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DETERMINANTS OF BORROWING BEHAVIOR OF RURAL HOUSEHOLDS IN KAZAKHSTAN

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The majority of the Kazakhstani rural population earns their living through non-legally registered subsidiary small households (SSHs). Due to the poorly developed micro-crediting in rural areas, regulatory restrictions to participate in RCP scheme, and the lack of commercial bank branches, the impact of formal FIs on SSHs' outcomes is still largely unknown and under-investigated.
The main objective of this study was to explore the relationships that exist between the socio-economic characteristics of rural households and their borrowing behavior towards formal financial institutions.

Личные подсобные хозяйства являются источником дохода значительной части сельского населения Казахстана. В связи с тем, что микрокредитные организации в сельской местности все еще слабо функционируют, кредиты СКТ для ЛПХ не доступны, сеть филиалов коммерческих банков слабо развита, влияние финансовых институтов на результаты деятельности этой категории хозяйств мало изучено. Статья посвящена исследованию ряда социально-экономических факторов и характеристик в решении проблем займов сельского населения в финансовых институтах.

Жеке қосалқы шаруашылықтар Қазақстан ауыл халқының елеулі бөлігінің табыс көзі болып саналады. Осыған байланысты ауылдық жерлердегі микронесиелік ұйымдар әлі де болса нашар жұмыс істейді. ЖҚШ үшін АНС-тер қолжетімсіз, коммерциялық банктер филиалдарының тізбегі нашар дамыған, ресми емес қаржылық институттардың осы категориядағы шаруашылықтарға әсері аз зерделенген. Мақала бірқатар әлеуметтік-экономикалық факторлар мен сипатының ресми емес қаржылық институттарда ауыл халқының қарыз алу проблемасын шешуге әсерін зерттеуге бағытталған.

Keywords: credit, subsidiary small households SSH, financial institutions, econometric analysis, rural credit partnerships.

Ключевые слова: кредит, личные подсобные хозяйства, финансовые институты, эконометрический анализ, сельские кредитные товарищества.

Тұтқалы сөздер: несие, жеке қосалқы шаруашылықтар, қаржылық институттар, эконометрикалық талдау, ауылдық несиелік серіктестіктер.

Credit is an important source of sustainable development of agricultural production. The type of credit services in many cases are conditioned by the type and level of development of financial institutions (FIs). Until recently, the influences of finance and FIs on state and perspectives of agriculture in transition economies were not considered as an important condition of agricultural development.

In the absence of a well developed branch network of commercial banks in rural areas of Kazakhstan, as well as the low interest of banks to deal with the rural population and subsidiary small households (SSHs), the only reasonable way to solve a problem of underprovided financial services for rural dwellers is the development of special rural FIs as credit cooperatives and micro-credit organizations.

The Kazakhstani government recognized agricultural producers having problems in gaining access to credit and initiated FIs that could coexist both with state financial programs and with the private sector. In other words, the government tried to find such a form that could resolve what was seen to be market failures and operate on a more commercial rather than a government basis.

This paper analyzes what determines the extent of rural households' demand for formal credit markets in Kazakhstan. The analysis is based on a data set collected in a survey of 704 households in 38 villages in eight rural districts of Pavlodar region conducted in 2011.The plan of the paper is as follows. Section II provides literature review. Section III describes crediting of rural households in Kazakhstan Kazakhstan. Section IV provides the description of the survey, methodology and data on which the study is based. In section V discusses the estimation of the model and the results from estimation. Section VI looks at some recommendations and provides conclusions.

A stable and efficient financial sector is important to support the high-growth strategies of transition economies and other emerging markets (Bloomstein, 19987) and is vital for a successful restructuring of the enterprise sector. It plays a coordinating role that is a necessary complement to the decentralization of economic decisions.

The development of financial market, improvement of financial services and the introduction of more effective FIs can accelerate income growth in agriculture and lead to increasing wellbeing and decreasing poverty. Thus, agriculture, in particular, in the transition countries, needs well functioning FIs.

