Does money matter? The effects of block grants on education attainment in rural China: Evidence from intercensal population survey 2015

Wei Ha[a,*], Fang Yan[b]

[a] Institute of Economics of Education and Graduate School of Education, Peking University, People's Republic of China
[b] Monitoring and Evaluation Specialist, UNICEF, People's Republic of China

A B S T R A C T

Considerable disagreement exists on the impacts of intergovernmental transfers in improving education access and outcomes. This is further complicated by the fungibility of these transfers, especially in a developing country setting. This study examines the effects of the block grant established by the Chinese government to subsidize the operating costs of rural compulsory education in 2006 on education attainment in a difference-in-difference framework. Comparing students whose compulsory schooling was completed just before or after the reform in counties receiving higher and lower percentages of their operating costs from higher-level governments, we find that a 20% increase in subsidies received from higher levels of government has led to 0.21 more years of schooling completed (0.07 standard deviation) and a 2.2 percentage points rise in the probability of completing compulsory education (0.08 standard deviation). These findings have implications not just for China but also for other developing countries which aim to achieve universal compulsory education.

1. Introduction

Since the laudable target of universal compulsory primary education was included in the Education for All (EFA) goals and the Millennium Development Goals (MDG) of the United Nations in 2000, the world has made substantial progress in this area. According to the MDG Report 2015, "the primary school net enrolment rate in the developing regions has reached 91% in 2015, up from 83% in 2000." It is then no coincidence that we have witnessed a mushrooming of comprehensive literature reviews to summarize the evidence of the effects of various interventions on access to and quality of education in low- and middle-income countries (Kremer et al., 2013; Murnane and Alejandro, 2014; Glewwe and Muralidharan, 2015; Snilstveit et al., 2015, to name just a few). These reviews have shown significant variation in their conclusions partly due to the criteria that they use to select studies in their reviews and partly due to the variation in how interventions are classified (Glewwe and Muralidharan, 2015; Evans and Popova, 2016). A careful reading of these reviews points to three shortcomings of the current research. First, the evidence so far has been primarily derived from experimental or quasi-experimental studies of small-scale interventions. While this micro-level research informs government decisions on how to allocate scarce resources (Glewwe and

Muralidharan, 2015), it does raise some questions on external validity. Second, these interventions are often designed, implemented, and/or evaluated with strong influence from foreign actors, as opposed to being homegrown, which casts doubt on their ownership and accountability. Third, as Kremer et al. (2013) points out, while we have relatively abundant evidence on how to increase the quantity and quality of education in primary schools, we know little about other education levels. In addressing these gaps, this study examines the effects of a major national rural education financing reform in China since the end of 2005 that aimed to provide free nine-year compulsory education by the Chinese government, shedding light on how developing countries can use their own initiatives, government systems, and public financing to achieve compulsory education and sustainable progress.[1]

Universal compulsory education was first promulgated in the Constitution of PRC in 1982 and reaffirmed in the Compulsory Education Law 1986. Because the financing of compulsory education in rural China was decentralized to local governments who had limited fiscal resources, especially for those poor and inner land counties, this decentralization had led to undue financial burden on rural families. Therefore, in late 2005, the Chinese government introduced a massive block grant program for rural compulsory education. It was

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* Corresponding author.
  E-mail address: wha@pku.edu.cn (W. Ha).

[1] Despite significant progress, Sub-Saharan Africa (SSA) remains the notable exception in achieving the universal primary education goals with net enrollment rate of 80%. Lower secondary net enrollment rates stand at 84% with SSA at 66%. This means the world is facing an uphill battle to achieve new and more ambitious targets in education in the Sustainable Development Goals, adopted by the United Nations Sustainable Development Summits in 2015.

Table 1

The rapid rise of expenditure after Rural Education Finance Reform (RMB Billions)*.

Source: Annual Budgetary Reports (2006–2011) submitted by the Ministry of Finance to the annual plenums of National People's Congress. *2006–2010 figures are executed figures; 2011 figures are budgeted figures. Cited from Li and Painter (2016). In the brackets are the breakdown of central and local shares.

	2006	2007	2008	2009	2010	2011	Total
Central	15 (42%)	36.48 (53%)	57.06 (55%)	66.61 (55%)	73.18 (55%)	92.12 (55%)	**340.45(54%)**
Local	21.1 (58%)	32.3 (47%)	47.16 (45%)	55.05 (45%)	60.48 (45%)	76.14 (45%)	292.23 (46%)
Total	**36.1**	**68.78**	**104.22**	**121.66**	**133.66**	**168.26**	**632.68**

promulgated by the revised Compulsory Education Law in June 2006. The central government provided block grants to provincial governments based on total number of students, average per-student spending in that province, and a cost-sharing plan that favored the economically disadvantaged provinces. This is the single largest Chinese intergovernmental transfer program in education. To give a sense of the program size, Table 1 shows that between 2006 and 2011, the central and provincial governments mobilized over 600 billion RMB (equivalent to 86 billion USD), of which, on average, 54% came from the central government.

