The Association of NPOs and Compulsory Education Aid in China

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Previous research has linked the activities of the non-profit sector to desired aid outcomes in China, such as improved public-service quality. However, issues related to the role of non-profit organizations (NPOs) in compulsory education aid have received little attention. This study draws on Dennis Young's complementarity theory - one of the most prominent non-profit theories - in examining the necessity and feasibility of NPO aid to Chinese compulsory education. In addition, it undertakes exploratory research in order to test an integrated model. Based on both data collected in surveys and statistical data from 263 Chinese county-level jurisdictions in five provinces, this study concludes that NPO aid can positively influence compulsory education outcomes in mainland China. Its main contribution is to expand our understanding of NPOs and offer insights on how public managers can improve governance.

**Keywords:** NPOs, compulsory education aid, educational expenditure, China

INTRODUCTION

A fundamental value of non-profit organizations (NPOs) is to offer high-quality public services and cross-sector governance to society and the economy at large (Forrer, Kee, & Boyer, 2014). Many scholars have explained the relationship between government and the non-profit sector in China (Hsu, 2010; Michelson, 2007; Jing & Gong, 2012; Zhan & Tang, 2016; Zhang, 2017). The two most prominent theories propounded are civil-society theory and corporatism theory. The civil-society theory emphasizes that the relationship between government and non-profits can be an adversarial one (Frolic, 1997), while corporatism theory emphasizes that NPOs are subordinate to government and only supplement it (Schmitter, 1974). But in the area of compulsory education in China, NPOs and government work together in such a way that the relationship between government and the non-profit sector becomes a complementary one (Young, 2000). Complementarity is a government-nonprofit theory in which the partnerships that emerge focus on resource mobilization. There are two most significant nonprofit theories: government failure theory and interdependence theory (Lecy & Van Slyke, 2013).

In the 1990s and early 2000s, there were numerous studies on the voluntary sector and its relationship to government (e.g., Salamon, 2002); and interest in this subject has recently surged again (e.g., Lecy & Van Slyke, 2013). For his part, Yong (2002) noted that "ultimately, the voluntary sector and government relationship evolved toward more of a complementary relationship" (p.159). However, the empirical evidence linking NPOs to compulsory education aid in China is still nascent. Compulsory education aid refers to combined intellectual and material support for the main beneficiaries – that is, those students who come from a relatively disadvantaged background – aimed at achieving equality of compulsory education among all children and the balanced development of compulsory education itself. The analytical framework of this study examines aid on three levels: to students from poor families, to vulnerable groups in poverty-stricken regions and areas dominated by ethnic minorities, and to less-developed countries (international education aid). In the meantime, such aid has grown fast in mainland

Figure 1. Ratio of the Education Budget to GDP, in Percent, 1992–2012
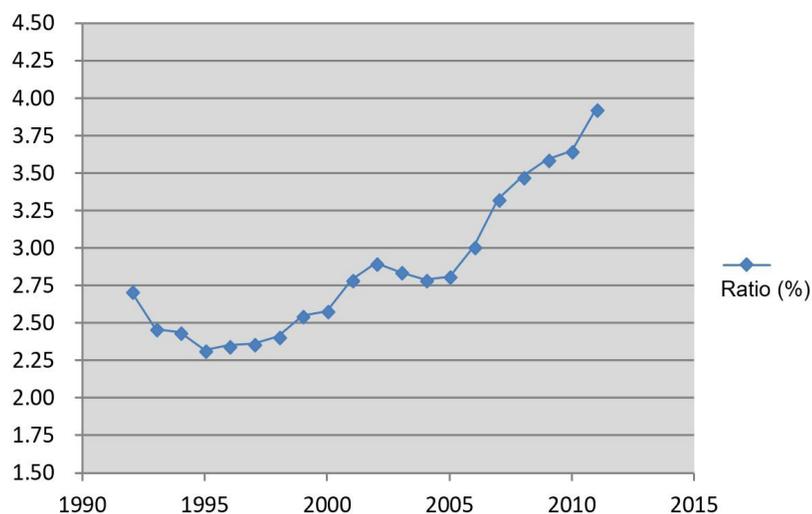
Sources: *Statistical Yearbook of China's Education Funding*, 1993–2013; Notice of Implementation of Statistics on Education Funding, 1992–2012.

China and is now an important factor. The work of Chinese scholars to date suggests that compulsory education aid refers simply to funding for poor students, including donations by aid organizations for computer hardware, school buildings and other facilities, teaching equipment, books and other materials and so forth. But as this study stresses, it also includes the non-material input of international and domestic volunteers, Chinese graduate students, those volunteering to promote development in the western region of China, teachers, self-organized volunteers and so forth.

In general, the non-profit sector can be viewed from two contradictory perspectives. First, the performance of NPOs has been a source of enthusiasm because of recent achievements. Second, NPOs can be seen a source of frustration for at least the past two decades (Paarlberg & Yoshioka, 2016; Boris et al., 2010). According to China's National Bureau of Statistics (2015), the non-profit sector is becoming an increasingly significant contributor to the Chinese economy: in 2014, almost 606,000 NPOs contributed RMB ¥156.06 billion to GDP and employed a total of 8.28 million people.

Below we examine the main macroeconomic, policy and social background under which compulsory education has developed in China. Owing to the lack of funds for education, government at all levels encourages the flow of private money into compulsory education. At the same time, the uneven distribution of educational resources is inevitable. Over the past 30 years, China has seen investment in education grow but has had to tackle the issue of inadequate funding for the sector – an issue that has still not been fundamentally solved.