In rural areas, potential borrowers may find themselves excluded or dissuaded from the formal financial sector (Nguyen, 2007). It is well known that different types of borrowers have different levels of access to certain types of loans and certain types of credit institutions (Hoff and Stiglitz, 1990).The problem of limited access to credit by the rural population is crucial for most developing and transition economies. Formal FIs in these economies tend to restrict access to formal institutional credit for marginal borrowers (in most cases small-scale farmers) and a proportion of these borrowers are increasing (Gonzalez-Vega, 1982). It is estima-ted that on the average, no more than 5% of the farmers in Africa and only about 15% of the farmers in Asia and Latin America, have access to institutional credit and, usually fewer than 20% of the total borrowers of the formal financial sector have received 80% of the total amounts of agricultural credit disbursed (Mpuga, 2008).

Most of the agricultural activities are spread over time, for example, implementation of a new technology requires investment in the current period with payoffs in the future. In addition, productive activities require inputs in advance of harvest and sales. Due to the high level of uncertainty and riskiness of agricultural production, formal financial markets are either completely missing or incomplete (Binswanger et al., 1989). Morduch (1995) emphasizes that credit, savings and insurance markets in the rural areas of transition and developing economies are generally non-existent, and of those that do, many work imperfectly.

Therefore, access to rural credit is essential in poor rural household production, investment and consumption decisions (Eswaran and Kotwal, 1989). Access to formal credit would allow rural households with no or few savings to cover their financial needs for agricultural inputs and productive investments. An ability to apply for formal credit could encourage rural households to adopt new technologies that raise levels and decrease riskiness of income (Rosenzweig and Binswanger, 1993).

Feder et al. (1990) showed in their empirical research that one additional *Yuan* of credit would yield 0.235 *Yuan* of additional gross value of output in China. Diagne et al. (2000) also found positive relationship between credit access and households' welfare in developing economies. Guirkinger and Boucher (2007) showed that 27% loss of agricultural output is associated with credit constraints in rural Peru.

A very high interest rate at the beginning of transition to a market economy affected farmers' credit demand and access to loans was hampered by lack of collateral. Additionally, some other discouraging factors appeared. The decrease in demand for agricultural products as an effect of the liberalization of imports was the most important; bankruptcies of food enterprises and their insolvency were painful too (Daniłowska, 2004). Farmers' income was decreasing dramatically. In 1995, in a pick of economic crisis in Kazakhstan, an average rate of profitability was (-25)%, a number of unprofitable farms was four times as much as a number of profitable ones. In these circumstances, farmers borrowed less money from banks.

During the transition period, three forms of intervention on the agricultural credit market were used in Kazakhstan: preferential loans, state ownership of rural financial institutions, state support to institutions that grant loans to farmers.

One of the forms of intervention in the rural/agricultural credit market is state ownership of rural financial institutions. A state owned RFI can directly realize agricultural policy. These RFIs can grant loans to borrowers who are not in the interest of commercial banks or in areas, which commercial banks do not operate in. In Kazakhstan, the RCPs are partly state owned financial institutions, which specialize in loans for the agricultural sector exclusively.

According to Petrick et al. (2014), only 7% of rural households took a loan in 2011 in Kazakhstan, among those rural households who did not like to take a loan, nine out of ten are considered as price rationed and three fourths risk rationed. Additionally, for about one half of

the households high transaction costs are a main reason for not borrowing.

According to our survey, out of 704 respondents 218 do not make any savings, it means one third either does not have enough income to save or their debts are too high to make any savings. 85.8% of respondents indicated not having a deposit account, in other words only every seventh rural inhabitant has an account in a commercial bank.

Among reasons preventing Kazakhstani rural population from opening a bank account the most significant are low income, lack of information, and distrust (Figure 1). People from rural areas are less financial literate and have relatively low economic status; therefore, most of them simply are afraid of opening accounts in private commercial banks for fear of being cheated. In turn, being reluctant to deal with low income savers, commercial banks do not provide enough information in comprehensible form. Bank staff is not always sensitive to such specific clientele, and financially illiterate respondents are reluctant to visit banks because they do not get favorable responses. Commercial banks do not have specific rural-client-oriented products (Gaisina, 2014).

