**Analyzing consequences of microfinance sector closure**

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**WORK IN PROGRESS**

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**1. Introduction and Motivation**

Microfinance was first introduced in 1970s with a noble intention of providing small loans to low income households and individuals in support of their private entrepreneurship and thus escaping from poverty. After global recognition, the microfinance model was adopted in various forms (i.e. classical Grameen type group liability, SME finance, individual etc.) in various countries (Bauchet et al. 2011). While in some countries, microfinance has demonstrated rapid expansion and sustainable growth (i.e. Bangladesh, India, Latin America, South Asia countries) in other countries – unfortunately it lead to a failure and sad experience of closing microfinance institutions (MFIs) - India, Bosnia and Herzegovina (Mujkovic, 2010; Marconi & Mosely, 2005).

Measuring the effect of **introducing** a new microfinance institution on business and household indicators has been given substantial attention in microfinance literature. In contrast, almost nothing is known on the reverse effect, i.e. what would happen in case of **withdrawal of microfinance institution or even the entire sector.** To the best of our knowledge, there are only two studies that analyzed this effect and both are from India (Banerjee et al, 2015; Breza & Kinnan, 2015) and predominantly in India, the original ground field for microfinance experiments. Measuring the consequences and impact of closing microfinance sector conveys a very important policy agenda as the loss of closing MFIs could be devastating as opposed to positive effects of introducing a new MFI.

In this paper we aim to provide a novel contribution to the literature by characterizing the effect of closing the entire non-bank microfinance sector in Uzbekistan, Central Asia, which took place in 2011. More specifically, in October 2011, the Central Bank of Uzbekistan revoked the license of all Credit Unions (121), and some of 34 Microcredit Organizations in the country. Before that date, the non-bank microfinance sector had been playing an important role in financial sector development as demonstrated by Alimukhamedova (2014a). Households and business representatives were actively taking microcredit loans that were proven to increase business size and household consumption patterns (see Alimukhamedova et al, 2017). We thus benefit from a so-called natural-type experiment setting and an exogenous variation in the supply side of microcredit provision.

It should be stressed that evidence from Uzbekistan is expected to provide important lessons for other developing countries. The microfinance sector in the country evolved in a private commercial form, thus corresponding to a so-called “meso-finance” or small and medium size (SME) finance models that became the focus of advocates in microfinance that criticize the classical pro-poor Grameen type group lending methodology. Given that the effect of the sector closure could have various socio-economic outcomes, we base our methodology on multidimensional approach for impact assessment. More important to correctly assess the consequences of sector closure we aim to assess the effect (a) the level of financial sector and the effect on the market (b) borrowing and savings patterns, local institutions and (c) household level identifying the profile of those who is being hurt and by how much. Given the lack of similar studies we also aim to provide qualitative research and economic reasoning of factors that lead to sector closure.

The paper is further structured as follows: Section 2 provides the review of related studies including theoretical predictions and empirical evidence. Section 3 defines specific research question and objectives. Section 3 provides brief overview of microfinance sector in Uzbekistan, and main factors of closing non-bank microfinance institutions. Section 4 defines methodology, overall conceptual framework of impact study and multi-dimensional approach. Section 5 provides overview of two rounds of household survey data: in 2011 before sector closure and 2015 afterwards. Section 6 presents methodology on assessing impact of sector closure on households. Section 7 provides preliminary results and discussion. Last section concludes.

**2. Literature Review**

To summarize literature on microfinance impact studies, we can distinguish three broad categories: (i) impact studies finding a causal effect of opening a new branch of MFI (ii) impact studies on expansion of existing MFI (iii) studies analyzing effect of various features of microfinance (see Bauchet et al. 2011 for summary of major studies).

The primary methodology employed and a “gold standard” for identification of a causal effect has been to design and implement an experiment, so-called Randomized Control Trial (RCT). Among the most prominent studies are Banerjee et al. (2014) in India; Karlan & Zinman (2011) in Phillipines; Crépon et al. (2011) in Morocco; and Karlan & Zinman (2010) in South Africa. Summary and results of these studies suggest positive (although modest) effect of microcredits. Even though the effect is quite heterogeneous depending on income level of borrowers and entry status - existing participants, new entrants, entrepreneurs etc.

Within microfinance impact studies, empirical evidence on the effect of terminating activities of MFI(s) is almost missing. Understanding the effect of sector closure on household wellbeing is very important both for academic side and for policy makers, as harm created could be more dramatic compared to positive effects of introducing new one.

To the best of our knowledge, there are only two impact studies (Breza & Kinnan, 2015 and Banerjee et al, 2015) both conducted in India. These studies benefit from RCT implemented earlier in case of Andhra Pradesh MFI in India. The results suggest that district-level reductions in microcredit supply are associated with significant decreases in casual daily wages, household earnings and consumption. There is also other country examples on devastating effect of microfinance as a result of oversaturation (Mujkovic, 2010, in Bosnia and Herzegovina) and a-cyclical behavior (Marconi & Mosely, 2005, in Bolivia). The latter studies are mostly descriptive, but signal on detrimental effect of microfinance sector. While it is very difficult and almost impossible to design and implement RCT for measuring counterfactual effect of MFI closure, all of empirical studies are limited by data availability and a particular country case.

Therefore our study provides important contribution on microfinance impact study literature analyzing consequences of withdrawing entire non-bank microfinance sector. It should be also stressed here that our empirical analysis is based on two rounds of country representative household surveys so that generalizations could be valid. Also, unique natural type experiment occurred in the country is based on a withdrawal of entire non-bank microfinance sector which is more influential compared to effect of a single MFI predominant in mainstream literature.

**3. Microfinance sector in Uzbekistan, story of the closure**

**3.1. Country Profile**

Located in the heart of the Central Asia, Uzbekistan is a most populous country of the region. With a GDP per capita of 2,132 USD[[2]](#footnote-2) Uzbekistan is a middle-income country. GDP growth was 8% in 2015 and has decreased to 7.8% in 2016 according to official statistics. The official poverty rate has been decreasing from 14.1% in 2013 to 12.8% in 2015 and forecasted to be 12.5% in 2016. The country is one of the rapidly growing economies of the region with high development prospects. Financial sector is primary base on banking institutions and microfinance has been considered as an important means of providing access to finance to low-income households and especially in remote areas.

**3.2. Microfinance Development**

According to a market failure hypothesis, microfinance plays an important role by serving the unbanked part of the population in countries, where formal banking institutions are weak (Vanroose & D’Espallier, 2013). The microfinance sector in Uzbekistan was originally introduced to smooth the transition from a Soviet-based economy to a free market, after gaining independence in 1991. After several legal changes, microfinance was dominated by private and commercial non-bank microfinance institutions - Credit Unions (CU) and Microcredit Organizations (MCO) by the end of the 2000s. The sector provided easy access for microcredit for entrepreneurs and households and this was shown to be profitable for both borrowers and lenders (Alimukhamedova, 2014a). As a result of their popularity, the number of CU and MCO institutions increased prominently[[3]](#footnote-3) and their credit portfolio increased dramatically.

Overall provision of microfinance in the country has been divided between commercial banks, non-bank microfinance institutions (i.e. Credit Unions and Microcredit Organizations), pawn shops and informal moneylenders. Table 1 provides comparison of microfinance providers as of 2011, the year when activities of non-bank microfinance institutions have been officially terminated. More detailed description of activities of non-bank MFIs could be found in Alimukhamedova (2014a), particularly comparison with international peers, common features and differences.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 1: Microcredit and microdeposit services in Uzbekistan, 2011** | | | | | | | | | |
| **Microfinance providers:** | | **Profit status** | **Legal status** | **No. of inst.** | **No. of borrowers** | **Loan portfolio, ‘000 USD** | **Average loan balance, USD** | **No. of depositors** | **Average deposit, USD** | **Monthly interest rate on loans** | |
| **[1]Specialized “Mikrokreditbank”** | | Profit | Bank | 1 | 51074 | 165001 | 3231 | 56540 | 1511 | 1.2% | |
| **[2] Downscaling[[4]](#footnote-4) Commercial banks** | | Profit | Bank | 2 | 7478 | 37409 | 5003 | n/a | n/a | n/a | |
| **[3] Credit Unions** | | Profit | Non-bank | 121 | 52965 | 121792 | 2300 | 153063 | 654 | 3.7% | |
| **[4] Microcredit Organizations** | | Profit | Non-bank | 34 | 9574 | 3853 | 402 | 0 | 0 | 4.8% | |
| **Total:** | |  |  | 138 | 121091 | 328055 | 10936 | 209603 | 2165 |  | |
| *Source*: MIX, NAMOCU, UNDP (2011); n/a indicates that data is not available. | | | | | | | | | | | |

During 1998-2011, non-bank microfinance sector in Uzbekistan has been acquiring important niche, receiving governmental support and popularity among population. This is very important issue, particularly, for post-Soviet countries that suffered transition period and a general mistrust to financial institutions and banks.

