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Discussion Papers

479

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Berlin, April 2005

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IMPRESSUM

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ISSN 1433-0210 (Druck) 1619-4535 (elektronisch)

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Banking competition, good or bad? The case of promoting micro and small enterprise finance in Kazakhstan [χ]

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Competition is claimed to be beneficial in development projects promoting micro and small enterprise finance although there are still some doubts whether these loans can be developed into a profitable business. Actually nothing is known about how many MSE banking units optimally should be created and supported in a certain region. Our research aims at shedding new light on this important issue in development finance. We employ a unique dataset from the Small Business Department of the European Bank for Reconstruction and Development for Kazakhstan, and investigate which strategy contributes more to the overall program's success: a strategy of building up several competing banking units targeted at MSE lending or a strategy of establishing regional monopolies.

Keywords: development finance, micro loans, competition, financial institution building

JEL: O16, O18, G21, G28

[χ] We are grateful to the the EBRD Small Business Department, namely Elizabeth Wallace and Elvira Lefting, which kindly supported the supply of the data. We thank Berthold Hertzfeld and Dennis Völzke from the KSBP for their valuable support during the period of building the dataset. We also acknowledge the excellent research assistance of Benjamin Klaus. Of course, we are responsible for all errors.

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> "Competition is the most important principle on which our strategy is based. As in any other market, effective competition provides incentives for banks to offer market based and demand-oriented financial services. Competition encourages the development of better products and services at lower cost." (Matthäus-Maier/von Pischke 2004, p. 1)

1 Introduction

Development politics considers creating financial institutions targeted at the supply of financial services to lower income households, particularly at the supply of loans to micro and small entrepreneurs (MSE) as one of the most powerful tools for fighting poverty and for speeding up growth in developing and transition countries (Morduch 1999, Robinson 2001). For more than a decade, public and private donor agencies have been spending millions of dollars every year to support the microfinance approach. Hundreds of new microfinance institutions (MFIs) were founded all over the world. In some areas with a high density of micro and small entrepreneurs where not long ago the lack of access to finance had been considered a main impediment to development and accordingly donors became active, the microfinance markets are crowded by now. Not only informal money lenders compete with semiformal or formal MFIs, but different MFIs compete for serving the same client group (Rhyne/Christen 1999, Chaudhury/Matin 2002).

Whether increased competition should always be welcomed, however, is far from being clear. Politicians, bank practicians as well as members of the economic scientific community claim that competition in banking may have negative impacts on both, the financial stability of a single bank and the stability of the banking system as a whole (Franklin/Gersbach/Krahnen/Santomero 2001). If potential virtues and vices of rising competition in financial markets, last not least caused by internationalization and globalization, are a subject of controversial discussion in developed countries, there should be even more caution with respect to competition in the microfinance markets of developing or transition countries. After all, the market segment of microfinance has not been shaped purely by commercial forces. It rather have been subsidies which supported the creation of this market and influenced the degree of competition.

Our paper wants to shed new light on the yet unsolved question of whether competition is good or bad in microfinance markets. The microfinance approach follows a dual mission: outreach to the target group of MSE and financial sustainability of the supplying institution. The latter provides the guarantee that the new business will survive in the market once the donors' support is faded out. To investigate how these two dimensions of project success are affected by competition, we analyse a unique set of microdata on MSE lenders in Kazakhstan. The data was collected by the Kazakhstan Small Business Programme (KSBP), a microfinance program supported by the European Bank for Reconstruction and Development (EBRD) (Terberger/Lepp 2004). The set up of the KSBP and, accordingly, the nature of the data, seem ideal to follow our research question because the creation of competition was not only an implicit, but an explicit part of the program's strategy.

The creation of competition as an integral strategy component is not a unique feature of KSBP. It is typical for any microfinance program following the so called downscaling approach. In distinction to donors' support for a non-profit organisation serving microclients to become a professional MFI (upscaling), development aid is used in downscaling to give incentives for commercial banks to move down the market and start a loan business for micro and small enterprise. Typically, a downscaling project is designed as follows: In a first step, several partner banks are selected who show a serious interest in receiving support for the foundation of microloan departments. In a second step, partner banks receive subsidies to cover the start up cost of their new business line. Usually the subsidies are provided in the form of technical assistance for selecting, training and paying special micro loan officers and establishing the administrative structures and procedures of the new loan departments. When the new business starts, its revenues go towards the coverage of its costs with the ultimate aim that revenues exceed costs, the partner banks make profits and will stick to their new business on their own behalf when the donor withdraws.

Being a partner bank in such a program means competing with other partner banks for the same clients right from the beginning if more than one partner bank is located in the same regional market. For this feature of the program design, downscaling projects are a 'living proof' of donors' belief in the virtues of competition. Downscaling serves as a kind of 'controlled field experiment' ideally suitable to study the effects of competition on the dual mission of the microfinance approach empirically.

Therefore, our results offer new insights into the problem of optimal policy design. By and large we find that competition is an impediment to the SME-branches' profitability but does not necessarely endanger their financial sustainability. The results concerning outreach are

ambiguous. While the volumes disbursed by each banking unit grow with competition, competition shows no effect on the number of new loans. Average loan size as the proxy for target group orientation goes up with competition, indicating that competition may force banking units towards serving wealthier clients.

The rest of the paper is organised as follows. Section 2 gives a brief review of the related literature. In section 3 we develop the hypotheses to be tested. Details about KSBP's history, the data set and the applied testing methods are provided in section 4. Section 5 contains the presentation and discussion of results. Section 6 concludes and points to open questions for further research.

2 Review of Related Literature

Since the beginning of the 1990ies numerous papers pointed out that competition in banking might show different effects than those predicted by the neoclassical equilibrium analysis (Cetorelli 2001). Due to the special characteristics of the banking business, which can only be explained in a setting of incomplete and imperfect markets, competition might not be a purely positive phenomenon driving prices down and enhancing efficiency. Competition may cause unwanted effects like suboptimal levels of screening, winner's curse problems, excessive risk taking or even the break down of the market which need to be counteracted by institutions like supervisory regulations to secure the financial stability of the banking sector. Closely related to our research question are those papers which analyse competition in the context of relationship lending. This lending technique is considered the most appropriate for lending to young firms and micro and small entrepreneurs, even more so in less developed financial markets with little public information on potential clients and low legal enforcement of creditor rights (Rajan/Zingales 1998). As relationship lending can only be applied if the lender has some monopolistic power (Rajan 1992), relationship lending might be undermined by competition (Petersen/Rajan 1995). Accordingly, micro and small firms might find it more difficult to get access to loan finance if the banking market is characterized by high competition - a hypothesis which was first confirmed in empirical analyses based on data of the U.S. banking market (Berger/Udell 1994; Petersen/Rajan 1995) and later on for other countries.

Although in development projects trying to promote MSE finance the relationship lending technique is regularly applied and although there exists a vast literature on microfinance, there are very few papers addressing the question of competition. The phenomenon of competition simply was not considered relevant for microfinance projects. After all, these projects were

trying to promote a service which formal players of the financial market would not supply out of their own business interest. Accordingly, the main focus was on the problem of making the supply of MSE loans a viable business. The first paper to point out that competition has reached the microfinance market and will be important for the future of the microfinance approach is Rhyne and Christen (1999).[1] The paper is based on a case study of microfinance in Bolivia, which is one of the furthest developed microfinance markets in the world.[2] Rhyne and Christen point to the dangers, which the entrance of commercial players into the microfinance market carries for the financial sustainability of incumbent non-profit players. This view is theoretically backed by Hoff/Stiglitz (1998). Inspired by development projects trying to extend the supply of microloans in informal markets by offering cheap formal refinancing sources to moneylenders (interlinkage approach), Hoff and Stiglitz provide arguments against the beneficial effects of competition. They show that economists' intuition which "suggests that a fall in the costs of funds to any group in a money market should lower the cost of credit to all through general equilibrium effects" (Hoff/Stiglitz 1998, p. 488) might be misleading if government subsidies lowering the cost of (informal) for-profit moneylenders are concerned. The argument rests on the new entry, which is attracted by subsidies because it may undermine the endogenous disciplining and monitoring technologies, which a provider of microfinance as a typical relationship lender has to rely on. New entry has an adverse effect on contract enforcement cost if the repayment discipline of microclients declines due to their lower cost of switching to an alternative lender. Under such circumstances the threat of cutting off a defaulting client from future credit supply, which is an important disciplining device for relationship lenders under monopolistic competition, cannot be applied effectively anymore. Similar effects arise if new entry prevents the exploitation of economies of scale or induces microclients to borrow from multiple sources. These effects of rising competition can be so strong that the intended effect of government subsidies to provide better access to finance for MSE may even be reversed.

The Hoff/Stiglitz paper directs its arguments against the interlinkage approach and even concludes that supporting MFIs in the formal sector is the superior microfinance approach (Hoff/Stiglitz 1998, p. 513). Nevertheless, their arguments against competition still hold for

[1] The paper was presented 1998 at a conference on Microfinance for practicians and academics by Elizabeth Rhyne, one of the most prominent figures in the microfinance industry holding the position of a vice president in ACCION International, a big private consultancy firm specialised on development finance.

[2] Donors started to support microfinance in Bolivia already in the end of the 1980ies building up several MFIs, underneath them BancoSol and Caja los Andes who belong to the flagship institutions of the microfinance movement by now (Rhyne 2001).