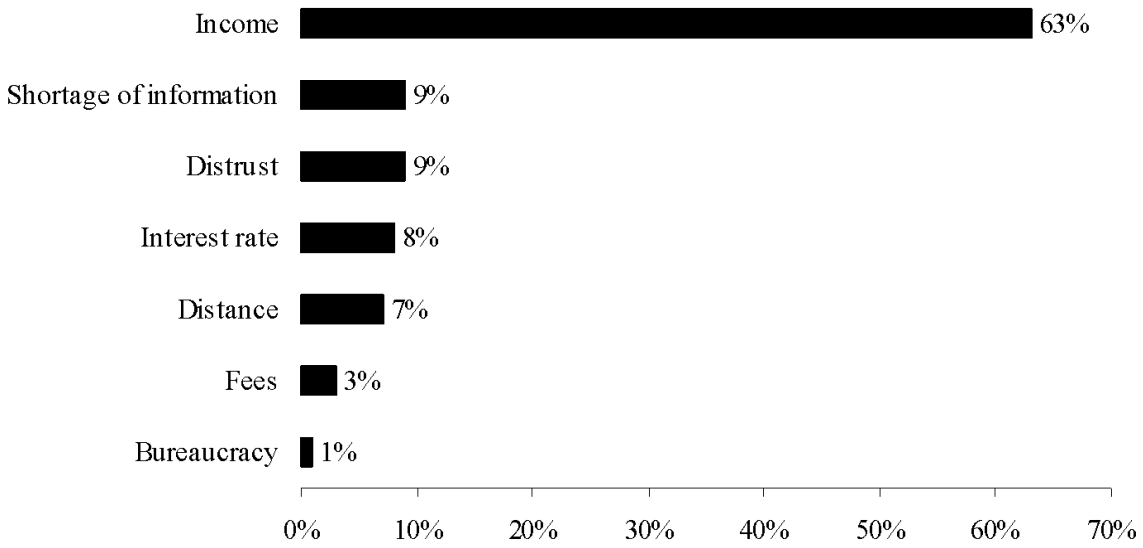

Figure 1. Reasons not to deal with commercial banks, share in percents

Source: Own survey, 2011 (Gaisina, 2014)

Despite a main reason of not to deal with formal FIs is still a low income level, other reasons are worthy to be considered by policy makers and bank officials. Nine per cent of respondents indicated that they do not trust formal institutions. We can cluster three reasons as information, bureaucracy, and distrust into one group characterizing financial illiteracy of rural population, every fifth respondent needs special treatment.

The target population of the study was defined and restricted to include rural households in Pavlodar region of Kazakhstan regardless of occupation, educational level and other socio-economic indicators. The data were collected from 38 villages in eight rural districts in Pavlodar region.

The cross-sectional primary data relating to the socio-economic particulars of selected households and the other data relating to the borrowing behavior of the households has been collected by means of questionnaires and used in this study. The questionnaire consists of 32 questions aimed to clarify determinants of rural population to borrow from formal financial institutions. The sample size for the analysis is 704 respondents.

Pavlodar region geographically is situated in Northern-Central Kazakhstan and belongs to the region known as Siberia. Its territory is 124.8 thousand sq. km and accounts for 4.6% of total Kazakhstan territory. The population of the region consists of 99 nationalities and makes about 750 thousand people, 34% of total population in the region lives in rural areas. The climate could be characterized as having harsh conditions with long and cold winters with temperatures reaching -20°C and low precipitation in the range of 200-300 mm per year. These conditions make agriculture a difficult and risky business in this region. Historically, wheat yields have been reduced by drought in two out of every five crop seasons. The dry climate, however,

contributes to the consistently high quality of Kazakhstan wheat.