Summarizing historical evolution of non-bank microfinance sector in Uzbekistan, it could be divided into the following periods: (1) First, it was initiated by UNDP funded pilot projects in two remote regions in 1998. These were classical group lending models and based on their results, various laws has been started to evolve (2) During 2002-2006 period CUs and international donor funded micro lending programs started to grow rapidly. This was also stimulated by adoption of a law on Credit Unions (3) in 2006 there was a structural break in activities of donor funded microfinance programs as it was contradictory to law to engage into commercial activity while having an NGO status. As a result, most of donor funded microlending was terminated. This was a serious drawback for the sector as with the departure of international donors, all international expertise was also wiped out (4) During 2006-2011 non-bank microcredit sector was booming. Number of CUs and MCOs has increased dramatically from just dozen to more than 135. Sector was performing well, attracting vast layer of population and, more important, generating significant trust among population. More detailed description of activities of CUs and MCOs, including a benchmark comparison with international peers could be found in Alimukhamedova (2014a). (5) During October 2011, after managerial problems revealed in some of CUs, the Central Bank of Uzbekistan decided to revoke the license of all CUs and most of MCOs had to pass re-registration. As a result, since October 2011, CUs have stopped to issue microcredits and currently, non-bank microfinance has been done primary by reduced number of MCOs and specialized “Mikrokreditbank”. Therefore, it would be valid to claim that closure of non-bank microfinance sector fits into natural type experiment due to exogenous reasons. This in turn conveys important justification for identification in empirical estimations. Figure 1 summarizes evolution of the microfinance sector in the country. Major milestones and turndowns are associated with adoption of laws that enabled operation of activities of MFIs.

|  |
| --- |
| **Figure 1: Cumulative growth non-bank MFIs in Uzbekistan, 1998-2011** |
|  |
| *Source:* author’s calculations based on official data from the Central Bank of Uzbekistan web site www.cbu.uz |

**3.3. October 2011: sector closure**

In October 2011, the Central Bank of the country revoked the license of all (121) Credit Unions and some of (34) Microcredit Organizations (MCO). License termination implied that MFIs were not allowed to issue further microfinance loans nor attract deposits. All microfinancing has been channeled through commercial banks and remaining MCOs.

We have conducted qualitative research and in-depth interviews with various stakeholders of microfinance sector including employees of Central Bank (regulators), managers of Credit Unions, clients (borrowers and deposit holders) on reasons and aftermath of the closure. While there were various explanations, top reasons could be defined as follows:

* Fraudulent behavior of some of CU managers. The whole “story” started with incidence that the managers of two-three CUs collected all deposits and escaped the country without repayment. These CUs were small ones and operating in regions, so they were not the ones operating normally and the best ones. In addition, deposit holders of other CUs started to complain to regulators and Government which provoked in screening of other “healthy”, operating in normal ones.
* Hidden (double) accounting of some CU that resulted in problems with payments in deposits; lack of professional management of credit portfolio in some CUs.
* Lack of sufficient technical and supervision skills of the regulator, Central Bank. So, even bad / weak loan portfolios were approved / passed by. In fact, the microfinance sector was introduced first, while sufficient training of employees on supervision of CUs was not introduced on time. In addition, the legal regulation and documents on procedures were developed and approved after the sector was introduced and with some lags.
* Quite high interest rate charged in loans of Credit Unions which was contradicting the original mission of microfinance and initial expectations of pro-poor loans.

After the problems revealed in two-three “problematic” CUs and other problems revealed in operations, the license of all Credit Unions were revoked in October 2011. In fact, some successful Credit Unions and other sector participants were trying to lobby to “rescue” the sector through mergers, taking over of problematic ones etc. Unfortunately, this did not help to preserve the sector.

In this regard, given paper provides new and timely evidence at international arena. It should be stressed that in similar studies in India they investigate the effect of terminating only one MFI, while we aim to quantify the effect of entire non-bank microfinance sector closure which includes around 130 MFIs.

**4. Conceptual framework of methodology, multi-dimensional approach**

While our primary objective is to quantify the consequences of non-bank microfinance sector closure, we consider the effect at several levels. Given approach enables a comprehensive assessment of the impact of sector closure as focusing only on one dimension could be obscure.

We consider the following multi-level (multi-dimensional approach) for measuring the consequences for sector closure: The general vision of methodology could be summarized in the following picture:

**Figure 2: Summary of methodology: three levels of interrelated analysis**

|  |
| --- |
| **Level 1: Macro / financial sector development**   * How big was “non-bank microfinance” niche? * Was closure expected or unexpected? * Harm could be different! 🡪 use further in Level 3 analysis * Who took MFI segment? Banks?   **Level 2: Borrowing and saving decision of households**   * Understand mechanisms of borrowing and savings; microfinance niche * Inflow and outflow of resources in households   **Level 3: Which households were hurt and by how much?**   * Use results of Level 1 and Level 2 * Heterogeneity of impact * Who were hurt and by how much? |

**Level 1: General Financial Sector**

At this level our primary objective is to determine the consequences of withdrawing non-bank MFIs from the market. Given high popularity and rapid growth of non-bank MFIs (both in number of borrowers and credit portfolio) and our hypothesis is that the closure of the sector created a significant shift in the provision of (micro)credits and this affected other players of financial sector. In this part we will characterize and define margins evaluating “how big” was non-bank microfinance sector. This is important to further analyses the consequences of withdrawing it. Further steps will be based on the followings:

(1) We will provide the theoretical framework on the potential effect of non-bank MFIs termination and develop hypotheses.

(2) A descriptive analysis on the main factors that lead to sector closure will be presented. This will include aspects like regulation and supervision by Central Bank, non-bank MFI lending policy, staffing and others. At this point we will also analyze whether closure of MFIs was expected or unexpected? In particular, if closing of MFI sector was expected or predicted, than harm to households could be less or even no. In particular, commercial banks anticipating that segment of the market has been already raised and clients of MFIs has already been elevated to be eligible for commercial banks, than closure of MFI sector could be predicted. In reverse, if closure of the sector was unpredicted – than harm could be more sever (Table 2).

**Table 2: Understanding reasons of closure**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Rationale:** | **Expected**  **Closure:** | **Unexpected**  **Closure:** |
| 1 | Whether commercial banks could lobby and reveal that they want to enter the sector, therefore MFI sector should be closed | Harm could be less or no  as banks and other institutions could be more ready for this | Harm could be larger |
| 2 | Credit portfolio of commercial banks and deposit[[5]](#footnote-5) | Increased before 2011 | Increased after 2011 |

Once we analyze the origins of sector closure, we will discuss who took the market? This is in line with previous literature on microfinance that claim the microfinance have important mission to work where formal banking is weak. Therefore once the sector grows and clients of MFIs has been “educated” being eligible for commercial banks, than they could be taken by commercial banks. Therefore our results are expected to contribute to a mainstream microfinance literature on original mission of microfinance of investing into a human capital, learning effect. In particular, Alimukhamedova (2014b) and Alimukhamedova et al. (2017) has established learning effect of households that had better geographical access to non-bank MFIs in Uzbekistan. Household residing closure to MFIs were found to have running more profitable business enterprise, re-allocation of consumption from non-durable items and investing more in human capital activities. Therefore our analyses will also additional and important understanding of the link between commercial banks and microfinance institutions and their role in terms of learning capacity of households and clients for financial literacy, entrepreneurship and other economic decision making skills. Providing particular country evidence, we will also provide understanding which features of commercial bank lending contract should be changed /adapted from MFIs ones. This is important to understand so that commercial banks could easily take over successfully MFI niche.

