«Working but watching every penny?». Working poverty and school dropout in Mongolia

Francesco Pastore

Abstract. This essay aims to study the determinants of working poverty at an individual level in Mongolia, one of the 50 poorest countries of the world. Working poverty means working for a salary that is below the poverty line. Our focus is on school dropout and family background, which is allowed by the type of data used, a school-to-work transition survey carried out by the ILO over a sample of young people aged 15 through 29 years.

Introduction

In advanced economies, working poverty is common not only among the low educated, but also among young and/or prime age workers holding higher education degrees. In the case of developing countries, dropping out of school, often associated with child labour is a major risk factor of working poverty ().

This essay aims to study the determinants of working poverty at an individual level in Mongolia, one of the 50 poorest countries of the world. Working poverty means working for a salary that is below the poverty line. A specific focus of the approach followed in this paper is the emphasis on the role of dropping out from compulsory education and, relatedly, poor family background as key risk factors of working poverty[1]. Working poverty is typical of jobs of very low quality, which means, in the case of Mongolia, jobs located especially in the agricultural sector, such as herding. In fact, there is well-known anecdotal evidence, confirmed by striking descriptive statistical analysis provided in this paper, that dropout from compulsory education is associated in Mongolia with child labor in very low productivity jobs, especially herding, in the case of boys, and domestic chores, in the case of girls (del Rosario, 2005; Gerelma, 2005). In turn, we expect that this early labor market experiences are likely to generate a permanent scar in terms of future income opportunities also more abysmal than completing compulsory education and experiencing (youth) unemployment thereafter.

The econometric analysis is based on an ad hoc school-to-work transition survey carried out by the International Labor Office (ILO) over a quite large sample of young people aged 15 through 29 years in 2006, representative of the underlying population. This data set comprehends unique information regarding many important aspects of the youth labour market experience, which is not available in any similar survey elicited in the country.

---

[1] In her book on working poverty in the USA, Newman (2000) notes that "[t]he nation's young, its single parents, the *poorly educated*, and minorities are more likely than other workers to be poor" (p. 42; emphasis added by me).

School dropout is meant here as dropping out of school before achieving compulsory education[2]. Given the cross-section nature of the data, the analysis is based on

In addition, the determinants of working poverty have rarely been studied using individual level data collected in developing countries, although (working) poverty is a particularly important social problem in these countries and a persistent one, although relatively recent. Poverty, and inequality as well, have become important social problems essentially after the end of communism (Mearns, 2004, p. 110).

The outline of the paper is as follows. After motivating the paper, by showing the strong impact of school dropout from compulsory school on working poverty, I discuss the methodology and the data used. In the methodology section, I explain the reason why I control for sample selection bias by means of the Heckprobit procedure while looking at the determinants of working poverty. Section three presents the main findings, which point to a dramatic impact. Some summary remarks and policy implications follow.

1. Motivation

1.1. Poverty and inequality

Poverty is probably the most dramatic social problem in post-communist Mongolia. In 2006, the year when the data used in this paper was collected, Mongolia ranked 42nd on the UNDP-based Human Poverty Index (HPI) and 116th on the Human Development Index (HDI). In fact, poverty is a recent phenomenon in the country, as it has exploded after the collapse of communism and the planned economy. A dramatic social stratification has arisen as a consequence, with entire households being at risk of falling into a poverty trap for generations.

The measures reported in Table 1 have been defined so as to allow money transfers from households above the poverty line to households below it, in order to be sure that such money

---

[2] Pastore (2016) focuses instead on dropping out of any type of education.

transfer will reduce the overall degree of inequality and poverty (see Lambert and Lanza, 2006). In this way, according to recent literature, such transfers might also foster economic growth.

These poverty lines are relative to the actual household's distribution of incomes and can be defined with respect to different indices of inequality. The table provides measures relative to the Gini and the Theil inequality indices. Based on the Gini index, all those transfers from households in the percentiles above 63.3 to those in lower percentiles will reduce inequality. The corresponding benchmark income equals TUGs 120,000 (US$103 or €76.6). The benchmark income based on the Theil index is slightly lower. The following columns of Table 1 bring further evidence of strong geographical differences. They suggest that, whatever the measure adopted, the threshold is much lower in rural than in urban areas. It is the highest in the capital city. In other words, poverty looks higher in rural areas, but this might also mirror the lower need of monetary means of payment there, as, among others, Mearns (2004, p. 118) already noted.

[Table 1 about here]

The abovementioned measures of poverty are all based on income levels. However, the national government can provide public transfers in-kind goods, commodities and services to poor households which are an important support. Such aid can also come from external sources, such as foreign governments and international nongovernmental organizations. A more accurate measure of poverty should consider the availability of free health, educational and social services to the poorest households. In turn, in the country, wealth is often measured in terms of heads of livestock. Though not included in the declared income in the survey data used in this study, these goods and commodities might alleviate the sense of deprivation and social exclusion due to poverty. Because of this important data limitations, poverty could be over-estimated, especially in rural areas, since the household welfare aggregate excludes the value of transfers and services.

Table 2 provides some summary statistics relative to the household's monthly net income as measured in thousands of tughrik[3]. The note to the table provides exchange rates for the dollar (US\$) and the Euro (€). The average income level of the households in the sample is TUGs 123,580 (US\$ 106.1 or € 78.9). When excluding all the households belonging to the percentiles lower than the 10th and 90th, then the average income equals TUGs 109,770 (US\$ 94.3 or €70). The median value, which is less affected by extreme values, equals TUGs 100,000 (US\$ 85.9 or € 63.8), independent of the sample considered.

[Table 2 about here]

Table 2 provides also some measures of dispersion, namely the minimum and maximum household income, as well as the standard deviation. Most households' income is between TUGs 58,120 (US\$49.9 or €37) and TUGs 161,450 (US\$138.6 €103). If the poorest (under the 10th percentile) and the richest (above the 90th) households are excluded, then the ratio of the richest to poorest becomes 6.7. This is quite a high ratio, as it is able to jeopardise the objective of any public system of offering equal opportunities to all. In fact, the lower the income level of a household is, the higher the opportunity cost of education is and, therefore, the lower the probability of finding good jobs in the future is.[4]

Other more complex measures of inequality are given in Table 3 for international comparisons. Whatever the index adopted, inequality is lower than average in the capital city than in rural areas. This is in line with Mearns (2004) and Morris and Bruun (2005) accounts of the evolution of rural areas after the privatisation of state and cooperative farms during the transition from plan to market.

