Impact of Demand- and Supply-side Components of CCT program on Pre-School Enrollment and Attendance: Evidence from Kazakhstan

By

Aidana Zhalelova

Submitted to

Central European University

Department of Economics

In partial fulfillment of the requirements for the degree of Master of Arts in Economic Policy in Global Markets

Supervisor: Professor Gabor Kezdi

Budapest, Hungary

2016

ABSTRACT

This thesis evaluates the impact of randomized Conditional Cash Transfer rogramme of 2011-2012 in rural areas in Almaty region, Kazakhstan, on pre-school enrollment and attendance rates as well as overall quality of pre-school education services. I exploit a simple comparison of outcome values of children of pre-school age in treatment and control okrugs specified by pooled OLS regression model. Similarly to a vast literature on effect of CCT programmes on pre-, primary and secondary school education outcomes, this study finds that being offered an opportunity to receive conditional cash benefits increased the enrollment rate of children of pre-school age that had ever been enrolled in pre-school. However, the study finds no impact on current enrollment rates. Moreover, as a result of program, children started spending more time at pre-school education facilities. As for the overall quality of pre-school facilities, CCT programme neither increased the quality of old pre-schools nor did the newly created BOTA facilities produce any change in overall quality.

Keywords: Conditional Cash Transfer, treatment, control, early childhood development, pre-school, access, quality

ACKNOWLEDGEMENTS

I would like to express my deepest acknowledgement to my supervisor Professor Gabor Kezdi for

introducing me to the field of Impact Evaluation. I thank him for the knowledge shared and time

dedicated as this thesis would not have been possible without his guidance and constant feedback.

My second acknowledgement goes to my friends Salima and Azhara for encouraging throughout

the entire thesis writing period. Lastly, I am gratefully thankful to my family for being supportive

during my studies at CEU.

Table of contents

List of tables

List of Figures

Introduction

Existing research recognizes the critical role played by the Conditional Cash Transfer (CCT, hereafter) programmes in combatting poverty with the assistance of human capital accumulation (Stampini and Tornarolli 2012). With respect to human capital development, the research also highlights the importance of CCT programmes for securing access to early childhood education in rural areas throughout developing world. The anticipated scenario is that cash transfers relieve the cost of pre-school services, thus eliminating demand-side barriers to access to pre-schools by enabling households to afford to enroll their children in early education facilities. Another much debated issue concerns the supply-side barriers to access to early childhood education. The debate has taken place between access and quality of education services. On the one hand, the expansion of education facilities is believed to positively affect education outcomes of pupils (Hanushek 2005). On the other hand, the quality of education facilities should not be traded for the quantity as it is believed to be one of the main determinants of early human capital development (Kremer 2005). Thus, the scholarly discussion of demand- and supply-side barriers to access to early childhood education needs to be further addressed in the context of CCT programmes.

CCT programmes focusing on education outcomes have originated in Latin America in the late 1990s and since then have traveled from the US to South East Asia. They have also recently reached Kazakhstan under the administration of BOTA Foundation, a non-profit organization focusing on early childhood and youth development. BOTA's CCT programme for poor households aims at increasing enrollment and attendance rates of children of pre-school age in early education facilities. In addition to distributing conditional cash to poor households, there has been supply-side expansion of pre-school facilities in treatment okrugs of Almaty region. This thesis attempts to find an overall programme impact on outcomes

targeted by programme as well as on overall quality of pre-school facilities taking into account newly created BOTA facilities.

In order to answer whether there is an impact of BOTA's CCT programme on outcomes of interest, I exploit the experimental nature of the program design. The programme in itself is randomized control trial which enables us to estimate the impact of the programme by comparing the outcome values between treatment and control groups. I estimate this difference in outcomes using a simple OLS regression model. The regression is run on panel child dataset consisting of baseline and endline observations. The analysis is restricted to children of pre-school age as they are the primary group targeted by the programme. I first estimate, the Intent-to-treat effect of CCT programme on the outcomes targeted by programme and then proceed to estimation of programme impact on the overall quality of pre-school facilities. By separating the impact on overall quality for old and all pre-school facilities, I attempt to link the supply-side expansion with quality of pre-schools.

One of the main findings of the empirical analysis is that being offered an opportunity to receive conditional cash benefits increased the enrollment rate of children of pre-school age that had ever been enrolled in pre-school. However, the study finds no impact on current enrollment rates. Moreover, as a result of the program, children started spending more time at pre-school education facilities. As for the overall quality, CCT programme neither increased the quality of old facilities nor did the newly created BOTA facilities produce any change in overall quality.

Unfortunately, much less known about the CCT programmes' role in securing access to pre-school education facilities rather than primary and secondary schools. Moreover, no impact evaluation of CCT or even governmental programmes exists in Kazakhstan. Thus, this thesis is aimed at contributing to overall literature (specifically, on Kazakhstan) pivotal role CCT programmes play in helping more children to get early childhood education.

The structure of this thesis is as follows. The second chapter provides a brief literature review on the barriers to access to early childhood education and the role of CCT programmes in eliminating those barriers. The third chapter briefly introduces a reader with early childhood education system and a general picture of the recent trends in pre-school enrollment rates and some of the indicators of pre-school quality in Kazakhstan. The third chapter presents an overview of BOTA's CCT programme, its design and experimental results. The fourth chapter describes the data used for the empirical analysis, empirical strategy and results. The fifth chapter gives an overall picture of results and the last chapter concludes the study by proposing policy implications.

3

1. Access to Early Childhood Development in the context of CCT Programmes

The trend in pre-school enrollment is an indicator of early childhood development. Even though it has been gradually increasing lately throughout the world, there are still some regions that have to put a lot of effort to catch up with others.[1] Plenty of literature and practices identify numerous demand- and supply-side barriers that hinder children from enrolling in pre-school facilities. Conditional Cash Transfer programmes for children of pre-school age are perceived to be effective welfare policy tools for contributing to early childhood development. This chapter introduces the reader with the obstacles created on the way to obtaining pre-school education and how CCT programmes can assist in eliminating them10 and their subsequent effect on pre-school enrollment rates.

1.1. Early Childhood Development and demand- and supply-side barriers to it

Since 1990, a child's right to development has been internationally protected by the Convention on the Rights of the Child. According to its Article 6, children are promised to be ensured as maximum as possible with the right to development. Article 27 of the same Convention states that every child is entitled to a standard of living necessary for his or her physical, mental, spiritual, moral and social development. Hence, to be able to accumulate human capital in the future, great attention should be paid on the way child develops in the early childhood, labelled as early childhood education. For instance, in the US, it is defined as part- or full-time daycare in a center, school, or home for children between zero and eight years old (National Association for the Education of Young Children 1993). Early childhood development can be referred as

---

[1] *Notes:* For comparison, in 2013, the minimum (18.4 per cent) total enrollment rate in pre-primary education facilities for both boys and girls was in Sub-Saharan Africa, whereas the maximum rate was observed in OECD member states (82.5 per cent).[1] In Latin American and Caribbean countries this indicator showed 76.5 per cent. *Source:* World Bank.

an importantfoundation, which directs the course of formation and development of everything that comes afterwards – character, abilities and skills. Studies on the long-term effects of the Head Start programme in the US found that participant children showed higher likelihood to go for subsequent schooling or college than their siblings (Ludwig and Phillips 2008).[2] An environment to which a child is exposed in early years creates preconditions for further development of child's personality, cognitive development and formation of interest in different types of occupation. Pre-school facilities such as kidergartens, mini-centers, independent play groups or play groups affiliated to primary schools are able to create environment where children would strive for development.

It is the whole system that defines and regulates the process of providing pre-school education to children. It is frequently a system is deficient and fails in providing decent access to pre-schools due to a number of barriers. Stakeholders – parents, government, local authorities and pre-school facilities can play a pivotal role in securing adequate access to pre-school daycare services by annihilating those barriers.

Addressing Barriers to Access by UNICEF (2012) identifies a number of barriers to access for children who face particular obstacles that can be classified as demand- and supply-side barriers. Demand-side barriers include (1) relatively high cost of pre-school services for low-income households, (2) presence of somebody else like grandparents or other family members who can take care of the child, (3) opportunity cost in the face of lost income due to child labour by sending a child to pre-school, and (4) failure of parents to consciously understand the seriousness and importance of pre-school education for the future of their children. Supply-side barriers incorporate (1) absence or unavailability of program or pre-school service in the community, which translates into that no pre-school service is provided

---

[2] *Notes:* The Head Start programme is the US governmental pre-school program for children aged 3-5 years in poor households which provided pre-schooling, health, nutrition, and social welfare services.

whatsoever or facilities are full, (2) long distance to pre-schools which makes it even harder for poor households to access services as they rarely have their own means of transportation, (3) parents' lack of awareness about local services, and (4) last but not least, low quality of services provided in existing pre-school facilities.

