

Household assets, school enrollment, and parental aspirations for children's education in rural China: Does gender matter?

Deng S, Huang J, Jin M, Sherraden M. Household assets, school enrollment and parental aspirations for children's education in rural China: Does gender matter?

Using rural household data from the China Household Income Project (CHIP) 2002, this article provides an analysis of different effects of household assets independent of family income on children's school enrollment and parental aspirations for education, examining both outcomes by children's gender. The study first compared the responsiveness of boys' and girls' enrollment with the improvement of household assets, measured as liquid assets and net worth, relative to family income. The multivariate regression analysis further detected the effects of household assets on both boys' and girls' school enrollment and parental aspirations for their future education. Statistical results show that, compared with family income, household assets matter more for girls' schooling than for boys'. In addition, household net worth was found to be significantly associated with parental aspirations for children's education regardless of gender. This study, albeit exploratory, sheds light on child welfare and education policies in rural China.

**Suo Deng¹, Jin Huang², Minchao Jin³,
Michael Sherraden³**

¹ Department of Sociology, Peking University, Beijing, China

² School of Social Work, St. Louis University, St. Louis, MO, USA

³ George Warren Brown School of Social Work, Washington University in St. Louis, St. Louis, MO, USA

Key words: household assets, gender, family income, school enrollment, parental aspiration

Suo Deng, Department of Sociology, Peking University, Beijing 100871, China

E-mail: dengsuo@pku.edu.cn

Accepted for publication February 14, 2013

Introduction

Gendered educational disparities in developing countries are well documented (Filmer, 1999; Lloyd & Blanc, 1996; Stromquist, 1989). Research has shown that girls are often disadvantaged in educational participation and achievement. Compared with boys, they are at higher risk of dropping out of school and less likely to pursue post-secondary education (Lantican, Gladwin, & Seale, 1996). In China, the rapid economic growth over the past decades, combined with dramatic social and ideological transitions, has substantially advanced gender equality in many respects. Nonetheless, gender gaps in schooling still exist, particularly in rural areas. Despite the improved enrollment of girls in elementary education due to the enactment of compulsory education laws, gender disparities at higher education levels in rural China are striking (Hannum, 2005; Song, Appleton, & Knight, 2006).

Among a variety of factors affecting girls' disadvantages in schooling, family-related characteristics, relative to school-related factors, have begun to receive more attention (Buchmann & Hannum, 2001; Stromquist, 1989). While earlier studies focused on

external factors such as distance to school and quality of educational facilities, recent literature places more emphasis on the impact that family background, especially household economic circumstances, has on educational stratification. The household welfare framework was developed in an attempt to explain the relationship between household economic circumstances, family strategies, and gendered educational outcomes (Papanek, 1985; Schultz, 1995). It proposes that better household economic circumstances, by increasing incentives for families to invest in girls' education, may lead to greater gender equality in educational outcomes at various levels (Papanek, 1985). The reasoning is that when families gain more economic resources, they face less stringent economic pressure to choose whom among their children to educate. It also implies that parents living in better-off household economic circumstances may have higher and more equitable aspirations for their children's future education.

Research over the past three decades has provided empirical evidence to support the household welfare framework. For instance, studies have found that girls' educational opportunities respond more strongly than that of boys' to improvements in the household's

economic status (Filmer & Pritchett, 1999a; Schultz, 1995). Nonetheless, with a few exceptions (Filmer, 1999; Filmer & Pritchett, 1999a), most studies measured household economic resources using household income and did not attend to household assets that may have long-term and different effects on children's schooling outcomes by gender. A growing body of research in the existing literature has shown that parental assets, independent of income, are significantly associated with children's educational attainments (Conley, 2001; Huang, Guo, Kim, & Sherraden, 2010; Zhan & Sherraden, 2003). The consideration of household assets in explaining the underlying mechanism of the relationship between household economic circumstances and children's well-being is an important extension of the existing explanatory frameworks that focus almost exclusively on income indicators.

The current study aimed to bridge this research gap by including household assets in the investigation of the effects of household economic resources on children's school enrollment and parental aspirations by children's gender. Based on household survey data from the China Household Income Project (CHIP) 2002, this study expanded on earlier studies by: (i) investigating the responsiveness of boys' and girls' schooling to increases of household assets compared with those of household income; (ii) exploring the effect of household asset holding, measured as liquid assets and net worth, on boys' and girls' school enrollment; and (iii) investigating the effect of household assets on parental aspirations for children's education by gender. This study helps to reveal the potential gender effect of parental asset holding on children's educational outcomes and contributes to the existing literature on asset welfare effects (Paxton, 2001; Sherraden, 1991).

Background

Education is considered an important mechanism for social mobility (Blau & Duncan, 1967; Breen, 2004). Less privileged groups such as the poor, racial minorities, and women, however, face more obstacles in accessing educational opportunities and achieving higher educational goals. Disadvantages in education are particularly pronounced for females in many developing countries (Filmer, 1999). Past research on education and social stratification has identified various factors affecting gendered educational disparities in which the *demand* for education and *supply* for schooling are two main explanatory directions (Buchmann & Hannum, 2001; Stromquist, 1989).

