Does Land Reform in Transition Countries Increase Child Labor?

Evidence from the Republic of Georgia

by

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Abstract

This paper investigates the issue of child labor in the context of land reforms in transition economies, using farm household data from the Republic of Georgia. The results show that an increase in landholdings as an outcome of the land reform can, in the presence of market imperfections, lead to an increase in child labor. This is because the increased demand for labor on the family farm is stronger than the wealth effect generated by the land reform. However, this result is not uniform across farm families. First, it is only relevant for boys, because girls tend to assist in household activities rather than in farm work. Second, larger households are able to meet the increased demand for farm labor without the need for additional child labor. To the extent that smaller households tend to be poorer, it is mostly the poor households that sacrifice the future well-being of their male children in order to satisfy current needs. In this sense, the land reform may lead to a higher rural inequality in the long run. The policy implications are that land reforms in transition countries should include, as an integral ingredient, the development of rural land, labor and credit markets, in order to avoid the repercussions associated with increased child labor.

Introduction

Child labor and land reform are two issues that received considerable attention in the economic literature during the last decade. Yet no study, to the best of my

knowledge, looked at their interaction, and in particular, whether land reform affects child labor. The potential positive effect of land reform on child labor is through the increase in the demand for labor by poor farm households that obtained land through the reform. On the other hand, land reform could have a positive wealth effect that potentially affects child labor in the opposite direction. Hence, the net effect is theoretically ambiguous and remains an empirical question. This paper will attempt to answer this question using data from the Republic of Georgia that is in the midst of a land reform. While child labor does not seem to be a major problem in transition economies in general (Edmonds and Pavcnik, 2005), the incidence and magnitude of land reform in these countries provide a unique opportunity to examine the phenomenon of child labor in agrarian societies in which a key component of family assets, namely land, changes unexpectedly.

Child labor, while not easy to define precisely, prevails in many societies (Grootaert and Kanbur, 1995; Basu and Tzannatos, 2003; Edmonds and Pavcnik, 2005; Fares and Raju, 2007). While the popular concern about child labor mostly stems from the stance against jobs that involve physical exploitation or morally objectionable activities, economists view child labor as detracting from human capital accumulation, and hence consider it detrimental for growth (Hazan and Berdugo, 2002). The individual time constraint implies that more labor leads to less schooling, and as a result, many studies focused on the tradeoff between child labor and school attendance (Canagarajah and Coulombe, 1997; Jensen and Nielsen, 1997; Psacharopoulos, 1997; Kurosaki et al., 2006; Nkamleu and Kielland, 2006; Wahba, 2006). See, however, the conflicting results of Ravallion and Wodon (2000), who found that most of the increase in child labor comes on the expense of leisure time. In addition, Emerson and Souza (2003) found that children who worked commanded lower salaries later in life. Moreover, several authors found that school achievement declines with child labor even if working children still attend school (Gustafsson-Wright and Pyne, 2002; Heady, 2003; Gunnarsson, Orazem and Sánchez, 2006). Finally, O'Donnell, Rosati and van Doorslaer (2005) found that child labor increases the risk of illness up to five years later.

In the next section I discuss the theoretical foundation of this empirical study, in order to motivate the focus on the interaction of landholdings and family size as key determinants of child labor. After that I describe the data used in the analysis, and

the empirical specification. The following section presents the empirical results. The paper ends with a discussion of the results and their policy implications.

Theory

Child labor is a derivative of the demand for labor services by the family and the availability of adult labor. The demand for labor could be for farming, for household production activities, and/or for other income-generating activities such as off-farm work or work on a family business. Hence, in the presence of imperfections in rural land and labor markets, an increase in landholdings will increase the demand for labor as an input in agricultural production, other things equal, and also the demand for child labor (Bhalotra and Heady, 2003). On the other hand, child labor may be an outcome of financial constraints (Beegle, Dehejia and Gatti, 2003; Cigno, 2004; Edmonds, 2004), and these constraints may become less binding if the farm household utilizes the extra land to increase household income and/or to ease the credit constraints. The positive wealth effect in itself could reduce the incentive to put children to work (Edmonds and Pavcnik, 2005). This is what Basu (1999) called 'the luxury axiom," that can be justified on many theoretical grounds. Hence the impact of landholdings on child labor is ambiguous. Fares and Raju (2007) found that the extent of child labor is positively related to the importance of agriculture in the economy. Bhalotra and Heady (2003) found that the effect of landholdings on child labor is nonlinear, meaning that for some households the substitution effect is dominant while for others the income effect dominates.