Among all, I want to put more emphasis on the barriers that have been addressed by governments and programmes most frequently. It is not difficult to understand the adverse effect of high prices of pre-school education services on children's enrollment perspectives. Distributing subsidies to families that are unable to afford pre-school education otherwise would ease the situation dramatically. Increasing the number of new facilities in hard-to-reach rural settlements is another promising option which would ensure a much wider effective coverage. These are the obstacles between children and pre-school education that governments can actually lessen by funding the certain policies and activities.

However, creation of new facilities does not imply proper treatment in daycare and improvement in child development nor does it promise high quality of services. What really matters is what happens inside facilities. As Love, Schochet, and Meckstroth (1996, cited in Berlinski and Schady 2015) describe high-quality care,

> (In high-quality care) caregivers encourage children to be actively engaged in a variety of activities; have frequent, positive interactions with children that include smiling, touching, holding, and speaking at children's eye level; promptly respond to children's questions or requests; and encourage children to talk about their experience, feelings, and ideas. Caregivers in high-quality settings also listen attentively, ask open-ended questions and extend children's actions and verbalizations with more complex ideas or materials, interact with children individually and in small groups instead of exclusively with the group

6

as a whole, use positive guidance techniques, and encourage appropriate independence.

Much of the ongoing debate whether access to school services or the quality of those services is more important for child development is concentrated on primary and secondary schools, but, in general, it would still apply to pre-school facilities too. It is true that underestimating either access or quality bears much risks in itself – both of them are equally vital components of early childhood development. The defendant of the higher quality of schools Hanushek (2005) reviewed ninety-six studies and summarized the effectiveness of educational inputs (teacher-pupil ratio, teacher's education, experience and salary, expenditure per pupil and facilities) on student performance in developing countries. The main finding is positive correlation between inputs and academic performance, by which he does not imply causality and neither says that the quality of education services does not explain the variation in school performance. What he suggests instead as a reason for poor academic performance is frequently ineffective use of inputs and comes up with performance incentives, i.e. a special approach for facilitating the process. However, it was never easy to upgrade existing schools so that all of them became the best. Hence, policy-makers face a trade-off between increasing the quality and creating new schools so that more children could have access to education services.

In his paper *Comment On Hanushek* (2005), Michael Kremer gives higher priority to greater access to schools. He atacks Hanushek's finding that positive correlation between inputs and academic performance is an evidence of inputs' effectiveness by stating that these correlations (not causal relations) may be explained by other factors. For example, some communities have stronger commitment to education, which overestimates the positive effect of quality on academic performance. What Kremer proposes instead is to trade quality for

quantity. Due to costliness of increasing schools' quality, it is more effective to concentrate on the number of children that are enrolled in education facilities by creating new schools in areas with no pre-school whatsoever or extending number of groups in schools with waiting lists.

The mixed approaches and opinions on the way how early childhood development is addressed signify that a welfare policy is needed for a well-designed and comprehensive policy tool which would take care of both demand- and supply-side constraints to early child education. Thus, new discoveries and expertise in and realization of significance of early childhood development were accompanied with increasing sympathy for programs that assist a larger number of children in poor areas to have a greater access to pre-school facilities.

1.2. CCT programmes as a tool of bolstering Early Childhood Development

Various policy approaches and measures have been suggested and promoted by decision-makers that would discuss the issues of poverty, welfare, social protection and human capital of people in need. The concept of Conditional Cash Transfer programme has been developed in the late 1990s and is perceived as a promising tool for poverty alleviation. In simple words, conditional cash transfer is a monthly cash benefit granted to poor families for improving health and education outcomes. Families, in their turn, are required to follow certain behavioural commitments such as sending children to school and/or making health check-ups on a regular basis. The result of incompliance with these conditions may be a reduction in cash size or even withdrawal from the program.

As the CCT is a poverty alleviation tool, the benefits CCT programmes provide are means-tested: only the poorest of the poor become beneficiaries of the programme. CCT programmes primarily target poor households in rural settlements where people are more likely to be uneducated due to various reasons such as high cost of education services, inadequate

access to or supply of education services as well as people's cultural and mental characteristics. These all may translate into higher rates of poverty in the future. By helping poor to develop and accumulate human capital here and now, CCT programmes expect to decrease poverty in the future. Thus, no one expects the effects of CCT programmes to be large in magnitude or substantial immediately. Instead, identifying the potential effect as long-run and short-run makes CCT effects to have an intergenerational nature. Simply put, in the short run, the ultimate goal of CCT programmes is human capital accumulation, whereas in the long run, it is expected to decrease poverty.

The popularity of CCT programmes throughout the world surely reflects the effectiveness and success in achieving the goals they aim at. Starting from Latin America and traveling to South and East Asia, CCT programmes have secured a good reputation and have proved they can bring promising achievements in improving early childhood development indicators such as health and education.

Latin American countries can be undoubtedly considered as pioneers of CCT. These countries had a clear objective and policy rationale when they started designing and implementing CCT programmes in the 1980s and 1990s. These years were the period of poverty trap for undereducated families. They were not promising in investing in early human development of their children (Pellerano and Barca 2014). Thus, their children were even less likely to get out of poverty at any time in the future. Policy makers deemed that introducing CCTs would be a fairly effective solution for chronic poverty which would force target population to change their behavior conditionally. By this, CCTs were perceived as a tool of human capital accumulation in the short- and medium-run and an instrument of poverty eradication in the long-run.

9

Unfortunately, the vast amount of literature that I reviewed analyzes demand- and supply-side education barriers for pupils of primary and secondary schools. Thus, the first contribution of this thesis is an empirical analysis attempting to apply such methods to pre-school education. One of the Conditional Cash Transfer programs, which was thoroughly analyzed by its demand- and supply-side component was Progresa in Mexico. Coady and Parker (2002) carried out cost-effectiveness analysis of demand- and supply-side education interventions under this program. The intervention includes both demand- (cash transfer) and supply-side (improving quality and extension of schools) subsidies to poor families conditional on enrollment and regular health check-ups. The program aims at increasing enrollment rates in secondary schools. The aim of the study is to disaggregate the overall programme effect into impacts of demand-side monetary assistance and expanded school supply on enrollment rates. The study found that, after one year, overall programme impact on secondary school enrollment was 8 percentage points for boys and 12 for girls. Surprisingly, adding supply-side variables slightly increased overall programme effect, which does not necessarily imply that quality of secondary schools in treatment areas did not increase but. Instead, the quality increase happened in both treatment and control areas.

The debate on impact of demand- and supply-side barriers that are tackled under CCT programmes directs me to investigate the recent picture of pre-school education system in Kazakhstan.

2. Early Childhood Development in Kazakhstan

Development and advancement of pre-school education system is among the top priorities of Kazakhstan's education and welfare policy. Participation of Kazakhstan in the UNESCO/OECD Early Childhood Policy Review Project has pushed the country to adapt progressive reforms and introduce programmes for establishing effective early childhood policies (UNESCO 2007). Along with the State Compulsory Standard, the government launched several state programmes throughout 2000s. In addition, BOTA Foundation, a non-governmental organization based in Kazakhstan, ran its Conditional Cash Transfer in six regions in Kazakhstan between 2009 and 2014, which is the main focus of this thesis. This chapter provides a quick overview of the pre-school education system in Kazakhstan with the following presentation of BOTA's CCT programme.

2.1. Pre-school education system in Kazakhstan

In Kazakhstan, the Ministry of Education and Sciences is responsible for early child education. Pre-school child education is the first stage in the education system and mostly focused on comprehensive (general) knowledge formation (Law on Education 2011). It is focused on realization of skills and abilities and prepares children for effective comprehension of primary education. According to the Law on Education, the pre-school study programmes form basic skills of reading, writing, calculating and communicating. The main aim is to give equal ground and conditions for students' subsequent development in primary and secondary schools.

Children younger than five years old may receive nursery education either in families or in specialized education institutions. Pre-school education is offered to children older than five years old until they start primary school. It is compulsory for all children and carried out

11

by the family, pre-school organizations, pre-school groups affiliated to schools and lyceums and gymnasiums. Public pre-school facilities are free of charge in Kazakhstan.