The 1985 Decision of the CPC (Communist Party of China) Central Committee on the Reform of the Education System (Zhonggong Zhongyang Guanyu Jiaoyu Tizhi Gaige De Jueding) proposed the establishment of a compulsory education system. In 1993, the CPC Central Committee and the State Council promulgated the Outline of Education Reform and Development of the People's Republic of China, which stated that the share of educational expenditure in GDP would reach 4 % in 2000. In 2005, the Notice of the State Council on Deepening the Reform of the Funding Mechanism for Rural Compulsory Education (Guowuyuan Guanyu Shenhua Nongchun Yiwu Jiaoyu Jingfei Baozhang Jizhi Gaige Tongzhi) clearly defined the mechanism for ensuring funding for compulsory education in rural areas. And the Outline of the National Medium- and Long-Term Programme for Education Reform and Development (2010–2020) made it clear that national expenditure on education should account for 4 % of GDP until 2012.

While there has been significant growth of China's education budget since 2006, the goal of 4 % of GDP has still not been achieved – more than 20 years after it was announced (in 1993). The share of national expenditure on education remains low: in 2011, it accounted for 3.66 % of GDP, compared with the international average of 4.00–4.58 %. It is worth noting that the ratio of China's education budget to GDP has risen twice and fallen twice during the period

Table 1. Annual Growth Rates of Students at Private Junior Secondary and Primary Schools Compared with All Such Schools in China, in Percent

Type of school	2006 vs 2005	2007 vs 2006
Private junior secondary school	*7.03*	4.67
Private primary school	*5.95*	8.91
All junior secondary schools	*-2.57*	-3.72
All primary schools	*-1.39*	-1.14

Sources: *China Statistical Yearbook on Education*, 2003–2008; The Implementation of National Education Funding Statistical Notice, 2002–2007.

1992–2012; the two lowest ratios were in 1995 and 2004 (see Figure 1).

Investment in Compulsory Education in Rural China after the Rural Tax Reform

In response to the implementation of the rural tax reform in 2000 (which included compulsory education fee reform) and the introduction of the policy of free compulsory education (six-year primary education and three years secondary education) in 2006, China significantly increased funds for compulsory education in rural areas. Data for the period 1999–2007 show that since the rural tax reform, funding for rural compulsory education (rural primary and secondary schools only) grew rapidly year on year (Zhao, 2006). Moreover, funding per student increased rapidly over this period. For example, the amount spent per primary-school student in Chinese rural areas grew from 550 RMB yuan in 1999 to 1,650 yuan in 2005 (MOE, Ministry of Education, 2000–2006). And in 2007, the ratio between rural compulsory education funding by the central and local government in the western and central regions was 8:2; in the eastern regions excluding municipalities, it varied according to the fiscal situation of the individual province. The same year, the central government gave free textbooks to all students in compulsory education in rural areas throughout the country. And according to the National Education Supervision Group, funding came mainly from the provincial governments in most provinces (MOE, 2007). Then this study focuses on the crucial year of 2006.

Given the requirement to provide equal opportunities for education in urban and rural areas and in the various regions, it is clear that rural areas have received insufficient funds for compulsory education. Indeed, the level of funding for education in rural areas was significantly lower than in the cities. Furthermore, developed rural areas receive a significantly higher level of funding for education than do those that are less developed (Wang, 2005).

The Recent Development of Compulsory Education in China's Private Schools

To resolve the issues discussed above, government at all levels is seeking to encourage investment in private education and secure funds from non-governmental sources. In 2002, the Law on the Promotion of Private Education was promulgated. Since then, private education has developed rapidly. For example, the number of secondary school students in private schools more than doubled 2,024,700 in 2002 to 4,125,600 in 2007, as did the number of primary school students – from 2,221,400 in 2002 to 4,487,900 in 2007 (MOE, 2002–2008). At the same time, the number of students at state-run secondary schools continued to decrease from 64,040,600 in 2002 to 57,361,900 in 2007 and the number of students at state-run primary schools from 121,567,100 in 2002 to 105,640,300 in 2007 (MOE, 2002–2008). The annual growth rate of students at private schools compared total growth rate of students in China in 2006 compared to 2005 and 2007 compared to 2006 shows the gap (see Table 1).

As Table 1 shows, the overall number of schools

and students at the levels of primary and secondary education – that is, compulsory education – has decreased. By contrast, the number of private schools and students at these levels has grown significantly, reflecting the increasingly important role of the private sector in compulsory education.

Under the Chinese compulsory education policy, students whose families had financial difficulties received stipends. Multi-agencies participated in the education delivery process. Local governments, state-owned enterprises and institutions, and other sectors of society, including NPOs and individuals, were encouraged to establish their own schools. Local governments had great decision-making power and were able to develop compulsory education. State-owned enterprises, NPOs, and individuals were encouraged to pool funds to accomplish compulsory education delivery. Local authorities used state appropriations and a percentage of local reserve financial resources (basically township financial revenues) to finance educational projects. County authorities were to distribute funds to each township government, which were to make up for any deficiencies. Generally, the relationship between government agencies and nonprofit schools is complementary. Tuition-free is for all students of compulsory education, including nonprofit schools by the government, while still a target rather than a realized goal throughout China. Nonprofit schools are regarded as partners of government that help deliver compulsory education, for example, PPP (public-private partnership), contracting or financial support through public expenditure. Local governments at or above county level may set up special funds for the development of nonprofit schools. The government has created a special fund to improve conditions in China's elementary and secondary schools, for new construction, expansion and the re-building of run-down structures. Parents paid a small fee per term for books and other expenses such as transportation, food, and heating. Sometimes voluntary teachers were hired for mountain villages.