The "supply side" approach investigates gender gaps in schooling by looking at factors derived from the educational supply, and focuses mainly on school-related characteristics and local community resources such as school quality, educational accessibility, and

community economic development. Research in developing countries has demonstrated significant effects of school characteristics on educational participation and achievement, especially for girls (Heyneman, 1976). The improvements in the school location, materials, and per pupil budget have been identified as factors that would increase girls' school participation (Hill & King, 1993). Additionally, community development factors may condition girls' educational opportunities. Recent research has examined the effects of community socio-economic characteristics, such as village income, on gender gaps in education (Hannum, 2003).

The second prominent explanatory approach emphasizes the "demand side" of education by analyzing the impacts of family-related factors such as parental education, household socioeconomic status, and family structure and size. While school factors are important, some cross-national studies have shown that the estimates of school-related effects might be relatively small compared with household welfare impacts (Filmer, 1999). Research on a wide range of developing countries has found that girls' educational participation responds more strongly to improvements in household economic conditions than boys'. For instance, Behrman and Knowles' (1999) study demonstrated that the income elasticity of demand for girls' schooling is higher than that for boys'. Using household data from 35 countries in Africa, the Middle East, and South and East Asia, Filmer and Pritchett's (1999b) study found a significant association of household wealth with female disadvantage in education in most countries in terms of male-female enrollment, both as measured in percentages and as a ratio of males to females. Studies based on data from individual countries have shown similar patterns of the effects of household economic status on gendered disparities in schooling (Appleton, 1995; Schultz, 1995; Song et al., 2006; Stromquist, 1989).

It has been argued that the decision to invest in children's schooling reflects specific family survival strategies conditioned on household economic resources. In a perfect credit market, education is a pure investment and children's educational opportunities are equally distributed across households. However, in reality, low-income households may face serious credit constraints on human capital investments (Filmer, 1999). Parents in poor households tend to invest in children's education to maximize economic returns in the future. While in many societies, boys often have labor market advantages and are expected to provide parents' old-age support, their education is prioritized in credit-constrained poor households (Song et al., 2006). On the other hand, improvements in household economic circumstances may result in a change in family strategies. Research has shown that better household economic conditions are generally accompanied by more gender-equitable household decisions

regarding children's education; therefore, household wealth might be far more decisive for girls than for boys (Davis, Landry, Peng, & Xiao, 2007).

In China, access to education for girls has improved dramatically since the establishment of the Communist regime in 1949, particularly after the enactment of compulsory education in the mid-1980s (Zou, Moen, & Tuma, 1998). Nonetheless, while enrollment at the elementary school level is almost universal now, gender disparities remain at higher educational stages. For instance, one study using household survey data in Gansu, a province located in the northwest of China, found that although almost all the children were enrolled in primary school in 2000, the risk of being out of school 4 years later was about 39 percent higher for girls than for boys (Zhang, Kao, & Hannum, 2007). Song et al.'s (2006) study showed a gender gap in school enrollment at the upper secondary school level compared with the primary level. In addition, it was found that parents in rural areas generally had higher educational expectations for boys than for girls (Li & Tsang, 2003).

The rising educational costs associated with the market-oriented educational reform implemented in the late 1970s have increased the economic burden of education for poor households, which could negatively affect girls' schooling in particular. Following the collapse of the commune system, the household has become the most important financial unit of children's education in rural China, with poor households encountering great difficulties in affording their children's education-related costs. Research has shown that education costs represent the largest expenditure for Chinese households in general and is one of the main reasons children drop out of school in many rural areas (Lu & Wei, 2004). Children from households that are both poor and credit constrained are three times as likely to drop out of school as those from households with better economic circumstances (Brown & Park, 2002), and girls' schooling is especially vulnerable in poor rural households.

In addition to household economic circumstances, cultural norms on gender and transitions in the labor market since the reform may reinforce girls' disadvantages in education. In Chinese culture, women traditionally have a lower social status than men. Sons are expected to provide old-age support to their parents and remain with the family of origin, whereas daughters typically leave their parents' household when they marry. Investment in their sons' education means long-term security for parents in many rural settings (Hannum, 2003; Li & Lavelly, 2003). Additionally, the increasing labor market opportunities after the reform may be favorable for boys with higher educational credentials (Summerfield, 1994). Research has found that girls are more likely to concentrate on agricultural work

or drop out of school at an earlier age to seek industrial jobs in the cities (Zheng, Niu, & Xing, 2002). Parents in rural areas tend to expect less schooling for girls than for boys, especially when encountering household resource constraints.

