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Enabling Access to Higher Education in Post-socialist Mongolia: Empirical Results for Implementation and Implications of Government Policies

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Enabling Access to Higher Education in Post-socialist Mongolia: Empirical Results for Implementation and Implications of Government Policies

Abstract

This quantitative study examines the effectiveness of government financial assistance policies in access to higher education in post-socialist Mongolia as of 2012, using probabilistic, cross-sectional Household Social and Economic Survey data. Using a six-subscale composite socioeconomic status (SES) variable, the study examines the effect of SES on government financial assistance, relationship between the State Budget Organization employee status on the assistance and the SES levels. Cross tabulations and multinomial regression models were applied in the analyses. The study reveals that the design and implementation of the policies were not entirely targeted at the poor and marginalized, and demonstrates a rather flattened-out distribution of the limited resource. It demonstrates how the policies reinforced the status quo and favored those who were not the ones with the most needs.

Keywords

Mongolia, Higher education, Equity, Financial support, Educational Finance, Socioeconomic status

Cover Page Footnote

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ENABLING ACCESS TO HIGHER EDUCATION IN POST-SOCIALIST MONGOLIA: EMPIRICAL RESULTS FOR IMPLEMENTATION AND IMPLICATIONS OF GOVERNMENT POLICIES

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Statement of the Problem

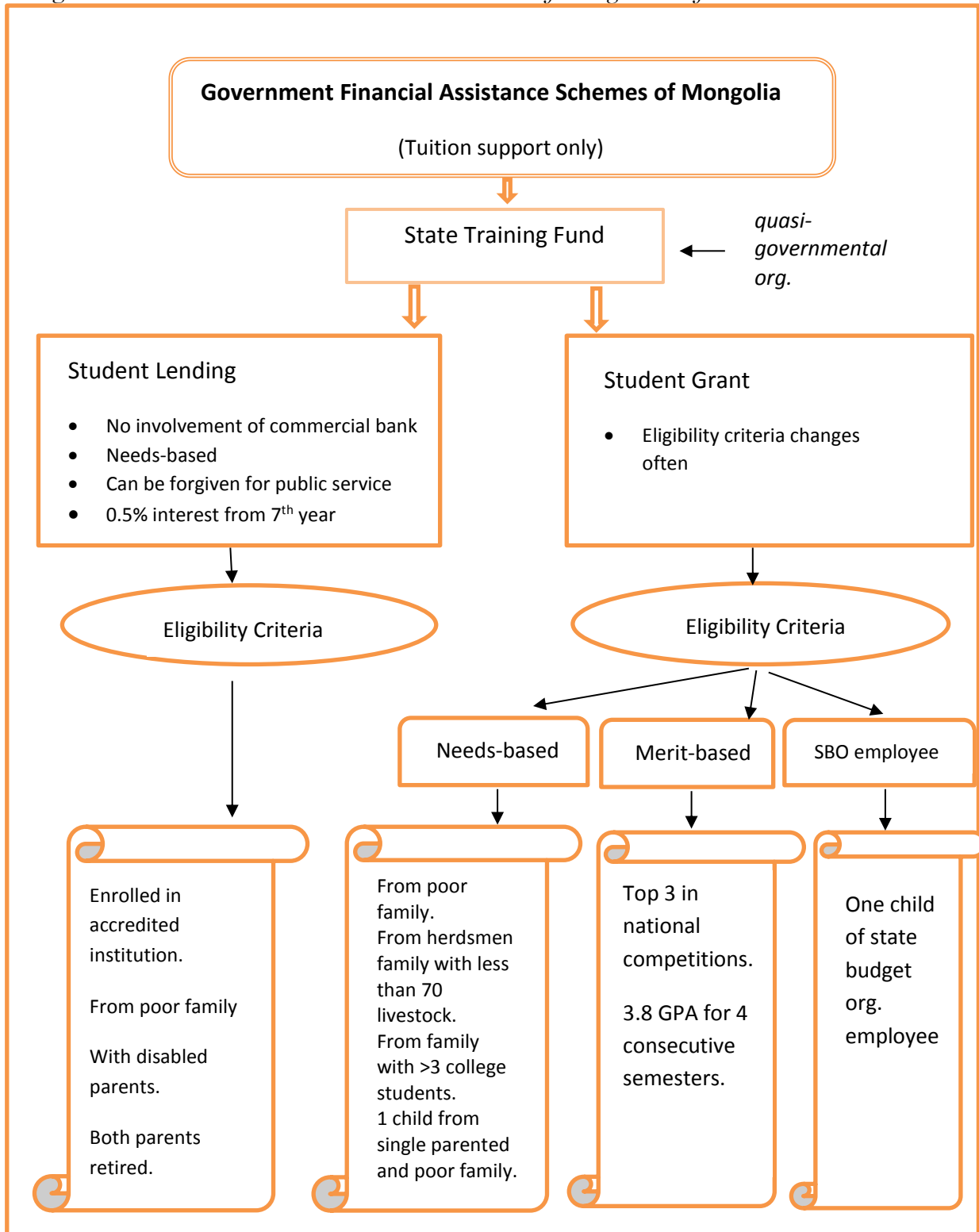
When socialism collapsed in Mongolia in the early 1990s, the monetary assistance from the USSR (which formed 30% of its GDP in the mid-1980s) disappeared overnight (Spaulding, 1992). The GNP fell to \$300 per capita, making Mongolia one of the world's poorest nations (Bray et al., 1994). Mongolia went through drastic and abrupt transitions in its political, economic and social spheres (Bat-Erdene et al., 1998). Higher education changed significantly during the last two decades as well (Weidman & Bat-Erdene, 2001; Bat-Erdene et al., 2010), from small and elite-oriented, incorporating only about 15% of the age cohort and fully funded by government (Weidman, 1995), into a system that is market-oriented and tuition-based (Otgonjargal, 2005). Tuition is now the most important revenue source for higher education institutions, encompassing about 90% of their annual budgets (Bat-Erdene et al., 2010). The government legalized private higher education in 1990. The number of higher education institutions has flourished since, reaching 101 as of 2012, 81 of which were private institutions. Higher education enrolment grew almost twelve times between 1990 and 2012 (American University of Mongolia, 2012; Ministry of Science and Education, 2014). There were approximately 14,000 students in bachelor degree programs in 1990 (Government of Mongolia, 1999 cited in American University of Mongolia, 2012). The number grew up to about 89,000 in the next ten years (Ministry of Science Education and Culture of Mongolia, 2003). Enrolment continued growing throughout the 2000s as well, from 98,453 in 2003 to 172,798 in 2012 (American University of Mongolia, 2012).