While there has been plenty of research on whether the program has actually buttressed the expenditure of rural compulsory education and reduced its inequality (see Ye et al. (2017) for a detailed review of the literature), less attention has been given to the effects of the block grant on the enrollment and education attainment of rural children after a decade. Using descriptive data from 18 counties in six Western provinces, Sun and Chang (2008) found that the block grant has lowered the direct cost of compulsory education for rural families and has improved enrollment. Yet the poorest students, female students and children suffering from other forms of inequalities or discriminations still lagged behind their peers. Employing difference-in-difference (DID) strategy and data from four counties in four Eastern and Western provinces between 2005 and 2007, Wang (2009) showed that the block grant lowered the middle school dropout rate by six percentage points for female students and 13% points for male students. On the contrary, he did not find any significant effect of block grant on school enrollment using data from 69 counties in 2005 and 2006 and employing a value-added model. Ding (2012) used survey data from 13 middle schools from three state-designated poor counties of three provinces in Southwestern China between 2004 and 2009 and found that the block grant has reduced dropout rate in a pre-post design. Using the China Health and Nutrition Survey 2000, 2004 and 2006 and DID strategy, Chyi and Zhou (2014) found that the tuition waiver (another way of examining the block grant) has only improved the probability of enrolling in school for those children who were not covered by the earlier education reforms. Shi (2016) uses three waves of the Gansu Survey of Children and Families 2000, 2004 and 2007 and DID strategy comparing younger and older cohorts and found small but statistically significant effects of the block grant on middle school enrollment but not for primary education. A one percent reduction in school fees led to a 0.03% point increase in the probability of enrolling in middle school.

Existing research had several shortcomings: first, they were all either based on small sample surveys or focused on the immediate effect after the implementation. Second, almost all studies treated Eastern provinces as the control for Western provinces without factoring in the fact that Eastern provinces also received central government transfers, albeit at a lower percentage. More importantly, cost-sharing at the provincial level was largely neglected in the previous literature. In fact, for some counties in Central provinces, they could have received the same amount of transfers from central and provincial governments as their counterparts in Western provinces if their provinces had decided to take the lion's share of the burden. This creates a major measurement error issue in the previous literature.

This paper contributes to the literature in several important ways: first, we employ newly available data from the 2015 1% National Population Sample Survey of China collected by the National Bureau of Statistics to examine the mid-term effects of the rural education finance reform. Given our large sample size, our results have much higher statistical power and much better external validity. Second, we spent considerable efforts on collecting and compiling detailed program design information of the block grant published by each province in 2006, especially the total block grant that a county/prefecture received from central and provincial government as a percentage of total designated expenditure. Therefore, the key measurement of the intensity of the intervention is much more precise in our paper than in earlier work where only cost-sharing information between central and provincial governments are used. Third, we employ difference-in-difference strategy to tease out the potential negative selection in the design of the block grant program. Specifically, we consider the counties with higher subsidy rates as treatment group and those with lower subsidy rates as control group. We then construct the end-line by using the status of younger cohort children who benefited from the block grant and using an older cohort as the baseline. The identification assumption is that without the differential subsidy rates, the education enrollment or attainment trends across counties would have been the same. Given that the counties with higher subsidy rates are likely to be poor and inner counties, and therefore improvement in education attainment is likely to be slower and more limited than richer counties, our identification strategy provides a lower bound estimate of the true effect of the block grant on education attainment. Fourth, we also show that when only crude cost-sharing information at the central/provincial level are available to researchers, it can lead to rather different estimates of the effects of the block grant.

We found that the block grants have significantly improved education attainment in rural China. To be specific, we find that a 20% increase in subsidies received from higher levels of government have led to 0.21 more years of schooling completed (0.07 standard deviation) and a 2.2 percentage points rise in the probability of completing compulsory education (0.08 standard deviation). These findings are consistent with the findings of Shi (2016). Equally important, our findings show that if researchers are only aware of the cost-sharing between the central and provincial government and pay no attention to sub-provincial cost-sharing, this leads to a severe underestimation of the effects of a subsidy.

The rest of the paper is structured as follows. Section 2 provides a detailed account on the evolution of rural education financing policy and the institutional features of the block grant. Section 3 introduces the 2015 1% National Population Sample Survey of China and data that we used and explains the empirical strategy employed to get the causal effects. Section 4 provides the empirical results, while Section 5 concludes and discusses the policy implications and directions for future research.

2. Rural education finance reform in China

While Article 18 of the Constitution of the PRC, promulgated in 1982, first provides for the universalization of primary compulsory education, the Decision on the Reformation of Educational System by the Central Committee of the Community Party of China in 1985 set out broad principles that mandates nine-year compulsory education to be