While much scholarly attention has been paid to the relationship between household economic circumstances and educational inequalities by gender, the existing studies have focused primarily on the effects of the family's short-term economic status such as household income, rather than long-term economic resources such as liquid assets and net worth. Earlier analyses have not investigated whether different types of household economic resources produce different effects on educational inequality when assets are considered. For instance, while earlier studies found an association between girls' schooling and household economic circumstances, no research has been conducted to differentiate household assets from household income in relation to the gender gap in schooling. In addition, few attempts have been made to explore the effects of household assets on parental aspirations for education. As an important predictor for children's future educational performance, parental aspirations may be correspondingly associated with family strategies of educational investment on children. Therefore, this study, by considering different types of household economic resources along with the child's gender, probed the effects of household assets on children's school enrollment and parental aspirations for their education in rural China.

Methods

Data

The sample was drawn from the CHIP 2002, a national cross-sectional survey collected by the Institute of Economics at the China Academy of Social Sciences (CASS) (Li, 2002). Adopting a multistage stratified probability sampling procedure, the CHIP survey collected household data covering provinces from eastern, central, and western regions of China. The CHIP contains detailed records of household socioeconomic information and enrollment-status variables and is considered the best publicly available data source on household expenditure, income, and assets in China (Gao & Riskin, 2009). While CASS conducted a similar survey in 2007 again, the data collected have not been released yet except for some summary values. The current study used the CHIP 2002 rural household survey data comprising a total of 9,200 households and 37,969 individuals. To investigate children's school enrollment, we used a subsample of children aged 7–16 with valid responses on all relevant variables, yielding a sample consisting of 5,677 children from 3,931 households.

Measures

The two dependent variables in the study include children's school enrollment and parental aspirations for children's education. Following Hannum (2005), school enrollment of children aged 7–16 was measured by a dichotomous variable with a value of 1 indicating "currently enrolled" and 0 indicating "never enrolled" or "having dropped out from school." If a child is enrolled, his or her parents were asked about their aspirations for this child's future education. Here, we focused on parental aspirations for children's college-level education because of the importance of college aspiration for actual college enrollment and, consequently, upward social mobility (Elliott III, 2009; Zhan & Sherraden, 2003). We treated parental aspirations as a dummy variable, with 1 indicating "college education and above" and 0 "less than college education."

The major independent variables were household assets and family income. Two forms of household assets, that is, liquid assets and net worth, were the focus of the study. Liquid assets in the CHIP were calculated as the sum of different types of financial assets such as savings, CDs (certificates of deposit), stocks, and bonds. Net worth is the total amount of household asset values including liquid assets, productive fixed assets, durable goods, and other assets net of home equity and unsecured liabilities. We did not include home equity or home ownership as the real estate market in rural areas is in general underdeveloped. Family income is the amount of income in the year 2002 from various sources, including business profits, agricultural income, subsidies, social support benefits, and other types of income. To shrink the dispersion of these variables, natural logarithm transformation was performed when they were included in regression models. To avoid the meaningless value of zero's natural logarithm, the value of assets and income was changed to 1 whenever it was 0.

Control variables included parental (mother) demographics, children's age and its squared term, children's academic performance, as well as other household characteristics. Following previous studies (Zhang et al., 2007), we included in the analysis mother's marital status (1 = married, 0 = not married), education (1 = high school or above, 0 = below high school), and employment status (1 = employed, 0 = not employed). Children's academic performance is often considered an important control in predicting the effects of household economic resources on schooling and parental aspirations (Brown & Park, 2002; Zheng et al., 2002). Academic performance was categorized into excellent, good, and fair, and then recoded as two dummy variables with "fair" as the reference group. Other controls included household size, householder's membership in the Communist party, and provincial

region. Household size was a continuous variable. Provincial region was categorized as western, central, and eastern regions. In this sample, western regions included Guangxi, Hainan, Sichuan, Yunnan, Tibet, Gansu, Qinghai, Ningxia, and Xinjiang. Central regions included Jiangxi, Hebei, Shanxi, Anhui, Henan, Hubei, Hunan, and Shaanxi. Eastern regions included Beijing, Liaoning, Jilin, Heilongjiang, Shanghai, Jiangsu, Zhejiang, Shandong, and Guangdong. This division also reflects the imbalance of economic development across geographic regions in China: The eastern region is the most developed and the western region the least developed.

Analytic strategies

The first set of analyses aimed to investigate how responsive girls' schooling is to household economic circumstances. The descriptive analysis presents the distribution of girls' school enrollment in different categories of household assets relative to family income. In the second set of analyses, logistic regression models were used to estimate the effect of household assets on children's school enrollment by gender after controlling for family income and other variables. We entered variables in steps in order to provide a better understanding of different model specifications on assets. We first examined the association of family income with children's enrollment. Then we added liquid assets and net worth separately to the model. The third set of analyses examined the association of household assets with parental aspirations for girls' education relative to boys'. Logistic regression was used to predict the effects of different household assets on the probabilities of parental aspirations for children's college education. As in the second set of analysis, we entered two forms of assets – liquid assets and net worth – separately.

