0.29**	0.22**	0.23*		0.19	0.09	0.16**	0.08
		(0.09)	(0.13)	(0.10)	(0.13)		(0.07)	(0.09)	(0.06)	(0.08)
90th Pctile of Institutions; 10th Pctile of Fed Govt Connection/Dissimilarity with non-Spetsbanks		0.20	0.17	0.15	0.35**		0.09	0.14	0.19**	0.29***
		(0.14)	(0.16)	(0.14)	(0.17)		(0.08)	(0.10)	(0.08)	(0.11)
Observations/Regions	48	48	48	48	48	48	48	48	48	48
Includes additional controls	Yes	No	Yes	No	Yes	Yes	No	Yes	No	Yes

Notes: Each column in each panel represents a separate regression. Each income growth specification includes logged income in 2001; each GNP growth specification includes logged GNP in 2001; each investment specification controls for logged investment in 2001. Additional controls include the log of per capita income in 1996 as well as all of the pre-banking characteristics shown in Table 1. Property rights protection is a measure constructed by experts at the Moscow Carnegie Center under the direction of Nikolai Petrov and Alexei Titkov and is measured on a scale of 1 to 5. The difference in spetsbank and non-spetsbank relationship with the federal government is defined as the difference between the share of bank asset weighted federal transfers to spetsbanks and non-spetsbanks, where the federal transfer is interest payments net of payments from federally owned firms paid to banks divided by the value of overall bank loans. The within-region index of differences between spetsbanks and non-spetsbanks is calculated as the normalized F-statistic arising from a region-specific regressions in which an indicator for spetsbank status is regressed on a set of variables describing sources and share of deposits and loan activity.

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

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