We should keep in mind that NPOs are playing a growing role in compulsory education in China, but compared with government investment, the total size of nonprofit schools is still relatively limited. Both the proportion of nonprofit primary and secondary schools in China compared with the whole school industry was less than 9%. In 2006, the proportion of nonprofit primary schools (6161) compared with the whole primary school industry (341600) was 1.80% (MOE, 2007), and the ratio was 2.82% (5681/201400) in 2014 (MOE, 2015). As the same case, in 2006, the proportion of nonprofit junior secondary schools (4550) compared with the whole junior secondary school industry (608855) was 7.47% (MOE, 2007), and the ratio was 8.98% (4723/52600) in 2014 (MOE, 2015).

Indeed, previous research has reported data on non-governmental investment in education that show sustained growth. But how and to what extent the growth of non-governmental education funding has affected China's compulsory education requires systematic and scientific research, which has so far been lacking. Below we seek to provide some necessary lessons for future policy-making on the input of social resources in education.

This paper is structured as follows. First, it reviews the key previous literature on this subject and develops its hypotheses. Following a description of the research design and methods, data analysis is conducted to determine the measurement model and the test hypothesis based on multiple regression analysis. Finally, the paper discusses the importance of its findings for achieving a better understanding of how public managers can improve governance.

LITERATURE REVIEW

Research on the governance of public-service delivery in developing countries has highlighted the importance of NPOs assuming more responsibility for the effective provision of public-service delivery and good governance (e.g., Batley et al., 2012). Governments are required to provide public goods and services, but they often lack sufficient resources or personnel to respond to new requirements (Salamon, 2002), especially in the case of so-called wicked issues (Weber & Khademian, 2008). Such an issue is the provision of education for

poor children, which is difficult to resolve due to often incomplete, contradictory and changing requirements (Forrer et al., 2014). Part of the complexity of social issues today is that NPOs are needed to assist in the provision of public services (Kettl, 2006), including compulsory education aid in China. Because NPOs will sometimes be successful in a particular area – for example, in satisfying the interests of minorities – governments may not devote enough specialized attention to that area. At the same time, NPOs have the opportunity to mobilize resources for causes that they deem important (Forrer et al., 2014, p. 40).

Funding for compulsory education is scarce, despite having long been recognized as one of the most important inputs to a nation's development. Unfortunately, there are huge discrepancies in how educational resources are allocated in China. For example, research shows that students from China's poor rural areas receive less secondary education than their urban peers (Shi et al., 2015): well over 90 % of school-age children living in large cities in China attend upper secondary school (Loyalka et al., 2014) compared with only half of those living in poor rural areas (Yi et al., 2015). This shows that compulsory education aid is urgently needed in China.

Inequity of Education Service Delivery

The research into the inequality and uneven distribution of compulsory education in China (Jin & Shi, 2009; Li, 2009; Li & Zhang, 2007; Yuan, 2010) has revealed the structural imbalances in the allocation of Chinese educational funding. First, investment in compulsory education is lower than that in higher education. The international average ratio for investment in primary schools, secondary schools, and institutes of higher education is 1:2.5:9.2 whereas that for China it is 1:4.1:14.9 – in other words, there is too little investment in primary education in China. Second, investment in rural education is lower than that in urban areas – the former is just 30 % of the latter. Third, there is an imbalance between the fiscal responsibilities and capacities of central and local government: the investment ratio between central, provincial and local governments is 2 %, 9 % and 89 % (Li & Zhang, 2007). In 2006, the central government accounted

for just 10.9 % of the total Chinese education budget and local government for no less than 89.1 % (Yue, 2009). Fourth, there are large differences in funding at the regional level. For example, the ratio of the primary-school budget in Shanghai to that in Henan is 8.26:1 and the ratio of the secondary-school budget in those two regions is 7.54:1. In the western areas, many provinces have an education budget that is below the national average (Zhou, 2008).

Similarly, some empirical research has found that government funding in education is rather low on the whole and even lower in rural areas. A lot of authors have looked at this problem in their quantitative researches or case studies. Qiu Xiaojian, for example, studied "Rural Compulsory Education Investment in Jiangxi Province: Empirical Analysis and Policy Recommendations" (2008). Wang Yi and Liu Kuibei' wrote "Set up the Diversified Investment in System Countryside Compulsory Education: Cases of Investment in Compulsory Education in Rural Areas of Shaanxi Province" (2006) and "Rural Investment in Compulsory Education in Yunnan Province" (2006). Furthermore, personnel funding (for instance, teachers' wages) is still too large compared with public funding and rural areas continue to receive too little funding per student in compulsory education.

Compulsory Education Aid

As Hodgkinson (1989) pointed out, it is difficult to use a single theory to explain all NPO activities. It is also difficult to use a single theory to explain all issues related to compulsory education. Nonetheless, specialized studies on compulsory education aid have been few and far between and are to be found as part of the body of research into the equality and balanced development of compulsory education. These studies can be categorized as focusing on the following: the mechanisms of compulsory education aid (Perri, 2002; Yang, 2008; Kong, 2009; Wang, 2003; Yu, 2004), bodies of compulsory education aid (Coleman, et al., 1966; Coleman, 1968; Heyneman, 1976; Hummel, 1983), forms of compulsory education aid (Huang, 2008; Yang, 2008) and how compulsory education aid functions (Banks, 2006; Foflonker, 2010; Kung & Chen, 2011; Tsang & Ding, 2003, Zhai, 2010).