Results

Descriptive statistics

Table 1 reports the sample characteristics. Of the total surveyed 5,677 children, ages 7–16, 45 percent were female and the average age was 12.7. Overall, the majority of school age children (92.9%) were enrolled in school, but less than 10 percent of the children (7.1%) stated that their academic performance in school was excellent. The majority of mothers were married, employed, and held a high school degree or above. Overall, parents showed relatively high aspirations for their children's future education. Most parents (79%) wanted their children to go to college. The average household size (4.6) was comparable with national census data (4.3) in 2000 (National Bureau of Statistics, 2001). About 14 percent of household heads

Table 1. Sample characteristics (n = 5,677).

Variables	Mean (median) or proportion	SD
Dependent variables		
Enrolled in school		
Overall (aged 7–16)	92.9%	
College aspiration (n = 5,241)		
Under college education	20.95%	
College education and above	79.05%	
Child characteristics		
Age	12.7 (13.0)	(2.6)
Female	45.0%	
Academic performance		
Fair	55.5%	
Good	37.4%	
Excellent	7.1%	
Mother's characteristics		
Mother's marital status (married)	99.2%	
Mother's employment status (employed)	84.3%	
Mother's education (high school and above)	90.6%	
Household characteristics		
Household size	4.6 (4.0)	(1.1)
Householder's membership of the Communist Party	13.9%	
Geographic region		
Eastern	27.2%	
Central	42.9%	
Western	29.9%	
Family income (Yuan)	10,530.1 (8,648.0)	(8,458.0)
Liquid assets (Yuan)	6,543.2 (2,920.0)	(10,987.3)
Net worth (Yuan)	34,974.5 (25,768.0)	(38,969.7)

SD, standard deviation.

Table 2. Children's school enrollment rates by household economic resources and gender.

Household economic resources	I: Family income and enrollment		II: Liquid assets and enrollment		III: Net worth and enrollment	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
Quintile						
Top fifth	94.2	91.2	94.1	93.8	95.8	95.0
Fourth	93.7	92.2	94.0	91.6	92.9	91.6
Third	91.7	92.2	92.9	93.0	93.5	92.5
Second	93.4	92.2	93.7	91.2	93.0	91.3
Bottom fifth	95.3	91.9	93.5	90.1	92.9	89.5
Overall	93.6	91.9	93.6	91.9	93.6	91.9
n	3,124	2,553	3,124	2,553	3,124	2,553

were members of the Communist Party of China. The average household liquid assets and net worth were 6,543 Yuan and 34,974 Yuan (approximately US\$1,022 and US\$5,465, based on the exchanging rate of 1 US\$ = 6.4 Yuan), respectively. The mean of family income (10,530 Yuan, approximately US\$1,645) was between that of liquid assets and of net worth. A comparison of the standard deviation of these variables indicates that the value on liquid assets and net worth was more widely dispersed than that on family income in this sample.

More descriptive statistics in Table 2 inform the responsiveness of girls' and boys' schooling to improvements in household economic conditions. We

examined school enrollment rates across different family income and household asset categories. The girls' enrollment rate (91.9%) was overall lower than the boys' rate (93.6%). With respect to enrollment differences among income groups, Table 2 shows that the gender gap in school enrollment in the bottom quintile (3.4%) is greater than that in the top quintile (3.0%). When using asset categories to detect gender differences in schooling, the data show that there was a 3.7 percent gap between girls in the bottom fifth and top fifth of liquid assets compared with a 0.6 percent gap for boys. Similarly, compared with boys (2.9%), a larger improvement in school enrollment for girls (5.5%) was shown when net worth increased from the

Table 3. Logistic regression results on girls' and boys' school enrollment.

Variables	Girls			Boys		
	Model I	Model II	Model III	Model I	Model II	Model III
Family income	0.182**	0.153	0.096	0.049	0.050	-0.024
Liquid assets		0.060*			-0.001	
Net worth			0.161***			0.114**
Children's age	-0.955	-0.910	-0.885	1.601**	1.601***	1.597**
Children's age squared	0.001	0.005	0.003	-0.088***	-0.088***	-0.088***
Children's academic performance (ref: fair)						
Good	1.030***	1.033***	1.025***	1.128***	1.128***	1.124***
Excellent	2.659***	2.653***	2.622***	1.977***	1.977***	1.963***
Mother's marital status (ref: not married)	0	0	0	0.222	0.221	0.221
Mother's employment status (ref: not employed)	-0.139	-0.148	-0.122	-0.075	-0.075	-0.055
Mother's education (ref: below high school)	-0.015	-0.039	-0.037	0.882***	0.882***	0.910**
Household size	-0.036	-0.033	-0.033	-0.085	-0.085	-0.077
Party Membership (ref: No)	0.095	0.106	0.109	0.321	0.321	0.323
Geographic region (ref: Eastern)						
Central region	-0.098	-0.150	-0.054	-0.710***	-0.710***	-0.723***
Western region	0.024	-0.001	0.073	-0.135	-0.135	-0.128
Constant	12.880*	12.432*	11.639*	-1.529	-2.410	-2.853
Pseudo R ²	0.239	0.241	0.247	0.245	0.245	0.245
n	2,530	2,530	2,530	3,124	3,124	3,124

*p < 0.1; **p < 0.05; ***p < 0.01.

lowest to the highest group. These results suggest that girls' educational participation may be more sensitive to the improvement of household assets than to the increase in family income. Thus, household assets as long-term economic resources may serve as a better indicator to predict girls' schooling than income.