Table 1 presents the structure of pre-school education and types of facilities in Kazakhstan. Types of facilities differ by functions, hence, have varying hours of operation. Nurseries offered to the youngest children (1-3 years old) operate for ten hours per day. Until six years old, children attend some type of kindergarten. Mini centres - a special type of kindergarten – operate only for two hours per day, thus, their curriculum is very different from conventional kindergartens. Pre-school facilities for orphans (kinderdorf and early childhood orphanage) operate for a full twenty four hours. Zero classes are one year long compulsory pre-school education facilities that exclusively prepare children for primary education, thus, operating hours are the shortest among all.

Table 1 - Pre-school Education system in Kazakhstan

Facility type	Age range	Hours of operation (per day)
Nursery	1-3	10
Kindergarten		
Kindergarten	3-5/6	10
Nursery-kindergarten	1-5/6	10
Kindergarten-school complex	1-10	10
Mini centres[a]	3-5/6	2
Kinderdorf[b]	4-7	24
Pre-primary education		
Zero classes[c]	5/6	4
Early childhood orphanages	0-3	24

Notes: (a) Mini centres can be established in kindergatrens, secondary school or home; (b) Kinderdorf is a pre-school facility for children in orphanages; (c) Zero classes are attended for one year before starting primary education. *Source:* Ministry of Education of Kazakhstan

2.2. Access to and quality in pre-school education facilities in Kazakhstan

As for supply-side barriers to pre-school education, data on enrollment rates provides a clear picture of effective coverage and access of children to early education facilities. Figure 1 provides trends for overall enrollment rates in all types of pre-school facilities for 2010 and 2011 by *oblast* (region) and the two largest cities, Astana and Almaty. In all oblasts except Zhambyl, Aqtobe and the capital Astana, the share of children aged 1-6 enrolled in any type of pre-school facility increased within one year.The southern part of Kazakhstan, which incorporates South-Kazakhstan, Almaty, Qyzylorda and Zhambyl oblasts, shows the lowest result on average (29.7 per cent in 2010, 33.6 per cent – in 2011). This may be partly explained by large concentration of Kazakh population in the South[3], and the third family member such as grandparents taking care of grandchildren is very popular among Kazakh families.

Figure 1 - Enrollment rate in PS facilities of children aged 1-6 by oblast, 2010-2011
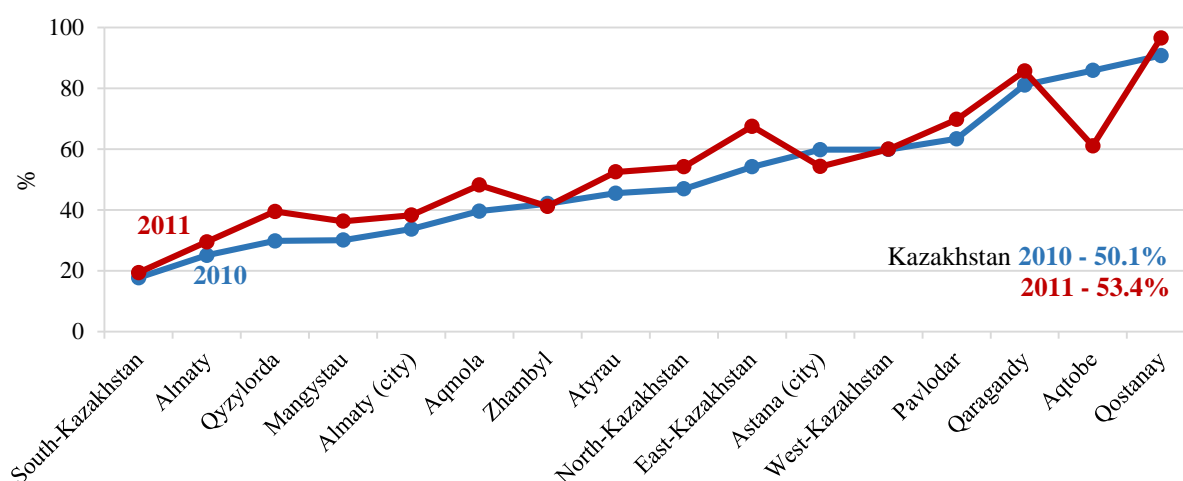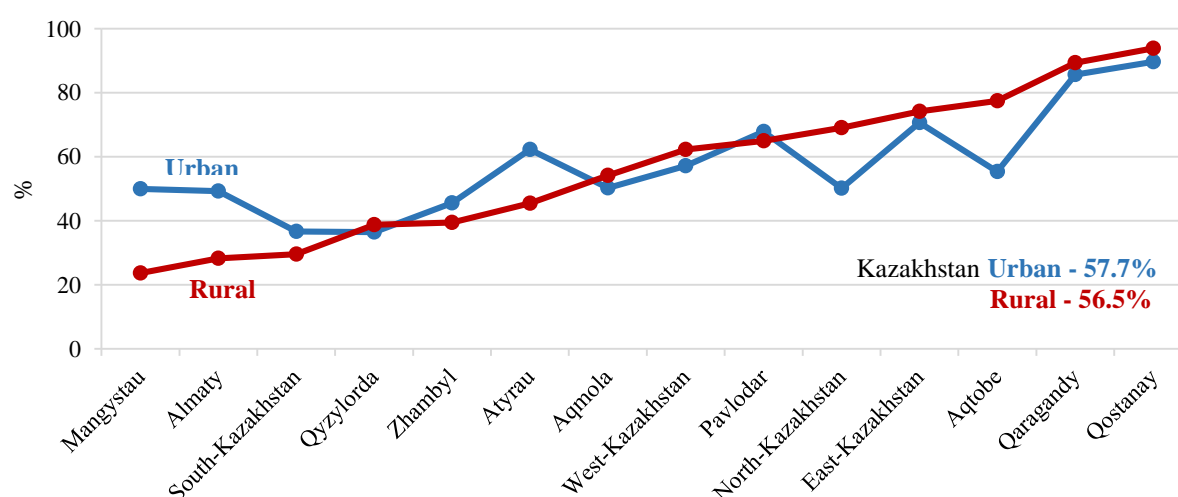

Source: Ministry of Education and Sciences of Kazakhstan (Regional Statistics on Education, 2012)

---

[3] *Notes:* In 2010, in the Southern part of Kazakhstan, Kazakhs comprised 75 per cent of the total population as opposed to 40 per cent in the North. *Source:* Agency of Statistics of Kazakhstan, 2010.

The focus of CCT programmes aiming at increasing enrollment rates in pre-, primary and secondary schools on rural areas reflects the importance of looking at effective coverage and access of children to early education facilities by urban and rural areas. Figure 2 provides overall enrollment rates in all types of pre-school facilities for 2013 both for urban and rural areas by *oblast* (region). Figure 2 demonstrates that, again, Southern - Almaty, South-Kazakhstan, Qyzylorda and Zhambyl – oblasts suffered from the lowest coverage rates in rural areas in 2013. As for the Northern part of Kazakhstan, many oblasts are characterized with higher rates than in the rest of the country and also show higher rates in rural areas than urban settlements.

Figure 2 - Enrollment rate in PS of children aged 1-6 by region and urban/rural areas, 2013

Source: Ministry of Education and Sciences of Kazakhstan (Statistics on Education System in Kazakhstan, 2013)

The zero class, which is responsible for the academic aspect of child's preparation for primary school, is free of charge and compulsory for everyone, and therefore one would expect higher enrollment rates in this particular type of pre-school across oblasts for children. Figure 3 provides zero class enrollment rates for 2013 both for urban and rural areas by *oblast* (region). Three oblasts – Mangystau, Pavlodar and South-Kazakhstan – showed the lowest results (less than 90 per cent) in rural areas. Aqmola, Atyrau, East-Kazakhstan, North-Kazakhstan,

14

Qaragandy, Qostanay, Qyzylorda and West-Kazakhstan oblasts showed perfect (100 per cent) results.