Compulsory Education Aid Provided by NPOs

Studies on compulsory education aid provided by NPOs are to be found mainly in the body of research focusing on the need and rationale for NPOs. But most such studies are in any case by the NPOs themselves or commissioned by those organizations.

Furthermore, there is very little China-specific research on compulsory education aid provided by NPOs. Only the following exists: "2007: Chinese Social Forces to Promote the Development of Education" (2008), "Non-governmental Organizations (NGOs) in Free Compulsory Education", "Educational Donation: New Ways of Financing of Compulsory Education in Rural Areas" and "On the Role of Nonprofit Organizations in Consumer Education" (2005). All of these descriptive studies showed that since the amendments to the Foundation Management Approach in 2000 and the enactment of the Foundation Management Ordinance in 2004, NPOs have developed quickly in the field of education in China. Such organizations include foundations, associations and social-service organizations (e.g., private schools). In Beijing, they account for more than 80 % of all NPOs.

Other papers refer only in passing to NPO aid for compulsory education. Otherwise, there are several studies on compulsory education in private schools. In the "Education Blue Book" edited by Yang (2008, 2009), studies showed that rural private schools operate poorly if funding is too low.

Thus, it can be seen that there has been little research into the impact of NPOs on China's compulsory education and that previous studies were descriptive only. The purpose of this quantitative research is to test the roles of NPOs in compulsory education aid using complementarity theory. Then, it measures the performance of NPOs in terms of both the share of social donations in education and the share of students attending NPO-funded private schools in total compulsory education aid.

THEORY

As explained above, the relationship between government and NPOs in the compulsory education field in China is a partnership one. The existing literature contains two theories. Government failure theory posits that there are limits to how government can provide for "quasi-public goods" and that when those limits have been reached, the support of NPOs is needed (Young, 2000). Interdependence theory asserts that government agencies and NPOs support each other – that is, they engage in co-production – and thus sees an improved collaborative relationship between NPOs and government (Gazley, 2010).

Although both government failure theory and interdependence theory focus on resource mobilization, the latter better explains the role of NPOs in compulsory education aid in China, because it sheds more light on growth in the nonprofit human-services sector than does government failure theory (Lecy & Van Slyke, 2013). According to interdependence theory, the relationship between government agencies and NPOs is a mutual – or even reciprocal – one. In the field of compulsory education aid in China, the theory is not used to identify such a relationship. Rather, while NPOs are seen as deliverers of education, the extent to which they depend on government agencies and grow because of government support is not taken into account. That is the very nature of the complementary relationship between government and NPOs (Young, 2000). According to complementarity theory, NPOs are regarded as partners of government that help deliver public services (Young, 2000). Indeed, Young provides a plausible explanation for why government and NPOs often have a complementary relationship whereby government finances services and NPOs deliver them. For this reason, this paper uses an analytical framework based on complementarity theory and tests the hypothesis.

Analytical Framework

Based on an extensive review of the collaborative governance literature on the complementary relationship between NPOs and government, this paper adopts an analytical framework that comprises three major components. First, it examines the contextual factors for the role of NPOs in compulsory education aid, including organizational structure, fund-raising capacity and institutional environment (Lin,

Figure 2. Analytical framework of this paper
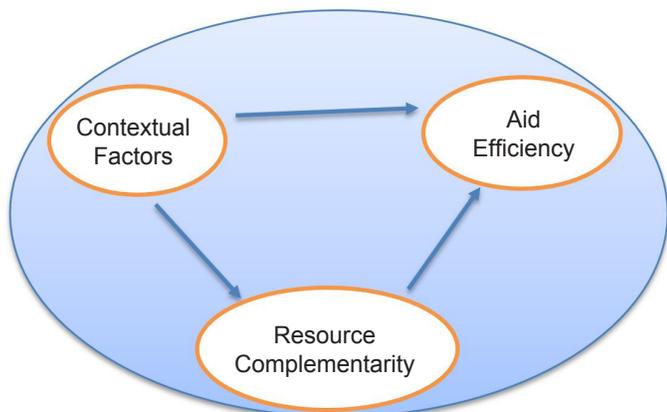
Sources: Author's compilation

2010). In the government-nonprofit complementary relationship, government and NPOs have symmetrical power relations. Second, this paper looks at resource complementarity between NPOs and government, which is associated with the contextual factors related to these organizations (Young, 2000). Service delivery by NPOs is qualitatively different from that by the government, and it is long term because the governmental provision of public service is undifferentiated. This paper highlights that variation in resource complementarity is correlated with the various contextual factors for the role of NPOs in compulsory education aid. The third component is a discussion of the multidimensional efficiency of NPOs in compulsory education aid, focusing on the enrollment rate of school-age children, the consolidation rate of students in school and the rate of those passing the final school examination (see Figure 2).

The relationship focused on this study is that between resource complementarity and NPO efficiency in compulsory education aid. First, the share of social donations raised by NPOs in total educational expenditure can be expected to influence the rate of enrollment at primary and secondary schools; indeed, it shows NPOs support to the government in delivering compulsory education, which is an important manifestation of resource complementarity between NPOs and government. Second, resource

complementarity between NPOs and government can be expected to have an impact on the rate of children finishing primary and secondary school. And third, the consolidation rate of junior secondary and primary schools is considered to be related to resource complementarity between NPOs and government.