[Table 3 about here]

---

[3] This variable is based on question A9 of the questionnaire.

[4] This statement is based on the assumption that the marginal utility of money is decreasing with income, like the marginal utility of any other good or commodity. This implies that assuming the same cost of investment in human capital formation, this cost will still be harder to bear for the poorer households.

1.2. Working poverty and the poverty traps

This paper is especially focused on working poverty, for two main reasons. First, in a country like Mongolia, more than unemployment itself, working poverty is a natural outcome of poverty traps à la Azariadis and Stachurski (2005): it starts from household poverty; it then leads to dropout of compulsory education, often to start a low productivity job that the young person will continue to hold for the rest of his life, forcing him into continuing poverty. In addition, although, in principle, unemployment is another typical consequence of school dropout, being also associated to youth poverty, nonetheless, it is less likely to happen among young people simply because they dropout of school exactly because they have some kind of (low productivity job) to do and, hence, are less likely to be unemployed. Moreover, sooner or later, as also descriptive statistical evidence provided below supports in the case of Mongolia, young people will find a job. It is, hence, important to understand what are the chances that they will end up into working poverty, if employed.

The emphasis on investment in education with low (or no) tuition fees; on low or no risk of unemployment; and on easiness to find a job after completing education made former socialist countries traditionally feature high levels of educational attainment almost everywhere. The returns to education were prominently non-monetary in nature: more educated people had easier access to jobs requiring less fatigue and in a more favourable and friendly work environment, while enjoying greater fringe benefits than manual workers. Instead private monetary returns to education were relatively low, due to the low average level of incomes and also to the political emphasis against income inequality (Atkinson and Mickelwright, 1992; Svejnar, 1999). This cultural heritage is still typical of most formerly socialist countries, where educational levels traditionally were, and still are, high.

However, the available evidence based on the SWTS suggests that Mongolia still under performs as compared to most former socialist countries and especially to former soviet union republics in terms of education attainment (Table 4). When looking at the oldest age segment

(aged 25-29) most of whom (95.6%) have already completed their education, a small, but still noticeable share of 3.3% is uneducated. As it is typical also of other developing countries, men fare worse than women. del Rosario (2005, p. 24) explains this finding noting that parents prefer boys to girls for herding.

[Table 4 about here]

Although the share of the uneducated living in rural areas is about three times bigger (at 6.43%) than that living in urban areas or in the province (*aimag*) or municipality (*soum*) centres, nonetheless, the larger population makes the overall size of the problem bigger in urban areas.

On a more positive note, the share of the uneducated is lower among the oldest segment, which might suggest that part of them manages to achieve at least primary or basic education in their twenties. del Rosario (2005, p. 17-18) notes that up to 1.2 million Mongolians are involved in some program of adult learning. In addition, in coordination with the Ministry of Education, UNESCO programmes target also the illiteracy rate with the supply of courses additional to the formal ones provided by the Mongolian educational system. However, some observers fear that programmes of adult learning might increase the dropout rate in the long run, by allowing many adults with unfinished education to achieve the same degree as their pairs, but with less effort and above all with an insufficient level of knowledge.

In addition, about 11-12% of the entire sample achieves only primary education and 20.4% of those aged 25-29 achieves only basic education. In other words, 34.4% of the 25-29 group has only compulsory education or below.

Table 5 provides the distribution of the uneducated by the reason why they dropped out of school before obtaining any diploma, by age and gender. The largest share of the uneducated left school because they did not enjoy it. del Rosario (2005, p. 27) explains this lack of enjoyment in terms of a number of factors, such as bullying by the students' peers, lack of attention from teachers and in general the low quality of education and poor conditions of school infrastructures. Nonetheless, del Rosario (2005, p. 65-66) and Pastore (2009) find that

most dropouts, and their families, value education very much and feel sorry for the fact that they left school.

[Table 5 about here]

About 27% of the dropouts declare that they left school to take care of livestock. Child labour related to herding is especially typical of boys. Many women that remained uneducated are involved in domestic chores.

Related to this is the high share, especially of young men who mention economic reasons to drop out. Overall, economic factors explain most of the dropouts, especially if one considers that the young people who do not enjoy school have poor cultural and social background[5].

Illiteracy in the after-compulsory school age is a worrying fact that educational policy should target. Integrating young people in compulsory education is the most effective way to increase the average job finding rate in the short run and, therefore, reduce unemployment, crime, poverty and social exclusion in the long run.

Child labour is an apparent consequence of poverty and confirms the worry that poverty might force too many young people into a trap. In order to survive, the poorest households might find it convenient (at least in the short run) to employ young children in low pay jobs to integrate their already very low income. Fighting child labour, perhaps with income support schemes for the poorest households is an important policy target for the government. The plague of child labour and the ways to fight it are becoming a very hot issue in the agenda of international organisations and also national governments in developing countries. The latter are becoming increasingly aware of the fact that child labour represents a trade-off between short time small advantages and long term important drawbacks.

The Mongolian Government is aware of the importance of this problem that has, in fact, exploded already in the early 1990s, soon after the beginning of the economic transition to a

---

[5] Del Rosario (2005) reports many examples of discrimination of urban pupils and teachers against other students coming from rural areas and/or from poor families. The former believe that the latter pull back the class.

market economy and the ensuing emergence of poverty for many families, especially in rural areas. In fact, Mongolia has adopted a new definition of drop out and a new regulation to fight it in the Education Law of 2005. del Rosario (2005, p. 70) reports a number of governmental interventions: a) abolition of the cost of school dormitories and food for children, through the allowance of subsidies; b) free school supplies in the amount of TUGs 16,000 (about $13.7); c) the already noted implementation of adult learning programs for the uneducated.

In addition to the collapse of cooperative farming, also the emerging weaknesses of the educational system are factors of this emerging social phenomenon. Public finances experience increasing budget constraints, which prevent the state to support the families most in need and sometimes forces to close down schools in less densely populated districts, which is particularly problematic in a large country with a very small population.