(3) We will predict the determinants of placement of non-bank MFIs in regions using socio-economic indicators in truncated tobit and probit models. Given uneven distribution of MFIs we estimate the probability of observing number of MFIs given that , where is a truncation point, is given by the following equation (1) based on Cameron and Triverdi (1998). In this case the truncation point is around zero:

|  |  |
| --- | --- |
|  | (1) |

Therefore we will estimate truncated Poisson regression model for count data, with robust standard errors. The dependent variable is an MFI number (number of MCOs and CUs), MCO number and CU number in districts. Independent variables will be similar as above. Based on probit and truncated Poisson regression model we will also perform robustness checks such as tests for potential multicollinearity of independent variables based on variance inflation factor (VIF) analysis and pair-wise correlation.

We utilize three broad categories of region and district level variables. The choice of variables is based on previous literature on macroeconomic factors influencing MFI performance including Marconi & Mosley, 2005; Honohan, 2008; Vanroose, 2008; Vanroose & D’Espallier, 2009. (i) Socio-demographic variables including economically active population, unemployed population, population density, urban population. Positive effect of these determinants have been established by Ahlin et al. (2010); (ii) Infrastructure including housing stock; provision of healthcare, utilities and road densities. Schreiner & Colombet (2001) found that an absence of adequate infrastructure hinders the development of microfinance. (iii) Economic structure of regions - SME share in Gross Regional Product, industrial production, trade saldo, manufacturing and retail sales. On MFIs side – we will exploit two dimensions as suggested by mainstream literature: [a] loan portfolio and average loan size defined as depth of outreach and [b] number of borrowers defined as extent of outreach. We will also use household survey data and in-depth interviews collected during January 2016. The survey questionnaire contained questions on access to MFIs, the use of various financial services and their quality by households.

We expect our findings to provide a better understanding of mechanisms through which microfinance interacts with the broader economy (Ahlin et al. 2011; Imai et al. 2012; Vanroose & D’Espallier, 2013; Ahlin & Jiang, 2008; Ahlin et al. 2011). This is a hot policy debate in microfinance, and the literature on overall financial sector development including empirical evidence is relatively thin.

**Level 2: Borrowing and savings decision of households**

Microfinance literature suggests that microcredits, even if originally issued solely for entrepreneurship activities, are fungible - households utilize them first for meeting personal and family needs and then – for business expansion. Collins et al. (2009) define that low income households that are primary beneficiaries, in fact, maintain so-called “portfolios of poor” and beside microcredits they also engage into cross-borrowing and lending, savings and other financial transactions. Therefore, while considering the impact of microfinance it is important to consider all inflow and outflow of financial resources in households. In additional, behavioral literature suggests that some households intentionally engage into microfinance as a self-disciplining effect (Bauer et al, 2012) or they take microcredits even if they have sufficient savings – effect defined as “simultaneous borrowing and saving” (Basu, 2009).

The literature on simultaneous borrowing and saving suggests a number of explanations that could be generally divided into three broad categories: (a) Traditional theories are based on the option value of savings, where savings are used against some uncertainty in the future or case of emergency (Basu, 2009); (b) Behavioral explanations are based on the preference type of individuals (Morduch, 2010; Bauer et al, 2012; (c) Empirical explanations represent the set of country or microfinance institution observations for the case of simultaneous borrowing and saving (Baland, Guirkinger and Mali, 2011).

Despite existing explanations, there is still a lack of empirical evidence and clarifications on whether households are forced or voluntarily engage into simultaneous borrowing and savings. In this paper we aim to provide new empirical insights on determinants as well as mechanisms of formal and informal type of savings, thus filling important gap in mainstream literature. Empirical evidence from Uzbekistan is fruitful soil for contribution given strong traditions for informal savings clubs and collectivist society. More important, a particular novel explanation is expected to be based on informal savings clubs (in local language defined as “gap”[[6]](#footnote-6)) and maintained by a close network of friends and family members. The results of Level 2 analysis will be further used while assessing the harmful consequences on households.

We plan to use two stage methodology. First, given that households conduct both borrowing and savings activities, households could belong to either of four categories. We also define corresponding probabilities of a household belonging to either category:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Categories of households:** | | | | | **Notation of probability:** |
| [1] Those who borrow primarily | | | | |  |
| [2] Those who save primarily | | | | |  |
| [3] Those who borrow and save | | | | |  |
| [4] Those who don’t borrow and don’t save | | | | |  |
|  | | **Save** | |
|  |  | Yes | No |
| **Borrow** | Yes |  |  |
| No |  |  |

As a first step, we will predict the probability of a household to belong to either of four categories. Since all four probabilities add up into one, we eliminate the fourth category - those who don’t borrow and don’t save, Next, following Madalla (2010) we express these probabilities in a binary form that will add to estimation of the likelihood function for the multinomial logit model presented as follows:

|  |  |
| --- | --- |
|  | (2) |

We will first estimate the maximum likelihood function as defined in (2) to predict the probability of a household to belong into m=1, 2, 3 categories of borrowing and saving. The model should also provide the set of determinants that predict a household to belong into either category.

After estimation of maximum likelihood function, we then proceed for estimating actual amount of borrowing and savings of households. This can be done by estimating the following simple regression conditional that a household is in either of m=1, 2, 3 categories:

|  |  |
| --- | --- |
| Amount of Borrowing / Saving = f () | (3) |
| Amount of Borrowing / Saving = | (4) |

where are household (and individual) determinants such as age, household head, education, marital status, number of children, education attainment, bargaining power within household, main and additional occupation, migrant family members and remittances, rural / urban location and other determinants. The choice of these variables is based on research objectives and relevant studies in microfinance on borrowing and savings such as of Carpenter and Jensen (2002), Karlan et al. (2014), Bauer et al. (2012) as well as previous microfinance research in Uzbekistan: Alimukhamedova (2014) and Alimukhamedova et al. (2017).

The primary dataset for Level 2 analysis will be based on a household level survey conducted by the researchers during November 2015-January 2016. The sampling was done using a stratified random quota sampling in regions. The sampling was done on a country representative scale covering 6 geographical-economic zones of Uzbekistan. The total sample size comprised of 600 face-to-face interviews based on a standardized questionnaires. The questionnaire contains 7 thematic blocks covering the following topics: (1) Household demographics and occupation (2) Assets, Income and Household Expenses (3) Entrepreneurship Activity (4) Credit and Borrowings (5) Savings Clubs (6) Access to Financial Institutions (7) Respondent’s Life Experience.

**Level 3: Identification of households who were hurt by sector closure and how much**

Once we determine the consequences of sector closure at general financial sector (Level 1) and then understand borrowing and savings patterns of households (Level 2), we then proceed with the most important component of impact assessment. At Level 3 we will determine who was hurt by microfinance sector closure and to what extent.

At this level we postulate the following three specific research objectives: (1) identify the profile of those households who has been hurt by sector closure (2) identify their socio-economic profile and (3) heterogeneous effect of sector closure based on experience in borrowing, savings, entrepreneurship activity. Therefore, we plan to benefit from empirical results defined in Level 2 in terms of understanding who borrows, who saves and who performs both.

As for methodology, we plan to employ “quasi” difference-in-differences (DID), which is suitable for studying differential effect of treatment on a “treatment group” versus “control group” as done in experimental research designs. The term “quasi” implies that we don’t have a pure panel data tracking households before and after sector closure.

The dataset for Level 3 is based on two household surveys: just few months before sector closure in 2011 survey of borrowers and non-borrowers (1086 sample size) and 2016 survey random population (600 sample size). Both survey questionnaires were very close to each other and 2011 year one was a retrospective which goes back to 10 years history.