However, the government statistics on the rapid growth in higher education enrolment in post-socialist Mongolia do not provide any disaggregation on the socio-economic background of the students. No data is available to demonstrate whether the current expansion (mostly driven by tuition revenue and privatization) provides equal or any opportunity at all to students from lower socio-economic backgrounds.

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Figure 1: Government Financial Assistance Schemes of Mongolia as of 2012.



The government's financial assistance program consists of student *loan* and student *grant* programs. The eligibility requirements of the *loan* program indicate that loan recipients must all represent poor or socially marginalized groups. About half of the student *grant* recipients must also come from poor and marginalized groups, as per the eligibility criteria. The other half is earmarked for students whose parent(s) work for state budget organizations (SBO)³ as of 2012.

The State Training Fund (STF), a governmental organization that operates closely with the Ministry of Education administers the government financial assistance schemes described above (Bat-Erdene et al., 2010). Figure 1 illustrates the two programs and their eligibility criteria as of 2012. Neither the student lending nor grant programs involve any commercial banks; the funding is made available from the government allocation to higher education.

According to the aggregated statistics provided by the Ministry of Education, since its inception, the number of students receiving student *loans* ranged from approximately 6,000 to 11,000 each year. The number of *grant* recipients ranged between 15,000 and 35,000 from 2001 to 2011. Between 2002 and 2012, the percentage of the total loan and grant recipients in the annual enrolment ranged between 23% - 33%, whereas the SBO grant recipients took about 10% - 15% of total annual enrolment⁴. However, the statistics on recipients of the government loan and grant programs do not display any information on the socioeconomic background of the recipient-students. Moreover, there is not any monitoring system for the implementation of these programs that involves representatives of civic organizations or the public. The ineffectiveness, ambiguity and lack of transparency of the STF are highlighted in other studies as well (Read, 2008; World Bank, 2010). Thus, whether or not the government financial assistance programs that aim to support the students from poor and marginalized backgrounds reach the intended groups is not clear, and there is not any empirical study that explores the issue.

Objectives and Research Questions

Since its launch in 1995, the government financial assistance programs and their eligibility criteria have changed frequently. While both the loan and grant programs state poverty and other indicators of social marginality in their eligibility criteria, more than 50% of the grant program was earmarked for students whose parent(s) work for the state budget organizations (SBO). However, the Law on Civil Service was amended in July 9 of 2011 and invalidated the clause that guaranteed a grant to one child of SBO employees. The amendment was enforced the following year. However, neither descriptive nor empirical analyses have looked at the government financial assistance programs prior to the change in the policy. The information available on the government financial assistance programs and their beneficiaries is restricted by the total number of students who receive each type of the government assistance on a yearly basis. The aggregated numbers on the loan and grant beneficiaries fail to demonstrate either their socioeconomic background information or any specific characteristics that make the beneficiaries eligible for the relevant type of government assistance program. Therefore, it is unclear whether the government financial assistance programs reach their targeted individuals.

The present study explores the effectiveness of the government financial assistance programs as of 2012, from an equity perspective, by focusing on the SBO status and its relationship with socioeconomic status of individuals in the country. The main research question of the study, thus, is: *To what extent do government financial assistance schemes reach*

³ State budget organizations (SBOs) are government organizations that are financed directly from the national budget.

⁴ Author's calculation based on statistics made available by the Ministry of Education from 2002 to 2012 obtained from various sources.

their target groups? Under the research question, the following sub-questions addressed include:

- Does socioeconomic status play a role in access to higher education and government financial assistance?
- How is government financial assistance distributed among various socioeconomic status groups?
- What is the effect of SBO employee status on the socioeconomic status level of individuals, as well as the distribution of the government financial assistance for higher education in post-socialist Mongolia, as of 2012?

Conceptual Framework

Equity in higher education. Scholars have deliberated on what equity means in higher education and how equity and social justice could be enhanced through higher education. Marginson (2011) suggests two notions of enhancement of equity in higher education. The first involves strategies to advance fairness by changing the composition of higher education for the purpose of reflecting a more socially representative higher education system, i.e., increasing the absolute number of people from previously under-represented social origins. Thus, if there is any increase from the formerly excluded groups to higher education, social equity is viewed as improved. The second notion, inclusiveness, focuses on the proportional distribution of student places between different social groups. Thus, if there is not any increase in the proportion of students from lower levels of society, equity is viewed as not improved.

There are a few studies that examine social inequality and its relations to higher education in international and comparative contexts. Based on their studies of 13 countries' higher education systems, Shavit and Blossfeld (1993) concluded that inequality of educational opportunity between social strata has been quite stable over time. Despite the prevalence of enrolment expansion among the countries, the authors did not find uniform evidence for shrinking educational inequality. Later, another study on 15 different higher education systems was conducted (Shavit et al., 2007). While reconfirming the still significant and inverse relationship between socioeconomic inequality and higher education attendance, the authors reached a rather optimistic conclusion, stating that enrolment expansion in higher education allows larger proportions of all social strata to attend higher education, and it is especially true in diversified systems. However, they also noted that in some countries with less diverse higher education systems, expansion was associated with increased inequality of access and more diversion of lower socioeconomic background students into lower-tier institutions, keeping the top-tier for the elite.