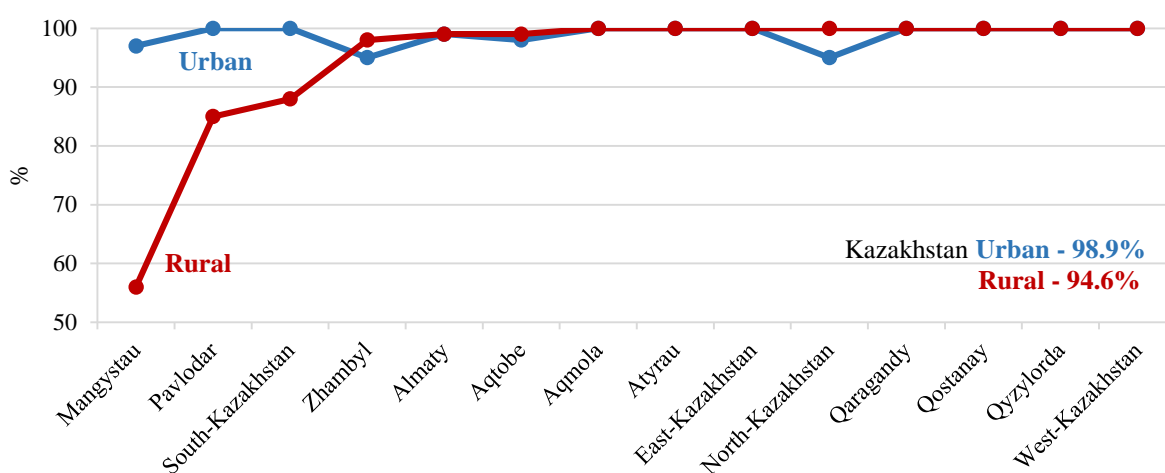**Figure 3** - Enrollment rate in compulsory Zero class of children aged 5-6 by region and urban/rural areas, 2013

Source: Ministry of Education and Sciences of Kazakhstan (Statistics on Education System in Kazakhstan, 2013)

All in all, Southern Kazakhstan plus Mangystau oblast have to put much more effort to catch up with the rest of the country. At the country level, only slightly more than half of the children aged 1-6 are enrolled in pre-schools (53.4 per cent in 2011). Both urban and rural pre-school enrollment rates signal a warning message to the government and policy-makers – half of the eligible children are unable to access early child education services.

Since the Law on Education has come into legal force in 1990, the second vital component of "access versus quality" debate, quality, has been a central focus of education policy in Kazakhstan. Special attention has been put to social inclusion of children, including orphans, and integration of different types of pre-school facilities. The pivotal and irreplaceable role of parents in the process of personality formation of their children has been highlighted and given appropriate consideration. However, the quality of pedagogical staff remains to be improved. Also, there is a room for progress in technical assistance such as computerization and internet access in early child education institutions. Figure 4 presents the share of

15

pedagogical personnel of the highest category (*zhogargy sanat*) in 2012 and 2013. The proportion of the highest quality staff does not exceed 10 per cent. Additionally, none of the oblasts except Aqmola improved between 2012 and 2013. Western part of Kazakhstan and Qyzylorda oblast showed the lowest results.

Figure 4 - Share of pedagogical personnel of the highest category by region, 2012-2013

Technical assistance facilitates every-day operation of any organization. The basic advantage of technical provision in contemporary world is its effectiveness in easing correspondence procedures and saving time. Figure 5 provides a general picture of the level of computerization and internet access in pre-school facilities in 2012 by region. Not surprisingly, more pre-schools have access to computers than to internet. Regional disparities persist

throughout country. Less than 45 per cent of pre-schools in East-, North- and West-Kazakhstan regions have computers and 34 per cent have access to internet.

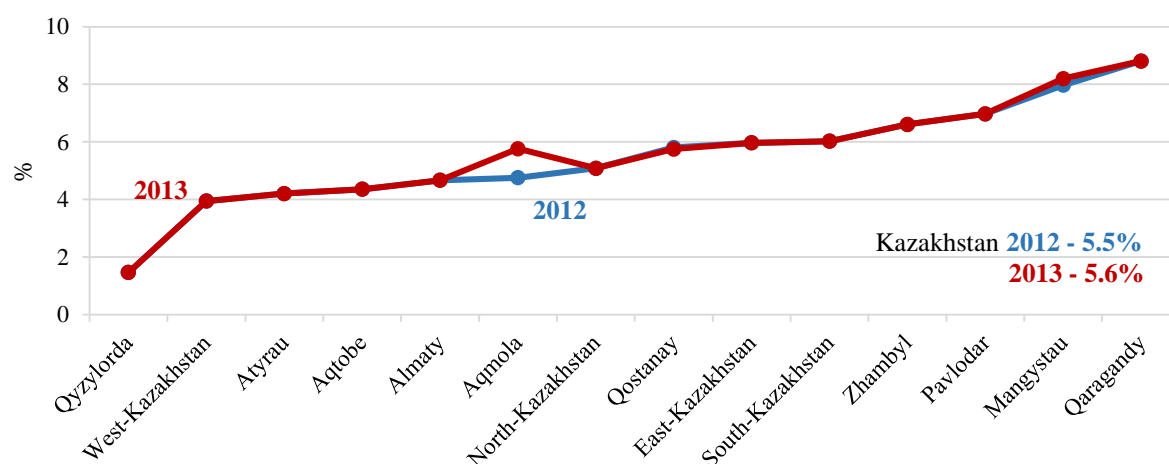**Figure 5** - Share of pre-school facilities with computers and internet access by region, 2012
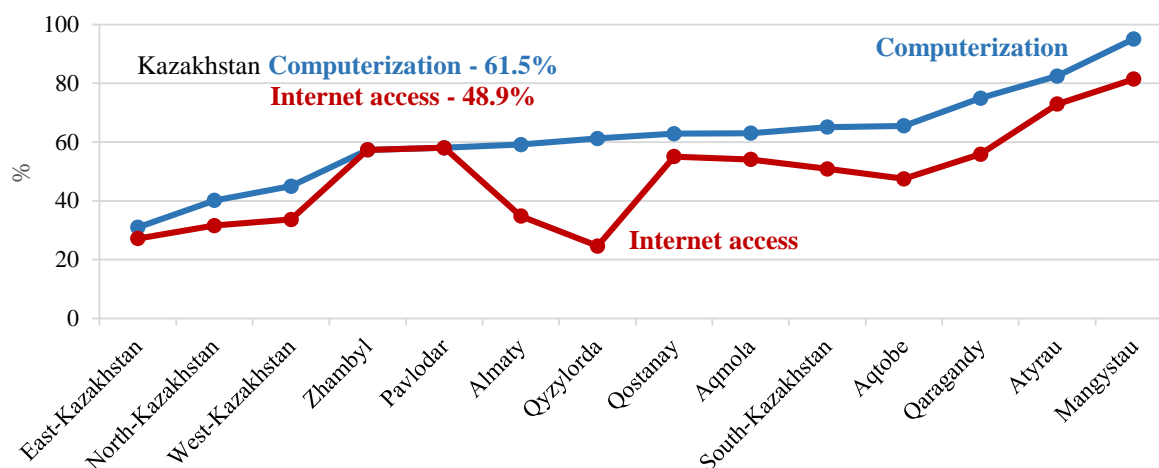
Source: Ministry of Education and Sciences of Kazakhstan (Statistics on Education System in Kazakhstan, 2013)

At country level, slightly more than 5 per cent of pedagogical personnel have the highest categories and around 62 per cent of pre-schools are provided with technical supply. Government has to take measures for attracting personnel of the highest category and subsidize the technical provision of pre-school facilities. Also, reduction of regional and "urban versus rural" gaps both in access to and quality of early education services deserves more attention in the agenda.

3. Overview of BOTA's Conditional Cash Transfer programme

Between 2009 and 2014, BOTA Foundation in Kazakhstan[4] conducted CCT programmes in six regions of Kazakhstan – Aqmola, Almaty, Atyrau, Qyzylorda, Mangystau and Zhambyl with a total budget of USD 65 million. Among them, as it is presented in the previous section, Mangystau, Almaty, Qyzylorda, Atyrau ans Zhambyl have the lowest pre-school enrollment rates both in urban and rural areas. Aqmola region is among the lowest half. In this thesis I analyze only BOTA's CCT program in Almaty region because no data is available for other regions. This section digs deeper into the program's design, target and experimental estimates.

3.1. Program overview

The Conditional Cash Transfer programme in *okrugs*[5] of Almaty region took place between 2011 and 2012. The program had several target groups: children of pre-school age, children with disabilities, pregnant and lactating women and youth in school-to-work transition. In this thesis I focus only on the pre-school enrollment and attendance rates of children aged 4-6.

The program is made of demand-side subsidies in the form of cash randomly distributed[6] to households in Almaty region. Cash benefit was to help households cover full or part of the pre-school cost. Criteria that households had to satisfy in order to get the transfer were (1) to live/be registered in one of the communities where BOTA was operating within Almaty region, except Almaty city due to its size and other settlements with more than 5000 inhabitants; (2) a household could apply for transfer only if at least one household member was

---

[4] *Notes:* BOTA Foundation is a non-profit organization focusing on improving the lives of children, youth and their families suffering from poverty.

[5] *Notes: okrug* is the smallest level of local government administration in Kazakhstan which consists of a small group of villages headed by a mayor or *akim*.