As a primary departure it is important to understand potential dynamics in the market, i.e. which category of households moved to which another one. We consider the following three broad categories of beneficiaries: A, B, C as defined below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Category:** | **Definition:** |  | **Dynamics after 2011 closure:** |
| **Category A** | “Old” clients of CUs and MCOs that have been clients before 2011 | Move from A to B category |
| Move from A to C category |
| **Category B** | Existing, running and new clients, would be clients - Eligible Non-participants | Move from B to B category |
| **Category C** | Not clients and does not wish to be clients | Move from C to C category |

Next, we foresee the following two-stage identification: In the first stage, we will predict the probability of borrowing from any finance sources (formal and informal) as summarized below:

|  |  |
| --- | --- |
| **2011 year survey (before sector closure):** | **2016 year survey (after sector closure):** |
| * no borrowing at all | * no borrowing at all |
| * borrowing from MFIs | * n/a |
| * borrowing from other sources than MFIs | * borrowing from other sources than MFIs |
| * borrowings from MFIs and other sources | * borrowings from MFIs and other sources |

Once we define how the probability of borrowing has changed since sector closure, we will try to quantify the following outcomes: (i) What happen with those who did not borrow from any sources? (ii) What are characteristics of those who did not borrow? (iii) How these characteristics of those who did not borrow changed after sector was closed? (iv) We then create the profile of those, who were harmed by sector closure; and (v) identify the proportion of households that were squeezed out of the market as a result of sector closure.

**5. Data Description**

For Level 1 analysis we aim to employ region and district level as described in methodology section.

For Level 2 and Level 3 analysis will be based on two household surveys conducted before and after non-bank microfinance institutions closure in Uzbekistan that happened in October 2011.

The first survey was conducted during January – March 2011, just before sector closure in October 2011. The survey was a cross-sectional conducted based on a multi-stage random country representative sampling and use of professional interviewers. The total sample size constituted 1086 households including 486 borrowers group and 600 non-borrower groups. The questionnaire includes questions on financial borrowing history, savings patterns, household income, expenditure and other important characteristics.

The second survey was conducted on a very similar basis as the first one. The total sample size constituted 600 households with a multi-stage random country representative sampling and use of professional interviewers.

It is important to note that both survey rounds have been designed in a professional and comparable manner so that the validity of empirical analysis is ensured. Table 3 below provides a summary, common blocks and differences of both datasets:

**Table 3: Comparison of household survey data**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Dimensions:** | **Survey 2011** | **Survey 2016** |
| **1** | **Data collection** | January – March 2011 | December 2015 - January 2016 |
| **2** | **Sampling size** | 1086 households  5163 individuals | 601 households  2917 individuals |
| **3** | **Sampling type** | **[1] Borrowers group:**  In each survey region one CU and one MCO was selected based on (a) maturity (b) size measured by total assets portfolio and (c) total number of clients. Selection of MFIs based on maturity ensures comparability across institutions and the  validity of a retrospective time window of 10 years.  **[2] Non-borrowers group:**  For control group the following multi-stage random quota sampling was used:  1st stage: non-overlapping “control” districts were randomly chosen  2nd stage: 2 communities (called mahallas) were randomly chosen. The sample frame constituted the list of all communities obtained from local mayors.  3rd stage: in each selected community a random selection of households based on pre-determined walk was used with a filter question about “entrepreneurship” until the assigned quota was not collected. Replacements and repeated visits were  done based on the reserve list. The respondent was identified as household head - the most knowledgeable person in the family of an economically active age (for women 18-54 years old, for men 18-59 years old). | The overall survey design is based on quota random sampling. The sample size and sampling procedures were determined based on (i) regional coverage (ii) the importance of the timing in selecting the treatment group (iii) time-resource constraints on the sample size.  The survey was implemented during November 2015 - and January 2016 at household level using a stratified random sampling in regions. The total sample size comprised of 600 face-to-face interviews based on a standardized questionnaires and 20 interviews for a pilot test. The sampling was done on a country representative scale covering 6 geographical-economic zones of Uzbekistan 1 . A quotas for interview were calculated for each zones / regions / and the  share of urban / rural population based on country demographics as provided in Table 2. |
| **4** | **Sampling Regions** | (1) Tashkent capital  (2) Tashkent region  (3) Fergana region | 6 geographic-economic zones:  (1)Southern (Qashqadaryo and Surkhandaryo regions)  (2)Northern (Karakalpak, Khorezm)  (3) Fergana (Andijan, Fergana, Namangan)  (4)Central (Samarkand, Bukhara, Navoi)  (5)Tashkent (Tashkent capital, Tashkent region)  (6) Mirzachul (Djizzakh, Sirdaryo).  For each geographic-economic zone one region was randomly selected and within each randomly selected region, a fixed quota for rural and urban population was derived. This ensures representability of the sample covering all regions and geographic-economic zones. |
| **5** | **Respondents Groups** | **(1)Clients of Microcredit Organizations (MCO):** microcredit borrowers who have been active over past few years  **(2)Clients of Credit Unions (CU):** microcredit borrowers who have been active for the past few years  **(3)Non-clients, entrepreneurs:** identified as individuals who have an entrepreneurship activity that generates profit and who  envisage self-employment  **(4)Non-clients, households without entrepreneurship activity:** the respondent was identified as the household head - the  most knowledgeable person in the family of an economically active age (for women 18-54 years old, for men 18-59 years old) | **(1) Ordinary households:** defined as household  **(2) Entrepreneurs:** defined as there is any entrepreneurship activity done by any member of the household.  **(3) Participants in savings clubs “gap”:** defined if any of the members of a household have been the member of savings  clubs.  **(4) Experience with non-bank microfinance institutions (Credit Unions and Microcredit Organizations):** defined if there was any member of household has borrowed in the past from CU or MCO. |
| **6** | **Questionnaire structure:** | Section Q. “Questionnaire passport”  Section A. “About family”  Section B. “Entrepreneurship activity”  Section C. “Credit and loans”  Section D. “Respondent’s life experience” | Section Q. “Questionnaire Passport”  Section A. “Family”  Section B. “Assets, Income and Household Expenses”  Section C. “Entrepreneurship Activity”  Section D. “Credit and Borrowings”  Section E. “Savings”  Section G. “Savings Clubs”  Section F. “Access to Financial Institutions”  Section J. “Respondent’s Life Experience” |
| **7** | **Retrospective blocks:** | Section A. “About family”  Section B. “Entrepreneurship activity”  Section C. “Credit and loans” | Section D. “Credit and Borrowings”  Section F. “Access to Financial Institutions” |

**6. Assessing the effect of microfinance sector closure on households (Level #3)**

We consider a modified Difference-in-Difference (DiD) methodology of assessing the harm to households. Since we don’t possess ideal panel for conducting before and after sector closure comparison of outcome variables, we derive two statistically comparable groups based on the general probability of borrowing. Detailed explanation of the methodology is provided below. Estimation procedures are in the process and therefore only selected results are presented in this version of the paper.

**Step #1. We estimate probit model predicting probability of borrowing from MFI for year 2011**

We estimate probit model (5) where the dependent variable is MFI borrowing dummy that is equal 1 if there is there was any borrowing from CU or MCO and 0 otherwise. is a list of household related covariates that define probability of borrowing from MFI such as age, age square, population density in districts, individual and household level controls such as education, occupation, business ownership, household size, household assets, number of businesses per household, financial literacy, risk aversion, trust to MFIs. The choice of these of covariates is based on previous literature on microfinance and impact studies done for Uzbekistan (Alimukhamedova, 2014a, 2014b). Descriptive statistics of these variables is provided in Table 4. Results of probit estimation are reported in Table 5 in Appendix.