Theoretical Hypotheses

A growing body of research that is supported by a diverse range of theories explores the determinants of the effectiveness of NPOs. Some perspectives explain how the NPO aid affects compulsory education. For example, government-NPO interdependence theories emphasize the positive relationship between the prevalence of NPOs and the size of government (Lecy & Van Slyke, 2013). Other studies based on NPO performance theories have identified the growing significance of NPOs in public affairs, including compulsory education (Durant & Ali, 2013).

The impact that social donations raised by NPOs have on the outcome of compulsory education in mainland China has yet to be examined, while previous research suggests that NPO aid may explain the process by which enrollment shapes student outcomes in compulsory education. Multiple typologies have been developed to understand the major contributions of NPOs. This type of research focuses on service provision, which is, arguably, one of the key important functions of NPOs (Salamon, 2012).

As documented in the existing literature, social donations raised by NPOs can help poverty-stricken students attending compulsory education schools in China to have improved access to educational resources and perform better (Basu, 2006; Besley & Ghatak, 2008; Wu & Lu, 2014). Financial aid for the poorest students is an important guarantee for the development of compulsory education (Wu & Lu, 2014). Similar observations have been made by nonprofit scholars in other developing countries. UNESCO (2008), for example, found that non-government providers improve on the standard models of state schooling by changing the mix of inputs at the school level, altering the institutional incentives that govern how schools operate, and setting up political

accountability relationships closer to the points of public service delivery. From 1991 to 2004, one-third of the increase in access to primary education in 136 developing countries was accounted for by non-state schools (Aga Khan Foundation Team, 2008). Another source found that financing the non-government provision of education was a better use of resources in improved public service delivery (Besley & Ghatak, 2008). And EQUIP2 research demonstrates that allocating resources to non- government providers can offer a more cost-effective means of reaching underserved populations (DeStefano et al., 2007).

Based on a sample of 136 developing countries, data from the UNESCO Institute of Statistics show that 75 million children of primary-school age remained out of school in 2007 (UNESCO, 2008), while many others were poorly served by government and dropped out. The same data showed that non-government schooling was a growing trend. Government and non-profit partnerships are often created to reach the most underserved. These partnerships played a significant role in the development agenda since they help achieve educational goals (Edwards & Hulme, 1995; Teamey, 2007).

With regard to measuring the compulsory education outcome, there has been a large amount of literature debating the relationship between that outcome and financial investment. Generally, scholars have argued that there are three areas of developmental outcome among students – academic/cognitive, mental and behavioral. Academic achievements are measured by standardized scores for the main subjects. For example, the PISA survey, which is taken among students in 60 countries coordinated by the Organization for Economic Cooperation and Development (OECD, 2010), is intended to measure the outcome of compulsory education. Other leading standardized scores include school examination results (Conti-Ramsden et al., 2009), the development of personal and social skills in the UK (Authority, 1996), the WA curriculum in the Australian compulsory education sector (Berlach & McNaught, 2007), teacher-based scores in Europe (Luque et al., 2015) and the academic scores of the students and the rankings of the schools,

both of which highlight the urban-rural gap (Zhao, 2009) in China.

In China, the government is legally required to use three different rates to measure the compulsory education outcome: the enrollment rate, the consolidation rate, and the dropout rate. The dropout rate is often correlated with the consolidation rate: for example, when the former is high, the latter is low. Moreover, the dropout rate is very difficult to measure: Shi et al. (2015) found that in 2006, the dropout rate at the secondary level in rural secondary schools across four provinces was six to 12 times higher than the (three-year cumulative) rate reported by the government. For this reason, the study used only the consolidation rate.

In light of the growing body of research linking various aspects of social donations raised by NPOs to complementary compulsory education (DeStefano & Moore, 2010; Archer, 2011; Berry, 2011), this paper proposes that NPO social donations enhance the compulsory education outcome. It uses the concept of "social donation" as a key component of the independent variable. In research based on complementarity theory, another component of the independent variable should be the size of all NPOs combined: for example, the ratio of private schools or social donations to NPOs. It is expected that consistent with the above, the share of social donations in total expenditure on education is positively associated with levels of compulsory education aid. As regards the core issue of why China's NPO efficiency in compulsory education aid is low, there are four theoretical hypotheses. Based on the analytical framework the following hypotheses can be formulated.

Hypothesis 1: The share of social donations in total educational expenditure is positively related to the enrollment rate of graduates of junior secondary schools to high school.

Hypothesis 2: The higher the share of social donations in total educational expenditure, the higher the primary-school consolidation rate.

Hypothesis 3: In terms of GDP per capita and local fiscal expenditure per capita, among other factors,

the proportion of NPO donations to total education expenditure can significantly affect the enrollment rate of graduates of schools to a higher-level school and the primary-school consolidation rate.

Hypothesis 4: It is expected that the H1, H2, and H3 still hold true after controlling some variables. As regards other factors that might affect the level of compulsory education aid, this study uses robustness checks – mostly in relation to local economic development.

RESEARCH DESIGN

Data Collection

This study draws on county-level data. This paper carries out quantitative research on the impact of NPOs on compulsory education based on a sample of 263 counties in China. The administrative system in China is much more hierarchical and centralized than that of the US. The respective authority of subnational and local governments is clearly defined. In all, China has 23 provinces, five autonomous regions and four provincial-level municipalities (Beijing, Shanghai, Tianjin, and Chongqing), which are at the same administrative level as provinces. The provincial-level municipalities are divided into several counties. There are 283 prefecture cities and 50 prefecture-level units within the provinces or province-level units as well as 2,862 county-level units (that is, counties, county-level urban districts and county-level cities) within the prefecture cities and prefecture-level units. Counties and county-level cities are independent administrative units. County-level urban districts are to be found only within prefecture cities; they do not enjoy administrative and financial independence and thus, strictly speaking, are not simply another level of local government. It is the prefecture cities – not the urban districts – that are responsible for public-service provision.