[6] *Notes:* Cluster randomized control trial at the *okrug* level was used to evaluate the programme. See Box 1 for the detailed description of randomization of *okrugs* to treatment and control within the program.

of a pre-school age, and a household was given additional cash if there was pregnant and/or lactating woman, children with disabilities and youth in school-to-work transition and (3) a household was eligible only if it passed the 'Proxy Means Test' which meant that a household was poor. Condition on which the cash was to be transferred was that a child attended at least 85 per cent of days that the school is open.[7] Cash size ranged between 24 USD and 35 USD per month depending on beneficiary category. Also, the programme took care of supply-side benefits by creating new pre-school facilities referred as BOTA facilities. These supply-side adjustment to potential increase in demand for pre-school services was done only in treatment *okrugs*.

The program's goal was to improve lives of children in poor households by offering a regular monthly income to households. The target group was poor households with children of Early Childhood Development category – children aged 4-6. The intended effect was identified for two periods: (1) in the long-run, which was the primary objective, the effect was expected to improve education and health outcomes leading to developed human capital; (2) in the short-run, which was the secondary goal, it was immediate access to education and other social sector services leading to reduction in poverty. This thesis is focused on program's education component, and identifies its effect on pre-school enrollment and attendance rates.

3.2. Experimental estimates

The programme was externally evaluated by Oxford Policy Management based on its randomized control trial design.[8] The effect of the program is estimated using both (1) ITT, which compares all eligible households in treatment areas with all eligible households in

---

[7] Please see Table X in the Appendices for the categories of beneficiaries with information on benefit size and condition for receipt of transfers.
[8] *Notes:* Oxford Policy Management is an organization based in the United Kingdom focusing on international policy development and consultancy.

control areas, and (2) ATT, which compares beneficiaries in treatment areas with a subset of eligible households in control areas who have characteristics similar to those of beneficiaries in treatment group.

The evaluation analyzes the impact on many outcomes that encompass education patterns such as pre-school enrollment status of eligible children and average days per week attended, health outcomes such as percentage of children with suspected pneumonia and diarrhea, consumption and expenditure outcomes such as mean monthly consumption per household, unemployment rate and poverty patterns such as poverty rate among individuals in eligible households (O'Brien et al. 2013). However, because in my thesis I concentrate only on program's education component, in this section I present estimates on pre-school enrollment and attendance rates. The programme's Intent-to-treat effect on pre-school enrollment rates was positive and significant: at follow-up, the share of children ever enrolled in pre-school is 84 per cent (significant at 1 per cent) in treatment *okrugs* and 70 per cent in control *okrugs*; the share of children never enrolled in pre-school is 16 per cent (significant at 1 per cent) in treatment *okrugs* and 30 per cent in control *okrugs*. There is no impact on average hours per day spent in pre-school and negative effect (-0.2 days/week, significant at 1 per cent) on average days per week spent in education facility.

Additional enrollment in pre-schools among eligible CCT beneficiaries in treatment areas, which is programme's average treatment effect on treated, strongly drives ITT effect by an additional 22 percentage points (significant at 1 per cent). The ATT effect on beneficiaries average days per week spent in education facility is -0.2 percentage points (significant at 1 per cent). Also, there is no spillover effects from beneficiaries to non-beneficiaries in treatment areas because the estimates for non-beneficiaries in treatment group and overall estimates for control group are almost the same.

4. Data, empirical strategy and results

Experimental estimates provided by OPM evaluators focus on overall program impact on education, health, consumption and expenditure, unemployment patterns and poverty rates. However, evaluation does not take into consideration the fact that, in addition to overall programme effect, the positive effect might have come from creation of new BOTA facilities in treatment *okrugs* or the change of the quality of pre-school services. In my thesis, I try to fill this gap by exploiting simple comparison of outcome values of children in treatment and control okrugs specified by pooled OLS regression model. In addition, I fix my attention on the quality of facilities. That way, I follow the framework of theoretical "access versus quality" debate by Hanushek (2005) and Kremer (2005). This section is devoted to description of datasets used thereafter, empirical strategy and methods, and results.

4.1. Description of data

Datasets that are used in this thesis are taken from World Bank's Microdata Library. Specially for the impact evaluation of BOTA's CCT programme, BOTA Foundation conducted survey in households of children that were randomly selected for an interview both in treated and control okrugs.[9] For the correct estimation of Intention-to-Treat effect, all households having participated in the interview were eligible to receive CCT. As a result, a wide range of data covering sampled children (pre-school education, caring arrangements, ECD environment and child health) and household (characteristics, labour supply and sources of income, consumption and food security) was collected. Whenever possible, BOTA also interviewed pre-school

---

[9] *Notes:* 226 *okrugs* were matched in 113 pairs according to multidimensional distance based on socio-economic characteristics. Out of 113 pairs, 60 pairs with largest sum of the number of population in both *okrugs* were selected as a sample. Within each pair, one *okrug* was assigned to treatment, the other – to control. The sample size at baseline was planned to be 1,200 observations (10 children per *okrug* were interviewed, 120 *okrugs* in total) and 2,400 – at follow-up (twice as large as baseline in order to maximize the possibility of detecting an impact).

facilities (enrollment and attendance, staffing and facilities) that were attended by sampled children. The baseline surveys collected information between June and December of 2011 and the follow-up surveys collected data during the same months of 2012.

For estimating the programme effect on pre-school enrollment and attendance rates, I use dataset at the sampled child level which covers outcomes on children's pre-school education, caring arrangements at home, ECD environment and child health. At baseline, number of children in treatment and control okrugs was almost equal, 589 and 584 children, respectively. At follow-up, 1170 children in treatment okrugs and 1119 children in control okrugs participated in survey. Household data contains the same number of observations as the dataset on sampled children and includes questions on characteristics of the head of household, labour supply and sources of income in the family, and household's consumption and food security. For estimating the programme effect on the quality of pre-school services, I use dataset at the pre-school facility level, which collected information on enrollment and attendance rates, staffing, and activities that children were engaged while at pre-school, and their funding status. At baseline, there were 108 okrugs in treatment and 88 okrugs in control groups. Follow-up facility dataset consists of 195 pre-school in treatment and 156 okrugs in control groups.

In potential outcomes framework, the effect of treatment on some outcome Y for unit i is the difference between two potential outcomes, $Y_i(1) - Y_i(0)$. Here, $Y_i(1)$ is the outcome value if unit i had been exposed to treatment and is observed. $Y_i(0)$ is the outcome value if unit i had not been exposed to treatment and is unobserved. Because $Y_i(0)$ is unobserved, the true effect is never observed. In this setting, we need a good measure of counterfactual. Good counterfactual assumes that without the programme, treated units would show the same outcome value as their counterfactuals (Rubin, 2005). For unbiased estimation of causal effect of CCT programme on outcomes targeted by programme and quality of pre-school facilities,

units in treatment and control okrugs need to be identical. Because BOTA's CCT programme has Randomized Control Trial design, it is already assumed that units in treatment and control okrugs are comparable due to randomization. To make sure that randomization was done properly, impact evaluators are strongly recommended to compare baseline characteristics of treatment and control groups. Researchers attempt to compare covariates that they believe are correlated with the outcome variable (Morgan and Robin 2012). Often time, outcome variable is also included in the covariate balance check. Similarly, I tried to pick those variables that are likely to be correlated with outcome. Table 2 provides pre-treatment covariate balance of selected variables for all three datasets.

We begin with household characteristics that we believe are a priori correlated with the outcome. Differences between treatment and control groups for all covariates are statistically insignificant. Distribution of households headed by female is equal in two groups. Most of the households are headed by males. If more families were headed by women, it would have been more likely that they did not have husbands and had to work to earn income. Thus, it would have been more difficult for them to take care of children during daytime. Male head may be negatively correlated with the enrollment and attendance rates. Mean age of the head of the household is quite high in both groups. Only two per cent of the head of households do not have any education whatsoever. A substantial share of the heads of household are unemployed and almost half of them are pensioners. 29 per cent of households in treatment and 33 per cent in control okrugs receive state benefits for children younger than 18 years old. A lot smaller share of households receive targeted state assistance for poor families. The difference between households in treatment and control okrugs seems to be large. However, it is statistically insignificant.

Mean age of children in treatment and control okrugs is observed to be the same, most probably due to the concentration of large number of children in mini centres. Health conditions

23

of children, shares of children with diarrhea and mental backwardness in treatment okrugs is not observed to be statistically different from those in control okrugs. I also included the outcome variables in child characteristics. The difference between treatment and control okrugs for ever enrollment and current enrollment rates is statistically significant and is higher for treatment okrugs. The difference in days per year spent at pre-school is also statistically significant and is higher for control okrugs.