MFIs as long as they apply the relationship lending approach and subsidies attract new entries. Other theoretical papers have followed which highlight possible negative effects of competition in the microfinance market. Ghosh and Ray (2001) analyze competition between for-profit relationship lenders, showing that competition might destroy repayment incentives and lead to market break down unless lenders react by credit rationing to threat bad borrowers off. Uhlig and Gersbach (2004) show, for the banking market in general, that rationing will not be a stable equilibrium as lenders can compete in being more and more strict in their rationing policy. The paper by McIntosh and Wydick (2003) is taking up again – much in line with Hoff/Stiglitz - the subject of competition in the subsidized microfinance market leading to new entry. They show that multiple source lending might lead to greater defaults due to overindebtedness, that competition might prevent MFIs to fulfill their mission of lending to the poor as cross subsidizing between more wealthy and poorer customers becomes impossible. Subsidization might even deter commercial lenders to enter the MSE market.

There do exist theoretical papers, however, which argue that an adequate institutional framework might overcome adverse effects of competition in the MSE loan market. Several papers, underneath them Padilla and Pagano (2000) analyze, again for the banking market in general, how information sharing between competing lenders can help to restore payment discipline. Actually, information sharing was already mentioned in the Bolivian case study based paper by Rhyne/Christen (1999) as a device against strategic borrower default in microfinance markets. Navajas, Conning and Gonzalez-Vega (2003) show, inspired by the Bolivian microfinance market as well, that competing MFIs can survive if they can concentrate on different customer groups and apply different lending technologies.[3]

No doubt, the message of the theoretical literature on competition and microfinance is ambiguous. Thus the question whether competition in microfinance is generally good or bad has to be answered empirically. However, papers systematically analyzing data on competition and microfinance are rare. The study of Vogelgesang (2003) analyzes the effects of competition on repayment behaviour by using a data set on the loan portfolio of Caja los Andes, one of the Bolivian MFIs. She finds that borrowing from multiple sources and loan default have increased with competition. At the same time, however, repayment discipline of those customers with unaffected borrowing behaviour increased.

McIntosh/Janvry/Sadoulet 2003 study the effects of competition on borrower behaviour for Uganda. Similar to the Bolivian situation, they find that multi source borrowing is going

[3] Navajas, Conning and Gonzales-Vega (2003) find some empirical evidence for their model results in the data of two big competing MFIs in Bolivia, BancoSol and Caja los Andes.

along with a decline of repayment discipline. However, overall they conclude a positive effect of competition. The negative impact on repayment behaviour did not undermine the financial stability of the institutions while competition contributed positively to outreach and financial deepening. Chaudhury/Matin 2002 find similar results for the "crowded" microfinance market in Bangladesh. Multiple source lending and borrower overindebtedness are "being managed from turning into a major default problem" (Chaudhury/Matin 2002: 46).

The empirical studies have got in common that they rely on a data set which is provided by one institution. Moreover, competitive effects are analyzed indirectly by information about multi source borrowing of the institutions' clients and – in the case of Uganda – information about the number of local competitors. Navajas et al (2003) study a data set supplied by two competing MFIs but concentrate on the question of how competition affects the lending technologies applied and the behaviour of borrowers leading to market segmentation. To our knowledge, no empirical study has tackled the question of how competition influences the outreach and the financial situation of MFIs directly yet. Due to our unique set of microdata on the credit portfolio as well as on cost and revenues of competing microloan departments in Kazakhstan, we are able to provide answers to this question.

3 Impact of Competition: Hypotheses

Our study aims at offering empirical insights, which could enhance the efficiency of development strategies promoting MSE loan finance by the financial institution building approach. Specifically we are interested in the question whether competition is conducive to the program's success.

Consequently we develop our hypotheses according to the dual mission followed by these projects in general and the KSBP in particular: financial sustainability in the form of cost coverage or even profitability of the loan supplier and – assuming that the budget or the level of financial sustainability is given - maximal outreach to the target group.

For the financial sustainability dimension the majority of the theoretical literature predicts a negative effect of competition on profits although this does not always imply a rise in welfare. Profitability is not equivalent to financial sustainability, however. It is a necessary precondition for the sustainability of the MSE loan business. Without reaching the brink of profitability, loan suppliers can or will not stick to the business unless they are provided with further subsidies. Therefore, profitability is an important indicator not only for financial sustainability but also for subsidy requirements. Accordingly, the first hypothesis to be tested is:

Hypothesis 1: The number of competing banks offering micro and small business loans in a location negatively affects profitability.

We test Hypothesis 1 by employing different indicators for profitability.

Outreach to the target group has several dimensions in itself. Outreach could be measured as the volume of the MSE-loan portfolio, it could be measured in client numbers, and it could also be interpreted in the sense of reaching the target group of low-income clientele. Although the literature even argues that competition might lead to a fall in the overall supply of MSE loans this hypothesis would not make sense in our context where first entries into a formerly unserved market are promoted. The number of banking units offering MSE loans should have a positive impact on total outreach purely by size effects. It seems appropriate, however, to predict that the number of competitors has a negative effect on the outreach of every single branch in that region because competition makes it more difficult for every single bank to extend the new business. This leads us to predict:

Hypothesis 2: The outreach of a single MSE banking unit decreases with the number of competing MSE-banks operating in a location.

We test Hypothesis 2 by employing different indicators trying to capture the different dimensions of outreach mentioned above.

4 Empirical Evidence

4.1 *The EBRD Downscaling Program in Kazakhstan*[4]

Kazakhstan belongs to the group of the most advanced CIS states concerning transformation and economic development because the government firmly committed to follow a policy of liberalization, privatization and structural reform as early as 1993/94. Positive growth-rates, except in the aftermath of the Russian financial crisis, an almost balanced state budget and a successful fight against inflation have characterized the Kazakh macroeconomic situation for the past few years.

Kazakhstan is rich in natural resources, especially in oil and gas, which on the one hand is an important source of income and attracts foreign investment; on the other hand it causes a dependence of the Kazakh economy on the world's oil and gas market. The need for more diversification in the economy was one of the reasons for the government's early commitment

[4] This paragraph draws on Lepp/Terberger 2004.

to promote small and medium enterprise development, which was reflected in several legal acts and in the request for the KSBP microfinance program.

Reforms in the financial sector had far advanced when the microfinance program took up its activity in 1998. Interest rate ceilings and directed policy lending had been abandoned, a two tier banking system had been established as early as 1993, and the government pushed the process of privatization with the last commercial bank being privatized in 2001. Moreover a well functioning banking supervisory authority had been established in the National Bank of Kazakhstan. A formal loan market for micro and small enterprise, however, was almost non-existent.

KSBP was implemented in April 1998. KSBP's "principal objectives are (i) to provide finance to MSEs, which currently have insufficient access to formal sector finance; (ii) to build up the credit capabilities of Kazakhstan's financial sector so that local banks are able to provide MSEs with access to finance on a permanent basis" (EBRD 1997). These objectives clearly point out the dual mission of the microfinance approach. According to its objectives, KSBP was not designed as a project to directly fight poverty, but as a project of financial market development. An impact on poverty reduction is expected in an indirect way by creating sustainable access to formal loan finance for small and micro entrepreneurs.

KSBP was provided with a sovereign guaranteed EBRD credit line of 77.6 Mio. USD as a refinancing facility for the MSE business of the partner banks. The conditions, however, made these funds not much more attractive than funds partner banks could borrow on the market. Some partner banks even had access to cheaper refinancing facilities. The main financial incentive for partner banks to participate was the donors' support of the organizational implementation of the new business for which the Kazakh government, EBRD and several other donor organizations provided a considerable sum[5].

Five partner banks had been selected beforehand which could meet the qualification criteria[6], underneath them some of the largest Kazakh commercial banks. Four of these banks were in private ownership. The fifth bank was fully privatized in 2001. Two more private banks joined the program in November 1998 and in September 1999 respectively.

[5] Among them EBRD, USAID and TACIS.

[6] The qualification criteria consisted of a full banking license, approval by the NBK, IAS-Audit, program compatible strategy and commitment of bank-management to gain experience in MSE business, location of geographical interest as well as financial stability according to banking regulation standards.

Competition was implemented by KSBP right from the beginning. All competitors had standardized starting conditions and offered the same standardized products. Furthermore, KSBP standardized the implementation of the organizational structure of the new loan departments within each bank.[7] By early 2004 all urban centers in Kazakhstan were covered by the program. The outstanding MSE-portfolio grew to over 162 Mio. USD in volume and over 35.000 in number, and growth rates were still high. "So far, the program has greatly outperformed expectations and serves as a model for expanding the outreach of commercial banks to poorer enterprises." (Worldbank 2004)

In 2003 KSBP started to establish a profit center calculation for the MSE business in each partner bank. The first reliable profit center data came out in late 2003. Therefore, the chance to analyze panel data right from the start of the program is foregone. Nevertheless, the data which were made available are unique and will allow a cross sectional analysis of the field experiment on competition and microfinance in Kazakhstan.

4.2 *Dataset and Variables*

The data for our analysis come from several sources. Most importantly we have cost and revenue information of the MSE loan departments of five out of seven banks participating in KSBP. The information comprises a cross-sectional survey of the loan departments for the first quarter of 2004. In addition to cost-revenue figures the survey contains information on the opening and, if applicable, the closing date for every reporting department, the name of the bank that established it and the city/town[8] where the banks' branch opening up the MSE department is located. By the end of 2003 the seven participating banks had established MSE-departments in 126 branches. As the MSE departments operate as separate profit centres within each branch, we will refer to the MSE departments just as MSE branches or branches in the following. Figure 1 shows the number of MSE branches per bank. The cost-revenue information in our data set covers all branches except those 12 branches, which belong to the two non-reporting banks (bank type 6 and 7).