2. Methodology and data

As already noted, the main hypothesis that this paper aims to test is whether dropping out of compulsory school, which means before the age of 15 (see Annex 2 for a description of the Mongolian education system), might cause working poverty in one's adult life (say at the age of 20-29 years or better 25-29 years). This hypothesis could be tested, in principle, by simply estimating by PROBIT the determinants of the probability of experiencing working poverty. Nonetheless, selection into employment of the most skilled individuals might bias the analysis of the impact of school dropout on the probability of working poverty. Since most of the individuals with the greatest chance of becoming a working poor might also have chances of finding a job whatsoever that are different from (greater or smaller than) the average individual, then a simple PROBIT model might under- or over-estimate the impact of school dropout on the probability of being a working poor if we do not consider jobless individuals. To take into account the possible impact of sample selection bias on the coefficient of interest, we implement

a Heckman correction procedure, which in the case of a PROBIT model is called Heckprobit model, for assonance to the most common Heckit model, which is used in the case of a continuous dependent variable (Van de Ven and Van Pragg, 1981).

From an analytical point of view, the Heckprobit model assumes that the dependent variable – the probability of being a working poor in our case – is not always observed. In the case under scrutiny, if the sample of individuals who got a job and therefore are at risk of being working poor is systematically different from that of the individuals who are jobless, the coefficients of any determinant of working poverty may be biased. Note that this binary outcome takes a value of one for wage employment and zero for joblessness. The unemployed and the inactive are pooled together because they are very similar in the case of young people (Clark and Summers, 1982; and Poterba and Summers, 1995). The young people still involved in education are excluded, but they are a small part of the sample because we focus only on the respondents aged 20 through 29 and 25 through 29, when most individuals have already completed their education. Including students in the analysis would have uselessly complicated the analysis.

To capture the possible effect of sample selection bias on the standard PROBIT results, we need to add another regressor, which measures the probability to be employed rather than jobless:

$$Pr\left(WP = 1 | D, \sum\nolimits_{h=1}^{m} Z_h\right) = SN\left(\alpha + \delta D + \sum\nolimits_{h=1}^{m} \vartheta_h Z_h + \rho\lambda\left(\sum_{j=1}^{m} \gamma_j Z_j\right)\right) \quad [5]$$

where *SN* is the cumulative standard normal distribution function. One problem with equation [5] is that we might not observe WP in some cases simply because some individuals are jobless[6]. If the factors affecting the decision to be employed rather than jobless correlate with the probability to experience WP, then we might be missing some important independent variable which might also bias the coefficients of other regressor and, in particular, the variable of interest, namely dropping out of school. This problem can be dealt with by thinking of the

---

[6] Table A1.1 in Annex 1 offers the definition of the variables used, which are not self-explaining.

existence of another regressor which has been omitted from the estimates if the probability to be employed is omitted. To catch the impact of this unobserved variable, say the propensity to work rather than not, the following sample selection equation is introduced:

$$Pr\left(E = 1|D, \sum_{j=1}^{n} Z_j, CS\right) = N\left(\alpha + \delta D + \sum_{j=1}^{n} \vartheta_j Z_j + \varphi CS\right)$$ [6]

where *CS* is the civil status and the condition of having children, assumed to be independent at this young age from the decision of being employed rather than jobless. In other words, following what Wooldridge (2003) and Cameron and Trivedi (2003) suggest with reference to the HECKIT model, equation [6] has exactly the same exogenous variables as equation [5] plus some instruments, namely *CS*, which should affect the probability of being employed rather than being jobless, but not the probability of experiencing *WP*. The following econometric analysis shows that this is the case under consideration. When the error terms of equation [5] (the main equation) and [6] (the selection equation) are correlated, the standard PROBIT model will produce biased results. The HECKPROBIT procedure is intended to correct for selection bias and provide, hence, consistent, asymptotically efficient estimates for all the parameters in the model. The estimates are simultaneously implemented using maximum likelihood.

The analysis is based on a SWTS of young people aged 15-29 years carried out in 2006 by the National Statistical Office of Mongolia with the ILO financial and technical assistance[7]. The SWT survey of Mongolia includes detailed information on parents' education, occupation and income levels on a large sample of young people, therefore providing an excellent testing ground to assess the extent of the intergenerational transfer of poverty. The survey includes about 4.585 households and 6,100 young (15−29 years) people, representing 0.75 % of the reference population and was conducted through interviews of a nationally representative sample that reflects the composition of the targeted population. The data set is unique in as much as the number of interviewees is so large that it is hardly available for the given age

---

[7] The Mongolian SWTS looks like similar surveys carried out in other developing countries in Africa, Asia and Europe, namely Azerbaijan, China, Egypt, Iran, Kosovo, Nepal, Syria. For further information, see http://www.ilo.org/employment/areas/WCMS_159352/lang--en/index.htm .

brackets in larger sample surveys covering the entire population. In addition, the questionnaire is very comprehensive and focused on youth labour market issues: e.g. education and training, perceptions and aspirations in terms of employment, life goals and values, job search, family's influence in career choice, barriers to and supports for entry into the labour market, wage versus self-employment preference, working conditions[8]. In particular, it allows studying the correlation between indicators of performance in education attainment and labour market outcomes between children and their parents.

3. Findings

3.1. Descriptive analysis

The previous section has shown that poverty leads to school dropout by imposing financial constraints to individuals' access to education. But what are the consequences of dropping out of school? Darii and Suruga (2006) and Pastore (2010b, p. 248) find that the private returns to education are not negligible also in Mongolia; in fact, they are much higher in the capital city than in rural areas. Nonetheless, no previous study has looked at the wage penalty associated to the decision of dropping out of school. This section of the paper seeks to assess the consequences of school dropout in particular on the probability of becoming a working poor. Showing that these two phenomena positively correlate with each other would confirm the existence of a poverty trap at place, which implies the transmission of poverty from parents to their children via imposing financial constraints to a full access to the educational system as based on individual talent.

It is interesting to show that this kind of causality chain exists in the case of a developing country where the production structure is still traditional. In the meantime, the analysis would

---

[8] A second questionnaire (unused in this paper) administered to employers aims to determine their attitude and expectations when hiring young people.

sound as an endorsement of the view that the educational system represents an important buffer against poverty and that policy intervention is aimed at removing the financial constraints that prevent access to education for all.