Since 2016 survey design was also focused on analyzing both borrowing and savings patterns of households, Table 6 in Appendix provides summary statistics of main covariates that determine borrowing and savings activities.

|  |  |
| --- | --- |
|  | (5) |

**Step #2: Distribution of probabilities of borrowing from MFI, definition of comparison groups**

As a next step we generate the distribution of the probability of borrowing from MFI. The main objective is to understand the distribution and identification of the top and bottom quintiles that shall be used for generating so-called synthetic “Treatment” and “Control” groups as below. These two groups are statistically comparable groups based on observed covariates.

**Distribution of probability of borrowing from MFI**

**High Probability of Borrowing from MFI:**

**Top 75% quintile**

**bottom 25% quintile**

**Low Probability of Borrowing from MFI:**

**Bottom 25% quintile**

**“Treatment Group”**

**“Control Group”**

The main essence of these two groups is to define proper comparison groups on measuring the extent of harm of sector closure. The core idea is that “Treatment Group” defined as having high chances of borrowing from MFI in 2011, are expected to be affected the most aftermath sector closure. “Control group” – defined as having low probability of borrowing will be expected to be less affected by sector closure.

**Step #3: Outcome Variables: Business and Consumption**

Since microcredits are primary issued to support business and household consumption activities, the main outcome variables are based on [1] Business Indicators such as size, revenue and profit and [2] Consumption Indicators such as total household expenses, expenses on education, on health, on social events and ceremonies; on housing; on basic needs; total household income; total assets; household and business assets. Detailed definition of these variables is provided in Table 7 in Appendix.

**Step #4: Comparison of means across groups**

While actual estimation procedures are in the process, meantime in the Table 8 below we try to capture a comparison of means for Treatment and Control groups before and after sector closure on two comparison groups:

**Table 8: Comparison of means between groups for identification of consequences of impact**

|  |  |  |  |
| --- | --- | --- | --- |
| **Outcome Variables:** | **2011 year**  **[before MF closure]** | **2016 year**  **[after MF closure]** | **Potential consequences of sector closure:** |
|  | Statistical Significance of Mean for **Treatment Group**  [high probability of borrowing] | |  |
| **Business indicators** | we expect around 100$ for example | we expect around 80$ for example | 🡪 indication of the sequences on Borrowers group |
| **Consumption indicators** |
|  | Statistical Significance of Mean for **Control Group**  [low probability of borrowing] | |  |
| **Business indicators** | we expect around 120$ for example | we expect around 140$ for example | 🡪 indication of the sequences on Non-borrowers group |
| **Consumption indicators** |

**Step #5: Before- and After- comparison**

The main essence of proper estimating before and after survey comparison, is that we will take 2011 year fitted values and in estimating probability of the borrowing in 2016, when sector was not already existing. The main essence of identification is that we will use the coefficients from the first (2011) survey will be used to PREDICT what group each household WOULD HAVE BEEN IN in the second (2016) survey IF the access to MFIs had still been allowed. In other words we will construct "synthetic control group".

This can be represented in the following equation (6) below:

In the first stage we estimate of probability of borrowing from MFIs in 2011 as defined in (5):

|  |  |
| --- | --- |
|  | (5) |

|  |  |
| --- | --- |
|  | (6) |

where are individual and household level controls such as age, education, occupation, business ownership, financial literacy, risk aversion etc. as defined before; is a fitted value from 2011 equation; is an error term with zero mean.

To acknowledge that economy of the country has also changed during 2011-2016, we will run regression on measuring the impact on a difference terms of outcome variables: and**.**

**Table 9: Difference-in-Difference estimator of impact of microfinance sector closure**

|  |  |  |  |
| --- | --- | --- | --- |
| : | Treatment Group  s=2 | Control Group  s=1 | Difference: |
| t=2 (2016 after closure) |  |  |  |
| t=1 (2011 before closure) |  |  |  |
| Change: |  |  |  |

|  |  |
| --- | --- |
|  | (7) |

where T is a dummy variable for t = 2 (2016 after closure) and S is a dummy variable for s = 2 (Treatment Group). TS term is a composite dummy variable capturing situation when S = T = 1. Estimated coefficients of this model are as follows. The famous application of DiD is by Card and Krueger (1994) who estimated minimum wage in New Jersey comparing employment in the fast food sector in New Jersey and in Pennsylvania. Since borrowing from MFIs is not observed in 2016 (after sector closure) we use fitted values from 2011 year equation.

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  | Treatment Effect 🡪  Impact of Closure (8) |

**Step #6: Robustness checks:**

In addition to two survey rounds defined above, we are also going to benefit from European Bank for Reconstruction and Development (EBRD) Life in Transition Survey (LITS) three survey rounds: Life in Transition III (2016), Life in Transition II (2010), Life in Transition I (2006). All three waves contain household level dataset on Uzbekistan and include set of comparable questions on banking, access to finance, savings and other relevant questions to our research proposal. Table 4 below summarizes all available dataset and outlines expected empirical effect:

**Table 10: Comparable dataset and robustness checks**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **Dataset:** | **BEEPS I** | **BEEPS II** | **MF survey** |  | **MF survey** | **BEEPS II** |
| 2 | Survey year: | 2006 | 2010 | March 2011 | October 2011 | March 2016 | 2016 |
| 3 | Microfinance closure effects: |  |  |  | MF sector was closed |  |  |
| 4 | Effect: | situation “before” closure | | |  | situation “after” closure | |

**7. Preliminary Results**

**7.1. Results on Level 1: Financial sector development**

In order to assess economic consequences of non-bank MFIs closure, it is important to analyze first socio-economic determinant of their placement. This is particularly important and missing in the literature as non-bank MFIs has been functioning based on a private and commercial nature. In contrast, commercial banks and in general bank lending has been on a (strict) state control and their determinants have been based on regulator’s authority.

Therefore we predict two important outcome variables on MFI placement: [1] Probability of MFI appearance using probit model and [2] predicting number of MFIs in district. Given that non-bank MFIs has been found to unevenly distributed in districts[[7]](#footnote-7), we estimated truncated Poisson model for count data, as described in methodology section.

The data for supply-side determinants is based on district level cross-section data as of 2001. The historical evolution of non-bank MFIs reveals that the movement of CUs was established in 2002 after the law “On Credit Unions” was adopted. The movement of MCOs commenced in 2006. Therefore by studying a relatively long period of data, from 2001, we control for the reverse effect of the capacity of MFIs to affect the market.

For district level determinants we include the following three group of variables based on previous studies in microfinance on macroeconomic determinants of MFI placement such as Ahlin et al. (2010), Vanroose & D’Espallier (2009), Schreiner & Colombet (2001): (i) Socio-demographics indicators mainly capture the demand for microcredits and are associated with the cost efficiency of MFIs. They include *economically active population[[8]](#footnote-8)* and *share of registered unemployed people* that control for overall labour force propensity to become the clients of MFIs. The share of small and medium size enterprises in gross regional product (*SME share in GRP)* controls for the entrepreneurship level. We also include *urban* *population* in districts to control for urbanization trends. (ii) Infrastructure indicators include *housing stock*, provision of *hospitals*, *water pipes,* *gas* in districts and *road density*. These variables are important determinants not only for the standard of living, but also are critical factors for opening and successfully running business enterprises. (iii) Economic structure of the economy: Ahlin et al. (2010) find that MFIs cover costs better when macroeconomic growth in the country is higher due to lower default rates and operating costs. Integrating this finding, we include gross regional product (GRP). In addition to growth, the structure of the economy has an important influence. Ahlin et al. (2010) find that a larger service sector predicts faster MFI growth, while a larger agriculture sector predicts significantly lower default, operating costs and interest rates. With available data, we control for the composition of the regional economy share of industrial production in GRP, trade saldo, per capita manufacturing and agricultural sales.

**Discussion and the effect of sector closure:**

In general the results of probit and truncated Poisson models[[9]](#footnote-9) suggest that non-bank MFIs in Uzbekistan followed general economic principles before their activities have been terminated. Given that these institutions represented the financial segment functioning based on competitive market principles, we also conclude that historical changes in the legal framework and other exogenous changes did not effect to their free market functioning.