Regression analysis

School enrollment. Table 3 shows the logistic regression models we used to predict children's school enrollment by gender. In these analyses, we ran separate models for each sex to detect the effects of different factors on children's enrollment and made direct comparisons of these effects (Fox & Faver, 1985). Children's individual and household characteristics were controlled.

In the regression results for girls, the base model (Model I) indicated that family income was positively and significantly associated with girls' school enrollment. Models II and III introduced asset indicators and tested asset effects after controlling for income and other confounding factors. Results from Model II showed that there was a significant association of girls' enrollment with liquid assets. More liquid assets increased the possibility of girls enrolling in school. After including liquid assets in the analysis, the magnitude of the coefficient of family income was reduced and became insignificant, suggesting that the effect of family income on girls' enrollment may be partially explained by household liquid assets. The effect of net worth was tested in Model III and, similarly, we found

that the association between family income and girls' enrollment was no longer significant. These results suggest that household assets may play a more important role in determining girls' schooling than does family income.

Regression Models I and II on boys' schooling show that neither income nor liquid assets were significantly associated with their enrollment. However, net worth in Model III had a statistically positive relationship with the likelihood of school enrollment for boys, but its regression coefficient was smaller than that for girls in Model III. The results suggest that family income and household assets may have an effect particularly on girls' schooling, which reinforces the notion that household economic circumstances matter more for girls' schooling than for boys' (Stromquist, 1989). In rural areas, education investment for boys may be prioritized by parents regardless of income or assets. However, girls' schooling tends to be highly constrained by household economic circumstances, especially household assets. It is worth noting that children's academic performance had a significant positive association with their enrollment regardless of gender. This finding is consistent with existing research which suggests that improved academic capability decreases the possibilities of dropping out of school for both girls and boys (Zheng et al., 2002). A child's school performance indicative of his or her potential may affect parental investment in the child's education. Parents with limited resources, typically in rural areas, are likely to invest in a child with better school performance to maximize returns (Zhang et al., 2007). In

Table 4. Logistic regression results on parental aspirations for girls' and boys' education.

Variables	Girls			Boys		
	Model I	Model II	Model III	Model I	Model II	Model III
Family income	0.189**	0.172**	0.132*	0.174**	0.162*	0.111
Liquid assets		0.038			0.020	
Net worth			0.110***			0.118***
Children's age	-0.219	-0.226	-0.194	-0.181	-0.185	-0.185
Children's age squared	0.008	0.008	0.007	0.006	0.006	0.006
Children's academic performance (ref: Fair)						
Good	0.543***	0.542***	0.536***	0.527***	0.526***	0.520***
Excellent	0.756***	0.758***	0.734***	1.012***	1.011***	1.004***
Mother's marital status (ref: not married)	0.492	0.531	0.526	0.812*	0.823*	0.864*
Mother's employment status (ref: not employed)	0.147	0.152	0.155	0.139	0.142	0.157
Mother's education (ref: Below high school)	0.851***	0.840***	0.867***	0.367***	0.365*	0.409**
Household size	-0.249***	-0.248***	-0.253***	-0.189***	-0.190***	-0.181***
Party membership (ref: No)	0.112	0.113	0.114	0.402**	0.401**	0.395**
Geographic region (ref: Eastern)						
Central region	-0.022	-0.042	0.008	-0.086	-0.099	-0.073***
Western region	-0.464***	-0.484	-0.434	-0.622***	-0.631***	-0.592***
Constant	1.248***	1.141***	0.502	1.052	1.034	0.380
Pseudo R ²	0.055	0.056	0.059	0.054	0.055	0.058
N	2,332	2,332	2,332	2,909	2,909	2,909

*p < 0.1; **p < 0.05; ***p < 0.01.

other words, girls' better school performance may compensate for the negative effect of household economic hardship on their educational participation. In addition, boys living in the central region and whose mothers had less than a high school education were unlikely to be enrolled in school.

Educational aspiration. Given that household assets are important economic resources, particularly for girls' enrollment, our research also asked if more parental asset holding may lead to more gender equitable aspirations for enrolled children's future education. Parental aspiration is considered an important predictor for children's actual educational attainment and reflects family strategies in children's educational investment (Zhang et al., 2007). As educational aspiration is a dichotomous variable, we modeled another set of logistic regressions to investigate asset effects when controlling for family income and other variables. Similar to regressions on children's school enrollment, we ran separate models for girls and boys. The analysis results are reported in Table 4.