Characteristics at the pre-school level do not differ between facilities in treatment and control okrugs. More than 90 per cent of pre-school facilities are public, thus funded by the government. Mean number of children enrolled in pre-school in treatment and control okrugs is 41 and 45, respectively, and average working day of pre-school in control okrugs is longer by 1 hour than in treatment okrugs. 55 per cent of pre-schools in treatment areas charge attendance fee compared to 68 per cent in control areas.

Table 2 - Pre-intervention covariate balance check, full sample

Indicator	Treatment	Control	Difference
Child characteristics			
Mean age	4.4	4.4	0.04
Ever enrollment rate (%)	46.5	36.6	9.9***
Current enrollment rate (%)	81.8	71.5	10.3**
Days per year spent in pre school[a]	256.7	280	-23.3***
Child suffered from diarrhea last month (%)	6.8	7	-0.2
Child is mentally backward (%)	1.4	1.4	0.05
N	589	584	
Household characteristics			
HH head is female (%)	18	20	-2
Mean age of the head of household	46.6	47.7	-1.2
HH head has no education (%)	2	2	0
HH head is unemployed (%)	60.3	63.3	-3
HH head is a pensioner (%)	50.8	48.8	2
HH receives state transfers for children under 18 years (%)	29	33	-4
HH receives Targeted State Assistance for poor HHs (%)	1.9	0.6	1.3
N	589	584	

Pre-school characteristics

Pre-school is public (%)	92	95	-3
Mean number of children enrolled	41.1	45.1	-4
Mean number of hours of operation	6	7.1	-1.1
Pre-school charges attendance fee (%)	55	68	-13
N	108	88	

Notes: (a) Days per year spent at school is calculated by multiplying days per week by
Source: OPM baseline survey (2011).

Cluster-robust standard errors are in brackets.
***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Significant difference in education outcomes is quite concerning because it implies that assignment to treatment was not random. Enrollment rate was much higher in treatment okrugs when the programme started. There had to be something that drove some households in treatment okrugs to enroll their children in pre-schools even before they received their first cash transfer. With the purpose of detecting what might have driven the significant difference in education outcomes between treatment and control groups at baseline, it is useful to mind time elapsed between BOTA entering an okrug and conducting interviews with each household. It is important because once BOTA team enters the okrug for identifying all eligible households, those eligible families that get to be interviewed in the end have more time to prepare themselves for the programme and enroll their children in pre-schools in meantime. Thus, when I controlled for the difference in time between listing of eligible households and conducting interviews, significant differences in education outcomes between treatment and control okrugs became insignificant. I present differences between children in treatment and control okrugs for outcomes targeted by the programme when controlling for time difference. Coefficients on treatment dummy is the difference between children in treatment and control okrugs that we are interested in. As expected, they become insignificant. Thus, pre-intervention

25

balance of outcome variables is restored which enables us to proceed with further analysis of

CCT programme's impact.

Table 3 - Balance check of pre-intervention outcomes targeted by the programme when controlling for time difference between listing and data collection, full sample

Indicator	Ever enrollment rate (%)	Current enrollment rate (%)	Days per year spent in pre school
Treatment dummy	0.0731	-0.00742	-28.514
	(0.120)	(0.0763)	(19.299)
Time elapsed	0.0542*	0.0590	-4.548
	(0.0266)	(0.0423)	(5.615)
Constant	0.246*	0.659***	275.161
	(0.120)	(0.180)	(25.642)
Observations	171	82	70
R^2	0.022	0.051	0.043

Notes: (a) Days per year estimate include children who never enrolled in pre-schools. Source: OPM baseline survey (2011).

       Cluster-robust standard errors are in brackets.

     ***Significant at the 1 percent level.

      **Significant at the 5 percent level.

       *Significant at the 10 percent level.

Table 4 presents post-intervention covariate balance for the full sample at the follow-up.

None of the indicators in treatment group is significantly different from the ones in control

group. On average, heads of household were a little older one year after the programme launch.

Share of heads of household that did not have education whatsoever as well as the share of

unemployed and pensioners decreased within a year. However, the share of households that

were receiving state transfers for children under 18 years and Targeted State Assitance for poor

households increased in both treated and control okrugs.

Table 4 - Post-intervention covariate balance check, full sample at follow-up

Indicator	Treatment	Control	Difference
Household characteristics			
HH head is female (%)	16.8	17	0.2
Mean age of the head of household	47	47.2	-0.2
HH head has no education (%)	1.2	0.8	0.4
HH head is unemployed (%)	51	48	3
HH head is a pensioner (%)	52.8	52.9	-0.1
HH receives state transfers for children under 18 years (%)	30	28	2

HH receives Targeted State Assistance for poor HHs (%)	2.1	2.2	-0.1
N	1170	1119	

Cluster-robust standard errors are in brackets.
***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

4.2. Method

In this thesis I attempt to analyze Intent-to-Treatment effect on two different sets of outcomes: pre-school enrollment and attendance rates and quality of pre-school facilities one year after the intervention started for all eligible children. Given the follow-up data and randomized assignment of okrugs to treatment and control, the model estimating the effect exploits simple comparison of outcome values of children in treatment and control okrugs using the following OLS regression model:

$$Y_i = \alpha_0 + \alpha_1 Treated_i + e_i$$

The first set of outcome variables is outcomes targeted by the programme. $Treated_i$ is a binary variable, which takes the value of 1 if child i resides in treated okrug and 0 otherwise. First, Y_i is equal to 1 if the child i has ever been enrolled in pre-school, 0 otherwise. Second, Y_i is equal to 1 if the child i is currently enrolled, 0 otherwise. Third, Y_i is time spent in pre-school facility measured by days per year when the program was operating, calculated by multiplying days per week by 52 weeks. α_0 is (1) ever enrollment rate in control okrugs as a share of all children of pre-school age, (2) current enrollment rate in control okrugs as a share of children that have ever been enrolled in pre-schools, and (3) days per year spent in pre-schools in control okrugs. α_1 is the difference in outcome variable between children in treatment and control okrugs at follow-up. Most importantly, it is the main coefficient of

27

interest as it measures the overall programme effect on ever and current enrollment rates as well as days per year spent in pre-school facility.

The second set of outcome variables is the quality of pre-school facilities. $Treated_i$ is a binary variable, which takes the value of 1 if facility i resides in treated okrug and 0 otherwise. Here, Y_i is the overall measure of quality of pre-school services. α_0 is overall quality of pre-school facilities in control okrugs. α_1 is the difference in overall quality between children in treatment and control okrugs at follow-up. Therefore, it is the main coefficient of interest and measures the overall programme effect on overall quality of pre-school facilities.

The variable for overall quality is a function of utilities, total number of staff, total number of staff with higher education and activities at pre-schools. Utilities incorporate heating, indoor toilets, hot water and drinking water. Total number of staff is the sum of management, teachers, caregivers, nannies, nurses and cooking staff. Total number of staff with higher education is the sum of staff that completed higher education in pre-school education and other specialisms. Activities include outdoor play area, outdoor play equipment, sports halls, sleeping facilities, library collection, musical instruments, TV and video players, computers, toy cars, dolls, balls, objects of different size, shape and colour and games relating to professions. I also converted total number of staff into a binary variable which takes the value of 1 if it is larger than its average – 8. I applied the same procedure to the number of staff with higher education: it equals 1 if it is larger than its average – 4.5. Then, the overall quality is the sum of all binary values that its components take of. Thus, the larger the value of overall quality, the better.

I estimate the impact on quality of old as well as all facilities separately in order to be able to see if newly created facilities contributed to the overall quality. Then, I disaggregate overall quality into utilities provision, total number of staff, total number of staff with higher education, presence of library, sport halls and musical instruments.

28

4.3. Results

The treatment group in this study includes households who benefited as well as who did not benefit from the programme, whereas in control group no one received the treatment. This makes it impossible to estimate Average Treatment Effect by simply taking the difference between average outcome values of treatment and control groups. In BOTA's CCT programme, all households residing both in treated and control okrugs are eligible for receiving cash transfer, i.e. meet all tree eligibility criteria, but only treated okrugs are offered to apply for CCT programme. This, in this thesis, I focus on estimating Intention-to-Treat effect. In this case, I measure the effect of giving households an opportunity to receive cash transfer.

The Intention-to-treat results of the estimation of impact of CCT programme on education outcomes using full sample is presented in Table 5. Coefficients on treatment dummies for ever enrollment rate were expected to be higher in treated okrugs due to children who enrolled in pre-schools during the CCT programme. The effect of the CCT program on children in pre-schools in treated okrugs is 18 percentage points and is statistically significant. However, this does not relate to current enrollment rates.[10] Surprisingly, the change in current enrollment rate is negative (-0.8 percentage points), though insignificant. In the original results of O'Brien *et al.* (2013), this change was positive but also insignificant. This may be due to different number of currently enrolled children in the report by O'Brien et al. (2013) and my thesis.