Equity oriented government policies in post-socialist Central Asia region. There are dual characteristics of the change in higher education in post-socialist Central Asian countries and Mongolia. On one hand, higher education systems are transitioning from elite to relatively mass higher education that opens doors to many individuals who were not previously able to access it, and on the other, higher education systems are becoming more market-oriented than ever before (UNESCO, 2009; World Bank & UNESCO, 2000). However, there is a lack of empirical studies on the role of government and its policies on equity in higher education in the region. The limited research available on government policies aiming to improve equity and empower individuals with less financial resources could be categorized as the following:

- *Policies that consider the role of measured achievement* are practiced in the region, despite many arguments against relying on academic performance only and, therefore, reinforcing a history of disadvantages (World Bank and UNESCO, 2000), and national enrolment examination results are important for government financial support. Central Asian countries have gone through major changes in

how students are tested for admission to higher education, by setting up agencies that design and administer external tests, mainly for the purpose of combatting admission corruption that had become rampant in the aftermath of the Soviet collapse (Drummond & Gabrscek, 2012). In Mongolia, a part of the government grant is devoted to individuals with exceptional academic performance.

- *Policies that give preference for certain ascriptive traits of individuals* are implemented in the region too. Scholars elsewhere dispute the desired effect from such policies on equity and social justice (Bowen & Bok, 1998; Greensberg, 2002; Sanders & Taylor, 2012; Thernstrom & Thernstrom, 1997). Nonetheless, factors like a specific mother tongue, location of residency, or ethnicity are prioritized in some state financial support policies in the region (Brunner & Tillet, 2007).
- *Policies focusing on financial mechanisms and economic leverage* are the most relevant to post-socialist nations as higher education is increasingly turning to tuition-driven systems. In Kazakhstan, about 80% of university income comes from tuition; it is 76% and 90% in Kyrgyzstan and Mongolia, respectively, whereas Uzbekistan and Tajikistan both acknowledge student fees as most important funding sources (Brunner & Tillet, 2007). Scholarships are offered on a competitive but limited basis. Student loans through banking systems are not set up in all countries in the region. People need to be creative in finding money for higher education in these former socialist economies. In Mongolia, for instance, herders take loans from commercial banks with commercial loan interest rates, putting their cattle for mortgage to be able to send their children to college (World Bank, 2010).

Methodology

A common belief is that, if educational attendance rates increase over time, then inequalities of opportunities will steadily decline because more individuals from the lower socioeconomic classes can increase their access. Status attainment studies have tested the assumption empirically and provide a wealth of literature (Sewell & Hauser, 1972; Weis et al., 2011). Blau & Duncan (1967) pioneered the study of change in the effect of social origin variables on the mean number of school years completed using linear regressions. Later, Mare's (1980; 1981) model was suggested for a better measurement of the change in the actual association between social origin and educational attainment, taking into consideration the educational expansion, in logistic regressions. Since then, most quantitative studies measuring relationships between education attainment and social status have used logistic regression models.

Measuring socioeconomic status (SES) is an important aspect of equity studies in education. Researchers operationalize SES in different ways (Nam & Terrie, 1982; Powers, 1982). The first way of operationalizing SES focuses on the subjective measure of jobs based on people's subjective assessment of other people's occupations. The second group uses objective measures by creating a status score for individuals based on their education and income. The third group uses a combination of the two methods. The Duncan (1961) SES index, which was revised by Featherman and Stevens (1982), is the most commonly used. Erikson and Goldthorpe (1992) developed an occupational scheme known as the EGP class scheme. Similarly, Muller and colleagues (1989) developed a scheme for educational classification: both are used commonly in representing SES in educational studies. Lately, using a composite variable for SES is becoming increasingly recommended (National Center for Education Statistics, 2012).

Data and procedures. I used cross-sectional data from probabilistic Household Social and Economic Survey of 2012 (hereafter referred to as HSES2012) conducted by the World Bank jointly with the Statistics Office of Mongolia. The World Bank started the HSES

surveys in the early 1990s in Mongolia, and in recent years the Bank has collaborated with the National Statistics Office in designing and administering the survey on an annual basis. The primary goal of HSES surveys is to collect data to determine and update the basket for consumer price index and estimate Gross Domestic Product. However, the HSES survey is the only nationally representative, comprehensive and multi-purpose survey which encompasses household and individual level information on income, expenditure, education, health, livestock, agriculture, production, crops, goods, durables and remittance.

The HSES2012 was conducted using the 2005 population census as a sampling frame with a multi-stage stratified random sampling method. Three strata were used for sampling: *Ulaanbaatar* (capital city), provincial centers and countryside (including *soum*⁵). 11,198 households participated in the survey, which allowed interviews with a total of 42,538 individuals of all ages. Table 1 illustrates the household member status of each individual included in the HSES2012.

Table 1. Household member status for all individuals.

| Household Member Status | Frequency | Percent | Cumulative |
|--------------------------------|-----------|---------|------------|
| head of household | 11,211 | 26.36 | 26.36 |
| wife/husband | 7,782 | 18.29 | 44.65 |
| son/daughter | 19,676 | 46.26 | 90.90 |
| father/mother | 510 | 1.20 | 92.10 |
| brother/sister/younger sibling | 753 | 1.77 | 93.87 |
| father-in-law/mother-in-law | 81 | 0.19 | 94.06 |
| brother-in-law/sister-in-law | 410 | 0.96 | 95.03 |
| grandpa, grandma | 38 | 0.09 | 95.12 |
| Grandchild | 1,688 | 3.97 | 99.09 |
| other relatives | 355 | 0.83 | 99.92 |
| non-relatives | 34 | 0.08 | 100 |
| Total | 42,538 | | |

Note: Based on Household Social and Economic Survey of 2012, Statistics Office of Mongolia and the World Bank.

Table 2 illustrates the weighted distribution of the sample households by stratum, region and urban/rural divide.

Table 2. Weighted Distribution of HSES2012.

| Stratum | HSES2012 | Region | HSES2012 | Location | HSES 2011 |
|----------------------------------|----------|-------------|----------|----------|-----------|
| Ulaanbaatar | 31.96% | Ulaanbaatar | 31.96% | Urban | 55.46% |
| <i>Aimag</i> /Provincial centers | 23.50% | West | 16.48% | Rural | 44.54% |
| <i>Soum</i> (small villages) | 20.87% | Highland | 22.90% | | |
| Countryside | 23.66% | Central | 19.48% | | |
| | | East | 9.18% | | |

Note: Based on Household Social and Economic Survey of 2012, Statistics Office of Mongolia and the World Bank.