We also find evidence of an upward selection of MFIs. Credit Unions and Microcredit Organizations were established in the areas with better infrastructure, stronger human capital and better growth opportunities. These findings are in line with relevant macro-level studies by Vanroose (2008), Vanroose & D’Espallier (2009), Hermes et al. (2009) and Ahlin et al. (2010). Macroeconomic and institutional environment is a significant determinant of MFI appearance and growth.

Now, once activities of non-bank MFIs has been officially terminated, we could conclude that they had detrimental effect on regional and district level economy and abruption of the microcredit supply. While rigorous econometric analysis is in the process, we might critically gauge that even if we find modest or low statistically significant effects – termination of activities of non-bank MFIs has created important negative effect in terms of local districts loosing so-called “learning hubs” or “microfinance networks”. As Alimukhamedova et al. (2017) have found, MFIs has been playing an important learning centers and attracting the whole array of related credit infrastructure such as collateral assessment offices, credit bureaus and other related facilities, we could expect that withdrawal of non-bank MFIs has lead not only on the direct cut of microcredit supply but also on shrinking of full area of microcredit related infrastructure particular to non-bank lending. While these facilities are abundant in capital Tashkent and regional centers, their termination and withdrawal could have been more detrimental in remote regions and districts.

In further analysis we are conducting a more rigorous econometric analysis comparing regions and districts with and without non-bank MFIs so that to have more empirical evidence.

**7.2. Results on Level 2: Borrowing and savings patterns of households**

As we have postulated in multi-level methodology, in order to assess the impact of non-bank MFIs closure on households, it is critical to understand “financial portfolio” of households and what niche / value microcredits from MFIs have occupied. Given socio-economic and cultural background we can distinguish that households in Uzbekistan are actively involved in borrowing from others (formal such as banks MFIs and informal such as friends, colleagues, neighbors), lending to others and savings activities (cash, non-cash, in-kind). Also, similar to international ROSCAs, there is also similar savings network named as “gap” that households in Uzbekistan have been actively involved in for many years.

Below we provide summary of main borrowing, lending and savings patterns of households in Uzbekistan based on a household survey conducted in 2016. The results are provided based on the following respondent groups: [1] whole sample, regular households (defined as “A” category) [2] entrepreneurs (defined as “B” category) and [3] participants in informal savings clubs “gap” and those who had been experienced to MFIs (defined as “C” category).

**Whom households lending money to?**

In this section we characterize lending behavior of household members to others which includes household members (1), relatives leaving separately (2), friends / colleagues (3) and others (4). Figure 3 summarizes sample characteristics and variation across A, B, and C categories. As can be seen, 48% of all funds is being channeled to relatives residing outside the families following to friends and colleagues (42%).

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| **Figure 3: Lending structure to others** |
|  |

Following the lending structure, in Table 11 we quantify actual amount of lending to others splitting into five quintiles. As can be seen, most of the households lend to others in the lowest quintile where the mean values are almost 2 million UZS, equivalent to almost 800 thousand USD. 10% of entrepreneurs in category B lending also higher value of money compared to other categories corresponding to second quintile.

**Table 11: Amount of lending to others by households**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Quintiles:** | **100-4250 thousand sums** | **4251-8500 thousand sums** | **8501-12750 thousand sums** | **12751-17000 thousand sums** | **17001-30000 thousand sums** | **Total** |
|  |  |  |  |  |  |  |
| **Mean value for each quintile: USD equivalent in parenthesis** | **2,075,000 UZS (813,087 USD)** | **2,124,500 UZS (832,484 USD)** | **2,124,500 UZS (832,484 USD)** | **2,124,500 UZS (832,484 USD)** | **6,499,500 UZS (2,546,826 USD)** |  |
|  |  |  |  |  |  |  |
| Whole sample | 762 (86%) | 5670 (5,5%) | 10611 (4,9%) | 15000 (0,55%) | 24120 (2,7%) | 2238 (100%) |
| А [regular households] | 720 (95%) | 0 (0%) | 0 (0%) | 15000 (2,4%) | 17100 (2,4%) | 1467 (100%) |
| B [entrepreneurs] | 804 (76%) | 5814 (10%) | 10250 (8,8%) | 0 (0%) | 26166 (4,4%) | 3272 (100%) |
| C [savings clubs, experience with MFIs] | 754 (90,4%) | 5333 (4,1%) | 11333 (4,1%) | 0 (0%) | 25000 (1,4%) | 1709 (100%) |

Notes: the table reports lending structure of household members to others. The unit of currency is Uzbek soum (UZS). Mean values and percent of the sample is provided in parenthesis. There are 5 quintiles to capture the distribution. Top value for each category of A, B, and C categories is highlighted with respective colors. USD equivalent for each quintile is calculated based on 2015 year average for 2015 equal to 1 USD=2552 USD.

**How borrowings from others have changed?**

Following the lending analysis, we below provide the borrowing structure of households. All sources are classified into the following broad sources of financial intermediaries: formal sources (banks, non-bank MFIs (CU and MCO)) and informal sources (i.e. pawnshops, moneylenders, relatives, friends / neighbors). Figure 4a visualizes the sources of borrowing structure from others. Surveyed household mostly borrow from banks (36%), relatives (34%) and friends / neighbors (26%). Since 2016 survey took place after five years since activities of non-bank MFIs (all Credit Unions and partly of MCOs) has been terminated, there are only few households in the sample that had borrowed in the past 10 years from non-bank MFIs.

Given the absence of non-bank MFIs, we observe that households mainly relay on bank borrowing and then from informal sources. Even than bank borrowing is costly, we assume that it is important based on the size and the term of the loan which is higher compared to borrowing from informal sources which is usually short-term and in a smaller amount.

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| **Figure 4a: Borrowing structure from others, 2016 survey** |
|  |

Figure 4b provides similar borrowing structure of households based 2011 year survey that took place just several months before activities of non-bank MFIs has been terminated. Constructing Figure 4a and Figure 4b we observe that even in the presence of non-bank MFIs, clients of microfinance programs had also tiny borrowing from banks and informal sources. Non-MFI clients in 2011, mainly borrowed from bank (40%) who had entrepreneurship activity and rely on informal sources (40% from relatives and 35% from friends and relatives) for non-MFI clients without entrepreneurship activity.

**Figure 4b: Borrowing structure from others, 2011 survey**

While more rigorous analysis is need to claim for a true causal effect, still comparing 2011 and 2016 we observe that once there was a cut on the microcredit supply from non-bank MFIs side, most of households switched to banks and informal lending such as borrowing from relatives, friends and neighbors. Borrowing from commercial banks is mainly relevant to those households that are engaged into entrepreneurship activities and demand higher amount of borrowing.

**How borrowed funds are used by households?**

In Figure 5a we summarize how the borrowed funds are disbursed by households in 2016. We differentiate three broad categories such as money borrowed from banks (blue), non-bank MFIs/ MCO (red), and informal sources which combine the following sources (pawnshops, relatives, friends, neighbors) (green). Since we don’t find significant variation across A, B, and C categories, we provide the results only for a whole sample of respondents.

As can be seen, most of the bank loans are used for purchase of consumer durables, vehicles (39%), following the education (16,7%), purchase of new and renovation of existing dwelling (15,6%), and acquisition of raw material / inventory (7,6%). Most of fund borrowed from MCOs were spent to cover expenses related to education (50%) and consumption, basic needs (50%). Money borrowed from informal sources, presumably for a short-term as used mainly for consumption (21%), family events, weddings, purchase of dowry (18%), housing improvements (13%), medical expenditures (11,6%) and other household needs.

|  |  |
| --- | --- |
| **Figure 5a: Disposal of borrowed funds by households, 2016 survey s to used by households ? y relevant to those households that are engaged into enterpreneurpship activities and de** | |
|  | |

*Notes:* Percentages represent the average weighted.

We also visualize similar patterns in use of borrowed funds based on 2011 year survey (Figure 5b). To credibly identity the microcredit channels respondents were asked how they actually used each credit or informal borrowing. The answers are grouped into 12 main categories (see Legend below). Figure 5b visualizes the patterns of borrowing used by each type of respondents and separate for bank, non-bank and informal sources of funding.