However, intensive cultivation during Soviet times led to high soil degradation and it became a serious impediment to agricultural production. Wheat farming lost profitability and after the collapse of the Soviet Union, the wheat production area significantly. Vast agricultural areas of northern Kazakhstan were abandoned. The problems with soil fertility, profitability of farming were aggravated by the worn-out and obsolete stock of machinery, which all together led to the reduction in farmland. Newly privatized farmers and farming enterprises resulting from the previous state owned cooperatives found it difficult to keep the old machinery working or to invest in new equipment (Hickman, 2006).

The soils of north-central Kazakhstan are highly variable: deep and fertile in some locations and highly salty and unsuitable for agriculture in others. The land is flat, expansive, and lends itself to large-scale agriculture. Individual fields frequently measure over 400 hectares.

Spring wheat comprises 95% of total wheat area in Kazakhstan and virtually all of the wheat in the three north-central regions. The crop is planted in the second half of May. Harvest begins in late August and is usually finished by early October (USDA, 2009).

As of January 2009 in Pavlodar region, there were 158 corporate farms, 3644 individual farms, and about 88 thousand subsidiary households. Regional contribution to agricultural GDP accounts about 5%.

The survey provides evidence of an inverse U-shaped age profile of income level. Middle-aged adults report higher income than the younger and older cohorts (Figure 2). The initial increase of income with age may be related to accumulation of experience and greater efforts to keep a job, especially in civil services, where income is relatively high and the rotation level is very low. On the other hand, this appears to be a worldwide problem with the younger generation in rural areas: the young people are reluctant to work in agriculture because of low income, and the better-educated young people, who can potentially command higher income, prefer to work in urban areas (Gaisina, 2014).

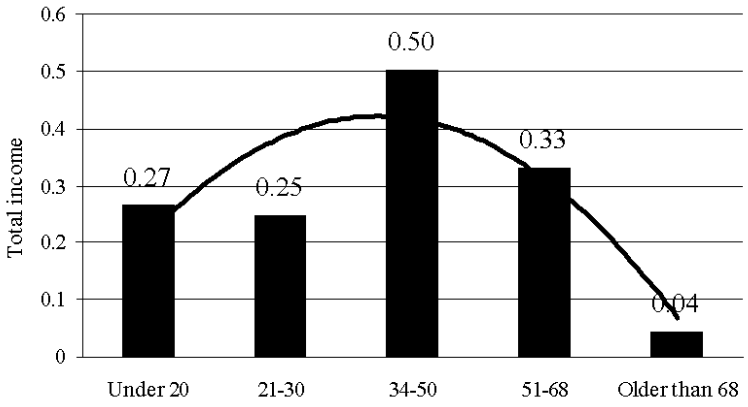

Figure 2: Average annual income by age group, million. KZT

Source: Own survey, 2011, (Gaisina, 2014)

Figure 3 shows a relationship between income levels and educational attainment. Basically, the higher the education level, the higher the income. However, post-graduates show lower income level, it could be explained by the fact that about 70% of those with post-graduate education are of age between 51 and 68. Majority of respondents of this age group get their income from operating SSHs, where level of income is the lowest in comparison with other groups of occupation (Figure 4).

Education can be defined as acquiring skills, which should help people to reach higher standards of living. Education is a process of getting new knowledge, acquiring specific desirable qualities, and ability to independently process information for making better decisions. Table 1 shows that respondents who grew up in Soviet time (the age group of 31-50 and older) had less opportunities to get higher education (about 15% of respondents), while rural population in the age group of 21-30, who grew up after the collapse of the Soviet Union, have had more opportunities to get higher education (about 34%). Kazakhstan's current education policy sets special state quotas and state grants for young people from rural areas, which facilitate their access to universities and colleges. Additionally, not only private institutions of higher learning, but also state institutions provide education on a commercial basis, thus increasing the available options.