The large sample used in our quantitative research method allows us to analyze both objectively and comprehensively the impact of NPOs on compulsory education aid in China at the macro level. It includes five provinces (including 1 autonomous regions and 2 provincial-level municipalities) in mainland China:

Henan, Guangxi, Tianjin, Chongqing and Xinjiang, which are to be found, respectively, in the central eastern, and western regions and the southern and northern parts of the country. Traditionally, these five provinces have had different levels of development. Moreover, they include four levels of Chinese government: county, county-level city, county-level urban district and county-level unit within provincial-level municipalities. Thus, the sample is fairly representative. The unit of data analysis for studying the impact of NPOs on compulsory education aid in China is the county-level one. Strictly speaking, this is not random sampling. That is because information is not publicly accessible in all of the county-level administrative units. Based on location, level of social development, type of government and educational level, 263 county-level units were ultimately selected to form our sample.

The data for this study come from three sources. The research team collected statistical data from a variety of sources and build one dataset for this paper. Part of the data was collected through field surveys. Economic and organizational data were taken from the *China Statistical Yearbook* for 2006 (including the chapter on "Education Funding"), the *Chinese County (City) Economic and Social Statistical Yearbook* for 2006 and the *China Statistical Yearbook on Education* for 2006, as well as various local statistical yearbooks and the website of the Project HOPE. The *China Statistical Yearbook* for 2006 and local statistical yearbooks included the number of GDP, per capita GDP and population density. Local fiscal revenue, local fiscal expenditure, fiscal revenue per capita, and fiscal expenditure per capita were collected from the *Chinese County (City) Economic and Social Statistical Yearbook* for 2006. The *China Statistical Yearbook on Education* for 2006 included a large number of the enrollment rate of junior secondary school-age population, the graduate rate at junior secondary schools, state education budget, funding by community groups and individual citizens, social donations and fund-raising, the number of private primary schools, the number of private secondary schools, the number of all primary schools, the number of all secondary schools, the number of private primary school students,

the number of private secondary school students, the number of all primary school students, and the number of all secondary school students.

As regards field research, the research team collected first-hand data in these five provinces above in three different periods: July–August 2009, July–August 2010 and July–August 2011. In addition, local volunteers undertook other empirical research. Both structured and semi-structured in-depth interviews were conducted both among groups of people and with individuals on a one-to-one basis. Interviewees were chosen according to the "snowballing" method and fell into following categories: government employees in the education sector, in human resources, social security and civil affairs departments, and in the Communist Youth League of China; principals and teachers at schools; teaching volunteers; and parents and students. While there is no qualitative data used in this article, the aim is that if field surveys and interviews contain retrospective questions, the accuracy and reliability of the answers given must be queried. In order to maintain the consistency of data, the research team verified matching 2006 demographic data with educational statistical data collected in 2009, 2010, and 2011. For this reason, the research team focused on collecting objective data – for example, from official documents and statistics. From this overall patchwork of information, we were able to identify the appropriate data for this study.

Variables and Measurements

Dependent variables. For the purpose of this study, there are two dependent variables. First, the enrollment rate of graduates of junior secondary schools to high school, and second, the primary-school consolidation rate. The rate is measured by the ratio of the number of students graduating to the total number of those enrolled (or put another way, the number of graduates / the number of enrolled students). The justification for the use of this measurement is explained above in the subsection on the theoretical hypotheses (e.g., Shi et al., 2015). In general, the development level of primary and secondary education in one county is measured as the enrollment rate of school-age children, the outcome of compulsory education is measured

as the enrollment rate of graduates of schools to a higher-level school, the consolidation rate of students in primary and secondary schools and the graduation rate. As tuition fees for compulsory education were abolished in rural areas of central and western China since 2006 and compulsory education has become compulsory, the primary-school enrollment rate has been constantly high during this period. However, this is due mainly to government enforcement. While the consolidation rate and the graduation rate results are linked directly to school education and not to the work of the government. There are reasons for attracting students and encouraging them to remain at school and for pursuing improved learning results. Therefore, they are good dependent variables.

Independent variables. Five independent variables are used in this study. First, the ratio of social donations to total education expenditure, that is, (funding from community groups and individual citizens + social donations and funds raised by NPOs) / (total education expenditure). It is used for measuring the size of the donation-fund to education in one county. Second, the ratio of the number of primary and secondary schools receiving social donations to the number of all primary and secondary schools, it is measured as, (the number of private primary schools + the number of private secondary schools) / (the number of all primary schools + the number of all secondary schools). Third, the ratio of the number of primary and secondary school students receiving social donations to the number of all primary and secondary school students, that is, (the number of private primary school students + the number of private secondary school students) / (the number of all primary school students + the number of all secondary school students). The second and third independent variables measure the size of the NPOs' schools of compulsory education in one county. Fourth, the ratio of all social donations to the state education budget (funding from community groups and individual citizens + social donations and funds raised by NPOs) / (state education budget). And fifth, the ratio of social donations to the total budget expenditure on education is measured by (funding from community groups and individual citizens + social donations and school fund raising by NPOs) /

(the total budget expenditure on education). The fourth and fifth independent variables are used to measure the level of the social donation-fund regarding the government's education input in one county. These variables show the ratio of social inputs and outputs of compulsory education to the total, reflecting the value of the various social components of non-government aid to compulsory education (MOE, 2007).