In addition to branches the participating banks settle non-autonomous MSE banking units, so-called outlets that are attached to parent MSE branches to whom they report their results. Data about outlets come from a second dataset that includes opening and – should the situation

[7] The standardization includes the introduction of an IT-based Management Information System (MIS), the MSE-lending guidelines and the introduction of an incentive based payment scheme for loan officers, which covered all aspects of their performance from disbursement to portfolio quality.

[8] In the following sections we use city and town interchangeably.

arise - closing dates of all banking units (branches and outlets) for each participating bank sorted by region. Besides the name of the region the data set names the location each banking unit is operating in as well as the number of citizens as a proxy for the size of the market. Figure 2 illustrates the distribution of the 126 branches over the regions. The 16 regions' names are taken from the central KSBP-statistics.

Figure 1: Number of MSE Branches per Bank

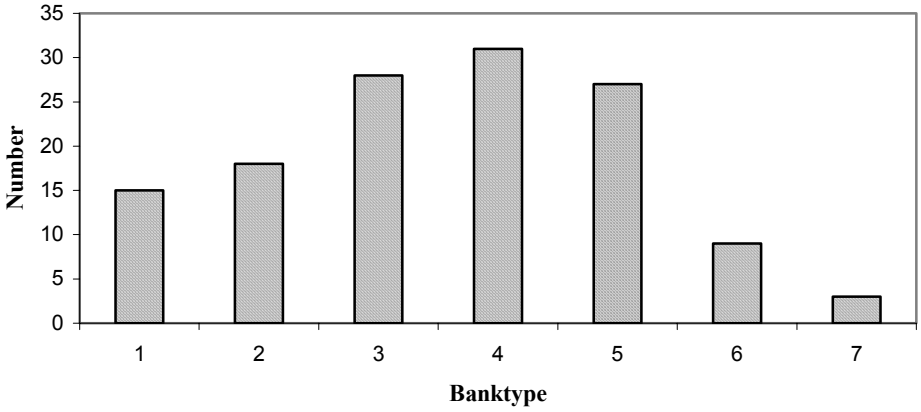
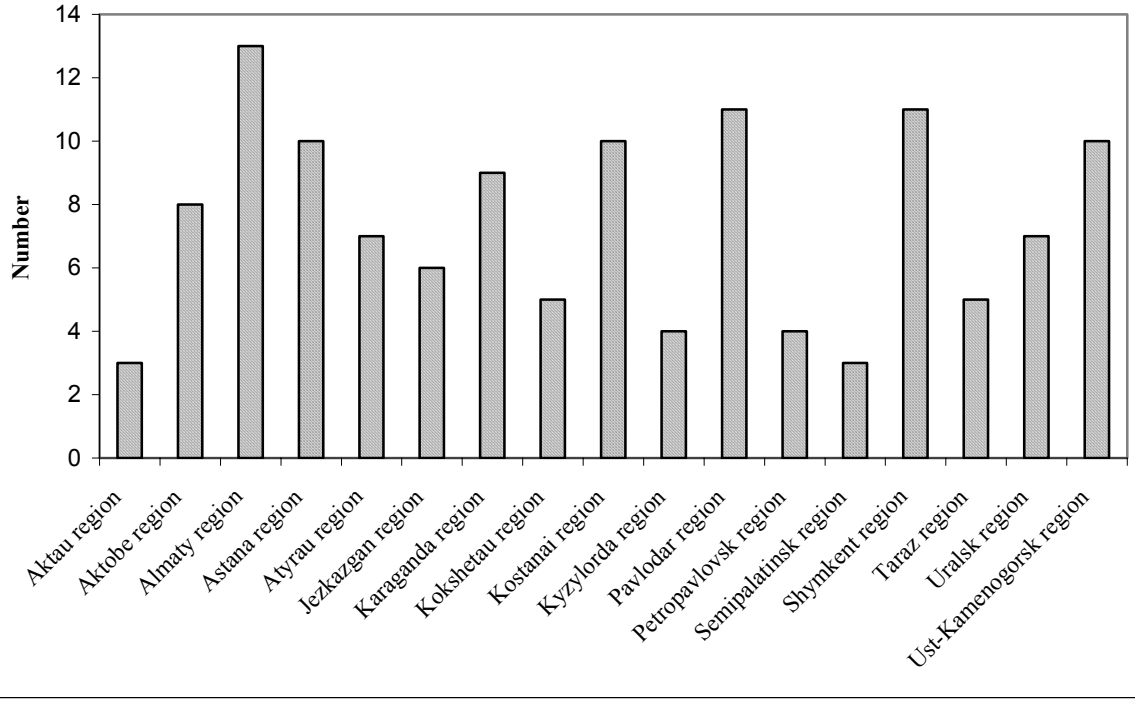


Figure 2: Number of MSE Branches per Region

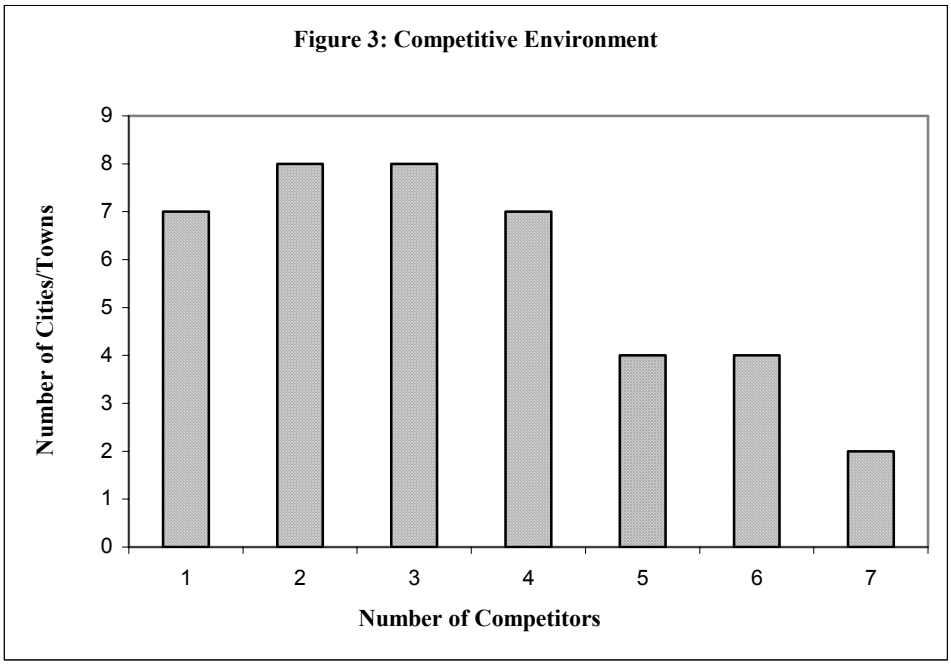


4.3 *Independent Variables*

The number of banks present in every single town/city at the beginning of 2004 reveals the state of competition. Each distinct bank present in a certain location is taken as one competitor. Thus the number of competitors (**NumberC**) ranges from one to seven (number of participating banks). If one bank owns more than one branch or outlet in a city all branches and outlets belonging to the same bank are counted as one competitor. In very few cities some banks are running only outlets. Nevertheless, the bank is present as a competitor in this location and therefore is counted as such.

Parent MSE branch and reporting outlets may be located in different towns. This could cause distortions of cost-revenue figures of parent branches with respect to the impact of competition. For example, if the parent branch's figures contain the results of an outlet that is a monopolist in its location, the effect of competition in the parent branch's own city is hardly reflected by these figures. To account for such distortions we would have had to remove parent branches from our data set, if parent branch and corresponding outlet face different competitive pressure. Luckily, however, the sample contains only outlets that face the same competitive environment as their parent branch even if both are located in different towns. Thus we keep the information on all parent branches in the sample. The competitive environment in which the KSBP-MSE-branches operate is shown in Figure 3. Most frequently two or three distinct banks operate in the same city.

Figure 3: Competitive Environment



The degree of competition may not only depend on the number of competitors but also on the proximity of clients to the next banking unit (Degryse/Ongena 2005) and market size. As we are lacking information on the local distribution of banking units we try to control for these issues by employing a density measure. The density of MSE-banking units (**LDensity**) is defined as the number of inhabitants of the town divided by the sum of branches and outlets in that location.

To control for other effects than the one of multiple entrance into the local microlending market we employ several control variables. Most importantly, we expect that the age of each banking unit or rather the time it has been in operation (**Age**) influences its performance due to economies of scale. Since as a bank branch gets older the marginal effect of time it has been in operation is likely to change, we have inlcuded the age squared (**AgeSqr**) variable that induces differentiated marginal effects of the **Age** variable on the dependent variables in question.

The portfolio volume of most branches is growing over time while certain fixed costs remain constant. Furthermore, experience leads to greater professionalism of the loan officers and thus could have a positive impact on results – to name just a few reasons for the likely impact of 'age'. The age distribution in the complete sample is shown in Figure 4. To control for the different structure of administrative cost, the size of each branch defined by the number of loan officers (**Size**) is included into the econometric model. Figure 5 reflects the complete sample's size distribution. Class 1 contains all branches with one or zero loan officers. Class 9 includes all branches, which employ more than 8 loan officers. The remaining classes correspond to the respective number of loan officers given on the horizontal axis.

A bank-type dummy variable (**Type**) ranging from one to seven is included to capture the specific influences coming from the mother bank, such as business style, popularity of the brand name, corporate governance or refinancing situation. We do not have access to region-specific socio-economic information for the year 2003 and 2004. In order to capture economic differences between the 16 regions we employ a region dummy (**Region**).