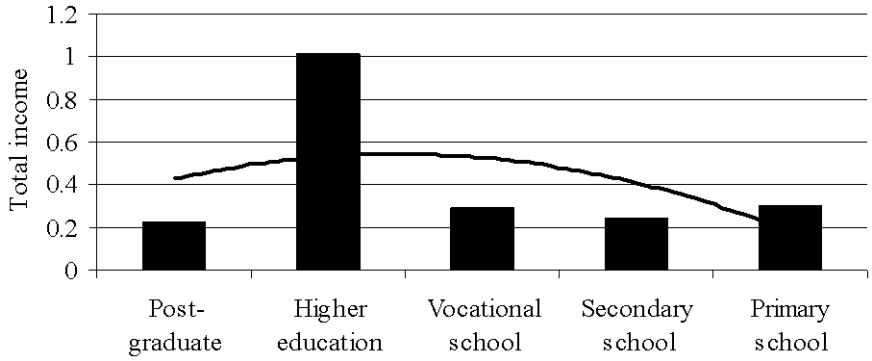

Figure 3: Average annual income by education group, mln. KZT

Source: Own survey, 2011

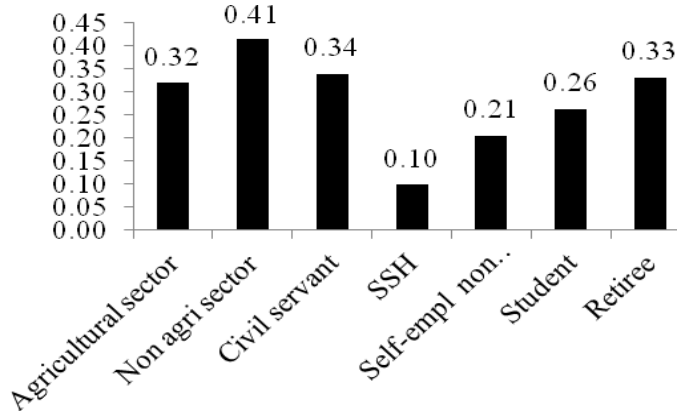

Figure 4: Average income by a type of employment unite along with income from SSH per annum, mln. KZT

Source : Own survey, 2011

Table 1: Composition of educational attainment by age group, percent

Level of education	Age group				
	Under 20	21-30	31-50	51-68	Older than 68
Primary school	20.00	0.00	0.72	2.84	20.00
Secondary school	40.00	28.47	42.79	58.87	80.00
Vocational school	40.00	37.96	37.74	24.11	0.00
Higher education	0.00	33.58	18.51	12.77	0.00
Post-graduate	0.00	0.00	0.24	1.42	0.00
Total	100.00	100.00	100.00	100.00	100.00

Source: Own survey, 2011 (Gaisina, 2014)

It should be expected that a higher education level would result into higher usage of Internet, in other words, digital literacy is higher among those who belongs to a group with higher level of education. For instance, despite almost identical income level for those with vocational school and primary school, the usage of Internet for former is 2.5 times as much.