We observe different expenditure patterns by each type of lending, therefore the type of funding indeed matters. Almost all microcredits from CUs and MCOs were used mostly for purchase of livestock, acquisition of raw material, inventory and new business start-up. In other words, significant part of microcredits was reinvested mostly into business. Besides business purposes credits from MCOs and CUs were used for consumption purposes, basic family needs, family events and home improvement.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Figure 5b: Disposal of borrowed funds by households, 2011 survey s to used by households ? y relevant to those households that are engaged into enterpreneurpship activities and de** | | | | |
| *Legend:* |  |
| *1 - Consumption, basic family needs*  *2 - Purchase of consumer durables, vehicles*  *3 - Dwelling improvement, construction of*  *4 - Weddings, events*  *5 - Education payment*  *6 - Medical treatment, health* | *7 - Debt repayment*  *8 - Purchase of livestock*  *9 - New business start-up*  *10 - Raw materials, inventory for business*  *11 - Acquisition of business assets*  *12 - Other* | |

Comparing Figure 5a and Figure 5b we conclude that having access to non-bank micro lending, households were actively re-investing borrowed funds for business and entrepreneurship activities, and less on non-durables and consumption. Therefore we infer that termination of MFI activities had detrimental effect on households borrowing and lending patterns. What is more critical is that, while microcredits were important source for start-up and entrepreneurship activities, they were also important for learning behavior of households and smart re-allocation of family funds towards more productive activities, i.e. cutting on un-necessary ones and re-investment into durable and financially profitable ones.

**How households save and on what?**

The second angle of household finance is savings behavior. In this section we summarize savings activities of households based on 2016 year survey. Unfortunately, questions on savings was missing in 2011 year survey. Therefore all results are based on the second survey. Table 8 summarizes cash and non-cash savings services used by households. As can be seen, most of the respondents (68,9%) prefer to accumulate savings in cash. An interesting observation which also corresponds to a general intuition is accumulation of cash is highest among A households (80,6%), compared to B entrepreneurs (75,8%), and savings clubs participants (55,2%). This potential indicates that having business and alternative savings mechanisms, households are less likely to make their savings in cash.

|  |
| --- |
| **Table 12: Forms of savings of households, 2016 survey** |
|  |
| Notes: the table reports savings structure of households in cash and non-cash forms. Percentages represent the average weighted. |

Given the features of local monetary policy in the country, most of the salaries in formal sector are transferred to local plastics cards with national currency. Therefore we observe that 9,9% of whole sample have this form of savings, which is more popular among regular households (11,8%) and the participants of savings clubs (11,2%). Intuitively, entrepreneurs, having their all funds occupied in their business have the lowest fraction of 6.5%. Given that participation in informal savings clubs is a cultural feature, 17,3% of households have outstanding savings in clubs, which is a minor case among entrepreneurs (2,2%) and more popular among actual participants (32,8%). Use of banking savings deposits in banks is not that popular, as only 3.7% of whole sample use this services, which is more predominant among regular households (5,4%) and entrepreneurs (5,8%), and intuitively less popular among the participants of savings clubs (0,8%).

Figure 6 visualizes the forms and mean by which households prefer to keep their savings. The range of all possible alternatives include cash (in local and foreign currencies), monetary deposits in banks (in local and foreign currencies), gold and other jewelry, savings in livestock, vehicle, immovable property and others. We can differentiate the following three broad categories of most popular forms of savings: liquidity (65% for whole sample; 56% among households, 71% savings clubs). Given that dollarization is a common phenomenon in Uzbekistan, 16% of households prefer to save money in foreign currency predominantly in USD.

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| --- |
| **Figure 6: In which form households prefer to keep their savings** |
|  |

*Notes:* Percentages represent the average weighted.

The third major preferred form of savings among households is livestock which is mostly purchased for fattening and further resale. This has been shown as a popular means of investment especially in rural areas (Alimukhamedova, 2011, 2014a).

We also measure the savings capacity of households by asking “how much money you and your family members can put aside as savings per month in thousand UZS).

|  |
| --- |
| **Figure 7: Savings capacity of households** |
|  |
| *Notes:* amounts are provided in thousand Uzbek soums. Average exchange rate for 2015 constitutes 1 USD = 2552 CZK. |

What we observe from Figure 7 is that despite all sophisticated borrowing, lending, risky entrepreneurship activity, households still have sufficient capacity to allocate additional funds which the range of more than 1 million UZS, equivalent to 391 USD per month. Transposing on a yearly terms, this amounts to 12 million UZS or 4,702 in US dollars.

These reserves indicate on potential market niche for investors and financial market intermediaries working on deposit attraction and mobilization those MFIs especially those that could attract deposits could benefit from.

**Discussion and the effect of sector closure:**

Analyzing borrowing, lending and savings patterns of households in 2011 and 2016 survey rounds, we infer that households have both substantial capacity of managing microcredit portfolio and also engage sophisticated savings. This indicates that potentially after the termination of non-bank MFIs in 2011, households start to switch more to bank lending, especially entrepreneurs who demand higher value loans, while regular households – rely more on borrowing from informal sources for a quick loans. we also infer heterogeneity in response based on ordinary households, entrepreneurs that have high business prospects and participants of informal clubs.

We can also infer that despite high demand for microcredits, households also possess high level of savings funds that could be potentially re-invested as currently been circulated in informal savings clubs. Rapid growth and popularity of Credit Unions in Uzbekistan during 2002-2011 has demonstrated that more than issuing microcredits, CUs have high capacity of mobilizing savings that households have been willing to allocate for high interest rates that commercial banks usually don’t provide.

**7.3. Results on Level 3: Which households were hurt and by how much?**

The results of this level analysis are in the process. More important 2011 and 2016 survey data is being processed: comparison groups for DiD assessment and construction of a “synthetic” control group for rigorous impact assessment is on the pipeline. Estimation procedures of this level of analysis are work in progress.

**Conclusions**

For almost five decades microfinance has promoted vastly as an important development and access to finance development tool. Many governments across the globe have already adopted microfinance in their state program and financial sector development.

Inspired with a promising mission of microfinance, numerous impact studies has been implemented heralded with randomized control trials for robust methodology. Accumulated evidence from these studies reveal marginally positive or no impact on various business start-ups and expansion, household consumption and many other development outcome indicators. The primary focus of these impact studies has been mainly on what would happen if a new MFI is being established or existing one opened another branch.

In this paper we analyze the reverse effect – what would happen in case provision of microfinance is being terminated. We benefit from so-called a natural experiment type event when the activities of almost entire non-bank microfinance sector represented by 121 Credit Unions and 34 Microcredit Organizations have been terminated in October 2011 in Uzbekistan. Before closure non-bank MFI sector served around 62,5 thousand borrowers and around 153 thousand depositors driven mainly by Credit Union’s activities.

Acknowledging lack of similar studies and respective methodology of impact studies on “microfinance closure” we contribute on both dimensions. First, we develop a multi-level methodology for assessing the impact of microfinance sector closure at three inter-lined levels: [1] broader financial sector development analyzing whether sector closure was expected or unexpected and who have taken microfinance niche [2] understanding borrowing and savings patterns and [3] identification of the profile of those households who were affected (hurt) by sector closure and by how much.

The database for impact assessment for [2nd] and [3rd] levels is mainly based on before closure (2011 year) and after closure (2016 year) country representative surveys. Ensuring correct identification of causal impact of microfinance closure for [3rd] level we aim to construct a “synthetic” control group for comparing with a treatment (i.e. those who are highly affected by microfinance closure). In particular, we aim to use coefficients from before (2011) survey to predict what group each household “would have been in” in the second (2016) survey if the access to MFIs had still been allowed.

Preliminary results indicate that even direct impact of microcredits on business and consumption is modest; there are in fact very important and long-lasting effects on educating households and individuals on borrowing, lending and other institutional changes. Taking microcredits and deposits households do improve on financial literacy, generating important survival and entrepreneurship skills thus experiencing important learning curve. We also infer that non-bank MFIs were also of great importance in remote regions and districts in terms of accumulating microcredit related infrastructure thus empowering local communities.