---

[10] *Notes:* According to BOTA's definition, currently enrolled children included those who usually attended a pre-school including cases when pre-school was closed over the summer and/or for repair.

Table 5 - Programme effect on ever and current enrollment rates, full sample

Indicator	Ever enrolled (% of all eligible)	Current enrolled (% of ever enrolled)
	Full sample	Full sample
	(1)	**(2)**
Treatment dummy	0.177***	-0.00833
	(0.0285)	(0.0187)
Constant	0.686***	0.817***
	(0.0273)	(0.0140)
Observations	2,284	1,773
R²	0.045	0.000

Notes: Two samples have different sizes because (1) ever enrollment is a share of all eligible children of pre-school age, and (2) current enrollment rate is a share of children that have ever enrolled in pre-schools. *Source:* OPM follow-up survey (2012).

Cluster-robust standard errors are in brackets.
***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

O'Brien et al. (2013) estimated the effect of CCT on days per week spent in pre-school. Their estimate includes only children who have ever enrolled in pre-school facilities Model 2 in Table 6 presents my replication of what O'Brien et al. (2013) did. The programme effect on days per week spent in pre-school was negative and significant (-0.26 days). This might be due to that newly created informal BOTA facilities were operating for less days than old facilities. .I choose a slightly different approach and attempt to estimate how CCT programme changed the time spent in pre-school facilities during the whole year of programme operation. I find that CCT programme had positive effect on the number of days per year spent in pre-school facility. On average, children in treatment okrugs spent more time in pre-schools than their counterparts in control okrugs by 39 days per year (See Table 5). This is due to that those who never enrolled are also included in the regression with zero days per year attended.

Table 6 - Programme effect on the number of days per year spent in pre-school facility, full sample

Indicator	Days/year Full sample	Days/week Full sample
	(1)	**(2)**
Treatment dummy	39.35***	-0.257***
	(9.585)	(0.0585)
Constant	166.9***	5.003***
	(7.624)	(0.00573)
Observations	1,953	1,442
R^2	0.029	0.033

Notes: Model 1 includes children that have never been enrolled. Model 2 includes only those who have been enrolled. Thus, the sample size is larger in Model 1. *Source:* OPM follow-up survey (2012).

Cluster-robust standard errors are in brackets.
***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

I assess the impact of CCT on overall quality of old and all pre-schools. All pre-schools include old and newly created informal BOTA facilities. Facility survey includes a lot of questions and outcomes that were tested on being affected by the programme. However, one has to mind multiple inference problem that estimated effect might have been by pure chance. Thus, I combined several indicators of pre-schools' quality into one overall measure of quality.[11] Table 7 presents Intention-to treat results for quality of all and old pre-school facilities. There is no effect of CCT programme on overall quality of old pre-school facilities in treated okrugs. Adding newly created informal BOTA facilities also did not significantly change the overall effect. Though insignificant, the magnitude of change in overall quality decreases as we add newly created BOTA pre-school facilities.

---

[11] *Notes:* Overall quality combines provision of utilities, total number of staff, number of staff with higher education, and different types of activities that children are engaged in while being at pre-school.

Table 7 - Programme effect on overall quality of pre-school facilities, old and all facilities

Indicator	Old facilities	All facilities
Treatment dummy	0.0944	0.0205
	(0.246)	(0.242)
Constant	4.138***	4.179***
	(0.188)	(0.190)
Observations	324	351
R^2	0.001	0.000

Notes: All facilities include both old and newly created informal BOTA facilities. *Source:* OPM follow-up survey (2012).
Cluster-robust standard errors are in brackets.
***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

As discussed in previous chapters, there are demand- and supply-side barriers to access to pre-school education. Table 8 presents some of the reasons that apply for poor households in rural areas of Almaty region under BOTA's CCT programme. The cost of pre-school education services was the main barrier both in treatment and control okrugs before CCT program was introduced. It remained so after the programme finished. However, in treatment okrugs, there was a substantial decrease of number of households (decreased by 65) reporting high cost of pre-schools as a reason for non-enrollment, which indicates that more children now had access to pre-school education. Accordingly, programme's demand-side component (cash benefit) was expected to tackle the demand-side barrier to pre-school education. In control okrugs, number of households reporting high cost as a reason for non-enrollment dropped by 51, a change close to but still smaller than the one of treatment group. A decrease in both treated and control okrugs might be driven by the financial assistance coming from outside sources like relatives and family friends.

The first component of "access versus quality" debate, i.e. access to pre-school education, is found among the top reasons for non-enrollment in rural areas of Almaty region. Second highest cited reason for non-enrollment was the absence of pre-school in the settlement or its remote location. This was the second main reason at baseline. Interestingly, it is not the

case anymore at follow-up. The number of households reporting the reason drastically drops by 53 in treated okrugs. A quite substantial decrease of 45 is also observed in control okrugs, most probably, due to creation of some pre-schools that are not related to BOTA.

Let us now focus on the second component of "access versus quality" debate found in the literature. In rural okrugs of Almaty region, the quality of care is among the least cited reasons for non-enrollment. At baseline, in treated okrugs, only 3 families indicate that they have never sent the child to pre-school due to the low quality of care or education. Good thing is that, at follow-up, low quality of care/education did not prevent anyone from access to pre-school education. In control okrugs, the number also dropped to zero. Overall, we can conclude that families in rural areas of Almaty region would have traded low-quality pre-school education services for greater access. Households would have enrolled their children in pre-schools even if the quality of care/education was poor.

Table 8 - Reasons for child having never attended pre-school at baseline and follow-up
(number of households reporting)

	Baseline		Follow-up	
Reason for non-enrollment	**Treatment**	**Control**	**Treatment**	**Control**
Too expensive	110	160	45	109
No pre-school here/too far away	70	68	17	23
There is somebody in/outside the family who can look after	40	46	27	46
Child too young	39	33	20	84
Impossible to enroll/waiting list too long/no places	20	18	11	26
Home is a better environment	11	15	7	8
Other	9	14	6	17
Did not want to go	7	8	8	12
Quality of care/education not very good	3	2	0	1
Needed to help out around the house	2	1	0	0
Stigma and discrimination	1	2	0	0
Total	312	367	141	326

Source: OPM baseline (2011) and follow-up (2012) surveys.

5. Discussion of Empirical Findings

The empirical analysis attempted to find the effect of BOTA's Conditional Cash Transfer programme on outcomes targeted by programme. Namely, I discuss the impact on ever and current enrollment rates in pre-school rates as well as days per year spent during one year of programme operation. Additionally, I investigate the programme impact on the overall quality of old and all pre-schools including new BOTA facilities. In this chapter, I sum up the empirical results and try to suggest an overall picture of programme's impact.

The first set of analysis gives mixed effects on the outcomes targeted by programme. It finds significantly positive effect of BOTA's CCT programme on enrollment rate of children that have ever been enrolled in pre-school facilities. It might have been driven by children that have enrolled between 2011 and 2012. However, analysis does not show that programme anyhow affected current enrollment rate. This might be due to large number of children that used to attend zero classes for one year and, thus, no more eligible to receive cash benefits. At follow-up, they were about to leave pre-school age and transfer to primary schools. Analysis also finds some evidence for increase in time spent in pre-school facilities in treated okrugs. The programme positively affected number of days spent in pre school facility during the year of programme's operation. This might be explained by the condition which households had to meet during the programme to be able to benefit from programme. The programme required beneficiaries to attend at least 85 per cent of time that a pre-school was operating.

The second set of analysis discovers that BOTA's CCT programme had no significant effect on overall quality of old pre-school facilities in treated okrugs. Expansion of supply of pre-schools by creating new informal BOTA facilities neither affected overall quality. Overall, it is unlikely to expect any positive changes in the quality of pre-school services in one year after the programme has been introduced. However, even though there is nothing to observe in the change of pre-school quality, we should be careful with stating that pre-school quality does

34

not explain the variation in pre-school education outcomes. People's expectations about better conditions at pre-schools after the program is launched may enable parents to send their children to pre-school education facilities.

In a year after the start of BOTA's CCT programme, demand- and supply-side barriers to access to early education services seem to be of a less concern to families both in treated and control okrugs. High cost of pre-school services does not hold a strong position as the main reason for child never having attended pre-school anymore. Nor does the absence of pre-school or its remote location. And last but not least, low quality of care and education is removed from the list of reasons for non-enrollment.