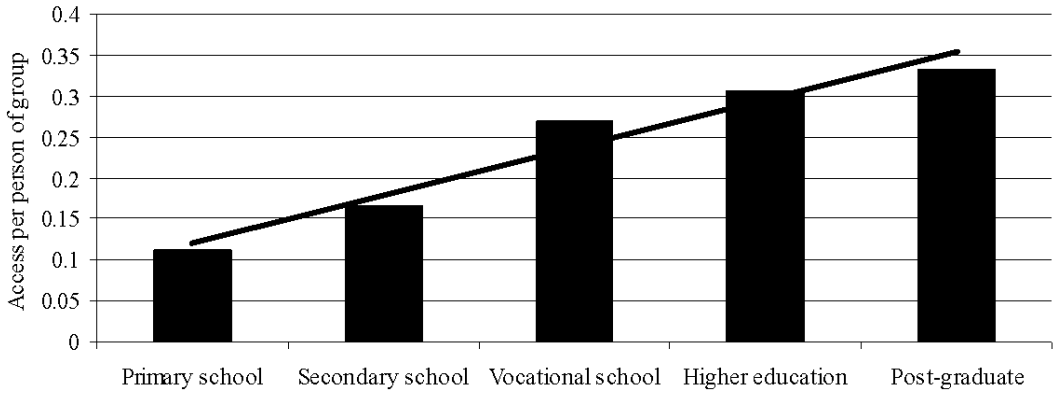

Figure 5: Usage of Internet per person per education group

Source: Own survey, 2011

There are no any obvious differences among education groups and a corresponding average family size; the size of family varies between three and four family members per group, which corresponds to average statistics for rural areas in Kazakhstan.

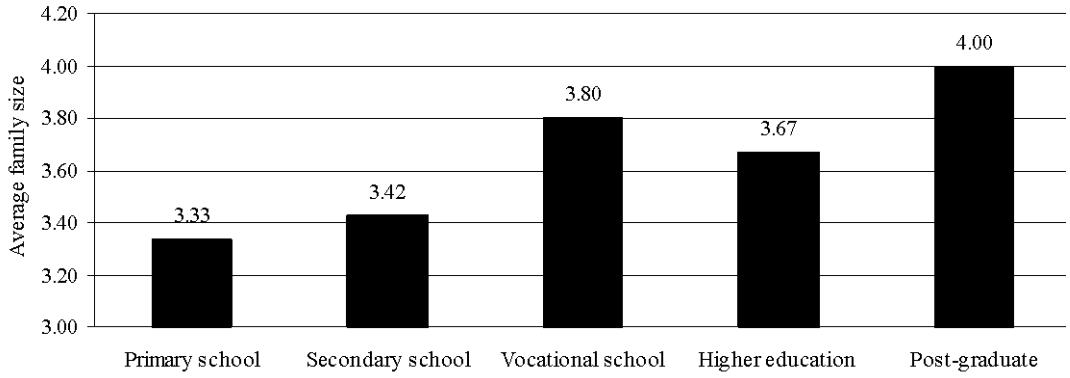

Figure 6: Average family size per education group, persons

Source: Own survey, 2011

To examine the impact of individual/household characteristics on the demand for credit from formal financial institutions, we estimate a probit model for the decision to apply for formal credit. In the absence of special FIs for rural residents, only commercial banks provide rural population with very limited financial services. For the probit model, we assume an individual is faced with two alternatives, to take credit from the provider or not. The general model is presented as follows:

K = f(DEPOSIT, ANIMAL, CAR, INTERNET, INCOME, GENDER, AGE, FAMILY, EDUCATION),

where K is a dummy variable taking a value of 1 if the individual applies for credit and 0 otherwise. Explanatory variables are:

- DEPOSIT refers to a having or not a deposit account in commercial bank, a dummy variable (yes= 1, no = 0).
- ANIMAL refers to animal stock in a household, a dummy variable (yes= 1, no = 0)
- CAR refers to a car in private ownership, a dummy variable (having a car = 1, not having a car = 0).
- INTERNET refers to the usage of Internet by a respondent (yes= 1, no = 0)
- GENDER refers to a gender of the respondent, a dummy variable (female =1, male= 0)
- INCOME measures total income of a respondent from all available sources, it is a continuous variable, mln. KZT.

The variables expressed in terms of money are indicated in Kazakhstani currency – KZT (1 $US= 150 KZT in 2011).

- AGE - a dummy variable, clustered into five groups: under 20 years old, 21 to 30 years old, 31 to 50, 51-68, older than 68 years old.
- EDUCATION – a dummy variable, clustered into five groups: primary school =1, high

school=2, secondary school=3l, higher education=4, postgraduate education=5.

- FAMILY – a continuous variable refers to a family size indicating number of family members.