3.2. The Heckprobit

Employment itself is not always a way out of poverty: young people often earn wages that are below the poverty line. This gives place to so-called "working poverty" (WP since now), a common phenomenon especially in developing countries. The poverty line is defined as being equal to half the median labour income[9], independent of whether income is based on wage employment or self-employment. In this section, we ask whether having dropped out of school positively affects the probability to experience working poverty

Table 9 presents LOGIT estimates of equation [2] for the entire sample and for the oldest age group (aged 20-29 years). The table also provides a gender breakdown. The overall significance level of the estimates is high, with a pseudo-R^2 fluctuating between 0.28 and 0.53. Correctly classified cases are always more numerous than 82% and the area under the ROC curve tends to over 80%.

In estimates using only a gender dummy as a regressor, women appear to have a probability of experiencing low income jobs about 1.4 times higher than their male counterparts in the entire sample and 1.7 times bigger when we consider the oldest age group in the sample. The gender coefficient is statistically highly significant. When controlling for all the other regressors in Table 9, the odds ratio of women goes up to 2.0 and 2.1 respectively. The difference between conditional and unconditional estimates might depend on the characteristics of both genders and the tendency of women to have characteristics that are more frequently associated to working poverty than men.

---

[9] Although often being very close to it, the poverty line should not to be confused with the 25th percentile.

Education provides quite an important defence against WP in Mongolia. This finding is generalized, since all odds ratios are lower than one, denoting a lower probability of individuals holding a given educational qualifications than that of the baseline holding secondary education or below. Nonetheless, not all coefficients are statistically significant in the case of men. In addition, vocational technical education is effective only for women.

A woman with a university degree has about one tenth of the chances of experiencing working poverty of the baseline group. This contributes to justify the tendency of young Mongolians to attribute much importance to tertiary education in their aspirations (Pastore, 2009).

In the case of men, WP tends to disappear with time passing: it is, in fact, less frequent among young people aged 25-29 years. The young teenagers, aged 15-19 years, are about two times more likely to have low pay jobs than the oldest age segment.

Civil status and the status of mother / father seems not to be a statistically significant determinant of WP, with an important exception. Being divorced, separated, widowed tends in the case of women to be associated with a greater likelihood to be a working poor.

Confirming the presence of a strong poverty trap in place, the indicators of household poverty adopted are all associated with a greater chance of being a working poor, with some gender differences. The number of household members increases the probability of being working poor in the case of women, suggesting that household larger households tend to discriminate against women. This is quite interesting considering that in general women are more educated than men also in Mongolia (Pastore, 2009).

Being fatherless (not motherless) reduces by a half the likelihood to experience WP. This can be probably explained by the need to work earlier than the rest of the population and the ensuing tendency to reach a decent job sooner than average.

Other parental factors, such as the educational attainment of mothers and fathers, seem not to be statistically correlated to the probability to be in low pay jobs. Working while studying does not seem to affect in a statistically significant way the dependent variable either.

Furthermore, the probability of WP is much lower in the capital city of Ulaanbaatar than in the Soum centres or, even more, in rural areas. The difference between the capital city and the Aimag centers is not highly significant from a statistical point of view. Those young people who live in rural areas are 28 times more likely to experience working poverty than their peers living in the capital city. This effect is especially high for women. As Mearns (2004) reports, this is also the consequence of the low productivity of jobs in rural areas and of the dismantling of state-owned and cooperative large farms typical of the soviet times.

Dropping out of school more than doubles the probability of experiencing working poverty. the effect is greater in the case of women. This confirms the poverty trap hypothesis.

[Table 9 about here]

3.3. Robustness checks

Is the impact of school dropout unlike in different areas of the country? In particular, is the effect larger or smaller in rural areas? One might think that education is less important in rural areas, but it is also true that in urban areas school dropout is a more common phenomenon. The data is large enough to allow looking at this issue with some detail. Table 10 presents the coefficients of the variable of interest in the capital city, the aimag centres, the soum centres and the rural areas. The second panel of the table presents also estimates relative to the oldest age segment of young people aged 20 through 29.

Quite surprisingly, dropping out of school is associated with a higher probability of working poverty everywhere, but in the capital city. The strongest impact is in the Aimag and Soum centres.

[Table 10 about here]

Is school dropout affected by sample selection bias? If school dropout is more likely to be conducive to joblessness than to working poverty, then, a simple LOGIT model might underestimate the true impact of school dropout on working poverty. In order to test this hypothesis, Table 11 presents results of a HECKPROBIT estimate of the type discussed in the

methodology section of the determinants of the probability of working poverty conditional on finding employment. The analysis focuses on the oldest age group of young people aged 20 through 29 years, when everyone has finished high secondary school. In comparison to Table 9, due to the small number of observations existing in several cells, some regressor have been grouped (e.g. the individual' educational level; parents educational levels in the estimates by gender) others have been excluded (e.g. father education). Our instruments – civil status and having children – are often statistically significant. We find evidence of sample selection bias in the case of men and women, but not in the case of the merged equation.

The sample selection corrected coefficient of the variable of interest is slightly reduced as compared to the coefficient of the simple LOGIT estimate. The probability of experiencing working poverty for those who dropped out of school is only 1.5 times higher than average. This is in line with the fact that those who experience school dropout have a greater, not a lower than average chance of employment. In other words, it is likely that those who drop out of school do so because they have found a job and therefore, having started earlier they are more likely to work in jobs that pay more than the income representing the poverty line.

Concluding remarks

In the following step of the analysis, the paper asks and answers the question whether experiencing school dropout is able to increase the chances of falling into working poverty, namely finding a job that pays an income below the poverty line. The analysis confirms this hypothesis, by showing that young people who dropped out of school have double the average chance of experiencing working poverty. Again this effect depends much on the location of individuals, being stronger in Soum centres and rural areas, rather than in the capital city or in the other Aimag centres. This might depend on the lower average incomes and the lower labour market dynamism of rural areas. We find evidence of sample selection bias on the traditional

LOGIT estimate. Once controlling for sample selection bias by means of a HEACKPROBIT Model, we find that the correlation of school dropout and working poverty is reduced by about a half. School dropout is in fact positively associated with the probability of finding a job. Overall, our analysis highlight the existence of poverty trap in place that run from financial constraints on access to education to working poverty.