The effect of household size on child labor is also ambiguous: household size has a positive effect due to the need to support a larger family (Patrinos and Psacharopoulos, 1997), and it has a negative effect if it indicates that the household has more labor resources (Jensen and Nielsen, 1997).

Bhalotra and Heady (2003) develop a two-period model of a farming household, which is useful to motivate a cross-sectional analysis of child labor decisions. It is more appropriate for our purposes than the model of Basu and Van (1998), which assumes a perfect labor market and does not include farm production. In the republic of Georgia, it is quite clear that the incomplete nature of the land reform has left land markets far from being complete (Gogodze, Kan, and Kimhi 2007). In addition, the empirical evidence clearly indicates that rural labor markets in the country are not functioning perfectly (Hoyman and Kimhi, 2005). Hence, I will

assume in this paper that land and labor markets are imperfect. I will also assume that child labor comes, at least in part, on the expense of human capital investments.

Under these assumptions, even a simple model of farm income maximization as a function of child labor, conditional on land and on adult labor, yields an ambiguous effect of land on child labor, which depends on the degree of substitutability between land and labor. This degree depends, in turn, on the levels of land and adult labor. Hence, in the empirical model I will allow the effect of land on child labor to be nonlinear and also depend on family size, which serves as a proxy for adult labor.

Data and empirical specification

The data used in this paper were collected by means of an Individual Farm Owners' Surveys carried out in 2003 in four rural regions of the Republic of Georgia: Dusheti, Mtskheta, Sagarejo, and Gardabani. The survey included 2520 individual farms. The survey questionnaire included questions on the demographic profile of the household, land resources and land tenure, farm production, sale of farm products, purchase of farm inputs, farm labor, finances and credit, income from different sources, and social aspects.

For children younger than 15 years of age, the survey does not document the allocation of time. It only provides the primary activity, as shown in table 1. Schooling is the primary activity of 84% of the children, while the primary activity of another 13% is some kind of work. The dominant type of work as a primary activity is work on one's own farm, which is consistent with previous studies (Bhalotra and Heady, 2003). This distribution of primary activity does not permit an empirical distinction between types of work, and therefore, for the purpose of the empirical analysis, all types of work are grouped together. The empirical model then estimates the probability of the primary activity being work.

Landholdings and family size serve as the primary explanatory variables. The estimated equation includes a second-degree polynomial in these variables in order to allow nonlinearities and interdependent effects. The data show that boys work more than girls, and those who work tend to concentrate in work on own farm, whereas girls who work tend to concentrate in household activities. Gender differences in child labor are documented in other studies, e.g., Gustafsson-Wright and Pyne (2002) and Bhalotra and Heady (2003). Hence, I include a gender dummy among the explanatory

variables, and alternatively estimate the model separately for boys and for girls. Another important variable is obviously child age. I also control for levels of education of adult males and adult females in the household. In the literature, researchers normally included education of parents and/or head of household, and found that it is the mother's education that mostly affects child labor negatively (Bhalotra and Heady, 2003). I prefer to control for education of all adult household members because if there is an income effect associated with education, it is not only that of the child's parents. In addition, education of older siblings may indicate, for example, some tendency towards education within the household. After experimenting with several specifications, I included among the explanatory variables two dummy variables, indicating whether at least one of the adult males (alternatively, females) in the household has at least a high school education.

Table 2 reports the means of explanatory variables, in the whole sample as well as among working and non-working children. It is easy to see that male children are more likely to work, and that education of both adult males and adult females reduces child work. The same is true for family size, as expected. Perhaps surprisingly, the raw data show that landholdings are negatively correlated with child labor. Note that the number of observations is larger than in table 1, because of missing values in the primary activity question.

Regional variation in practices of child labor is expected for more than one reason. It could be due to omitted variables such as agricultural productivity, labor demand, school accessibility and quality, and social norms (Chamarbagwala and Tchernis, 2006). In this research, I control for regional variation by estimating village fixed effects.

The model chosen for estimation is the linear probability model. Despite the well-known difficulty of predicted values that lie outside of the zero-one interval, this model is semiparametric in the sense that it does not assume a particular distribution of the error terms. For comparison, I estimated the work equation with a Probit model, and the marginal effects were not much different.