The estimated model is then stated as follows:

$K = \alpha_0 + \alpha_1 DEPOSIT + \alpha_2 ANIMA + \alpha_3 CAR + \alpha_4 INTERNET + \alpha_5 INCOME + \alpha_6 GENDER + \alpha_7 AGE + \alpha_8 FAMILY + \alpha_9 EDUCATION + \varepsilon$,

where K is the individual's revealed demand for credit, the explanatory variables are as defined before, and ε is the error term assumed to be normally distributed with constant variance. The model is estimated using the maximum likelihood estimation procedure.

As a first step of this study, a general analysis of the groups of respondents was carried out to compare them in terms of variables. The mean values of the all variables were calculated for the two groups of respondents, i.e. the two groups either applying or not applying for formal credit. Results are obtained using a t-test and are presented in Table 4.

Table 2. Comparison of two groups of respondents, applying and not applying for formal credit

Factors	Entire sample (N=704)	Apply for credit (N=435)	Not apply for credit (N=269)	t-test
DEPOSIT, dummy (have=1, do not have=0)	0.14	0.067***	0.188***	4.520
ANIMAL, dummy (have=1, do not have=0)	0.64	0.515***	0.711***	5.350
CAR, dummy (have=1, do not have=0)	0.24	0.243	0.236	0.190
INTERNET, dummy (use=1, do not use=0)	0.23	0.209	0.241	0.977
INCOME, (mln. KZT)	0.41	0.743*	0.211*	1.821
GENDER, dummy (female=1, male=0)	0.62	0.578*	0.644*	1.756
AGE, dummy (<20=1, 21-30=2, 31-50 =3, 51-68=4, <68 =5)	3.0	3.131***	2.929***	3.903
FAMILY, number of members	3.6	3.239***	3.830***	4.622
EDUCATION, dummy	2.7	2.668**	2.798**	2.101

Note: *** - significant at a level of 0.1%;
** - significant at a level of 1%;
*- significant at a level of 5%.

The results showed that there are significant differences between two groups of respondents compared with respect to the variables DEPOSIT, ANIMAL, AGE, and FAMILY. Education level is less significant, in other words, one can find him/herself in any group regardless of what education he/she has. The least significant factors distinguishing groups are INCOME and GENDER. Variables CAR and INTERNET are not significant and it means that access to internet is not a crucial factor motivating people to apply for formal credit.

This model fits the data well (χ^2=104.4, p< 0.0000), and tells us that our model as a whole is statistically significant, that is, it fits significantly better than a model with no predictors.

In Table 3 probit results of rural households borrowing from formal FIs are presented. Out of nine explanatory variables, four variables are insignificant; however, the signs by coefficients correspond to what was expected.

The marginal effects in Table 3 tells us that for a variable DEPOSIT, with average values of other variables, the predicted probability of a respondent applying for credit from a formal financial institution is 17.6% (p<0.007) greater for an individual with a deposit account than for one who does not have the deposit. The same trend could be observed for respondents answered as having animal stock, the probability to apply for credit for these respondents increases by 17.5% (p<0.000). Unexpectedly such variables as CAR and INTERNET turned out to be not significant, but both could positively affect the probability of applying for formal credit. This could be explained by the fact that rural people in comparison with urban population are less active Internet users due to a number of reasons (22.9%), one of the most important reasons is that rural people are less educated in this area and less familiar with Internet. Similarly, only few house-

holds have in own possession cars (25.8%), a main reason for that is a low income level of rural population in Kazakhstan in comparison with people living in cities and towns.

Table 3. Probit results of rural households borrowing behavior from formal FIs, 2011

	Demand for credit from formal FIs, 58.9%		
	Marginal Effect	Coefficient	Standard Error
DEPOSIT	0.176	0.453** (0.007)	0.168
ANIMAL	0.175	0.449*** (0.000)	0.111
CAR	0.022	0.057 (0.651)	0.125
INTERNET	0.066	0.170 (0.173)	0.125
INCOME	-0.316	-0.814*** (0.000)	0.154
GENDER	0.025	0.063 (0.558)	0.108
AGE	-0.091	-0.235*** (0.003)	0.079
FAMILY	0.031	0.081** (0.010)	0.031
EDUCATION	0.030	0.077 (0.221)	0.063
_cons		0.325 (0.363)	0.357