Data management and preparation. From the HSES2012 dataset, a target sample of college-aged individuals, between the age of 17 and 23, was selected. From the selection, everyone who already had obtained a higher education diploma and above as of 2011 was

⁵ Small villages

excluded, and everyone who was still in secondary school in the survey year was dropped as well. The *Head of Household* category was used as the proxy in identifying parents and parental educational and occupational information for the college-aged individuals. Two observations from heads of households and four spouses with the value “other” for highest educational level obtained were deleted due to the missing explanation of the value “other” as a category for educational attainment level in the code book of the survey.

Construction of outcome, explanatory and control variables. An outcome variable “College Access” was created. It is a categorical variable with three outcomes: 1). *Out of college*: everyone in the college-age sample who is not enrolled in any higher education institution; 2). *In college*: everyone enrolled in a higher education institution; 3). *In college with assistance*: everyone who is in college and also declared as receiving either a grant or loan provided by the government. The third category was created based on the following questions in the survey:

- Do you pay tuition? (dichotomous)
- Did you receive any assistance from anyone in the past 12 months? (dichotomous)
- Who or which organization gave you the assistance? (Multiple choice: Government/State Training Fund; Business entity; NGO; Parents/children/siblings/relatives; Others such as friends, neighbors, etc.; Foreign or international organization or citizen; Other).
- What did you spend the assistance on? (Multiple choice: Household expenses; Educational/Tuition fees; Medical treatment; Housing; Holidays/Funeral; Household enterprise/business; other).

The key explanatory variable of the study is Socio-Economic Status (SES) of individuals. In order to take advantage of the richness of the information HSES survey data offers in terms of the social, economic and financial background of the individuals, I chose to create a *Composite SES*.

It was composed from these sub-categories: 1) Household total annual salary; 2) Household total annual cattle breeding activity income; 3) Household total annual crop and horticulture activity income; 4) Household total annual entrepreneurial activity income; 5) Highest parental education; 6) Highest parental occupation prestige. The three forms of income levels were calculated as the difference between the annual revenues and expenditures of respective activity. For revenues, the data offers high sale, average sale and low sale for each activity and the number of months of a year for each of these three sale levels. To simplify the calculation for non-agricultural activities, I took the average sale and corresponding number of months.

The highest level of educational attainment among the two parents was chosen to represent the parental education in the SES composition. I kept the original scale from 1 to 10, referring to the lowest to highest educational attainment in the data for my models.

Of the total college-age sample (N=5,310), there were 455 observations who were college-aged individuals *and* heads of households or their spouses, themselves. The parents of these 455 individuals were traced by looking at *father/mother* and *father-in-law and mother-in-law* categories of the household member status indications (Table 1). However, in order to qualify for the proxy of the parental information for the college-aged individuals in the sample, these parents and in-laws had to be living in the same household as their college-age *and* heads of household children because the unit of analysis of the HSES data is a household, not an individual. As a result of the exploration into the data, 46 parents were living with their adult children’s families and were able to be matched for the college-age heads of household (and their spouses). The parents of the remaining 439 college-age heads of households were not living with their children and, therefore, were not indicated in the data

as their parents. Thus, 439 observations (8% of $N=5310$) have missing values for the parental education and occupation.

In the original data, the occupations were classified and assigned values from 1 to 10 in a descending order. In order to standardize the occupational index with the educational index, I reverse-coded the occupational prestige indexes from 1 to 10 in an ascending order.

The measures of all components of the SES were standardized into a Z score. Equal weights of these three components were added and averaged to identify the score for the composite SES. Once the composite continuous SES variable was created, I divided it into ten levels based on the percentile distributions for more in-depth analysis and comparisons between the lowest SES levels and the highest ones.

State budget organization employee parents. The explanatory dichotomous variable “**BudgetOrg**” was created indicating whether the observation’s parent(s) is a state budget organization (SBO) employee for the purpose of identifying those who are eligible for the SBO grant from the government. The variable helped account for the students with SBO-employee parents and explore whether the remainder of the government grant program is reaching the individuals from poor families. The BudgetOrg was created by selecting those who are SBO employees *and* are heads of households, their spouses, mothers/fathers and mothers-in-law and fathers-in-laws *as well as* at least 38 years old. Then the variable was merged with the college-age sample. Since only one child per household is eligible for the SBO grant, despite the fact one or both parents are SBO employees, I merged the variable with the college-age sample, making sure that only *one* college-aged individual, per household, who is *enrolled* in a higher education institution would be marked as “1” under the BudgetOrg variable.

Statistical procedures and diagnostics. Two and three-way contingency tables were estimated to differentiate the socioeconomic status levels among the government financial assistance recipients, after accounting for the children of SBO employees. Logistic regression was chosen as the key statistical procedure for the study. Since the outcome variable (CollegeAccess) was categorical with three options, multinomial logistic regression models were fit to analyze the effect of SES on three categorical outcomes. Cronbach’s Alpha for the reliability of measurement of the SES Composite variable was 0.65 ($\alpha=.65$). The Hausman test did not find any evidence for Independence of Irrelevant Assumption (IIA) violation (Hausman & McFadden, 1984).

Results

Table 3 below presents the descriptive statistics of the college-age sample of 2011. The college-age sample was on average 20 years old (STD = 1.7) and the sample size was ($N=5310$). 2,884 (54.3%) of the sample were not in college, whereas 2,309 (43.5%) were in college with no government financial assistance. Only 2.2% (117) of the college-aged sample was attending college with government financial assistance.

Male individuals were represented slightly higher (52.2%) than female individuals (47.8%) in the sample. About 72% of the sample had completed secondary education, whereas 18% had primary or basic education. Only 3% of the sample indicated “none” when they were asked of their educational level. The question “Did you work last week?” was answered “no” by 77% of the sample where the response of the remaining was “yes”.

The urban and rural divide of the sample is 53.5% and 46.5%, respectively, indicating there are more people from urban areas in the sample. Most individuals of the sample came from households with 3-6 members (mean = 4.6; STD = 1.8). As described in the Data and Procedure section, one college student per household who has a parent(s) working for SBO was identified. There were 818 of them in the sample. SES was evenly divided into ten standardized levels of socioeconomic status and indicated from 1 to 10 in ascending order.