The base models in Table 4 show that after controlling for other relevant variables, family income had a significant association with parental aspirations for both girls' and boys' college education. When introducing asset variables into models, household net worth, independent of family income, was positively and significantly associated with parental aspirations, regardless of the child's gender. The results suggest that better household economic circumstances, measured either as family income or net worth, increase parental aspirations for both girls' and boys' future education. This

contrasts somewhat with findings from previous studies that indicated family wealth only has a significant effect on mother's aspirations for boys but not for girls (Zhang et al., 2007). It is worth noting that a supplemental analysis (not reported in the article) found that parents in general expect boys to have higher levels of education than girls ($p < 0.001$, $B = 0.370$) when different educational levels, including middle school, high school, and post-secondary education, were used to predict parental aspiration in the sample.

Statistical results in Table 4 also indicate other factors that may be associated with parents' educational aspirations. Parental aspirations for children's college education for boys in particular were likely to be higher when children had a strong academic performance, the mother was married and had a higher level of educational attainment, and a member of the family belonged to the Party. In contrast, larger household size and living in the west region were associated with lower educational aspirations among parents.

Discussion and conclusion

Using data from the CHIP 2002, this study investigated the effects of different types of household economic resources on children's school enrollment and on parental aspirations for education, examining both outcomes by children's gender. The descriptive results show that girls' school enrollment responds to the improvement of household assets more strongly than boys'. Controlling for family income and other relevant variables, household assets, measured as liquid assets and net worth, have positive impacts on girls' schooling

but negligible effects on boy's schooling. When it comes to parental aspirations for children's education, household economic resources are relevant for both girls and boys. More household asset holding, independent of family income, is associated with a positive change in parental attitude toward girls' future education. Although parents in rural China in general hold lower educational aspirations for girls than for boys, the improvement of household assets should benefit all children regardless of gender.

The findings in the study have important implications for child welfare and educational policies in rural China. Education is regarded as one of most important strategies to achieve social equality. However, due to poverty and cultural biases in many developing countries, girls are often disadvantaged in terms of educational participation and achievement. Since the implementation of compulsory education laws, girls' school enrollment in China has improved significantly. The gender gap in school enrollment at the primary education level has decreased sharply compared with decades ago (Hannum, 2005). Nonetheless, poor families still face remarkable barriers to continuously support their children's education due to the increasing educational costs associated with the market-oriented reforms. Many studies tend to use family income to predict children's educational participation and this might not sufficiently reflect the structural and persistent reasons for household economic hardship (Carter & Barrett, 2006). Assets refer to the stock of wealth rather than the flow of resources such as income (Sherraden, 1991) and have been increasingly considered a better indicator of family economic circumstance that may have a profound impact on children's schooling (Filmer & Pritchett, 2001; Lerman & McKernan, 2008; Sahn & Stifel, 2003). When households lack sufficient and stable economic resources, parents in rural areas are more likely to sacrifice girls' instead of boys' educational opportunities to increase economic returns from educational investment (Buchmann & Hannum, 2001). While improving family income is critical, more emphasis should be placed on augmenting household asset holding, which may have particular effects on girls' educational participation.

The most significant policy implication is the need for actions to ensure families have stable and future-oriented economic resources for both girls' and boys' equal educational participation and better educational outcomes. Since China's market-oriented reform in the late 1970s, ordinary families have experienced a drastic wealth accumulation. Nevertheless, the household wealth holding shows significant gaps between urban and rural residents. Studies found that the urban-rural per capita wealth gap reached 1:3.6 compared with 1:3.1 of income ratio in 2002 (Li, Wei, & Ding, 2005).

Furthermore, rural households in general have fewer types of financial assets and are less sheltered from financial risks than their urban counterparts (Chen, 2008). Recently, the Chinese government's 12th Five-Year Plan (2011–2015) has placed a great emphasis on shifting developing strategies and building a well-off society in which eliminating the wealth disparity between urban and rural residents is being given considerable attention (*People's Daily*, 2011). Since 2006, a series of policies aimed at upgrading rural social benefits have been enacted, including, but not limited to, a rural minimum living standard scheme, free compulsory education, and expansion of rural social insurance scheme. Despite these policy efforts, very few institutional incentives have been in place to encourage the building of stable family economic resources for children's long-term educational goals. Income maintenance policies, while critically important for the poor's relief and social protection, should be complemented by asset-based programs targeting future development of low-income households. Some innovative programs such as Child Development Accounts or college savings accounts in the name of a child have the potential of building household assets for children's educational advancement (Loke & Sherraden, 2009; Meyer, Masa, & Zimmerman, 2010). As the current study implies, particular attention in program design should be given to promoting girls' educational opportunities and guiding parental asset accumulation and investment for children's education toward a gender equity end.