Figure 4: Age Distribution Within and Across Branches

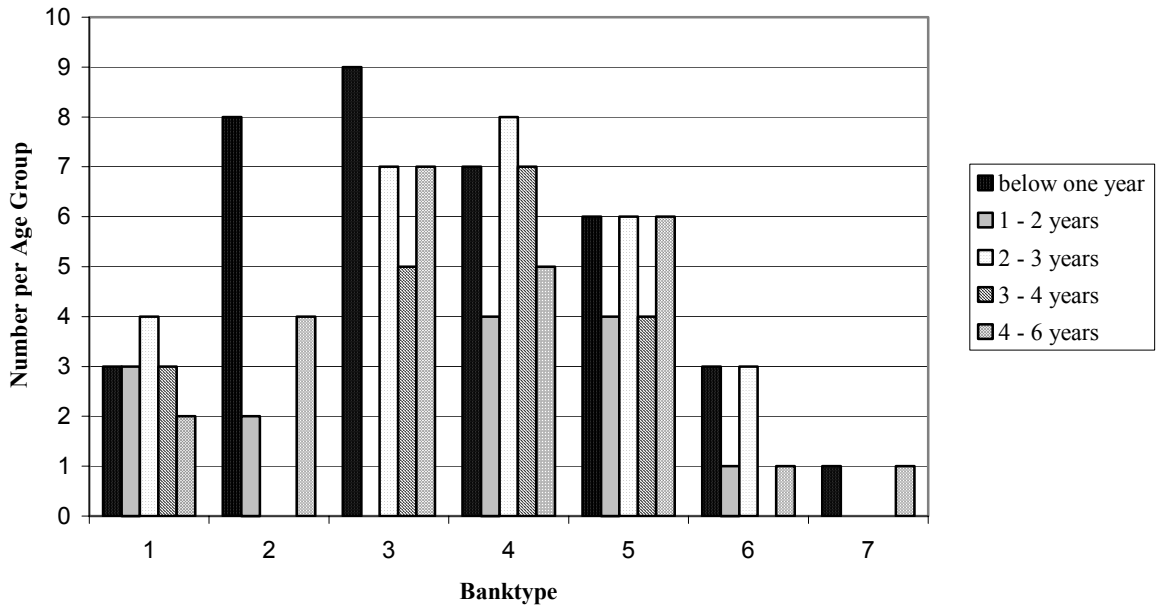
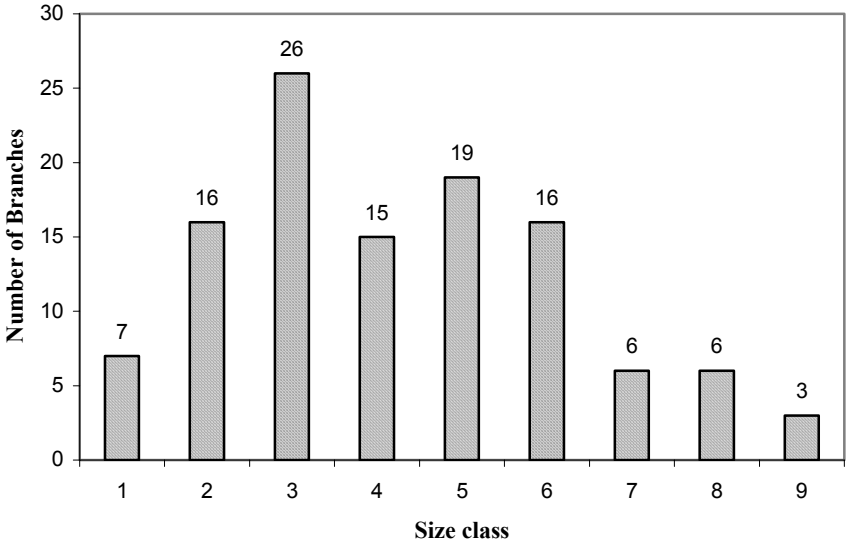


Figure 5: Size Distribution



4.4 *Impact of Competition – Dependent Variables and Testing Methods*

The initial cost-revenue file contains data on 126 banking units that have been brought into action before 2004. However, the financial data are missing for all branches of bank type 6 and 7 (12 branches). This leaves us with 114 observations. Since the very young MSE branches (defined as those that are from 1 to 3 months old) need a start-up period in order to collect a loan portfolio, we have also expelled these branches from the estimation sample, which leaves us with 111 branches. Furthermore, we have excluded from the analysis two branches that report zero loan officers, and two branches that report negative returns (in order to avoid taking logs from negative numbers). As a result, we are left with 107 observations. We analyze the influence of competition on the dual mission of the microfinance approach. For measuring profitability we employ several indicators. The revenue side of profitability is represented by the interest income per unit of the outstanding MSE portfolio (**InterestIncome)** whereas expenses for personnel (**CostPersonnel**) and total administrative cost of the MSE departments (**CostAdmin**) reflect the cost side. As refinancing costs are not under the control of the MSE departments but are rather determined by the other business of the mother bank, we do not analyze these costs separately. To combine the cost and revenue sides and measure profitability more directly we use two indicators: first, the rate of return on the MSE loan portfolio as the return on asset (**RoA**) since the loan portfolio is the only asset which can be exclusively assigned to the micro loan department and, second, the return per loan officer (**OfficerProfitability**). Both profitability measures seem especially important because financial funds allocated to the MSE loan portfolio as well as trained personnel represent the scarce resources tied up in the MSE loan business. These resources can be expected to be transferred to other business if the MSE business does not pay off. Finally, since profitability is also affected by bad loans, we use the arrears rate **(Arrears)** as a direct indicator of portfolio quality and an indirect indicator of profitability**.**

For measuring outreach we focus on turnover-related indicators such as the volume and the number of loans disbursed per loan officer during the first quarter of 2004 (**VolumeDisbdSize, NumberDisbdSize)**. We chose these flow related measures instead of measures representing the stock of the accumulated portfolio because the competitive situation changed while the stock of loans was built up. Therefore, measures of the new business in the first quarter of 2004 can be expected to give the best reflection of the actual competitive situation. Furthermore, we employ the average loan size (**ALoanSize)** as a

measure of outreach. The latter is likely to reflect the degree to which a branch is dedicated to the target group of low-income clientele. Table 1 presents the summary statistics for the selected indicators.

Table 1: Summary Statistics

Dependent Variables	Explanation	Number of Observations in est-imation sample	Mean	Standard Deviation	Min	Max
Profitability Measures						
InterestIncome (in %) Regression 1	Interest income divided by average outstanding portfolio*	107	5.4793	0.79170	3.7142	9.4031
CostPersonnel (in %) Regression 2	Wages and salaries divided by average outstanding portfolio*	106	0.56319	0.30473	0.094762	1.7662
CostAdmin[+] (in %) Regression 3	Total administrative costs divided by average outstanding portfolio*	106	0.83692	0.46603	0.21895	2.6390
RoA (in %) Regression 4	Department profit before tax divided by average outstanding portfolio*	107	2.7753	0.98572	0.15000	6.6900
OfficerProfitability (in US-Dollar) Regression 5	Department profit before tax per loan officer	107	7757.1	5549.3	105.40	35196
Arrears° (in %) Regression 6	Arrears divided by average outstanding portfolio*	27	0.35609	0.57571	0.0059998	2.8406
Outreach Measures						
VolumeDisbdSize (in US-Dollar) Regression 7	Loan volume disbursed in quarter 1 of 2004 per loan officer	107	103690	57455	14493	346850
NumberDisbdSize Regression 8	Number of loans disbursed in quarter 1 of 2004 per loan officer	107	21.414	9.7398	6.0000	54.833
ALoanSize (in US-Dollar) Regression 9	Total volume of loans disbursed in quarter 1 of 2004 divided by number of loans disbursed during the period	107	5386.3	3147.4	1407.5	16427

* All figures were multiplied by a hundred.

[+] One branch reports zero administrative costs. This branch is excluded from the sample when regressing the administrative costs on the number of competitors and the controls.

° The summary statistics refer to the 27 branches which report arrears.

The dependent variables InterestIncome, CostPersonnel, CostAdmin, OfficerProfitability, VolumeDisbdSize, NumberDisbdSize, AloanSize have been log transformed in the regressions. All of the regressions except the regression for arrears (regression 6) have been estimated by the Ordinary Least Squares (OLS) method. The OLS-regression adequacy has been checked by the following tests available as the standard regression diagnostic tests in PcGive 10.4 (see Doornik and Hendry 2001): Doornik-Hansen (1994) test for residual normality, White (1980) test of no residual heteroscedasticity, and Ramsey (1969) RESET regression misspecification test.

There appear to be a certain number of outliers in some of the regressions. As a result, some of the diagnostic tests reported that the underlying model assumptions have been violated. These outliers have been dummied out such that the assumption of the residual normality remained fulfilled. However, it is important to note that inclusion or exclusion of these dummy variables in our regression have no practical influence on the conclusions.

For estimating the impact of competition on the arrears we could not apply the OLS-method. Since most of the banks in our sample (80 out of 107) report no arrears at all, we have choosen to assess the impact of competition on the likelihood that a particular bank has arrears by means of a logit regression, where the dependent variable is a constructed indicator variable that takes value of one when a bank has arrears and value of zero otherwise.

We test various specifications for all regressions given in Table 1 that differ in the amount of control variables included (see Appendix). For reasons of clarity we report in the following section only the specification that includes the complete set of control variables plus the significant type and region dummies (see Table 2).