Table 3. *College-aged sample descriptive statistics. 2011.*

| | <i>N</i> | <i>M</i> | <i>SD</i> | Range |
|----------------|----------|----------|-----------|---|
| College Access | 5310 | 0.48 | 0.54 | 0 – not in college (54.3%) 1 – in college no assistance (43.5%) 2 – in college with assistance (2.2%) |
| SES | 4871 | 0.03 | 0.71 | (-13.53) - 3.74 |
| Age | 5310 | 20.17 | 1.74 | 17 – 23 |
| Gender | 5310 | 0.48 | 0.50 | 0 – male (52.2%) 1 – female (47.8%) |
| Marital status | 5310 | 0.09 | 0.29 | 0 – single 1 – married |
| Household size | 5310 | 4.63 | 1.80 | 1 – 14 |
| Urban or rural | 5310 | 0.54 | 0.50 | 0 – rural (46.5%); 1 – urban (53.5%) |

The rate of government assistance for students in college was examined for each level of SES by running a contingency table between the SES levels and the categorical variable College Access (Table 4). There was a moderate relationship between the two variables; $\phi = .21$, $\chi^2(18) = 421.4$, $p < .001$.

Table 4. *The rate of government assistance for tuition by grants for each standardized level of SES.*

| Standardized Family SES | Not in college <i>n</i> (%)* | In college with no assistance <i>n</i> (%)* | In college with assistance <i>n</i> (%)* |
|----------------------------|---------------------------------|---|---|
| 1 | 332 (68.2) | 145 (29.8) | 10 (2.1) |
| 2 | 336 (69.1) | 140 (28.8) | 10 (2.1) |
| 3 | 314 (64.2) | 169 (34.6) | 6 (1.2) |
| 4 | 297 (60.9) | 183 (37.5) | 8 (1.6) |
| 5 | 271 (56.0) | 200 (41.3) | 13 (2.7) |
| 6 | 283 (57.9) | 196 (40.1) | 10 (2.0) |
| 7 | 237 (48.8) | 234 (48.2) | 15 (3.1) |
| 8 | 194 (39.8) | 280 (57.5) | 13 (2.7) |
| 9 | 167 (34.0) | 307 (62.5) | 17 (3.5) |
| 10 | 115 (23.8) | 359 (74.2) | 10 (2.1) |

*The percentage shown is out of the total college-aged students at each standardized level of SES (row percentage), including those not in college.

The rate of college attendance increased as the standardized level of SES increased, with 76% of the highest SES level and 31% of the lowest level attending college (Table 4). However, the total rate of students receiving government grants to assist with tuition

remained relatively stable over SES levels (2-3%). Ten students in the lowest SES level received tuition assistance from the government, as did 10 in the highest SES level.

More concerning, in the second highest SES level, 17 students received government tuition assistance despite their family having income and occupation prestige that was well above average. In an ideal world, the students receiving government assistance would be clustered more highly at the lower levels of SES with the highest not receiving any assistance.

The described distribution of the government grant could possibly be explained by a particular government policy. As of 2012, a significant portion of the government grant money is earmarked for students who have a parent(s) working for an SBO. Thus, the SES status and parental employment at an SBO were examined for college-aged individuals.

About 15% of the sample had at least one parent who worked for a SBO ($n = 818$). Having a parent(s) working for an SBO has a statistically significant relationship with SES status, and the likelihood that a parent worked for an SBO was higher as standardized SES level increased (Table 5; $\phi_c = .36$, $\chi^2(9) = 622.6$, $p < .001$). There was a very strong relationship between the two variables.

Table 5. Frequency of parents working for state budget organization (SBO) in a college-aged sample.

| Standardized Family SES level | Parent(s) do not work for SBO <i>n</i> (%) | Parent(s) do work for SBO <i>n</i> (%) |
|-------------------------------|---|---|
| 1 | 475 (97.5) | 12 (2.5) |
| 2 | 468 (96.3) | 18 (3.7) |
| 3 | 437 (89.4) | 52 (10.6) |
| 4 | 453 (92.8) | 35 (7.2) |
| 5 | 430 (88.8) | 54 (11.2) |
| 6 | 442 (90.4) | 47 (9.6) |
| 7 | 410 (84.4) | 47 (9.6) |
| 8 | 356 (73.1) | 131 (26.9) |
| 9 | 298 (60.7) | 193 (39.3) |
| 10 | 286 (59.1) | 198 (40.9) |

Furthermore, individuals with parents who worked for an SBO were also more likely to be attending college and were slightly more likely to have a government grant (Table 5; $\phi_c = .18$, $\chi^2(2) = 180.3$; $p < .001$). Sixty-seven percent of all college-aged individuals who have at least one parent working for an SBO were attending college while only 42% of all college-aged individuals whose parent is not an employee of SBO were attending college. 3.8% of all individuals who have at least one parent working for an SBO was attending college with a government grant whereas twice less (1.9%) number of individuals who do not have a parent(s) working for an SBO was attending college with a government grant (Table 6).

Table 6. College access for college-aged individuals with and without parents who work for a state budget organization (SBO).

| | Not in College <i>n</i> (%) | College with no government assistance <i>n</i> (%) | College with government grant <i>n</i> (%) |
|----------------------------------|--------------------------------|--|--|
| Parent(s) do not work for SBO | 2615 (58.2) | 1791 (39.9) | 86 (1.9) |
| Parent(s) do work for SBO | 269 (32.9) | 518 (63.3) | 31 (3.8) |

College access, grant status, and standardized SES level were examined for college-aged individuals whose parents were and were not employed by an SBO (Table 7). For families where no parents worked for an SBO, the number of subjects who were in college with government grants was relatively the same for all standardized levels of SES. In fact, the number of students in college with government grants whose families fall into the highest three SES levels ($n = 22$) was almost the same as the lowest three SES groups ($n = 24$). For individuals whose parents do work for SBOs, the majority (77.4%) of students with government assistance are from families that fall into the highest four SES levels (Table 7).