The limitations of this study should be noted. First, because the most recent household data have not been released yet, the information drawn from the 2002 survey in this article might not accurately reflect the socioeconomic situation in today's China. Luo, Li, Sicular, Deng, and Yue (2011) provided a brief description of some summary values in the CHIP 2007. With respect to the rural survey particularly, the 2007 data were larger in sample size and comprised a smaller share of female respondents. While there was an increase between 2002 and 2007 in the number of adults with primary schooling, the proportion of those attending lower/middle school decreased. Information on children's schooling was not available. Additionally, Li and Sato's (2012) study found an upward trend of rural-urban inequality in household wealth, beyond income, between 2002 and 2007. Compared with their urban counterparts, rural households had significantly fewer sources of asset income, including income from financial assets and imputed rental income from owner-occupied housing.

Furthermore, the cross-sectional data used in the present study are unable to track changes in children's educational outcomes, which may constrain the explanatory capability of the analytical models. For

example, it is possible that higher parental aspirations for children's education lead to more family concerns about household economic circumstances, which in turn increases asset accumulation. Future research should use longitudinal data to gain a more advanced understanding of the underlying causal relationship between household assets and children's education. Third, due to limitations in survey design, we were not able to include more mediating factors that may have gendered effects on children's schooling and parental aspirations for children's education, such as parental gender attitudes and community characteristics. It would also be interesting to include more external economic and social factors, including the transformation of educational policy and economic situation, in the analysis of the association between household assets and children's educational outcomes.

The 2007 survey demonstrated the continuous asset vulnerability of rural residents, and further analysis based on the latest dataset is necessary to replicate and expand the current study on the effects of household assets on children's education.

References

- Appleton, S. (1995). The interaction between poverty and gender in human capital accumulation: The case of the primary leaving exam in the Cote D'Ivoire. *Journal of African Economies*, 4(2), 192–224.
- Behrman, J. R. & Knowles, J. C. (1999). Household income and child schooling in Vietnam. *World Bank Economic Review*, 13(2), 211–256.
- Blau, P. M. & Duncan, O. D. (1967). *The American occupational structure*. New York, NY: Wiley.
- Breen, R. (2004). *Social mobility in Europe*. Oxford, UK: Oxford University Press.
- Brown, P. & Park, A. (2002). Education and poverty in rural China. *Economics of Education Review*, 21(6), 523–541.
- Buchmann, C. & Hannum, E. (2001). Education and stratification in developing countries: A review of theories and research. *Annual Review of Sociology*, 27, 77–102.
- Carter, M. R. & Barrett, C. B. (2006). The economics of poverty traps and persistent poverty: An asset-based approach. *The Journal of Development Studies*, 42(2), 178–199.
- Chen, Y. (2008). In Chinese. The comparative analysis of China's urban and rural wealth distribution. *Jin Rong Yan Jiu [Journal of Financial Research]*, 12, 87–100.
- Conley, D. (2001). Capital for college: Parent assets and postsecondary schooling. *Sociology of Education*, 74(1), 59–72.
- Davis, D., Landry, P., Peng, Y., & Xiao, J. (2007). Gendered pathways to rural schooling: The interplay of wealth and local institutions. *The China Quarterly*, 189(March), 60–82.
- Elliott, W. III (2009). Children's college aspirations and expectations: The potential role of children's development accounts (CDAs). *Children and Youth Services Review*, 31(2), 274–283.
- Filmer, D. (1999). *The structure of social disparities in education: Gender and wealth*. Gender and Development Working Paper No. 5. Washington, DC: World Bank.
- Filmer, D. & Pritchett, L. (1999a). Educational enrollment and attainment in India: Household wealth, gender, village, and state effects. *Journal of Educational Planning and Administration*, 13(2), 135–164.
- Filmer, D. & Pritchett, L. (1999b). The effect of household wealth on educational attainment: Evidence from 35 countries. *Population and Development Review*, 25(1), 85–120.
- Filmer, D. & Pritchett, L. H. (2001). Estimating wealth effects without expenditure data – or tears: An application to educational enrollments in states of India. *Demography*, 38, 115–132.
- Fox, M. F. & Faver, C. A. (1985). Men, women, and publication productivity: Patterns among social work academics. *The Sociological Quarterly*, 26(4), 537–549.
- Gao, Q. & Riskin, C. (2009). Market versus social benefits: Explaining China's changing income inequality. In: D. Savis, F. Wang (Eds.), *Creating wealth and poverty in postsocialist China* (pp. 20–36). Stanford, CA: Stanford University Press.
- Hannum, E. (2003). Poverty and basic education in rural China: Communities, households, and girls' and boys' enrollment. *Comparative Education Review*, 47(2), 141–159.
- Hannum, E. (2005). Market transition, educational disparities, and family strategies in rural China: New evidence on gender stratification and development. *Demography*, 42(2), 275–299.
- Heyneman, S. (1976). Influences on academic achievement: A comparison of results from Uganda and more industrialized societies. *Sociology of Education*, 49, 200–211.
- Hill, M. A. & King, E. M. (1993). *Women's education in developing countries: Barriers, benefits, and policies*. Baltimore, MD and London, UK: John Hopkins University Press.
- Huang, J., Guo, B., Kim, Y., & Sherraden, M. (2010). Parental income, assets, and borrowing constraints and children's post-secondary education. *Children and Youth Services Review*, 32(4), 585–594.
- Lantican, C. P., Gladwin, C. H., & Seale, J. L. J. (1996). Income and gender inequalities in Asia: Testing alternative theories of development. *Economic Development and Cultural Change*, 44(January), 235–263.
- Lerman, R. I. & McKernan, S.-M. (2008). Benefits and consequences of holding assets. In: S.-M. McKernan, M. Sherraden (Eds.), *Asset building and low-income families* (pp. 175–206). Washington, DC: The Urban Institute Press.
- Li, D. & Tsang, M. (2003). Household decisions and gender inequality in education in rural China. *China: An International Journal*, 1(2), 224–248.
- Li, J. & Lavelly, W. (2003). Village context, women's status, and son preference among rural Chinese women. *Rural Sociology*, 68(1), 87–106.
- Li, S. (2002). *Chinese household income project (icpsr21741)*. Ann Arbor, MI: Inter-university Consortium for Political and Social Research.
- Li, S. & Sato, H. (2012). *Trends in the distribution of income in China*. Paper presented at the Asian Historical Economics Conference, Tokyo.
- Li, S., Wei, Z., & Ding, S. (2005). Empirical analysis of wealth distribution disparity of Chinese residents and its changes. *China and World Economy*, 13(6), 40–51.
- Lloyd, C. & Blanc, A. (1996). Children's schooling in sub-Saharan Africa: The role of fathers, mothers and others. *Population Development Review*, 22, 265–298.
- Loke, V. & Sherraden, M. (2009). Building assets from birth: A global comparison of Child Development Account policies. *International Journal of Social Welfare*, 18, 119–129.
- Lu, A. & Wei, Z. (2004). Child poverty and well-being in China in the era of economic reforms and external opening. *Harnessing globalization for children: A report to UNICEF*. Retrieved September 2, 2010, from <http://www.unicef-irc.org/research/ESP/globalization/chapter7.pdf>
- Luo, C., Li, S., Sicular, T., Deng, Q., & Yue, X. (2011). Appendix I: The 2007 Household Surveys: Sampling methods and data description. Retrieved December 26, 2012, from <http://>

