



Gender differences of academic performance in compulsory education in rural Southwestern China



Xin Gong^{a,*}, Yanqing Ding^b, Mun C. Tsang^a

^aTeachers College, Columbia University, USA

^bGraduate School of Education, Peking University, China

ARTICLE INFO

Keywords:

Gender difference
Gender gap
Academic performance
HLM
China

ABSTRACT

Based on data from the Southwest Basic Education Project, this paper provides an empirical estimation of gender gaps in Chinese and math among primary and lower-secondary school students in poor counties of Southwestern China. Major findings from 2-level HLM analysis by grade (3, 5, 7, and 9) include: (1) small positive gaps favoring girls in Chinese and negative gaps in math were found for all grades. (2) Gaps were larger in higher grades, girls' advantage in Chinese experienced a small increase over the 2006–2010 period, and gaps varied by province. (3) Being a minority and having a low SES interplayed with gender in some circumstances.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

Gender difference in student academic achievement has been a heated research and policy topic for decades, because of its significant wage effect for adult life (Christie and Shannon, 2001; Murnane et al., 2004; Rose, 2006) and the equity concern for reducing gender gap in education (Marks, 2008). Most studies found a positive gender gap (female better) in language art; and a traditional negative gap in STEM (Science, Technology, Engineering, and Mathematics) that might have decreased over time and across countries in recent years (Zhang and Tsang, 2012).

There are relatively few empirical studies of gender gap in academic achievement in China. Available evidence indicates that girls have higher achievements in Chinese and English, and the gender gap in math is mostly not significant (Hannum et al., 2008; Lai, 2010; Lu and Du, 2010; Zhang et al., 2010; Zhang and Tsang, 2012). However, some studies did find a negative gender gap in math (Turner, 1994; Wang et al., 2012). Among these empirical studies, there are relatively fewer rural studies than urban studies that fully focused on the gender gap issues. Similarly, a recent media discussion in China has drawn attention to the trend that girls are outperforming boys in every subject (including math), with a focus on urban schools (Beijing Youth Daily, 2012). The

limited number of rural studies that looked at rural settings only reported the results of gender academic difference as a byproduct rather than the research focus; and their reported gaps are mostly positive for Chinese (Hannum et al., 2008; Liang and Du, 2011; Lu and Du, 2010) or for a total score (Brown and Park, 2002), while the gaps are either insignificant or negative for math (Liang and Du, 2011; Lu and Du, 2010; Sun et al., 2009; Wang et al., 2012). Moreover, few rural or urban studies examined gender differences over time and by ethnic groups. It is important to empirically estimate the gender gap with a rigorous model to test whether girls perform better than or similar to boys in poor rural areas of China. Also important is to examine whether gender difference varies by subject, across grades, over time, by ethnic groups, and by other characteristics.

Based on a 3-wave student and school level data from the Southwestern Basic Education Project (SBEP), this paper attempts to examine gender difference of primary and middle school students' academic performance in China's poor rural counties. SBEP is an education improvement project jointly initiated by the United Kingdom and China. The project began in 2006 and was completed in 2010, targeting selected schools in 27 poor counties of Guangxi, Sichuan, Guizhou and Yunnan. This dataset provides a unique opportunity to explore gender gaps in a region with a large variety of ethnic minorities. For example, Yunnan province has the most variety of ethnic groups among the provinces in China. There are 25 ethnic large minority groups (with a population over 5000) in Yunnan (Government of Yunnan Province, 2012), accounting for one third of the total population of the province. Guangxi and Guizhou have a large number of ethnic minority groups as well.

* Corresponding author at: 525 West 120th Street, Box 11, Macy 348, Center on Chinese Education, Teachers College, Columbia University, New York, NY 10027, USA. Tel.: +1 917 370 8233.

E-mail addresses: xg2143@columbia.edu, xg2143@tc.columbia.edu (X. Gong).

Besides, this dataset covers four grades (3, 5, 7, and 9), providing the opportunity to explore gender gap in academic performance during the compulsory education cycle.¹

The next section of the paper is a brief literature review and the statement of key research questions. Section 3 describes the data sources and the estimation methods. Section 4 presents the empirical findings and Section 5 is a summary and conclusion.

2. Gender and academic performance: a brief review

There has been plenty of research in the English literature about the determinants of student academic performance, where education production function theory is used as the analytical framework. Similar interests also apply to China (An et al., 2007; Park and Hannum, 2001; Tsui, 2005; Liu and Lu, 2008; Zhang and Tsang, 2012). However, because of the lack of publicly released student achievement data, there are fewer studies on China.

Among the studies regarding student performance in China, earlier studies have found SES and related family factors to be key determinants apart from the usually unmeasured ability factor. For instance, SES was found to have a weak but positive correlation with academic performance in meta analysis (White, 1982; Zou, 1994). Liu and Lu (2008) identified a positive association between family SES and academic performance based on a rural sample in western China. Other important determinants include age (+, Sun et al., 2009), gender (e.g. Brown and Park, 2002; though not all studies confirmed gender to be a significant factor), minority status (–, Liang and Du, 2011), number of siblings (–, Liang and Du, 2011), family income or SES (+, Tsui, 2005; Liang and Du, 2011), migration status (–, Liang and Du, 2011), parental expectations (+, Tsui, 2005), education level of fathers (Zhao, 2005), boarding status (+, Du et al., 2010; –, Lu and Du, 2010), academic aspirations (+, An et al., 2007; Sun et al., 2009), and industriousness (+, An et al., 2007; Sun et al., 2009). Classroom level factors such as teacher's education level (Zhang et al., 2010; Du et al., 2010), and having local teachers (An et al., 2007), are also found to be important. However, fewer studies incorporated school level predictors due to the lack of relevant information. Besides, in terms of outcome subject and measures, most studies used test scores of Chinese and/or math, or a measure of total score, whereas only a few examined the determinants of academic performance in other subjects.