Control variables. GDP per capita, local fiscal expenditure per capita and the state education budget are the control variables used in this study. As stated above, the government is largely responsible for the funding of primary and secondary education under the existing system and undertakes the provision of public goods for compulsory education. The level of local government funding for compulsory education is affected by the state of the economy at both the national and local level – GDP, GDP per capita, population density, local fiscal expenditure and local fiscal expenditure per capita, local fiscal revenue and local fiscal revenue per capita, and the state education budget. There is research showing how all these factors impact the level of expenditure on education (Lin, 2009). For this reason, they are included as control variables in this study. But it is also necessary to address as far as possible the issue of endogeneity based on empirical analyses. Generally speaking, GDP per capita is closely correlated with GDP and population density; local fiscal expenditure with local fiscal expenditure per capita; and local fiscal revenue with local fiscal revenue per capita. In order to avoid endogeneity, this study omits the following indicators - GDP, local fiscal expenditure, local fiscal revenue and local fiscal revenue per capita.

Method of Analysis

The present dataset covers 263 counties in Henan, Guangxi, Tianjin, Chongqing, and Xinjiang. A multivariable regression model has been used to test the hypothesis. There were no violations of the regression assumptions of normality and linearity (Tabachnick & Fidell, 2013). But as some information is not publicly available, the final number of counties for the purpose of the multivariable regression analysis is just 231, while the size of the sample which is valuable for the

study of primary-school consolidation rate is 107.

This study is cross-sectional study and focuses on the crucial year of 2006, in which China began to phase out tuition fees for compulsory education in the rural areas of China's central and western regions and the policy of compulsory education was implemented. The unit of analysis is the county: this means not just the county proper but also the county-level city, the county-level urban district and the county within provincial-level municipalities.

Previous studies have shown that the activities of NPOs are linked to both economic development and demographic diversity in the different regions of China (Matsunaga & Yamauchi, 2004). In terms of level of economic development, the highest unit at the county level is the county within a provincial-level municipality, which comes directly under the central government; it is followed by county-level urban district and then by the county-level city, while the lowest in terms of economic development is the county proper and the county-level city or municipality. Thus, counties within provincial-level municipalities are set as the dummy variable in order to test whether the level of economic development has affected the enrollment rate in junior secondary schools and the consolidation rate of primary schools. The results obtained from the structured questionnaires are subject to quantitative analysis based on the SPSS software.

RESULTS

Basic Data Description
This paper examines how the share of social donations in total education expenditure and other factors affects the level of compulsory education. It uses the consolidation rate at primary schools and the enrollment rate of graduates of junior secondary schools to high school as dependent variables. Furthermore, GDP per capita, public expenditure on education and local fiscal expenditure per capita are included as control variables. Descriptive statistics information for all survey items is summarized in Table 2.
The average primary-school consolidation rate is 93.22 %. In the western part of the country, the rate is

Table 2. Descriptive Statistics of the Variables in the Study Year 2006

	N	Min	Max	Mean	SD
Consolidation rate at primary schools (%)	107	60.30	110.40	93.22	8.70
Enrollment rate of junior secondary school-age population (%)	263	74.50	102.20	98.36	3.01
Enrollment rate of graduates of junior secondary schools to high school (%)	263	22.40	100.00	66.80	19.11
State education budget (ten thousand yuan)	263	1155	49568	12404	8166.86
Funding by community groups and individual citizens (ten thousand yuan)	263	0	6303	1179.99	1214.65
Social donations and fund-raising (ten thousand yuan)	263	0	1201	116.55	201.89
Share of social donations in total educational expenditure (%)	263	0	0.54	0.11	0.11
GDP (ten thousand yuan)	261	45145	5182000	711050	638468.03
Per capita GDP (yuan)	261	1006	70627	12104	10585.46
Population density (people/ sq km)	259	15	26227	752.74	2534.34
Local fiscal revenue (ten thousand yuan)	236	2139	159904	23804	27423.79
Local fiscal expenditure (ten thousand yuan)	236	19090	202654	56604	28431.94
Fiscal revenue per capita (yuan)	234	91	8819.32	515.02	789.89
Fiscal expenditure per capita (yuan)	234	320	15441.12	1200.30	1256.75

Sources: Author's compilation

slightly lower – at 92.54 %. The standard deviation is 8.70 %. The average enrollment rate of graduates of junior secondary schools to high school is 66.80 %, much lower than that for the whole country, i.e. 75.70 %. But if the standard deviation of 19.11 % is taken into account, there is a difference of just half a standard deviation; moreover, as the data are from the central-western regions, this result has some credibility. The average amount of school funding from social groups and private individuals is 11.80 million yuan, but the maximum is 63.03 million yuan and the minimum zero. Thus, compulsory education aid is not distributed as evenly as is suggested in earlier research. The same applies to social donations, as can be seen from the ratio of such aid to total education expenditure: an average of 0.11 %, a maximum of 0.54 % and a minimum of zero. The average state education budget is 124.04 million yuan, while the minimum is 11.55 million and 495.68 million yuan the maximum and the standard deviation 81.66 million yuan. Average GDP per capita is 10,585.46 yuan, while there is a large differential between the minimum of 1,006.45 yuan and the maximum of 12,103.99 yuan. This reflects both the reality on the ground and the current level of China's economic development. Similarly, local fiscal expenditure per capita is 515.02 yuan on average while the minimum is 91.30 yuan and the maximum of 8,819.32 yuan; the standard deviation is 789.89 yuan.