5 Presentation and Discussion of Results

Table 2 presents the estimation results on the link between competition and measures of profitability and outreach. The first regression indicates that the number of competitors decreases the gross interest rate (**InterestIncome**) an MSE branch earns on the average portfolio. The coefficient of **NumberC** is negative and highly significant while none of the control variables – except type and region dummies – show a significant effect. In regression 2 and 3 neither the margin needed to cover the cost of personnel nor the margin for covering total administrative cost shows any significant difference, which can be attributed to the number of competing banks, although the coefficient of **NumberC** is negative in both regressions. The control variable **Age** is negatively significant which points at cost decreasing effects from economies of scale and learning.

The results of the regressions on our profitability indicators, which combine the cost and revenue side, complete the picture. When the return on the average outstanding portfolio **RoA** is regressed on **NumberC** (regression 4) and outliers are controlled for, the number of competing banks has a negative impact on **RoA** with significance on the 1% level. The cooefficient of **Age** is positive and significant at the 5 % level. Almost replicating the outcome with respect to the link between **InterestIncome** and **NumberC** the results are fairly robust.

Table 2:[9] Results

		Constant	Age	AgeSqr	Ldensity	Size	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
Profitability Measures[10]													
InterestIncome	Coef.	**-3.177*****	**0.001**	**0.000**	**0.036**	**0.006**	**-0.033*****	65, 82	[0,5721]	[0,4157]	[0,4396]	0.536	12
(Regression 1)	t-ratio	-13.200	0.272	-1.220	1.540	0.887	-4.400						
	p-value	0.000	0.786	0.224	0.128	0.377	0.000						
CostPersonell	Coef.	**-1.781****	**-0.030*****	**0.000****	**0.171****	**0.023**	**-0.021**	15	[0,8350]	[0,9485]	[0,5297]	0.625	10
(Regression 2)	t-ratio	-2.130	-4.570	2.130	2.110	1.250	-0.991						
	p-value	0.036	0.000	0.036	0.037	0.214	0.324						
CostAdmin	Coef.	**-1.428***	**-0.038*****	**0.000*****	**0.173****	**0.032***	**-0.015**		[0,5926]	[0,4987]	[0,2834]	0.680	10
(Regression 3)	t-ratio	-1.890	-6.200	2.760	2.360	1.750	-0.680						
	p-value	0.061	0.000	0.007	0.020	0.083	0.498						
RoA	Coef.	**-1.483**	**0.031****	**0.000****	**0.403****	**0.036**	**-0.138*****	15,62,	[0,8874]	[0,4963]	[0,0611]	0.568	13
(Regression 4)	t-ratio	-0.848	2.150	-2.050	2.370	0.816	-3.000	82,103					
	p-value	0.399	0.034	0.043	0.020	0.416	0.003						
OfficerProfitability	Coef.	**6.132*****	**0.060*****	**0.000*****	**0.142**	**0.043**	**-0.082****	15,70,103	[0,0879]	[0,2162]	[0,1625]	0.729	11
(Regression 5)	t-ratio	4.540	5.670	-3.160	1.080	1.470	-2.410						
	p-value	0.000	0.000	0.002	0.281	0.146	0.018						
Arrears	Coef.	**-8.864**	**0.143****	**-0.002****	**0.350**	**0.453****	**0.036**						
(Regression 6)	t-ratio	-1.190	2.120	-2.100	0.499	2.590	0.199						
	p-value	0.235	0.037	0.038	0.619	0.011	0.843						
Outreach Measures													
VolumeDisbdSize	Coef.	**8.950*****	**0.028*****	**0.000****	**0.159***		**0.074*****	66,74,100	[0.5195]	[0.9156]	[0.1535]	0.673	13
(Regression 7)	t-ratio	10.600	4.100	-2.420	1.970		3.180						
	p-value	0.000	0.000	0.017	0.052		0.002						
NumberDisbdSize	Coef.	**3.951*****	**0.009**	**0.000**	**-0.095**		**-0.019**		[0.4688]	[0.5213]	[0.7614]	0.072	6
(Regression 8)	t-ratio	3.920	1.100	-0.953	-0.981		-0.707						
	p-value	0.000	0.273	0.343	0.329		0.481						
ALoanSize[11]	Coef.	**7.128*****	**0.018****	**0.000**	**0.057**	**-0.008**	**0.088*****		[0.4018]	[0.0041]***	[0.6720]	0.570	11
(Regression 9)	t-ratio	9.166	2.440	-0.548	0.744	-0.403	2.960						
	p-value	0.000	0.015	0.5824	0.4592	0.688	0.003						

[9] The regressions include all control variables and both the type and region dummies.
[10] * significant at 10%; ** significant at 5%; *** significant at 1%
[11] The t-ratios and the associated p-values have been calculated using the heteroscedasticity consistent covariance matrix estimator.

The impact of local competition on **OfficerProfitability** (regression 5) is also negative and significant on the 5%. **OfficerProfitability** is an increasing function of age. The coefficient is highly significant and robust, hinting just like the regression results on cost measures at learning effects.

In sum Hypothesis 1 is confirmed by the data. As most of the theoretical literature suggests profitability, measured in rates of return on scarce financial and human resources, is linked negatively to local competition for microlending branches in Kasakhstan. The finding is consistent with an empirical result developed in Chang et. al. (1997) for the banking market of New York City. They concluded that profits decrease if banks follow other banks' branches. As mentioned before, declining rates of return do not per se endanger financial sustainability, however. The donor community might even welcome such a development if profits are still high enough to keep the business attractive – a discussion which is picked up again later on.

What we already can conclude, however, is that the negative effect of competition on return measures cannot be attributed to a decline in repayment discipline. Although most theoretical literature predicts that competition will undermine disciplining devices of relationship lending, we do not find any evidence that the quality of the portfolio is affected. The logit regression fails to reveal a significant impact of **NumberC** on the likelihood of arrears (regression 6). This result is in contrast to Matin/Chaudhury (2001), McIntosh et. al (2003), and Vogelgesang (2003) but is consistent with Park et. al. (2002). The latter argue that in presence of credit rationing, competition induces financial institutions to exert greater screening and enforcement effort.

Interpreting our result, it needs to be kept in mind that all of the MSE departments are still under the influence of the central consulting service provided by KSBP. The standardized screening and monitoring technique implemented by KSBP is a very restrictive one, which implies rather risking to reject a loan application of a client which might perform well than risking a default. Therefore, the rates of arrears and the loan write offs have always stayed extremely low in almost all of the MSE departments, no matter, how fast their loan portfolios were growing (Lepp/Terberger 2004).

Turning to our results on outreach, the regression results are quite clear again. The variable **VolumeDisbdSiz** measures the gross increase in the size of the portfolio per loan officer in quarter one of 2004. The competition coefficient is positive and highly significant (regression 7). This result implies that individual employee's disbursement of loans increases in volume if local competition intensifies. **Age** is highly significant, the sign of the coefficient being

positive as well. Presumably, only experienced loan officers are capable of disbursing higher loan volumes. In contrary to our results on loan volume, we can find no impact of the competition variable or the age variables on the number of loans disbursed per loan officer (regression 8). Indirectly confirming our results on volume and number, we find a highly significant positive effect of local competition on the average size of disbursed loans. Thus if more competitors serve the local market on average the MSE branches provide clients with bigger loans (regression 9).

In sum, Hypothesis 2 is partly rejected with respect to turnover-related indicators. Unexpectedly, competition goes along with an increase of the branches' activity in terms of the volume of loans granted. This could be attributable to clustering effects in MSE lending which is an innovative business for banks in Kazakhstan. Branches might learn from their competitors and get motivated by their presence. Furthermore, the pure fact that several banks in the same location advertise MSE loans may give a boost in potential clients' knowledge and trust increasing the pool of sound loan applications. These would be exactly the outreach effects which donors' hope for when they make the promotion of competition an integral part of their institution building strategy.

The volume effect of competition goes along with an increase in the average size of loans. This result confirms hypothesis 2 and probably would not be appreciated by donors who have a high priority on lending to the low-income group. Thus the impact of competition on outreach is ambiguous. On the one hand competition increases turnover-related indicators but on the other hand bigger single loan amounts suggest that competition shifts the business model towards bigger clients. Due to economies of scale bigger loans are cheaper for the branch. Our results might indicate that branches' react to increased competitive pressure with bigger loans as an attempt to compensate for decreasing margins.

Trying to evaluate this trade off which shows up in the different outreach dimensions one should come back to the objectives of KSBP. Explicitly, KSBP was designed as a program of financial market development by establishing the service of MSE lending and not as a program to directly fight poverty. Therefore, a trend to move up the market probably induced by competition should not outweigh the positive impact of competition on the supply of loans in terms of volume, as long as these loans supply finance for clients, which have viable investments and had no access to finance before. On the contrary, granting larger, more profitable loans might keep up the possibility to cross subsidize the service for smaller clients. Whether the partner banks of KSBP will be ready to do this, once donors have withdrawn, is a question that is beyond the scope of this paper. The impact of competition on the pool of

clients receiving loans might become more prominent once donors influence and control will be absent.

Without financial sustainability of the business, MSE lending will not be supplied in the Kazakh financial market on a permanent base. For a private commercial bank as a for-profit player, the criteria of financial sustainability is met if the scarce resources the bank is devoting to the MSE loan business earn the same (risk adjusted) rate of return which these resources could generate in any alternative business opportunity. Our results on profitability indicate that the rates of return are influenced negatively by competition. The question arises whether the rates are still sufficiently high to keep the business attractive, despite of competition.