Regarding gender gap, for empirical studies outside China, findings regarding the gender factor have been consistent for language art achievement and mixed for math scores. For many countries, the gender gap is generally positive (female better) in language (reading) and negative (male better) in math (Bedard and Cho, 2010; Dwyer and Johnson, 1997; Kenney-Benson et al., 2006; Kimball, 1989). The positive gender gap in language seems to be enlarging over time while the negative gender gap in math is narrowing (National Center for Education Statistics, 2004; Holmlund and Sund, 2008; Marks, 2008). Also, the degree of decrease in the gender gap in math over the time period seems to vary by country (Bedard and Cho, 2010; Holmlund and Sund, 2008); the gender gap in math was actually found to be positive in some countries such as Hungary and Sweden (Schmidt and Kifer, 1989). More interestingly, some studies found that math gap occurred early in early elementary school years and grew with the grade, on the basis of longitudinal samples of children in the U.S. (Fryer and Levitt, 2010). The timing has not been clearly

established in previous literature (Aunola et al., 2004), although Sohn (2012) argued that some general consensus of the U.S. literature on gender gap in math was reached, saying that “a consistent math gap in favor of males does not appear until adolescence; the gap widens as individuals grow older”.

However, for China, empirical analysis of gender gap studies in primary and secondary education achievements is rather limited. Consider first studies of urban areas. Turner (1994) studied gender differences in mathematics performance among 235 Chinese middle school students in Wuhan. Relying on *T* test and test of variance, he reported no significant differences in the mean scores in the logic sub-test but significant differences in favor of the boys in space and numeracy sub-tests. In a recent paper based on data from 7235 students in the Dongcheng District of Beijing and a value-added ordinary least squares (OLS) estimation approach, Lai (2010) found that girls outperformed boys in Chinese and English in both the Middle School Graduation Exam (MSGE) and High School Entrance Exam (HSEE). In math, girls performed better in MSGE but boys performed better in HSEE. More recently, Zhang and Tsang (2012) studied gender differences in academic achievement of high-school graduates in Jinan city. Using student scores in the national college entrance examination (NCEE), they found a significant and positive gender gap in Chinese and English but no significant gap in math. Chen (2012), with a sample of NCEE takers in Jiangmen city of Guangdong Province, had similar findings.

For rural China, most of the relevant studies are based on data for western China and mostly for primary education. First, we identified three studies that used data from the Gansu Survey of Children and Families (GSCF) to explore predictors of academic achievement in rural Gansu, a province in northern China; all of them targeted 9–12 year olds and therefore primary school students; and their findings on the gender differences are mixed. Note that in these Gansu studies, gender is mostly a control variable in a typically OLS regression model. At a closer look, An et al. (2007)'s study of teaching quality and student outcomes used a sample of 1926 primary school children in the GSCF Survey of 2000 and found that gender was insignificant in the achievement regression (the achievement measure is a combined score of math and language scores for children aging 9–12 in primary grades) but positive in the industriousness equation. Using the updated GSCF Survey in 2004, Sun et al. (2009) reported no gender difference in Chinese but a small girls' disadvantage in math at the primary school level for children aged 9–12 years old. Both of these two studies employed OLS; they focused on family and school factors of academic performance in general, not gender gap. Using the GSCF data in 2000 and 2007 and for the sample of children aging 9–12, Hannum et al. (2008) found a positive gender gap in Chinese and no significant gap in mathematics. The focus of this paper is on the family predictors of gender gap. At least for Gansu, their findings suggest that “rural parental educational attitudes and practices toward boys and girls are more complicated and less uniformly negative for girls than commonly portrayed” (p. 3).

Second, based on OLS modeling for a sample of about 4000 grade 4 and grade 5 students in 75 rural primary schools of Qinghai and Ningxia (close to Gansu) in 2009, Wang et al. (2012) found a female disadvantage in math; such a negative gender gap in math still existed for home-staying girls (not statistically significant for school boarding girls) after controlling for nutrition intake (anemia) and anxiety level. This study paid direct attention to the gender gap issue.

Third, there have been three rural studies that involve provinces in Southwestern China, mostly of which involve primary education. Although they only reported findings on gender academic gaps as byproducts, which are additional to their main research questions (e.g. school merger, teacher effectiveness or poverty),

¹ In China, compulsory education consists of primary school and lower-secondary school years (from grade 1 to grade 9). The legal school starting age is either six (e.g. in Yunnan) or seven (e.g. in some places of Guizhou), but poor families may send their kids to school later because of financial constraints or other reasons.

Download English Version:

<https://daneshyari.com/en/article/6841410>

Download Persian Version:

<https://daneshyari.com/article/6841410>

[Daneshyari.com](https://daneshyari.com)