Results

The estimation results are in table 3. The first column is for both male and female children. Family size has a statistically significant quadratic effect on the probability of child labor, with the probability decreasing with family size for small

families and increasing with family size for large families. Landholdings have a marginally significant positive effect on the probability of child labor, with a positive but insignificant quadratic term. The interaction of landholdings and family size has a negative and statistically significant coefficient. This means that the effect of landholdings is positive for small families and becomes negative for larger families. The turning point is at family size of about five, somewhat below the sample mean. This implies that for small families, labor shortage is a serious constraint, and therefore an increase in landholdings leads to an increase in child labor. In larger families, labor is more readily available, and the family can satisfy the increased labor needs induced by an increase in landholdings without using child labor. In this case the income effect of the increase in landholdings dominates, and leads to a decrease in the probability of child labor.

Figure 1 illustrates the interaction of family size and landholdings, by plotting the probability of child labor as a function of landholdings for different family sizes, for an otherwise average child in the sample. The range of landholdings shown excludes the lowest and highest 4% of the sample. Up to a family size of four, the probability of child labor increases monotonically with landholdings. For a family size of five, the probability first increases but then becomes almost fixed as landholdings increases further. For larger families, the probability of child labor decreases monotonically with landholdings.

While the coefficient of the gender dummy is not statistically significant, it does indicate that the probability of child labor may be higher for male children. In addition, recall that male children have a higher tendency than girls to engage in farm work, which female children tend to concentrate in household work. This implies that the effect of landholdings on the probability of work may be different for male and female children. In particular, one could expect that the effect of landholdings will be stronger for male than for female children. This expectation is confirmed after looking at the gender-specific estimation results in the last two columns of table 3. While the effect of landholdings on the probability of work is stronger for male children than for the whole sample, it is not statistically significant for female children.

It is interesting to note that the effect of family size, ignoring the interaction of landholdings and family size for boys, is not very different for boys and girls. Another interesting finding is that the education of adult females in the household is associated with a higher probability of work for girls. This stands in sharp contrast to the existing

literature, which in most cases shows that adult education decreases child labor (Bhalotra and Heady, 2003). Perhaps this result is a consequence of a higher female labor supply among educated adult females that creates a demand for labor in household activities that is traditionally satisfied by female children.

Discussion

Land reform in transition countries mostly involves transfer of land from state enterprises to family farms. In the Republic of Georgia, land was allocated to farm families but the possibility of land transactions is still fairly limited (Gogodze, Kan, and Kimhi 2007). In addition, the rural labor market is not functioning perfectly, and neither does the credit market. In this situation, there is a risk on an increase in the incidence of child labor as the land reform progresses and more land is allocated to farm families. The empirical results of this paper show that this problem is mostly relevant for boys rather than for girls, and that it is not affecting all farm households similarly. In particular, small families, in which labor is in short supply, respond to an increase in landholdings with an increase in male child labor. On the other hand, larger families tend to reduce male child labor with an increase in landholdings, perhaps due to the positive wealth effect associated with landholdings, when child labor is an inferior good.

Earlier studies showed that smaller households tend to have lower income (Kan, Kimhi and Lerman, 2006). Combining this finding with the empirical results of this paper, one can conclude that it is mostly the poor households that sacrifice the future well-being of their male children in order to satisfy current needs induced by the land reform. In this sense, the land reform may lead to the undesirable consequence of increasing rural inequality in the long run.

The policy implications of these findings are that it is far from sufficient to distribute land to rural families in order to increase rural well-being. When land transactions are institutionally limited, and when hiring labor is not feasible either because labor is not available or because the family cannot afford to hire labor, the family may be forced to resort to second-best resource allocations involving child labor. In this sense the family is substituting future well-being for current income and consumption, which is not desirable from a social welfare point of view. Hence, it is important that land reforms in transition countries will not stop short of their goals, and complement the redistribution of land with the creation of an institutional

environment that supports land transactions and minimizes the transactions costs. In addition, the development of well-functioning rural labor and credit markets may allow rural households to reap the full benefits of the land reform rather than resort to second-best strategies.

It is surprising that despite the relative abundance of agricultural households in poor countries in which child labor is a significant problem, only a few of the studies dealing with child labor have focused on the specific feature of farm households, namely the demand for child labor for the purpose of working on the family farm. Clearly there is a need for more studies in this direction, in particular in countries experiencing significant structural changes in the farm sector, such as transition countries that are in the process of land reforms.