An IMF/Worldbank study reports declining interest rates on loans as well as declining margins due to increased competition (IMF/Worldbank 2004). Compared to the MSE business, however, the interest rate income on loans is considerably lower than the average interest rate income on the MSE portfolio of KSBP banks. For 2003 the study reports an interest rate received on loans of 13,05% on average, and of 12.47% for the three largest banks. According to our data set, the MSE portfolio generated an interest income on average portfolio volume of almost 5.5% in the first quarter of 2004 (see Table 1). Accordingly, the interest rate received per annum should be well over 20%. On the one hand, the relatively high gross interest income of the MSE portfolio could be influenced positively by the excellent portfolio quality. This conjecture is supported by the high rate of loan loss provisions of Kazakh banks. According to the report, provisions amount to 4.88% of deposits on average and 5.37% for the three largest banks in 2003. On the other hand MSE loans are usually more expensive than loans to medium and big enterprise to cover for the higher administrative cost per unit. On average, these additional costs could easily be covered by the interest rate income, as the return on the MSE portfolio indicates. The mean return on average outstanding portfolios of over 2.7% in the first quarter of 2004 (see Table 1) exceeds the return on assets of Kazakh banks for the whole year of 2003 which is reported as 1.98% on average and as 1.84% for the three largest banks. We have to take into consideration, however, that the total balance sheet of a bank does contain unproductive assets as well while the only asset assigned to our MSE departments is the productive loan portfolio. Furthermore, no overhead like a part of head office costs is assigned to the MSE departments when their return is calculated. Nevertheless, the MSE business on average seems to have not only passed the line of full financial sustainability, but is contributing considerably to the banks'

profits.[12] For the Kazakhstan case it seems justified to conclude: Competition shows a negative effect on profitability without endangering the financial sustainability on average. However, there exist other countries where the preconditions for establishing a financially sustainable MSE business might be less favourable than in Kazakhstan. In such contexts competition might have actually have adverse effects on programs promoting MSE finance. Furthermore, even in Kazakhstan, competition might have slowed down the process of reaching the brink of cost coverage, causing more subsidies to be spent than would have been necessary to develop the MSE loan market.

6 Conclusions

Based on a unique data set comprising cost and revenue figures of competing MSE banking units in Kazakhstan we analyzed the influence of competition on the success of an EBRD development project promoting MSE loan finance in the Kazakh commercial banking market. The main objectives of any program promoting MSE finance are twofold: MSE lending shall be established as a viable business whose survival in the market is not dependent on further subsidies (financial sustainability) and the outreach to the target group of micro and small enterprise shall be maximised.

As the relationship lending technology is applied in MSE lending whose efficiency can be adversely affected by competition, we were surprised to find that competition, measured by the number of competing banks in a location, and lending activity were positively correlated in Kazakhstan without undermining repayment discipline. The outreach, measured by the volume of new loans disbursed, increased with competition while arrears were not affected. The latter presumably points to clustering effects in the MSE business which is innovative in the Kazakh financial market. The volume increase did not go along with an increase in the number of loans, however. The average single loan amount increased with competition, hinting at banks' moving up the market. Furthermore, our results show a negative link between the degree of competition and the profitability of the MSE business, measured as the rate of return on the loan portfolio. Although for Kazakhstan it is not likely that competition has been a serious impediment to the financial sustainability of the MSE business, it can not be ruled out that competition in MSE lending may endanger the survival of the new business

[12] It has to be mentioned, however, that there are rather big differences between the different MSE departments. The two departments, which were reporting losses were not included in our analysis due to methodological reasons, the least profitable department contained in Table 1 reports a return on average portfolio of just 0.15% for the first quarter of 2004. An analysis of why profitability varies is beyond the scope of this study.

in a market altogether under less favourable conditions. Thus, future research on the effect of competition in developing banking markets should be dedicated to cross-country studies.

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Appendix

Table 1, Regression 1[1]

Dependent variable: InterestIncome

		Variables											
Add	Regression	Constant	Age	AgeSqr	Ldensity	Size	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**-3.469**	**-0.002**	**0.000**	**0.065**	**0.009**	**-0.021**	none	[0.0003]**	[0.0002]**	[0.7635]	0.165512	6
	t-ratio	-11.300	-0.617	-0.286	2.160	1.210	-2.460						
	p-value	0.000	0.539	0.775	0.033	0.228	0.016						
Dummy	Coef.	**-3.279**	**0.000**	**0.000**	**0.049**	**-0.005**	**-0.020**	65, 82	[0.2240]	[0.4117]	[0.6710]	0.402855	8
(Model 2)	t-ratio	-12.400	-0.133	-0.655	1.910	-0.793	-2.740						
	p-value	0.000	0.895	0.514	0.059	0.430	0.007						
Type	Coef.	**-3.271**	**0.000**	**0.000**	**0.045**	**0.003**	**-0.023**	65, 82	[0.1985]	[0.5582]	[0.3494]	0.508697	12
(Model 3)	t-ratio	-13.100	-0.038	-0.930	1.860	0.386	-3.350						
	p-value	0.000	0.970	0.355	0.066	0.701	0.001						
Type S	Coef.	**-3.187**	**-0.001**	**0.000**	**0.038**	**0.003**	**-0.022**	65, 82	[0.3984]	[0.5300]	[0.4973]	0.475057	9
(Model 4)	t-ratio	-12.700	-0.664	-0.359	1.550	0.410	-3.260						
	p-value	0.000	0.508	0.721	0.124	0.682	0.002						
Region	Coef.	**-2.897**	**0.001**	**0.000**	**0.015**	**-0.001**	**-0.029**	65, 82	[0.0354]*	[0.8146]	[0.0897]	0.542073	24
(Model 5)	t-ratio	-5.860	0.370	-1.020	0.342	-0.133	-3.320						
	p-value	0.000	0.712	0.309	0.733	0.895	0.001						
Region S	Coef.	**-3.217**	**0.000**	**0.000**	**0.043**	**-0.005**	**-0.020**	65, 82	[0.0789]	[0.5575]	[0.6750]	0.438314	10
(Model 6)	t-ratio	-12.300	0.172	-0.933	1.700	-0.741	-2.850						
	p-value	0.000	0.864	0.353	0.093	0.460	0.005						
Type+Region	Coef.	**-3.074**	**0.002**	**0.000**	**0.027**	**0.006**	**-0.034**	65, 82	[0.0184]*	[0.8648]	[0.2127]	0.624556	28
(Model 7)	t-ratio	-6.540	0.726	-1.510	0.642	0.924	-4.040						
	p-value	0.000	0.470	0.136	0.523	0.358	0.000						

Type+Region S	Coef.	**-3.177**	**0.001**	**0.000**	**0.036**	**0.006**	**-0.033**	65, 82	[0.5721]	[0.4157]	[0.4396]	0.536372	12
(Model 8)	t-ratio	-13.200	0.272	-1.220	1.540	0.887	-4.400						
	p-value	0.000	0.786	0.224	0.128	0.377	0.000						

Table 2, Regression 2[1]

Dependent Variable: CostPersonell

		Variables											
Add	Regression	Constant	Age	AgeSqr	Ldensity	Size	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**-3.071**	**-0.032**	**0.000**	**0.296**	**0.028**	**-0.009**		[0.5470]	[0.0680]	[0.2967]	0.447	6
	t-ratio	-3.370	-4.260	1.870	3.320	1.320	-0.372						
	p-value	0.001	0.000	0.065	0.001	0.191	0.711						
Dummy	Coef.												
(Model 2)	t-ratio			No dummy ID									
	p-value												
Type	Coef.	**-2.836**	**-0.037**	**0.000**	**0.266**	**0.028**	**-0.003**		[0.5511]	[0.1577]	[0.8921]	0.550115	10
(Model 3)	t-ratio	-3.310	-5.030	2.460	3.170	1.350	-0.134						
	p-value	0.001	0.000	0.016	0.002	0.180	0.893						
Type S	Coef.	**-3.077**	**-0.032**	**0.000**	**0.290**	**0.014**	**-0.006**		[0.3892]	[0.1564]	[0.6098]	0.521	8
(Model 4)	t-ratio	-3.550	-4.480	1.980	3.430	0.681	-0.276						
	p-value	0.001	0.000	0.050	0.001	0.497	0.783						
Region	Coef.	**-1.256**	**-0.027**	**0.000**	**0.120**	**0.043**	**-0.035**	15	[0.2363]	[0.8874]	[0.6192]	0.653	23
(Model 5)	t-ratio	-0.806	-3.690	1.480	0.857	2.120	-1.260						
	p-value	0.422	0.000	0.143	0.394	0.037	0.211						

Region S	Coef.	**-1.465**	**-0.031**	**0.000**	**0.146**	**0.033**	**-0.027**	15	[0.9729]	[0.7692]	[0.4600]	0.576	9
(Model 6)	t-ratio	-1.670	-4.520	2.260	1.720	1.730	-1.240						
	p-value	0.099	0.000	0.026	0.089	0.087	0.219						
Type+Region	Coef.	**-1.760**	**-0.032**	**0.000**	**0.160**	**0.042**	**-0.026**	15	[0.4491]	[0.7577]	[0.6761]	0.716	27
(Model 7)	t-ratio	-1.190	-4.310	1.950	1.200	2.090	-0.999						
	p-value	0.239	0.000	0.055	0.234	0.040	0.321						
Type+Region S	Coef.	**-1.781**	**-0.030**	**0.000**	**0.171**	**0.023**	**-0.021**	15	[0.8350]	[0.9485]	[0.5297]	0.625	10
(Model 8)	t-ratio	-2.130	-4.570	2.130	2.110	1.250	-0.991						
	p-value	0.036	0.000	0.036	0.037	0.214	0.324						

Table 3, Regression 3[1]