Table 7. *Tabulation of college access, standardized family SES level, and parental employment with SBO in representative sample of college-aged individuals.*

| Parent(s) do not work for a SBO | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|
| Standardized SES Level | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| No College (n) | 325 | 327 | 285 | 281 | 250 | 265 | 213 | 152 | 108 | 72 |
| (%) | 14.3 | 14.4 | 12.5 | 12.3 | 10.9 | 11.6 | 9.3 | 6.7 | 4.7 | 3.2 |
| College with no government assistance (n) | 140 | 131 | 148 | 165 | 168 | 170 | 188 | 195 | 181 | 210 |
| (%) | 8.3 | 7.7 | 8.7 | 9.7 | 9.9 | 10.0 | 11.1 | 11.5 | 10.7 | 12.4 |
| College with government grant (n) | 10 | 10 | 4 | 7 | 12 | 7 | 9 | 9 | 9 | 4 |
| (%) | 12.3 | 12.3 | 4.9 | 8.6 | 14.8 | 8.6 | 11.1 | 11.1 | 11.1 | 4.9 |
| Parent(s) work for a SBO | | | | | | | | | | |
| Standardized SES Level | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| No College (n) | 3 | 9 | 29 | 16 | 21 | 18 | 24 | 41 | 59 | 43 |
| (%) | 1.1 | 3.4 | 11.0 | 6.1 | 8.0 | 6.8 | 9.1 | 15.6 | 22.4 | 16.3 |
| College with no government assistance (n) | 5 | 9 | 21 | 18 | 31 | 26 | 46 | 85 | 126 | 149 |
| (%) | 1.0 | 1.7 | 4.1 | 3.5 | 6.0 | 5.0 | 8.9 | 16.5 | 24.4 | 28.9 |
| College with government grant (n) | 0 | 0 | 2 | 1 | 1 | 3 | 6 | 4 | 8 | 6 |
| (%) | 0 | 0 | 6.5 | 3.2 | 3.2 | 9.7 | 19.4 | 12.9 | 25.8 | 19.4 |

The following section describes the inferential statistical procedures that were run on the college-age sample of 2011 for Mongolia. A multinomial logistic regression was run to determine if access to college and governmental assistance (no college, college with no governmental assistance, and college with governmental grant) was related to standardized family SES (Table 8). 'Not attending college' was used as a reference group. A relative risk ratio was estimated (instead of odds ratio) for interpretation purposes, which produced t values (instead of z values). The reduced-form equation for the multinomial regression model is shown below:

Equation 1. Multinomial logistic regression on college access and government assistance.

$$\ln \frac{\Pr(Y_i = collegeNogrant)}{\Pr(Y_i = notInCollege)} = \beta_0 + \beta_1 SES$$

$$\ln \frac{\Pr(Y_i = collegeGrant)}{\Pr(Y_i = notInCollege)} = \beta_0 + \beta_1 SES$$

Survey weights, primary sampling units, and stratification were accounted for in the model. Four thousand eight hundred and seventy-one (N=4871) college-aged individuals had complete data and were included in analysis.

The overall effect of SES was significant ($F(2, 1167) = 84.06, p < .001$). For each increase in standardized SES level, individuals were 2.3 times more likely to be in college without assistance ($RRR^6 = 2.3$ (95% CI: 2.03-2.61), $SE = .148, t = 12.95, p < .001$) and 1.89 times more likely to be in college with assistance ($RRR = 1.89$ (95% CI: 1.28-2.81), $SE = .379, t = 3.19, p = .001$) when compared to individuals who were not in college. The effect of standardized family SES in predicting college attendance without government assistance, compared to not attending college, was statistically equivalent to the effect of standardized SES in predicting college attendance with a grant, compared to not attending college ($F(1, 1168) = 0.96, p = .327$).

Table 8. Multinomial logistic regression predicting college and government grant access by standardized family SES level.

| Outcome | Variable | Relative Risk Ratio (95% CI) | Standard Error | t | p |
|---|-----------|---------------------------------|----------------|--------|-------|
| Not in college (N=2,884) reference group | | | | | |
| In college, no grant (N=2,309) | Intercept | .824 (.76, .90) | .035 | -4.52 | <.001 |
| | SES | 2.30 (2.03, 2.61) | .148 | 12.95 | <.001 |
| In college with grant (N=117) | Intercept | .042 (.03, .06) | .006 | -23.53 | <.001 |
| | SES | 1.89 (1.27, 2.81) | .379 | 3.19 | .001 |

Baseline log-likelihood= -3841.017

Model log-likelihood=-2674.607

McFadden's Adj R²=0.294

Model BIC=-2162.982

A larger multinomial regression was run to determine if the effect of standardized family SES was still related to college access and governmental assistance after controlling for a number of interpersonal factors. Gender (male/female), marital status (married/not married), age, household size, and living in an urban or rural area were added to the model as predictors. 'Not attending college' was again used as the reference group. After controlling for the interpersonal variables, the relative risk ratios of standardized SES on group prediction remained fairly stable when compared with the original model (Table 9). The reduced-form equation of the multinomial regression model is shown below:

⁶ Relative Risk Ratio

⁷ RRR (relative risk ratio) was estimated (instead of Odds ratio) for interpretation purposes which produced t values (instead of z values).

Equation 2. Multinomial logistic regression on college access, government assistance by SES.

$$\ln \frac{\Pr(Y_i = \text{collegeNoGrant})}{\Pr(Y_i = \text{notIncollege})} = \beta_0 + \beta_1 \text{SES} + \beta_2 \text{age} + \beta_3 \text{female} + \beta_4 \text{married} + \beta_5 \text{hhsz} + \beta_6 \text{urban}$$

$$\ln \frac{\Pr(Y_i = \text{collegeGrant})}{\Pr(Y_i = \text{notIncollege})} = \beta_0 + \beta_1 \text{SES} + \beta_2 \text{age} + \beta_3 \text{female} + \beta_4 \text{married} + \beta_5 \text{hhsz} + \beta_6 \text{urban}$$

Table 9. Multinomial logistic regression predicting college and government grant access by standardized family SES level while controlling for interpersonal factors.