This paper has important and clear policy implications. By highlighting the key role of financial constraints on access to education, it suggests that special support should be provided to those young people who were born in households living out of $1 a day. As such, the paper lends support to government programs, often supported by such international organizations as the International Labour Office and the World Bank, aimed at providing special financial support to households living in extreme poverty. Moreover, this paper lends support to those programs of non-governmental organizations that foresee the possibility that households in Western countries provide monthly cash transfers to the poorest children living in the most peripheral areas of Mongolia and other poor countries. In fact, given the small amount of funds that are necessary and the nature of direct interrelation between sending and recipient households, these programmes are an important policy tool when every family living in an advanced economy can be a policy maker.

References

Atkinson, A.B., & Micklewright, J. (1992). Economic Transformation in Eastern Europe and the Distribution of Income. Cambridge University Press, Cambridge.

Azariadis, C. and J. Stachurski (2005), "Poverty Traps," in P. Aghion and S. Durlauf (eds.), Handbook of Economic Growth, Elsevier, North Holland.

Cameron AC, Trivedi PK (2009), Microeconometrics Using Stata. Stata Press, Texas

Clark, K. B. and Summers, L.H. (1982), "The Dynamics of Youth Unemployment", in Summers, L. H. (1990), *Understanding Unemployment*, MIT Press, Cambridge, MA.

Darii, A.; Suruga, T. 2006. *Economic returns to schooling in transition: A case of Mongolia*, Kobe University, GSICS working papers, September, No. 9.

del Rosario, M., (2005) "The Mongolian Drop Out Study", Mongolian Education Alliance, Ulaanbaatar.

Gerelmaa, A. (2005), World Bank draft policy brief on the Mongolian drop out rate, unpublished manuscript.

Lambert, P.J.; Lanza, G. 2006. "The effect on inequalities of changing one or two incomes", in The Journal of Economic Inequality, Vol. 4, No. 3, pp. 253–277.

Mearns, R. (2004), "Sustaining Livelihoods on Mongolia's Pastoral Commons: Insights from a Participatory Poverty Assessment", Development and Change, 35(1): 107-139.

Morris E. and Bruun, O (2005), Promoting employment opportunities in rural Mongolia, ILO, Bangkok.

Newman, Katherine (2000). *No Shame in My Game*. Vintage Books.

Pastore, F. (2009), "School-to-Work Transitions in Mongolia", *European Journal of Comparative Economics*, 6(2): 245-264.

Pastore, F. (2010a), "Returns to education of young people in Mongolia", *Post-Communist Economies*, 22(2): 247-265.

Pastore, F. (2010b), "The gender gap in early career in Mongolia", *International Journal of Manpower*, 31 (2): 188-207.

Pastore, F. (2016), "«I wish I Had 100 Dollars a Month …» - The Intergenerational Transfer of Poverty in Mongolia" (2016), ***European Journal of Development Research***, (advance online publication).

Poterba, J.M. and Summers, L.H. (1995), "Unemployment Benefits and Labour Market Transitions: A Multinomial Logit Model with Errors in Classification", *Review of Economics and Statistics*, Vol. 77, No 2, pp. 207-216.

Svejnar, J. (1999), "Labor Markets in the Transitional Central and East European Economies," Chapter 42 in O. Ashenfelter, and D. Card (ed.) Handbook of Labor Economics, Vol. 3B, Elsevier Science B.V., pp. 2810-2857.

Van de Ven, W.P.M.M. and Van Pragg, B.M.S. (1981), "The demand for deductibles in private health insurance: A probit model with sample selection", *Journal of Econometrics*, 17(2): 229-252.

Wooldridge J (2003) Introductory Econometrics: A Modern Approach (Mason. Ohio, Thomson Learning).

Tables and Figures

Table 1. Different measures of the poverty line (in Thous. TUGs)

Relative Poverty Line	All	UB	Aimag centres	Soum Centres	Rural area
Gini Benchmark Percentile	63.31	61.89	63.41	63.35	63.23
Gini benchmark income	120	150	125	105.40	96
Theil benchmark income	109.77	124.86	113.52	100.55	89.11
Deviation benchmark income	123.31	137.67	127.90	112.70	99.50

Note: The indices have been computed excluding the households whose incomes are lower the 10th or above the 90th decile.
Source: own elaboration on the Mongolian SWTS.

Table 2. Summary statistics on household's monthly net income (in '000 TUGs)

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
All	6415	123.58	100	144.09	0	9000
No zeros	6367	124.51	100	144.23	1	9000
From the 10th to the 90th (deciles)	5153	109.77	100	51.68	35	236

Note: As to the 31st of May 2007, the nominal exchange rates of the TUG to the Euro and the US dollars were as follows: 1 Euro = 1566.8700 Tughrik; 1 Tughrik = 0.0006 Euro; 1 US Dollar = 1164.6993 Tughrik; 1 Tughrik = 0.0009 US Dollars.
Source: own elaboration on the Mongolian SWTS.

Table 3. Measures of inequality of the household's income

Inequality measures	All	UB	Aimag Centres	Soum Centres	Rural
Relative mean deviation	0.1995	0.1788	0.2038	0.1971	0.1908
Coefficient of variation	0.4708	0.4146	0.474	0.4792	0.4918
Standard deviation of logs	0.4929	0.4609	0.5006	0.482	0.4651
Gini coefficient	0.2661	0.2378	0.2682	0.2669	0.2646
Mehran measure	0.3799	0.3506	0.3842	0.3752	0.3651
Piesch measure	0.2092	0.1814	0.2102	0.2128	0.2143
Kakwani measure	0.0638	0.0527	0.0651	0.0635	0.0624
Theil index (GE(a), a = 1)	0.1094	0.0886	0.1114	0.1102	0.1108
Mean Log Deviation (GE(a), a = 0)	0.1164	0.0977	0.1193	0.1141	0.1102
Entropy index (GE(a), a = -1)	0.1346	0.1166	0.139	0.1281	0.1189
Half (Coeff.Var. squared) (GE(a), a = 2)	0.1108	0.0859	0.1122	0.1147	0.1208
Atkinson inequality measures (eps = 1)	0.1098	0.0931	0.1124	0.1078	0.1044

Note: The indices have been computed excluding the households whose incomes are lower the 10th or above the 90th decile.
Source: own elaboration on the Mongolian SWTS.