Dependent Variable: CostAdmin

		Variables											
Add	Regression	Constant	Age	AgeSqr	Ldensity	Size	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**-1.801**	**-0.038**	**0.000**	**0.209**	**0.023**	**0.029**		[0.6089]	[0.8124]	[0.4340]	0.521	6
	t-ratio	-2.040	-5.070	2.230	2.420	1.100	1.230						
	p-value	0.044	0.000	0.028	0.017	0.275	0.222						
Dummy	Coef.												
(Model 2)	t-ratio				No dummy ID								
	p-value												
Type	Coef.	**-1.491**	**-0.041**	**0.000**	**0.177**	**0.011**	**0.032**		[0.3039]	[0.7329]	[0.8504]	0.610	10
(Model 3)	t-ratio	-1.800	-5.670	2.830	2.180	0.535	1.390						
	p-value	0.076	0.000	0.006	0.032	0.594	0.167						
Type S	Coef.	**-1.537**	**-0.039**	**0.000**	**0.179**	**0.008**	**0.027**		[0.3534]	[0.5599]	[0.7084]	0.606	8
(Model 4)	t-ratio	-1.870	-5.670	2.710	2.240	0.404	1.210						
	p-value	0.064	0.000	0.008	0.027	0.687	0.228						

Region	Coef.	**-1.670**	**-0.035**	**0.000**	**0.189**	**0.053**	**-0.009**	[0.5345]	[0.2151]	[0.1200]	0.656	22
(Model 5)	t-ratio	-1.040	-4.750	1.800	1.310	2.520	-0.317					
	p-value	0.300	0.000	0.076	0.194	0.014	0.752					
Region S	Coef.	**-1.737**	**-0.037**	**0.000**	**0.206**	**0.046**	**-0.011**	[0.8852]	[0.5510]	[0.1119]	0.598	8
(Model 6)	t-ratio	-2.100	-5.450	2.200	2.570	2.330	-0.462					
	p-value	0.038	0.000	0.030	0.012	0.022	0.645					
Type+Region	Coef.	**-1.152**	**-0.039**	**0.000**	**0.143**	**0.038**	**-0.005**	[0.1264]	[0.6077]	[0.3661]	0.735	26
(Model 7)	t-ratio	-0.778	-5.450	2.490	1.070	1.880	-0.188					
	p-value	0.439	0.000	0.015	0.288	0.064	0.851					
Type+Region S	Coef.	**-1.428**	**-0.038**	**0.000**	**0.173**	**0.032**	**-0.015**	[0.5926]	[0.4987]	[0.2834]	0.680	10
(Model 8)	t-ratio	-1.890	-6.200	2.760	2.360	1.750	-0.680					
	p-value	0.061	0.000	0.007	0.020	0.083	0.498					

Table 4, Regression 4[1]

Dependent variable: RoA

		Variables											
Add	Regression	Constant	Age	AgeSqr	Ldensity	Size	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**-1.530**	**0.043**	**-0.001**	**0.382**	**0.052**	**-0.135**		[0.0294]*	[0.0001]**	[0.2029]	0.13	6
	t-ratio	-0.677	2.250	-1.920	1.730	0.997	-2.200						
	p-value	0.500	0.027	0.058	0.086	0.321	0.030						
Dummy	Coef.	**-1.335**	**0.039**	**0.000**	**0.406**	**-0.043**	**-0.123**	15,62,82,103	[0.6568]	[0.0508]	[0.0408]*	0.41	10
(Model 2)	t-ratio	-0.698	2.410	-2.030	2.170	-0.913	-2.380						
	p-value	0.487	0.018	0.045	0.032	0.363	0.019						

Type	Coef.	**-0.712**	**0.035**	**0.000**	**0.333**	**0.027**	**-0.158**	15,62,82,103	[0.5873]	[0.1118]	[0.0075]**	0.55	14
(Model 3)	t-ratio	-0.407	2.240	-1.980	1.940	0.593	-3.270						
	p-value	0.685	0.028	0.051	0.056	0.555	0.002						
Type S	Coef.	**-0.924**	**0.035**	**0.000**	**0.381**	**-0.012**	**-0.140**	15,62,82,103	[0.6342]	[0.0672]	[0.0232]*	0.49	11
(Model 4)	t-ratio	-0.514	2.280	-1.860	2.170	-0.270	-2.880						
	p-value	0.608	0.025	0.066	0.033	0.788	0.005						
Region	Coef.	**1.149**	**0.047**	**-0.001**	**0.180**	**-0.033**	**-0.136**	15,62,82,103	[0.8311]	[0.1614]	[0.0304]*	0.49	26
(Model 5)	t-ratio	0.301	2.640	-2.290	0.524	-0.618	-2.010						
	p-value	0.764	0.010	0.025	0.602	0.538	0.048						
Region S	Coef.	**-2.164**	**0.041**	**0.000**	**0.479**	**-0.042**	**-0.113**	15,62,82,103	[0.7783]	[0.0690]	[0.1056]	0.43	11
(Model 6)	t-ratio	-1.090	2.520	-2.230	2.490	-0.884	-2.180						
	p-value	0.277	0.014	0.028	0.014	0.379	0.032						
Type+Region	Coef.	**1.178**	**0.041**	**-0.001**	**0.147**	**0.037**	**-0.164**	15,62,82,103	[0.9500]	[0.2359]	[0.1000]	0.62	30
(Model 7)	t-ratio	0.342	2.390	-2.170	0.475	0.729	-2.660						
	p-value	0.733	0.019	0.033	0.636	0.468	0.009						
Type+Region S	Coef.	**-1.483**	**0.031**	**0.000**	**0.403**	**0.036**	**-0.138**	15,62,82,103	[0.8874]	[0.4963]	[0.0611]	0.57	13
(Model 8)	t-ratio	-0.848	2.150	-2.050	2.370	0.816	-3.000						
	p-value	0.399	0.034	0.043	0.020	0.416	0.003						

Table 5, Regression 5[1]

Dependent variable: OfficerProfitability

		Variables											
Add	Regression	Constant	Age	AgeSqr	Ldensity	Size	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**5.909**	**0.079**	**-0.001**	**0.128**	**0.009**	**-0.072**		[0.0006]**	[0.0599]	[0.0072]**	0.502147	6
	t-ratio	3.650	5.830	-3.510	0.808	0.229	-1.630						
	p-value	0.000	0.000	0.001	0.421	0.819	0.106						

Dummy	Coef.	**6.582**	**0.062**	**0.000**	**0.092**	**0.024**	**-0.081**	15,70,103	[0.5953]	[0.0600]	[0.0612]	0.657122	9
(Model 2)	t-ratio	4.580	5.240	-2.900	0.658	0.758	-2.160						
	p-value	0.000	0.000	0.005	0.512	0.450	0.033						
Type	Coef.	**6.806**	**0.060**	**0.000**	**0.081**	**0.047**	**-0.093**	15,70,103	[0.1453]	[0.2407]	[0.1227]	0.718523	13
(Model 3)	t-ratio	5.020	5.180	-2.830	0.608	1.500	-2.560						
	p-value	0.000	0.000	0.006	0.545	0.138	0.012						
Type S	Coef.	**6.959**	**0.058**	**0.000**	**0.069**	**0.043**	**-0.093**	15,70,103	[0.1384]	[0.1855]	[0.1404]	0.716094	10
(Model 4)	t-ratio	5.290	5.420	-2.820	0.535	1.450	-2.690						
	p-value	0.000	0.000	0.006	0.594	0.151	0.008						
Region	Coef.	**6.062**	**0.071**	**-0.001**	**0.147**	**-0.014**	**-0.018**	15,70,103	[0.0571]	[0.2218]	[0.1333]	0.716681	25
(Model 5)	t-ratio	2.260	5.540	-3.380	0.605	-0.383	-0.370						
	p-value	0.026	0.000	0.001	0.547	0.703	0.712						
Region S	Coef.	**5.682**	**0.063**	**-0.001**	**0.172**	**0.025**	**-0.070**	15,70,103	[0.5589]	[0.0670]	[0.1411]	0.672268	10
(Model 6)	t-ratio	3.860	5.490	-3.240	1.210	0.779	-1.880						
	p-value	0.000	0.000	0.002	0.231	0.438	0.063						
Type+Region	Coef.	**7.154**	**0.066**	**-0.001**	**0.052**	**0.007**	**-0.019**	15,70,103	[0.0015]**	[0.5566]	[0.0117]*	0.775358	29
(Model 7)	t-ratio	2.860	5.220	-3.080	0.231	0.197	-0.427						
	p-value	0.005	0.000	0.003	0.818	0.845	0.671						
Type+Region S	Coef.	**6.132**	**0.060**	**0.000**	**0.142**	**0.043**	**-0.082**	15,70,103	[0.0879]	[0.2162]	[0.1625]	0.728606	11
(Model 8)	t-ratio	4.540	5.670	-3.160	1.080	1.470	-2.410						
	p-value	0.000	0.000	0.002	0.281	0.146	0.018						

Table 6, Regression 6[1]