| Outcome | Variable | Relative Risk Ratio (95% CI) | Standard Error | t ^s | p |
|--|--------------------|---------------------------------|-------------------|----------------|-------|
| Not in college (N=2,884) reference group | | | | | |
| In college, no grant (N=2,309) | Intercept | 14.75 (6.1 - 35.60) | 6.63 | 5.99 | <.001 |
| | SES | 2.17 (1.90 - 2.47) | 0.15 | 11.47 | <.001 |
| | age | 0.85 (0.82- 0.89) | 0.02 | -7.49 | <.001 |
| | female | 1.97 (1.73 - 2.25) | 0.13 | 10.14 | <.001 |
| | married | 0.51 (0.33 - 0.80) | 0.12 | -2.96 | .003 |
| | house hold size | .957 (0.91 - 1.00) | 0.02 | -1.88 | .060 |
| | urban | 1.49 (1.26 - 1.77) | 0.13 | 4.61 | <.001 |
| In college with grant (N=117) | Intercept | 3.67 (0.36 - 37.76) | 4.37 | 1.10 | .272 |
| | SES | 1.69 (1.15 - 2.47) | 0.33 | 2.69 | .007 |
| | age | 0.79 (0.71 - 0.88) | 0.04 | -4.31 | <.001 |
| | female | 2.59 (1.53 - 4.37) | 0.69 | 3.55 | <.001 |
| | married | 0.64 (0.18 - 2.33) | 0.42 | -0.68 | .498 |
| | house hold size | 0.85 (0.74 - 0.98) | 0.06 | -2.23 | .026 |
| | urban | 2.29 (1.29 - 4.04) | 0.66 | 2.85 | .004 |

Baseline log-likelihood= -3841.017

Model log-likelihood=-2674.607

McFadden's Adj R²=0.294

Model BIC=-2162.982

^s RRR (relative risk ratio) was estimated (instead of Odds ratio) for interpretation purposes which produced t values (instead of z values).

For each increase in standardized SES level, individuals were about 2.2 times more likely to be in college without assistance ($RRR = 2.2$ (95% CI: 1.90 -2.47), $SE = .146$, $t = 11.47$, $p < .001$) and 1.69 times more likely to be in college with a grant ($RRR = 1.69$ (95% CI: 1.15-2.47), $SE = .328$, $t = 2.69$, $p = .007$) when compared to individuals who were not in college. The effect of standardized family SES in predicting college attendance without government assistance, compared to not attending college, was still statistically equivalent to the effect of standardized SES in predicting college attendance with a grant, compared to not attending college ($F(1, 1168) = 1.7$, $p = .182$).

The government financial assistance programs were set up to support access to higher education for individuals with low family resources who otherwise would not attend. Currently, as standardized family SES increases, students are more likely to be in college with and without government financial assistance than not attending college. If the grant program was reaching the low-income individuals it was set up to assist, the probability of receiving a grant would have the opposite relationship with SES; it would decrease as family SES increased.

Discussions

The role of socioeconomic status in access to higher education. The result of the analyses shows that the rate of college attendance increases as the socioeconomic status levels of individuals increase. Only 31% of the college-age individuals from the lowest SES group is attending higher education compared to 76% of the highest SES group. Yet the rate of students receiving government financial support to pay for tuition remains relatively stable throughout the ten SES levels, with the second highest SES group receiving the largest number of government tuition assistance, despite their well-above-average income and occupation status.

If the government financial assistance programs' goal to support the individuals with the least means was being met, the students receiving government support would have been distributed more frequently among the lower levels of SES groups. The current distribution of the government financial assistance programs in the real world does not demonstrate a clear priority of the government to support the improvement of equity in access to higher education for lower socioeconomic individuals. Rather, it demonstrates a flattened-out, even distribution of the limited resource throughout the entire spectrum of society, including the highest end of the spectrum who may not even need the support. Such uniform distribution of the limited government money may be partially explained by the specific policy to support parents working for state budget organizations, which I will discuss in the next section.

SBO employee-parents and socioeconomic status levels. More than 50% of the government grant program is allocated to students who attend higher education and whose parent(s) work for a state budget organization (SBO) - government organizations that are fully funded by the state budget from tax revenue. Ten SES levels were examined in relationship with families working for SBOs. It was revealed that being an SBO employee increases the probability for the family to belong in a higher socioeconomic status level.

The number of parents working for SBOs increases steadily as the family socioeconomic status levels increase, with the highest concentration of SBO employee-parents in the highest three SES groups (There are 6.5 times more SBO employee-parents in the highest three SES groups than those in the lowest three SES groups). Also, individuals who have at least one parent working for an SBO are more likely to attend a higher education institution than those whose parents do not work for SBOs, and they also are more likely to receive a grant from the government to pay tuition.

The analysis readily demonstrates that families with SBO employee-parent(s) are highly concentrated in the well above-average levels and specifically in the top three socioeconomic status levels in the country. Yet, despite their status, more than half of the total government grant money for students is dedicated to support these families only.

SBO grants and access to higher education. A closer look at the access to higher education within the context of government assistance programs, SBO employee status, and socioeconomic status levels of families in Mongolia reveals more alarming results, when viewed from the equity perspective in higher education. As expected based on the previous analyses and results, the vast majority of students whose parent(s) work for SBOs (77.4%) and who receive government financial assistance belong to the highest four SES groups.

Considering that such high concentration of government assistance on the highest end of the socioeconomic spectrum among families working for SBOs is an outcome of the current government policy on SBO grants, I looked at families without a parent working for an SBO more closely. The result was just as concerning. Unlike the distribution among the families with SBO employee-parents, the number of students attending higher education with government financial assistance among families without a parent working for SBOs are fairly evenly distributed across the ten socioeconomic status groups. Consequently, the number of students with government assistance that belong to the lowest three SES groups were almost equal to the number of students with government assistance falling into the highest three SES groups. This result indicates that, accounting for the SBO grant, government financial assistance is not necessarily prioritized for the lower level of socioeconomic status families.

In conclusion, socioeconomic status has a statistically significant, direct effect on access to higher education in Mongolia. As the standardized SES level increases by one unit, the individual's probability of being in college without assistance rises 2.3 times more, and almost 2 times more for being in college with assistance, compared to the individuals who have no access to higher education. Secondly, when it is compared to the individuals who are not in college, the effect of SES is similar to the group who attends college without assistance and the group that attends college with assistance. In other words, when socioeconomic status is taken into consideration, the families whose children go to college with or without financial assistance do not differ significantly. Lastly, this study demonstrates that the government financial assistance programs which specifically intend to support the poor and marginalized families are not fully reaching the lower socioeconomic status groups in post-socialist Mongolia.