Note: Figures in parentheses are corresponding p-values;
*** - significant at a level of 0.1 percent;
** - significant at a level of 1 percent
* - significant at a level of 5 percent

Income plays a significant role in the decision making process in borrowing and saving. However, the results of regression show that a 1 mln. KZT increase in income will decrease the probability of applying for formal credit by 31.6%. These controversial results are based on psychological barriers of rural people and their traditional skeptical attitude to all official and formal institutions. In other words, the necessity to deal with formal creditors will appear in a case of the borrower's lack of funds, once borrower's funds are available or even increase; rural people are reluctant to apply for formal credit.

AGE and FAMILY are both significant; however, unexpectedly, the size of a family positively affects the probability of the respondent to apply for formal credit. An increase by one family member will increase the probability of applying for credit by 3.1% ($p<0.01$). At the same time, as it was expected, the older the respondent is, the lower the probability to find himself among those applying for formal credit, and the probability decreases by 9% ($p<0.003$). GENDER and EDUCATION are not significant, but have positive signs. Despite the lack of financial literacy among rural population in Kazakhstan, in general, rural population is well educated, and the level of literacy in rural areas among adults (older than 15) is 99.6%. Gender disparity in rural areas of Kazakhstan is obvious; in particular as for employment, type of occupation, and the remuneration, however, gender-related differences are less important for commercial banks.

In general, the probability to apply for formal credit by rural population is high enough and equal to 58.9%.

This paper dealt with the policy options for growth and development of rural FIs in Kazakhstan. Using a probit model the paper estimated the determinants of demand for formal credit among rural population in Kazakhstan. It showed that demand for credit is affected significantly by the level of income, but negatively. In addition, the demand is strongly influenced by existing financial experience of households, availability of animal stock, age, and the family size. It was not observed that a gender plays a role and affect the ability to apply for credit. Education is not an important factor in demand for credit in the rural areas. Traditionally, wealth in rural areas of Kazakhstan still is estimated by animal stock and taking into account that households can use animals as collateral to se-

cure loans, it was expected that this factor would significantly and positively affect demand for credit.

Recent reforms and supporting programs aimed to increase productivity and efficiency of agricultural production in Kazakhstan as well as a number of state initiatives toward the improvement of the business environment in rural areas requires enabling or establishing formal FIs in rural area. Those FIs should be able to cater for increased incomes and as a result increased savings while serving the rural dwellers' demand for and access to credit.

One of the Kazakhstani government initiatives was the establishment of a network of rural credit partnerships (RCPs). These FIs operate in rural areas. The goal of these RCPs was to increase access to short- and mid-term credit for rural agricultural producers. The Agricultural Credit Corporation (ACC), an entirely state-owned organization, is responsible for setting up RCPs and it retains the right to approve the membership of each new RCP. According to the regulatory law on RCPs, the latter are not allowed to take deposits. RCPs are partly state owned organizations: they feature about 30% of state participation in equity (although private RCPs are permitted, none exists) and over 50% of all credit is funded through the state budget at a relatively low interest rate. The RCP membership is restricted and depends greatly on the type of agricultural produce, the area of land, legal status, and, in most cases, good connections with local authorities (Gaisina, 2011).

Despite RCPs steadily increase their influence in the agricultural financial market of Kazakhstan; they are still, in fact, used as channels for favorable state loans for agricultural producers, being heavily dependent on state funds.

Due to commercial banks remain the only sources of borrowed capital for rural residents; accessibility of this service is vital. An average SSH can afford comparatively less amount of investment loan and as a result, the commercial banks in Kazakhstan neglect small-scale borrowers due to fear of default and large screening expenses. Hence, commercial banks need to create special financial products for such borrowers; the repayment capacity of the rural households should be properly assessed, irrespective of the size. Adequate amounts of investment loan should be provided to SSHs which are a main source of income in rural areas of Kazakhstan.

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