The limitation of the empirical strategy used in this thesis is that it does not allow to estimate direct impact of creation of new BOTA facilities on outcomes targeted by programme. Because the data on names of sampled children and names of pre-schools were removed from the dataset on sampled child level with anonymization purposes, it was impossible to match a sampled child with a pre-school s/he used to attend. If possible, further research should be carried out in this regard as I believe that matching sampled children with corresponding pre-schools would generate more credible results.

Conclusion and Policy Implications

In this thesis, I studied the impact of BOTA's CCT programme on children's ever and current enrollment rates and time spent in pre-school facilities in rural areas of Almaty region. In addition, I investigated the programme's impact on overall quality of pre-school services. Two main conclusions can be made with respect to findings. First, the ever enrollment rate is positively affected by the programme along with the time spent in pre-school facility. This is consistent with the findings in the literature. Second, the programme neither affect the overall quality of old pre-school facilities nor of all including newly created BOTA facilities. It is hard to conclude whether it goes in line with the literature findings as it is unlikely to observe any impact on quality within one year time span. Most probably, much more time is needed to actually observe any change.

From the policy perspective, the recent trends in pre-school enrollment rates and regional disparities regarding it in Kazakhstan suggest that there is a need for a policy toolkit which would help increase enrollment rates in rural areas. Empirical findings in this thesis suggest that introducing well-targeted CCT programmes may have a potential to improve the situation. In order to decrease the regional gaps, scaling up the programme in other regions of Kazakhstan depending on the enrollment and attendance fees would be potentially promising. In addition, to detect programme's impact on the quality of pre-schools it is recommended to collect data within a larger period of time as such effect is likely to be measured only in the long run.

References

Berlinski, S., and Schady, N. (2015). The Early Years. Child Well-Being and the Role of Public Policy. Hampshire: Palgrave Macmillan.

Coady, D. P., and Parker, S. W. (2002). A cost-effectiveness analysis of demand- and supply-side education interventions: The case of Progresa in Mexico. *Discussion Paper,* No. 127. (USA, Washington, International Food Policy Research Institute, Food Consumption and Nutrition Division).

Hanushek, E. A. (2005). Interpreting recent research on schooling in developing countries. *The World Bank Observer*, Vol. 10, No. 2, pp. 227-246.

Janvry, A., Finan, F., and Sadoulet, E. (2006). Evaluating Brazil's Bolsa Escola program: Impact on schooling and municipal roles.

Kremer, M. (2005). Research on schooling: What we know and what we don't: A comment on Hanushek. *The World Bank Research Observer*, No. 10, pp. 247-254.

Law on Education of Kazakhstan. (2011).

Ludwig, J., and Phillips, D. (2008). Long-term effects of Head Start on low-income children. *New York Academy of Sciences,* No. 1136, pp. 257-268.

Ministry of Education and Sciences of Kazakhstan. (2012). Regional Statistics on Education.

Ministry of Education and Sciences of Kazakhstan. (2013). Statistics on Education System in Kazakhstan.

Moore, C. (2009). Nicaragua's Red de Protección Social: An exemplary but short-lived conditional cash transfer programme. *Country Study, International Policy Centre for Inclusive Growth*, No. 17.

Morgan, K. L., & Robin, D. B. (2012). Rerandomization to improve covariate balance in experiments. *The Annals of Statistics*, Vol. 40, No. 2, 1263-1282.

National Association for the Education of Young Children. (1993). A conceptual framework for early childhood professional development. *A Position Statement* (Washington, DC).

O'Brien et al. (2013). Kazakhstan: External evaluation of BOTA's programmes. The impact of BOTA's Conditional Cash Transfer (CCT) programme. *Final Report* (UK, Oxford, Oxford Policy Management Ltd.).

Pellerano, L., and Barca, V. (2014). Does one size fit all? The conditions for conditionality in cash transfers. *Working Paper* ISBN 978-1-902477-15-2. (UK, Oxford, Oxford Policy Management Ltd.).

Rawlings, L. B., and Rubio, G. M. (2003). Evaluating the impact of Conditional Cash Transfer programs: Lessons from Latin America. *World Bank Policy Research Working Paper* 3119.

Rubin, D. B. (2005). Basic concepts of statistical inference for causal effects in experiments and observational studies.

Soo-Hyang, C. (2005). Early childhood care and education in Kazakhstan. UNESCO/OECD Early Childhood Review Project (UNESCO, Paris).

Stampini, M., and Tornaroli, L. (2012). The growth of Conditional Cash Transfers in Latin America and the Caribbean: Did they go too far? *IZA Policy Paper*, No. 49 (Germany, Bonn).

United Nations International Children's Emergency Fund (UNICEF). (2012). Addressing Barriers to Access.

Appendices

Table 1 – Estimated effect of CCT program on selected quality components at old pre-school facilities

Indicator	Diff-in-Diff			
	Kindergarten	**Mini Centre**	**Zero class**	**Total**
Overall quality (old)	-0.143	0.793*	-0.0196	0.0944
	(0.541)	(0.373)	(0.291)	(0.246)
R^2	0.005	0.044	0.000	0.001
Utilities (% of all)	0.0260	0.490	0.0994	0.192
	(0.364)	(0.319)	(0.107)	(0.140)
R^2	0.000	0.040	0.003	0.07
Number of staff	1	0.443	-0.476	-0.663
	(2.754)	(0.480)	(0.660)	(0.678)
R^2	0.005	0.004	0.006	0.004
Number of staff with higher education	0.643	0.551**	-0.259	-0.389
	(1.421)	(0.193)	(0.550)	(0.241)
R^2	0.006	0.023	0.002	0.005
Library collection	-0.182	-0.0375	0.0457	-0.0184
	(0.107)	(0.0915)	(0.0395)	(0.0299)
R^2	0.111	0.004	0.006	0.001
Sports hall	0.227	-0.0369	-0.0930	-0.0768
	(0.224)	(0.0815)	(0.103)	(0.0862)
R^2	0.000	0.002	0.009	0.006
Musical instruments	-0.383**	0.00395	-0.0891	-0.0944*
	(0.163)	(0.132)	(0.0631)	(0.0449)
R^2	0.198	0.000	0.010	0.010
Computers	0.0974	-0.0270	-0.00616	-0.0234
	(0.0792)	(0.0686)	(0.0467)	(0.0391)
R^2	0.010	0.002	0.000	0.001
Observations	25	80	207	324

Notes: (a) utilities include heating, indoor toilets, hot water and drinking water, (b) there is no effect on student-teacher ratio in mini centres because only 75 out of 95 mini centres did not have teachers at baseline.

Cluster-robust standard errors are in brackets.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 2 – Estimated effect of CCT program on selected quality components in all pre-school facilities

Indicator	Diff-in-Diff			
	Kindergarten	**Mini Centre**	**Zero class**	**Total**
Overall quality (all)	-0.321	0.881**	0.0160	0.0205
	(0.473)	(0.354)	(0.288)	(0.242)
	0.029	0.055	0.000	0.000
Utilities (% of all)	-0.0714	0.538	0.141	0.164
	(0.305)	(0.305)	(0.107)	(0.144)
R^2	0.003	0.050	0.006	0.005
Number of staff	-1.652	0.415	-0.454	-1.276
	(3.410)	(0.484)	(0.630)	(0.915)
R^2	0.009	0.003	0.005	0.011
Number of staff with higher education	-1.143	0.597**	-0.280	-0.767**
	(1.607)	(0.224)	(0.547)	(0.248)
R^2	0.014	0.027	0.003	0.016
Library collection	-0.214	-0.0267	0.0374	-0.0269
	(0.127)	(0.0891)	(0.0440)	(0.0238)
R^2	0.127	0.002	0.004	0.002
Sports hall	0.0804	-0.00891	-0.0913	-0.0872
	(0.229)	(0.0780)	(0.105)	(0.0951)
R^2	0.007	0.000	0.008	0.008
Musical instruments	-0.366**	0.0107	-0.0836	-0.0936*
	(0.134)	(0.128)	(0.0652)	(0.0459)
R^2	0.186	0.000	0.009	0.010
Computers	-0.0804	-0.0232	-0.00842	-0.0321
	(0.105)	(0.0614)	(0.0469)	(0.0356)
R^2	0.007	0.001	0.000	0.002
Observations	30	84	209	351

Notes: (a) utilities include heating, indoor toilets, hot water and drinking water, (b) there is no effect on student-teacher ratio in mini centres because only 75 out of 95 mini centres did not have teachers at baseline.

Cluster-robust standard errors are in brackets.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.