Implications

Higher education presents a high stake in individuals' future wellbeing. Having a higher education degree matters and has important implications worldwide. On average, in the US, a college graduate makes 84% more over a lifetime than their high school-educated peers (Carnevale et al., 2011). In OECD (Organization for Economic Cooperation and Development) countries, men aged 25-64 with a higher education degree could expect 5.6 more years of employment than their counterparts with secondary education (World Bank, 2000).

The situations in former socialist Eastern European countries are similar and the stakes are even higher. Higher education degree holders in the Czech Republic, Hungary and Poland are employed respectively 11, 13 and 9 more years than their peers with secondary education. Higher education essentially guarantees that a family will not be poor compared to the families with heads having only primary or secondary education (World Bank, 2000).

Former socialist Central Asian countries are in similar situations as well. There is a high return to higher education in Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Mongolia (World Bank, 2007, 2010; Weidman et al., 2004; Vicol, 2005). Poverty rates in Kyrgyzstan were 41% for those with a higher education degree and 92% for those without one; likewise, poverty rates in Tajikistan were 50% for those with a degree and 75% for those without. The rates were 24% and 48% in Uzbekistan for those with and without a higher education degree, respectively (Brunner & Tillet, 2007). The importance of equal access to higher education in the region, has been emphasized repeatedly by international agencies in their declarative documents (UNESCO, 2009; World Bank 2000).

Yet there is increasing inequality represented in higher education systems of nations in the last twenty years (UNESCO, 2009). Despite many policy initiatives in recent years, broader participation in higher education has not benefitted all groups of societies equally (Shavit et al., 2007), and although there are not many empirical studies on socioeconomic background and higher education attainment, aggregate information from national surveys indicates that most students come from wealthy families, and as such, equity in higher education does not improve (World Bank, 1994, 2002).

Mongolia is not an exception to the story. Its higher education system expanded steadily in the past two decades of the post-socialist era. The *fairness* notion of Marginson's (2011) approach in improving equity in higher education could be considered achieved. This is assuming that 884 students (Table 4) from the lowest five SES levels attending higher education may not have been able to access university prior to the expansion of higher education when the higher education enrolment rate was only about 15%. However, the notion of *inclusiveness* in ensuring equity is far from being achieved, because higher education attendance is not proportionally represented by the whole spectrum of the society in Mongolia as of 2012 (Table 4). Also, an increase in socioeconomic status level predicts not only access to higher education but also government financial assistance awards (Table 8, 9). Specifically, one level increase in SES not only increases the individual's probability of being in college, but also it increases the probability of being *in* college *with* government financial assistance by almost double in comparison to the individuals who have no access to higher education.

The government loan and grant policies as of 2012, developed under the umbrella of improving equity and social justice in higher education, failed to benefit the individuals and families with the most need. They also reinforced the government's own status quo and contributed to social stratification by favoring those who worked for the government organizations and their families, who clearly were not even below average in socioeconomic status. Moreover, the concessional loan repayment is only 2%. The loan is treated like a grant by the government because often the cabinet announces loan forgiveness. Due to the low repayment rate, the loan program has no system in place for self-sufficiency. The loan program's outreach to the poor is extremely limited as demonstrated by this study as well.

As of today, since the amendment of the Law on Civil Service in July of 2011, which annulled the grant to one child of SBO employees, the eligibility criteria of the government grant program include stipend support for all students, in addition to the needs-based criteria that existed prior to the amendment, and merit-based support for exceptional academic performance. The loan criteria seem to remain targeted mostly at poor and vulnerable students. The effects of these new policies on financial assistance for higher education in Mongolia are yet to be revealed, although I do not expect a large scale difference considering the ambiguity in the STD's operation.

What do these findings mean for poor students? Students from a poor background are already disadvantaged in the preparation and competition for access to college. But once they finally make it to higher education, they face an even bigger challenge – finding ways to pay for it. The average bachelor tuition in Mongolia is an unsurmountable load for the poor. Yet the existing government financial assistance programs lack evidence of either a clear target or systemic reporting on the extent these programs are serving the poor.

Limitations

The key limitation of the study is related to several potential biases, which the quantitative approach of this analysis was not able to untangle. First, there is a great chance of selection bias in the dataset regarding the individuals who professed themselves as receiving government financial assistance to pay tuition for higher education. Identifying those who have access to higher education with and without government assistance is purely based on their self-declaration in the household survey. Second, the unobservable factors that

could have played roles in granting the government assistance to individuals could not be captured in the dataset. Therefore, due to these potential biases there is a possibility of overestimation of regression coefficients.

The study is quantitative based on large scale probabilistic data. Qualitative components that further explore the operation of the STD and how it works with the higher education institutions in identifying and selecting the students eligible for the government financial assistance could enrich the study. For future research, more qualitative inquiries on these issues could be conducted.

Study Significance

The study adds new evidence to the scholarly literature on government loan and grant policies on higher education, especially on the notion that financial assistance policies for access to higher education with intentions to decrease inequality may produce an opposite effect. As this study shows, the limited government financial assistance programs in Mongolia are distributed evenly throughout society, including those who are better off, and who could, thus, have afforded higher education without government assistance. However, more importantly, the study makes a contribution to the literature with a case from a largely unexamined socio-economic context, namely, post-socialist nations.

Equity issues in post-socialist countries are largely unexamined. Studies sponsored by the World Bank, Asian Development Bank or UN agencies devote only a couple of pages to issues regarding equity in higher education in these countries, and these are mostly general statements. Similarly, the higher education enrolment increase in the last 20 years in Mongolia has never been explored from an equity perspective. The present study is the first quantitative study that explores issues in higher education in post-socialist Mongolia, conducted using the HSES – a nationally representative dataset that is the most comprehensive social and economic survey in the country. The study is also unique as it is the first that constructed socioeconomic status as the key explanatory and composite variable in the models. Also, it is the first quantitative research that explores the government financial assistance programs from an equity perspective in Mongolia. It is hoped that the study will contribute to the limited amount of empirical analyses on equity in higher education in post-socialist countries and add to the existing research in international and comparative education.

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