Table 4. Education attainment by gender and place of residence (in %)

	15-29			25-29			15-29			Ages		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	15-19	20-24	25-29
Uneducated	4.64	2.06	3.34	3.46	1.94	2.65	8.05	4.88	6.43	3.07	4.29	2.65
Primary	14.11	9.98	12.02	16.05	7.34	11.4	38.98	22.36	30.5	13.18	11.01	11.4
Basic	33.94	31.53	32.72	22.96	18.12	20.38	41.1	35.77	38.38	54.29	14.7	20.38
Secondary	31.77	34.98	33.39	24.32	31.07	27.92	7.63	27.24	17.63	27.52	45.94	27.92
Vocational technical	3.63	3.23	3.43	5.8	5.07	5.41	0.85	3.66	2.28	1.24	4.63	5.41
Diploma, specialized	1.83	2.71	2.28	4.2	5.61	4.95	0.85	2.03	1.45	0.15	2.79	4.95
Tertiary/bachelor	9.79	15.06	12.46	22.22	29.45	26.08	2.54	4.07	3.32	0.56	16.49	26.08
Master's degree	0.28	0.46	0.37	0.99	1.4	1.21				0	0.15	1.21
Number of observations	3,167	3,248	6,415	810	927	1,737	236	246	482	2,671	2,007	1,737

Source: own elaboration on the Mongolian SWTS.

Table 5. Reasons to leave school for the uneducated by age and gender (in %)

	All	Men	Women	15-19	20-24	25-29
Failed examinations	2.82	2.56	3.33	3.33	2.6	2.5
Did not enjoy schooling	26.55	26.5	26.67	23.33	27.27	30
Do not like schooling	2.26	3.42	0	3.33	2.6	0
Wanted to work	2.26	2.56	1.67	0	5.19	0
Parents did not allow to continue school	6.78	3.42	13.33	5	2.6	17.5
Economic reasons	9.04	11.11	5	20	5.19	0
Takes care of livestock	26.55	28.21	23.33	20	29.87	30
Other	23.73	22.22	26.67	25	24.68	20
Number of observations	177	117	60	60	77	40

Source: own elaboration on the Mongolian SWTS.

Table 9. Logistic regression of the determinants of working poverty in Mongolia

	Entire sample			Aged 20 through 29 years		
	All	Women	Men	All	Women	Men
Women	2.0034***			2.1287***		
Education (baseline: Secondary education or below)						
Vocational technical secondary	0.6215	0.4034*	0.8997	0.5354	0.3155**	0.8711
Specialized secondary	0.3907**	0.3184*	0.6569	0.3059**	0.2918*	0.3179
University or above	0.1667***	0.0854***	0.3863*	0.1542***	0.0787***	0.3483*
Age (baseline: aged 25-29 year-old)						
Young teenagers (15-19 year-old)	1.8591***	1.4133	2.2253***			
Young adults (20-24 year-old)	1.3221*	1.3911	1.3009	1.3017*	1.3323	1.2982
Civil status (Baseline: single)						

Woman married	1.1292	1.18		1.1754	1.1413	
Man married	0.7385		0.7128	0.7731		0.7731
Woman divorced, separated, widow	3.3921	6.4371**		3.3878	6.1057*	
Man divorced, separated, widow	(omitted)		(omitted)	(omitted)		(omitted)
Man with children	1.2487		1.1854	0.7622		0.7868
Woman with children	0.8204	0.9297		1.1062	1.0106	
Number of household members	1.0895**	1.1815**	1.0439	1.0727	1.1186	1.0512
Has no father	0.5230***	0.4084***	0.6261**	0.5290***	0.4081***	0.6459*
Has no mother	0.9328	1.546	0.5471	0.8575	1.4386	0.4607*
Father education (Baseline: basic education or below)						
Secondary	1.0234	0.5107	1.686	1.0475	0.5422	1.7224
Vocational technical secondary	0.5609	0.3708	0.7671	0.6135	0.3838	0.9476
Specialized secondary	1.0778	1.6309	0.8084	1.1451	1.833	0.8048
University or above	0.809	1.0218	0.483	0.8163	1.2864	0.3791
Mother education (Baseline: basic education or below)						
Secondary	0.9456	2.1849*	0.5776*	1.0211	2.7083**	0.5765
Vocational technical secondary	1.8309*	2.2982	1.4159	1.8464	2.5383	1.2689
Specialized secondary	0.7259	0.8007	0.7221	0.6718	0.7625	0.6725
University or above	1.4147	3.0061	0.9943	1.5548	2.7332	1.2386
Working while studying	1.4119	1.5736	1.332	1.3384	1.3441	1.2818
Dropouts	2.3064***	2.6114***	2.2394***	2.2413***	2.5511***	2.2047***
Location (baseline: Ulaanbaatar)						
Aimag centre	2.1216*	2.2913	2.4219	2.2314**	2.546	2.4124*
Soum centre	4.5340***	7.9581***	3.8715**	4.1220***	7.4920***	3.4263***
Rural area	27.8775***	79.2984***	15.9319***	26.5866***	84.5479***	13.4185***
Constant	0.0105***	0.0119***	0.0219***	0.0187***	0.0136***	0.0351***
N	2150	1003	1147	1927	923	1004
Pseudo-R2	0.40	0.52	0. 31	0.40	0.53	0. 28
Correctly classified cases	84%	88%	82%	85%	88%	83%
Area under ROC curve	0.90	0.93	0.86	0.90	0.94	0.85

Note: *significant at 10%; **significant at 5%; *** significant at 1%.
The table presents the odds ratio, attained by taking the exponential of the logistic regression coefficients: they measure the relative probability of the associated characteristics with respect to the baseline characteristics.
Robust standard errors are computed using the Huber / White / sandwich estimator.
Source: Own elaboration on the Mongolian SWT survey.