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Table 1. Distribution of Children by Age and Primary Activity

| | Primary Activity | | | | | | | |
Age	Work on own farm	Work on another farm	Self-employment activity	Non-farm hired job	Household activity	Student	Not working	Total
6	6	0	0	0	0	34	5	45
7	5	0	1	1	4	71	2	84
8	3	0	2	2	3	89	4	103
9	4	1	2	3	1	85	4	100
10	6	0	3	0	3	125	3	140
11	7	2	2	4	5	111	4	135
12	8	4	0	5	6	166	4	193
13	16	1	1	6	2	129	0	155
14	9	1	3	5	6	131	5	160
total	64	9	14	26	30	941	31	1115

Table 2. Means of Explanatory Variables

Variable	All	Not working	Working
Male (dummy)	0.506	0.481	0.573
Age	10.631	10.789	11.063
Education males	0.907	0.920	0.887
Education females	0.918	0.934	0.915
Family size	5.413	5.666	4.825
Landholdings (ha)	2.163	2.039	1.388
Observations	1304	941	143

Table 3. Linear Probability Estimation Results

Variable	All	Males	Females
Male	0.029499 (1.45)		
Age	-0.00056 (-0.13)	0.00251 (0.37)	-0.00373 (-0.64)
Education males	-0.00690 (-0.17)	0.04755 (0.69)	-0.03986 (-0.79)
Education females	0.07018 (1.23)	-0.04730 (-0.58)	0.20063 (2.44)**
Family size	-0.28489 (-6.18)***	-0.28915 (-4.04)***	-0.26384 (-4.28)***
Family size squared	0.02506 (6.81)***	0.02912 (4.98)***	0.01936 (4.05)***
ln(land)	0.06961 (1.65)*	0.13044 (2.16)**	-0.00351 (-0.06)
ln(land) squared	0.00225 (0.65)	-0.00195 (-0.38)	0.00593 (1.15)
ln(land)*Family size	-0.01406 (-2.26)**	-0.0188 (-2.14)**	-0.00655 (-0.73)
R^2	0.1684	0.1951	0.2413
Observations	1039	515	524

* Coefficient significant at 10%
** Coefficient significant at 5%
*** Coefficient significant at 1%
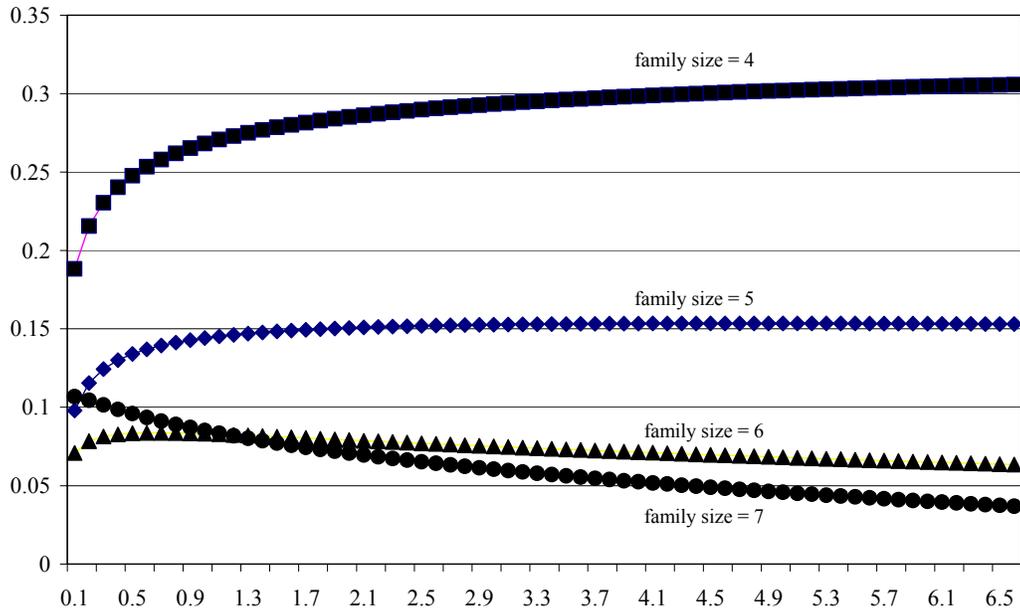
Figure 1. The Probability of Child Labor as a Function of Landholdings