- economics.uwo.ca/centres/cibc/wp2011/RisingInequality/AppendixI.pdf
- Meyer, J., Masa, R. D., & Zimmerman, J. M. (2010). Overview of child development accounts in developing countries. *Children and Youth Services Review*, 32(11), 1561–1569.
- National Bureau of Statistics. (2001). *China statistical yearbook: 2001*. Beijing: China Statistic Press.
- Papanek, H. (1985). Class and gender in education-employment linkages. *Comparative Education Review*, 29, 317–346.
- Paxton, W. (2001). The asset-effect: An overview. In: J. Bynner, W. Paxton (Eds.), *The asset-effect* (pp. 1–17). London, UK: Institute for Public Policy Research.
- People's Daily. (2011). *Analysts: Inclusive growth key to China's future development*. Retrieved October 16, 2012, from <http://english.peopledaily.com.cn/90001/90780/91344/7165102.html>
- Sahn, D. E. & Stifel, D. (2003). Exploring alternative measures of welfare in the absence of expenditure data. *Review of Income and Wealth*, 49(4), 463–490.
- Schultz, T. P. (1995). Investments in the schooling and health of women and men: Quantities and returns. In: T. P. Schultz (Ed.), *Investments in women's human capital* (pp. 15–50). Chicago, IL: University of Chicago Press.
- Sherraden, M. (1991). *Assets and the poor: A new American welfare policy*. Armonk, NY: M. E. Sharpe, Inc.
- Song, L., Appleton, S., & Knight, J. (2006). Why do girls in rural China have lower school enrollment. *World Development*, 34(9), 1639–1653.
- Stromquist, N. (1989). Determinants of educational participation and achievement of women in the third world: A review of the evidence and a theoretical critique. *Review of Educational Research*, 59(Summer), 143–183.
- Summerfield, G. (1994). Economic reform and the employment of Chinese women. *Journal of Economic Issues*, 28, 715–732.
- Zhan, M. & Sherraden, M. (2003). Assets, expectations, and children's educational achievement in female-headed households. *Social Service Review*, 77(June), 191–211.
- Zhang, Y., Kao, G., & Hannum, E. C. (2007). Do mothers in rural China practice gender equality in educational aspirations for their children. *Comparative Education Review*, 51(2), 131–157.
- Zheng, Z., Niu, R., & Xing, L. (2002). Determinants of primary and middle school enrollment of 10–18-year-olds in China. *Ren Kou Yu Jing Ji [Population and Economics]*, 131, 28–37. (in Chinese).
- Zou, X., Moen, P., & Tuma, N. B. (1998). Educational stratification in urban China: 1949–1994. *Sociology of Education*, 71(3), 199–222.