Table 10. Unconditional and conditional coefficient of dropout on the probability of experiencing working poverty

Variable	Entire sample			Ulaanbaatar			Aimag centre			Soum centre			Rural area		
	All	Women	Men	All	Women	Men	All	Women	Men	All	Women	Men			
unconditional	11.7356***	14.5298***	9.1678***	0.6333		0.9036	4.9640***	3.7714***	5.5289***	4.5393***	6.88***	3.3542***	3.1291***	3.6644***	2.5683***
conditional	2.3064***	2.6114***	2.2394***	0.4665	(omitted)	0.5821	2.9619	2.8619	5.7501*	3.5862**	7.7066**	3.3530*	2.4497***	2.3841**	2.6529***
N	2150	1003	1147	552	240	297	295	145	150	423	211	212	881	391	480
Young people aged 20-29 (region specific poverty line)															
Variable	Entire sample			Ulaanbaatar			Aimag centre			Soum centre			Rural area		
	All	Women	Men	All	Women	Men	All	Women	Men	All	Women	Men			
Conditional	2.2413***	2.5511***	2.2047***	0.4092	0.8528	0.2397	2.5916*	1.9070	2.4030	4.1052***	5.6256***	4.6316***	1.5079*	1.4368	1.6046
N	1927	923	1004	433	139	240	282	130	100	393	179	185	729	343	369

Note: The conditional estimates include the same control variables as in Table 9, except for the case when the variables had no observations. See the footnotes under Table 9.
Source: Own elaboration on the Mongolian SWT survey.

Table 11. Heckprobit estimates of the probability to be a working poor (20-29 years)

Variable	All	Women	Men
Women	1.5831***		
Post-secondary education	0.3879***	0.3238***	0.6405**
Number of household members	1.0335	1.041	1.0046
Fatherless	0.7058***		
Motherless	0.9671		
Mother education (Baseline: basic education or below)			
Vocational technical secondary	1.2768		
Specialized secondary	0.8927		
University or above	1.2035		
School dropout	1.5026***	1.4686**	1.3396**
Location (baseline: living in Ulaanbaatar)			
Aimag centre	1.4843*		
Soum centre	2.1434***	1.5875*	1.3985*
Rural area	7.2215***	3.3320***	4.2996***
Post-secondary degree of father		1.2421	0.9124
Post-secondary degree of mother		1.0025	0.9439
Constant	0.1345***	0.5413	0.1391***
Selection equation			
Women	0.9471		
Post-secondary degree	2.2992***	2.2594***	2.3935***
Number of household members	0.9542***	0.9431***	0.9626*
Fatherless	0.8957*		
Motherless	1.0543		
Mother education (Baseline: basic education or below)			
Vocational tecnica secondary	0.9791		
Specialized secondary	0.9617		
University or above	1.1943*		
School dropout	1.1430*	1.1702*	1.1351
Location (baseline: living in Ulaanbaatar)			
Aimag centre	1.0316		
Soum centre	1.0302	1.1496	0.8569*
Rural area	2.3286***	2.7941***	1.7367***
Woman engaged in some partnership	1.1714*	1.1394	
Man engaged in some partnership	1.5784***		1.6400***
Man with children	0.8579		0.8295
Woman with children	0.8335**	0.8126**	
Post-secondary education of father		0.986	1.11
Post-secondary education of mother		1.1723*	0.8453*
Constant	0.8311*	0.7503**	0.9007
Athrho			
Constant	0.9081	0.3830**	22.5872***

Statistics			
N	2712	1522	1190
Censored observations	1178	683	495
Uncensored observations	1534	839	695
Wald test of independent equations	0.04	4.6**	23.5***

Note: *significant at 10%; **significant at 5%; *** significant at 1%. Coefficients measure elasticities.
Source: Own elaboration on the Mongolian SWT survey.

Figure 1. Working poor by school dropout

Panel (a): Entire sample	Panel (b): Excluding students
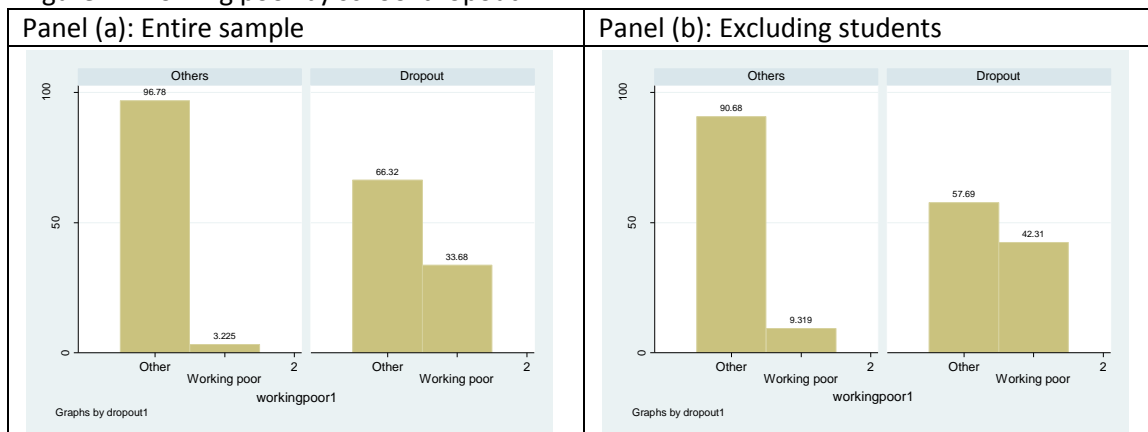
Source: Own elaboration on the Mongolian SWT survey.