Dependent variable: Arrears — Logit regression

		Variables					
Add	Regression	Constant	Age	AgeSqr	Ldensity	Size	NumberC
(Model 1)	Coef.	**-5.225**	**0.115**	**-0.002**	**0.042**	**0.333**	**0.116**
	t-ratio	-0.823	2.060	-2.140	0.068	2.470	0.696
	p-value	0.413	0.042	0.035	0.946	0.015	0.488
Dummy	Coef.						
(Model 2)	t-ratio						
	p-value						
Type	Coef.	**-5.948**	**0.167**	**-0.002**	**0.057**	**0.476**	**-0.008**
(Model 3)	t-ratio	-0.810	2.220	-2.220	0.082	2.650	-0.044
	p-value	0.420	0.029	0.029	0.935	0.009	0.965
Type S	Coef.	**-3.736**	**0.130**	**-0.002**	**-0.100**	**0.477**	**0.006**
(Model 4)	t-ratio	-0.544	2.030	-2.020	-0.152	2.800	0.032
	p-value	0.588	0.045	0.046	0.880	0.006	0.975
Region	Coef.						
(Model 5)	t-ratio						
	p-value						
Region S	Coef.	**-9.845**	**0.118**	**-0.002**	**0.461**	**0.308**	**0.142**
(Model 6)	t-ratio	-1.440	2.040	-2.130	0.712	2.250	0.826
	p-value	0.153	0.044	0.036	0.478	0.027	0.411
Type+Region	Coef.						
(Model 7)	t-ratio						
	p-value						

Type+Region S	Coef.	**-8.864**	**0.143**		**-0.002**	**0.350**	**0.453**	**0.036**				
(Model 8)	t-ratio	-1.190	2.120		-2.100	0.499	2.590	0.199				
	p-value	0.235	0.037		0.038	0.619	0.011	0.843				

Table 7, Regression 7[1]

Dependent variable: VolumeDisbdSize

Add	Regression	Constant	Age	AgeSqr	Ldensity	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**10.499**	**0.024**	**0.000**	**0.006**	**0.051**		[0.0551]	[0.7519]	[0.4634]	0.350035	5
	t-ratio	9.860	2.690	-1.150	0.061	1.790						
	p-value	0.000	0.008	0.253	0.952	0.076						
Dummy	Coef.	**10.215**	**0.025**	**0.000**	**0.042**	**0.043**	66,74,100	[0.5580]	[0.9967]	[0.4444]	0.511914	8
(Model 2)	t-ratio	10.900	3.140	-1.560	0.466	1.660						
	p-value	0.000	0.002	0.122	0.642	0.101						
Type	Coef.	**10.237**	**0.024**	**0.000**	**0.052**	**0.044**	66,74,100	[0.5567]	[0.9965]	[0.4011]	0.571597	12
(Model 3)	t-ratio	11.300	2.920	-1.320	0.585	1.680						
	p-value	0.000	0.004	0.191	0.560	0.095						
Type S	Coef.	**10.345**	**0.024**	**0.000**	**0.039**	**0.039**	66,74,100	[0.4551]	[0.9936]	[0.4205]	0.567417	9
(Model 4)	t-ratio	11.600	3.120	-1.350	0.451	1.570						
	p-value	0.000	0.002	0.182	0.653	0.119						
Region	Coef.	**9.155**	**0.037**	**0.000**	**0.130**	**0.074**	66,74,100	[0.8782]	[0.8383]	[0.5413]	0.673941	24
(Model 5)	t-ratio	5.420	4.640	-3.160	0.850	2.610						
	p-value	0.000	0.000	0.002	0.398	0.011						
Region S	Coef.	**8.724**	**0.030**	**0.000**	**0.172**	**0.078**	66,74,100	[0.7226]	[0.9221]	[0.0947]	0.627074	12
(Model 6)	t-ratio	9.760	4.100	-2.650	2.010	3.120						
	p-value	0.000	0.000	0.009	0.047	0.002						

Type+Region	Coef.	**9.463**	**0.034**	**0.000**	**0.110**	**0.081**	66,74,100	[0.5874]	[0.8559]	[0.9032]	0.731483	28
(Model 7)	t-ratio	5.890	4.370	-2.880	0.757	2.970						
	p-value	0.000	0.000	0.005	0.451	0.004						
Type+Region S	Coef.	**8.950**	**0.028**	**0.000**	**0.159**	**0.074**	66,74,100	[0.5195]	[0.9156]	[0.1535]	0.673209	13
(Model 8)	t-ratio	10.600	4.100	-2.420	1.970	3.180						
	p-value	0.000	0.000	0.017	0.052	0.002						

Table 8, Regression 8[1]

Dependent variable: NumberDisbdSize

Add	Regression	Constant	Age	AgeSqr	Ldensity	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**3.859**	**0.010**	**0.000**	**-0.092**	**-0.017**		[0.9506]	[0.4514]	[0.3442]	0.0346086	5
	t-ratio	3.770	1.190	-1.120	-0.932	-0.607						
	p-value	0.000	0.235	0.267	0.353	0.545						
Type	Coef.	**3.769**	**0.008**	**0.000**	**-0.072**	**-0.006**		[0.2022]	[0.5663]	[0.2519]	0.108932	9
(Model 3)	t-ratio	3.710	0.857	-0.847	-0.733	-0.207						
	p-value	0.000	0.393	0.399	0.465	0.837						
Type S	Coef.	**3.951**	**0.009**	**0.000**	**-0.095**	**-0.019**		[0.4688]	[0.5213]	[0.7614]	0.0719346	6
(Model 4)	t-ratio	3.920	1.100	-0.953	-0.981	-0.707						
	p-value	0.000	0.273	0.343	0.329	0.481						
Region	Coef.	**3.878**	**0.016**	**0.000**	**-0.110**	**0.020**		[0.7179]	[0.1333]	[0.8421]	0.267297	21
(Model 5)	t-ratio	2.000	1.770	-1.930	-0.630	0.629						
	p-value	0.048	0.081	0.057	0.531	0.531						

Region S	Coef.	**3.859**	**0.010**	**0.000**	**-0.092**	**-0.017**	[0.9506]	[0.4514]	[0.3442]	0.0346086	5
(Model 6)	t-ratio	3.770	1.190	-1.120	-0.932	-0.607					
	p-value	0.000	0.235	0.267	0.353	0.545					
Type+Region	Coef.	**4.032**	**0.011**	**0.000**	**-0.114**	**0.038**	[0.0771]	[0.1564]	[0.3405]	0.35278	25
(Model 7)	t-ratio	2.120	1.220	-1.440	-0.663	1.170					
	p-value	0.037	0.225	0.153	0.509	0.245					
Type+Region S	Coef.	**3.951**	**0.009**	**0.000**	**-0.095**	**-0.019**	[0.4688]	[0.5213]	[0.7614]	0.0719346	6
(Model 8)	t-ratio	3.920	1.100	-0.953	-0.981	-0.707					
	p-value	0.000	0.273	0.343	0.329	0.481					

Table 9, Regression 9[1]

Dependent variable: ALoanSize

Add	Regression	Constant	Age	AgeSqr	Ldensity	Size	NumberC	Dummy ID	Normality	Heterosc.	RESET	Rsqr	Par
(Model 1)	Coef.	**6.708**	**0.014**	**0.000**	**0.090**	**0.008**	**0.066**		[0.8349]	[0.0829]	[0.3180]	0.393329	6
	t-ratio	6.310	1.570	-0.123	0.868	0.339	2.280						
	p-value	0.000	0.119	0.902	0.387	0.736	0.025						
Dummy	Coef.												
(Model 2)	t-ratio				No dummy ID								
	p-value												
Type	Coef.	**6.776**	**0.017**	**0.000**	**0.083**	**-0.002**	**0.055**		[0.5727]	[0.2687]	[0.5671]	0.418898	10
(Model 3)	t-ratio	6.280	1.770	-0.198	0.783	-0.071	1.820						
	p-value	0.000	0.080	0.844	0.436	0.944	0.072						
Type S	Coef.	**6.708**	**0.014**	**0.000**	**0.090**	**0.008**	**0.066**		[0.8349]	[0.0829]	[0.3180]	0.393329	6
(Model 4)	t-ratio	6.310	1.570	-0.123	0.868	0.339	2.280						
	p-value	0.000	0.119	0.902	0.387	0.736	0.025						

Region	Coef.	**6.412**	**0.021**	**0.000**	**0.130**	**-0.018**	**0.084**	[0.5144]	[0.0316]*	[0.8975]	0.647346	22
(Model 5)	t-ratio	3.700	2.590	-0.679	0.829	-0.793	2.760					
	p-value	0.000	0.011	0.499	0.410	0.430	0.007					
Region S	Coef.	**7.128**	**0.018**	**0.000**	**0.057**	**-0.008**	**0.088**	[0.4018]	[0.0041]**	[0.6720]	0.570041	11
(Model 6)	t-ratio (HCSE)	9.166	2.440	-0.548	0.744	-0.403	2.960					
	p-value	0.000	0.015	0.5824	0.4592	0.688	0.003					
Type+Region	Coef.	**6.920**	**0.025**	**0.000**	**0.086**	**-0.031**	**0.075**	[0.4599]	[0.2299]	[0.9171]	0.666025	26
(Model 7)	t-ratio	3.910	2.890	-0.897	0.541	-1.290	2.400					
	p-value	0.000	0.005	0.373	0.590	0.202	0.019					
Type+Region S	Coef.	**7.128**	**0.018**	**0.000**	**0.057**	**-0.008**	**0.088**	[0.4018]	[0.0041]**	[0.6720]	0.570041	11
(Model 8)	t-ratio (HCSE)	9.166	2.440	-0.548	0.744	-0.403	2.960					
	p-value	0.000	0.015	0.5824	0.4592	0.688	0.003					

Annotation:

[1] Model 1 explores the correlation between profitability measures and outreach indicators respectively and the number of competitors, controlling just for age, age squared, density, size. In model 2, we control for outliers by including a dummy for each of them. In model 3 the bank type is controlled for as well. Model 4 contains only significant type dummies. Region dummies are included in model 5 and 6 (6: only significant ones). Finally, we control for both type and region in model 7 and 8 (8: only significant ones).