Finally, case of Uzbekistan also provides important country evidence on microfinance functioning in heavy regulated environment. Actively operating for almost two decades non-bank MFIs have demonstrated to capturing important niche and functioning based on market principles. Although lack of sufficient regulation and specialized skills suitable for microfinance niche was among the reasons that lead to a decision for closing the sector.

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**APPENDIX**

**Table 6: Summary statistics of the determinants of borrowing and savings, 2016 survey, whole sample**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Section** | **No.** | **Variables** | **Level; Measure** | **Obs** | **Mean** | **Std.Dev.** | **Min** | **Max** |
| **Demographics** | 1 | household size | household; people | 601 | 4.85 | 2.05 | 1 | 16 |
|  | 2 | female adults | household; people | 1463 | 2 | 0 | 2 | 2 |
|  | 3 | male adults | household; people | 1454 | 1 | 0 | 1 | 1 |
|  | 4 | children below 18 years old | household head | 910 | 8.1 | 5.1 | 0 | 17 |
|  | 5 | age | household head | 2917 | 0.2 | 0.4 | 0 | 1 |
|  | 6 | number of migrant members | household; people | 109 | 1.3 | 0.8 | 1 | 8 |
|  | 7 | remittances | household; ‘000 UZS | 29 | 7420 | 8317 | 0 | 17100 |
| **Women’s bargaining power** | 8 | strong | household; composite score | 2063 | 1.9 | 0.27 | 1 | 2 |
|  | 9 | weak | household; composite score | 2063 | 1.9 | 0.10 | 1 | 2 |
| **Education** | 10 | basic secondary education | household head | 17 | 2 | 0 | 2 | 2 |
|  | 11 | complete secondary education | household head | 166 | 3 | 0 | 3 | 3 |
|  | 12 | secondary vocation education | household head | 244 | 4 | 0 | 4 | 4 |
|  | 13 | higher education | household head | 170 | 5 | 0 | 5 | 5 |
| **Occupation** | 14 | business owner | household head | 154 | 2.5 | 0.9 | 1 | 4 |
|  | 15 | hired job | household head | 763 | 5.5 | 0.5 | 5 | 6 |
|  | 16 | self-employed | household head | 323 | 8.4 | 0.7 | 7 | 9 |
|  | 17 | unoccupied | household head | 694 | 11 | 0.7 | 10 | 12 |
| **Income** | 18 | monthly household income per capita | per capita; ‘000 UZS | 601 | 4606 | 7793 | 35 | 80621 |
| **Expenses** | 19 | monthly household income per capita | household; ‘000 UZS | 601 | 462 | 789 | 32 | 12200 |
| **Assets** | 20 | household assets per capita | per capita; ‘000 UZS | 601 | 38865 | 41847 | 8.3 | 400400 |
|  | 21 | business assets per capita | per capita; ‘000 UZS | 601 | 1952 | 12060 | 0 | 176000 |
|  | 22 | total assets (HH + business) per capita | per capita; ‘000 UZS | 601 | 40818 | 44763 | 8.3 | 400400 |
| **Entrepreneurship**  **activity** | 23 | number of businesses | household; number | 958 | 1.2 | 0.4 | 1 | 3 |
|  | 24 | business profitability | selected business | 185 | -17018 | 46399 | -399950 | 100 |
|  | 25 | business employment | selected business | 958 | 2.6 | 3.6 | 1 | 32 |
| **Borrowings** | 26 | household lending to others per capita | per capita; UZS | 182 | 598 | 1475 | 14.2 | 12500 |
| **Lending** | 27 | household borrowing to others per capita | per capita; UZS | 571 | 3694 | 10847 | 20 | 50000 |
| **Savings clubs** | 28 | household members in savings clubs | household; member | 1830 | 10.6 | 1.48 | 4 | 16 |
|  | 29 | duration of clubs | household; years | 1830 | 4.5 | 2.9 | 1 | 30 |
|  | 30 | contribution amount in club | household; UZS | 1809 | 108885 | 194842 | 10000 | 3000000 |

Notes: whole sample, expenditure items are provided in local currency, thousand soums, UZS.

**Table 7: Outcome indicators of measuring the impact of sector closure**

|  |  |  |
| --- | --- | --- |
| **Major categories:** | **Outcome variables:** | **Definition:** |
| **[1] Business Indicators:** | Size | is number of employees (both hired and family members) engaged on a regular basis in business run by a household; in thousand local currency, UZS |
|  | Revenue | is a gross revenue generated by business run by a household; in thousand local currency, UZS |
|  | Profit | is a net profit generated by business run by a household; in thousand local currency, UZS |
| **[2] Consumption Indicators:** | Total HH expenses | is a sum of all expenses incurred by all household members; in thousand local currency, UZS |
|  | Education expenses | is a sum of annual expenses per household on education, schooling, higher education tuition fee, purchase of education related uniforms, books and other required stationary; in thousand local currency, UZS |
|  | Health expenses | is a sum of annual expenses per household on medical treatments, drugs, long term medical treatment and other medical expenses; in thousand local currency, UZS |
|  | Social expenses | is a sum of annual expenses per household on weddings, family festive and other important ceremonies; in thousand local currency, UZS |
|  | Expenses on housing | is a sum of annual expenses per household on weddings, family festive and other important ceremonies; in thousand local currency, UZS |
|  | Expenses on basic needs | is a sum of annual expenses per household on food, public transport; in thousand local currency, UZS |
|  | Total household income | is a sum of all cash and non-cash income received by all household members per month; in thousand local currency, UZS |
|  | Total assets | is a sum of household assets and business assets; in thousand local currency, UZS |
|  | Household assets: durables | is a sum of assets used for household purposes in form of durable items such as housing, additional residential premises; in thousand local currency, UZS |
|  | Household assets: non-durables | is a sum of assets used for household purposes and in form of non-durable items such as various household appliances, vehicle, livestock; in thousand local currency, UZS |
|  | Business assets | is a sum of assets used for business purposes only; in thousand local currency, UZS |

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2. Source: In current US dollars, as of 2015. Source: World Development Indicators. Retrieved from: http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators. [↑](#footnote-ref-2)
3. During 2002-2011 period, the number of Credit Unions increased from 2 to 121 and Microcredit Organizations - to 35 in Uzbekistan. In contrast, there are only 5 commercial banks that engage into microfinance lending, but they have high state dominance, require complicated paper documentation and high value collateral (Alimukhamedova, 2014a). As of now (June 2017) financial institutions that engage into microfinance include Joint Stock Commercial Bank “Mikrokreditbank” pawnshops, and few MCOs. In terms of commercial banks – there are total 140 banks, of which 134 are branches and 6 head offices. [↑](#footnote-ref-3)
4. Existing financial institutions enter the microfinance segment by offering loans of a lower amount, i.e., direct lending to end-users. [↑](#footnote-ref-4)
5. This part of the analysis will be further elaborated with by adding an additional figure with a dynamics of credit portfolio and deposits of commercials banks during 1998 – 2016. This would be done based on data availability. [↑](#footnote-ref-5)
6. Uzbek informal savings clubs “gap” technically function similar to Rotating Savings and Credit Association (ROSCA), although the purpose is somewhat different. In some cases, “gaps” are maintained seeking cooperation of purchasing specific durable goods, home appliances or social ceremonies as weddings. In other cases, members maintain “gaps” for social gatherings and not necessarily a collective purchase of a good. So the host keeps accumulated amount and what is left from host expenses can use for any personal purposes. [↑](#footnote-ref-6)
7. See Alimukhamedova (2014b) for more details and description of microfinance environment of Uzbekistan. [↑](#footnote-ref-7)
8. In Uzbekistan economically active age constitutes 18-55 years old for women and 18-60 for men. [↑](#footnote-ref-8)
9. Given that this paper mainly focus on analyzing “closure” effect, the results of probit and truncated Poisson models are not provided in this version. Available from authors upon request. [↑](#footnote-ref-9)