Annex 1. Variables definition

Table A1.1. Variables definition

Variable	Definition
Dropout	= 1 if dropping out of any type of school, up to high secondary school, without getting the aimed diploma; =0 otherwise.
Working poverty	= 1 if the individual income is below the poverty line (1/2 the median value of the gross monthly income from the main job); =0 otherwise.
Women	= 1 if woman; 0 otherwise.
Teenager	= 1 if aged 15-19 years; = 0 otherwise.
Young adults	= 1 if aged 20-24 years; = 0 otherwise.
Oldest age segment	= 1 if aged 25-29 years; = 0 otherwise.
Single	= 1 if single; = 0 otherwise.
Married woman	= 1 if married and woman; = 0 otherwise.
Married man	= 1 if married and man; = 0 otherwise.
Divorced, separated, widowed woman	= 1 if divorced, separated or widowed and woman; = 0 otherwise.
Divorced, separated, widowed man	= 1 if divorced, separated or widowed and man; = 0 otherwise.
Man with children	= 1 if man and with children; = 0 otherwise.
Woman with children	= 1 if woman and with children; = 0 otherwise.
More than $100 a month	= 1 if the household income is more than $100; = 0 otherwise.
From $60 to $100 a month	= 1 if the household income is comprised between $60 and $100; = 0 otherwise.
From $30 to $60 a month	= 1 if the household income is comprised between $30 and $60; = 0 otherwise.
Less than $30 a month	= 1 if the household income is less than $30; = 0 otherwise.
Number of household members	= continuous variable indicating the number of household members. In some estimates, several dummy variables have been added of the following type.
Number of household members (baseline is 3 members or less)	
4	= 1 if there are 4 household members; = 0 otherwise.
5	= 1 if there are 5 household members; = 0 otherwise.
6	= 1 if there are 6 household members; = 0 otherwise.
7	= 1 if there are 7 household members; = 0 otherwise.
8	= 1 if there are 8 household members; = 0 otherwise.
9 or more	= 1 if there are 9 or more household members; = 0 otherwise.
Fatherless	= 1 if the individual is fatherless; = 0 otherwise.
Motherless	= 1 if the individual is motherless; = 0 otherwise.
Father or mother education (baseline: tertiary or above)	
Uneducated	=1 if the father or mother has below primary education; = 0 otherwise.
Primary education	=1 if the father or mother has primary education; = 0 otherwise.
Basic	=1 if the father or mother has low secondary education; = 0 otherwise.
Secondary	=1 if the father or mother has high secondary education; = 0 otherwise.
Vocational technical secondary	=1 if the father or mother has vocational technical secondary education; = 0 otherwise.

Specialized secondary	=1 if the father or mother has specialised secondary education; = 0 otherwise.
Worked while at school (baseline: did not work at school)	
As a clerk	=1 if the respondent worked as a clerk while at school; = 0 if she did not work.
Part time	=1 if the respondent worked part-time while at school; = 0 if she did not work.
In services	=1 if the respondent worked in the service sector while at school; = 0 if she did not work.
In agriculture	=1 if the respondent worked in agriculture while at school; = 0 if she did not work.
As a commercial	=1 if the respondent worked as a commercial while at school; = 0 if she did not work.
Other types of work	=1 if the respondent worked in other types of jobs while at school; = 0 if she did not work.
Family run business	=1 if the respondent worked in a family run business while at school; = 0 if she did not work.
As a volunteer	=1 if the respondent worked as a volunteer while at school; = 0 if she did not work.
Main goal in life* (baseline: Being successful at work)	
Making a contribution to the society	=1 if the respondent declared that making a contribution to the society is her main goal in life; = 0 otherwise.
Participating in community affairs	=1 if the respondent declared that participating in community affairs is her main goal in life; = 0 otherwise.
Upholding religious faith	=1 if the respondent declared that upholding a religious faith is her main goal in life; = 0 otherwise.
Having a lot of money	=1 if the respondent declared that having a lot of money is her main goal in life; = 0 otherwise.
Having a good family life	=1 if the respondent declared that having a good family life is her main goal in life; = 0 otherwise.
Having a good education	=1 if the respondent declared that having a good education is her main goal in life; = 0 otherwise.
Gaining work experience	=1 if the respondent declared that gaining work experience is her main goal in life; = 0 otherwise.
Living wisely	=1 if the respondent declared that living wisely is her main goal in life; = 0 otherwise.
Being self-confident and achieving goals	=1 if the respondent declared that making a contribution to the society is her main goal in life; = 0 otherwise.
Gain a reputation	=1 if the respondent declared that gaining a reputation is her main goal in life; = 0 otherwise.
Live freely	=1 if the respondent declared that living freely is her main goal in life; = 0 otherwise.
To work in overseas	=1 if the respondent declared that working overseas is her main goal in life; = 0 otherwise.
Location (baseline: Ulaanbaatar)	
Aimag centre	= 1 if the respondent lives in an Aimag centre; 0 otherwise.
Soum centre	= 1 if the respondent lives in a Soum centre; 0 otherwise.
Rural area	= 1 if the respondent lives in a rural area; 0 otherwise.

Annex 2. The Mongolian educational system

The Mongolian educational system has changed substantially after the end of socialism[10]. The formal school system comprises primary, secondary, and higher education; pre-school education is also provided.

Although a 10 years of schooling general education system was inherited from the previous regime, and is still in place, the composition of primary, incomplete secondary and complete secondary education (3+5+2 structure) has changed several times during the period of transition from plan to market. For example, the structure was changed into a 6+2+2 model in 1990. In 1992, it was changed back to the 3+5+2 structure. However, since 1993, the system has adhered to the present 4+4+2 structure: a) primary education (4 years, from age 7-11 years); b) basic or incomplete secondary school (4 years, from the age 11-15 years); c) complete secondary school (final 2 years, from age 15-17 years). Despite these reforms, though, the curriculum did not change.

Compulsory education ends at the age of 15, when it is time to attain a diploma of non-complete secondary education. Primary and lower secondary education together comprise the basic compulsory educational level that the State provides for free, as stated in the country's Constitution. General education includes a combination of basic education and high school (Law on Education, 2002). Also, the last two years of general education are free.

At the end of the first two stages, primary and lower secondary, graduates have two possibilities for high secondary school:

(a) general secondary school;

(b) technical and vocational school, and training, TVET.

Both graduates from incomplete and complete secondary education can join TVET, which further requires 2.5 and at least one year to complete, respectively. TVET comprises specialized

---

[10] For a more detailed analysis of the Mongolian educational system and legal framework, see Gerelmaa (2005) and del Rosario (2005).

complete secondary schools, as well as post secondary diploma programmes housed in higher educational institutions. Correspondingly, graduates from the former are given a complete secondary education diploma and those from the latter a technical specification diploma. TVET graduates have the possibility to access higher educational institutions.

Tertiary education comprises higher education diplomas and bachelor degrees. Institutions involved in higher education are of the following types: colleges, institutions and universities. The length of higher education is three years for the diploma programme (diploma of higher education) and four years for graduate programme (diploma of bachelor degree). However, for some professional courses, the length can vary (e.g. medicine). Graduates from universities and the 16 other higher educational institutions can obtain a diploma, a bachelor degree or a master degree. Some higher educational institutions are approved by the Ministry of Education to provide magistrate (two years) and doctoral programme (three or four years). Pre-doctoral and doctoral courses are offered in some universities. Non-formal and distance educational activities span over the entire system.