Empirical Evidence

First, we explain the relationship between the share of social donations in total education expenditure and the enrollment rate of graduates of junior secondary schools to high school. Our results show that there is a close relationship between the two, thereby confirming Hypothesis 1. The higher the share of social donations in total education expenditure, the higher the enrollment rate of graduates of junior secondary schools to high school (see Table 3).

Table 3. Correlation Between the Share of Social Donations in Total Education Expenditure and the Enrollment Rate of Graduates of Junior Secondary Schools to High School

	B	Std. Error	Beta	t	Sig.
(Constant)	63.61	1.66		38.26	0
Ratio of social donations to total education expenditure	32.28	11.01	0.18	2.93	0.00

Note: Dependent variable: enrollment rate of graduates of junior secondary schools to high school
Source: Author's compilation

Table 4. Regression Models of Social Donations and Local Finance in Compulsory Education to the Enrollment Rate of Graduates of Junior Secondary Schools to High School (Year 2006)

	Model A	Model B	Model C	Model D	Model E
(Constant)	58.71	58.53	76.27	78.60	82.59
Share of social donations in total educational expenditure (%)	0.23**	0.03**	0.05**	0.02**	0.04**
Control variables					
County type (counties in municipalities as reference group)					
County proper			0.00***	0.00***	0.01**
County-level city			0.04***	0.04**	0.10
County-level urban district			0.00***	0.00***	0.00***
GDP per capita (yuan)		0.52	0.39	0.66	0.37
State education budget (ten thousand yuan)				0.00***	0.00***
Local fiscal expenditure per capita (ten thousand yuan)					0.15**
F	25.60	13.12	12.37	13.37	10.93
R	0.48	0.49	0.56	0.58	0.53
R²	0.23	0.24	0.31	0.33	0.28
N	263	263	257	257	231

Note: *** $p < .01$, ** $p < .05$, * $p < .10$;
Source: Author's compilation

Table 4 shows five multiple regression models that make use of various independent variables and control variables as well as the enrollment rate of graduates of junior secondary schools to high school as the dependent variable. It can be seen from all five models that there is a close correlation between the level of social donations and the enrollment rate of graduates of junior secondary schools to high school. Thus Hypothesis 3 is confirmed – namely, that a higher level of social donations means a somewhat higher enrollment rate of graduates of junior secondary schools to high school. Comparing Model A with Model B shows that with the control variable of GDP per capita, the enrollment rate remains at a significant level. While comparing Model A with Model C shows that local fiscal expenditure per capita and the state education budget are closely correlated to the enrollment rate of graduates of junior secondary schools to high

Table 5. Correlation Between the Share of Social Donations in Total Education Expenditure and the Consolidation Rate at Primary Schools

	B	Std. Error	Beta	t	Sig.
(Constant)	94.48	2.23		45.24	0
Ratio of social donations to total education expenditure	-19.51	15.01	-0.18	3.82	0.07

Note: Dependent variable: consolidation rate at primary schools
Source: Author's compilation

Table 6. Regression Model of Social Donations and Local Funding in Compulsory Education to the Consolidation Rate at Primary Schools (Year 2006)

	Model A	Model B	Model C	Model D	Model E
(Constant)	103.59	104.57	102.97	105.12	107.03
Share of private school students (%)	0.10***	0.07***	0.01***	0.01***	0.01***
Share of social donations in total educational expenditure (%)	0.13	0.17*	0.09*	0.07*	0.11*
Control variables					
County type (counties in municipalities as reference group)					
County proper			0.12	0.11	0.08*
County-level city			0.08*	0.40*	0.06*
GDP per capita (yuan)		0.91	0.98	0.96	0.75
State education budget (ten thousand yuan)				0.58	0.87
Local fiscal expenditure per capita (ten thousand yuan)					0.35
F	13.01	5.60	4.77	3.23	3.00
R	0.45	0.47	0.47	0.48	0.49
R^2	0.20	0.22	0.22	0.23	0.24
N	107	107	107	107	107

Note: *** $p < .01$, ** $p < .05$, * $p < .10$;
Source: Author's compilation

school. However, despite these control variables, the model remains valid. Model E shows that if the share of social donations in total education expenditure increases by 1 percentage point, the enrollment rate of graduates of junior secondary schools to high school increases by 0.04 percentage points. At the same time, the enrollment rate of graduates of junior secondary schools to high school is also affected if the control variables are the state education budget and local fiscal expenditure per capita. For every increase in the state education budget of 10,000 yuan, the enrollment rate of graduates of junior secondary schools to high school will increase by 0.003 %. For every increase of local fiscal expenditure per capita of 1 percentage point, the enrollment rate of graduates of junior secondary schools to high school will increase by 0.04 percentage points (see Table 4).

Secondly, we explain the relationship between the share of social donations in total education expenditure and the consolidation rate at primary schools. Here there is a significant impact. Hypothesis 2 is thus supported: the higher the share of social donations in total education expenditure, the higher the consolidation rate at primary schools (see Table 5).

Table 6 shows five multiple regression models that make use of various independent variables and control variables as well as the consolidation rate at primary schools as the dependent variable. It demonstrates that there is a close correlation between the level of social donations and the consolidation rate at primary schools. Hypothesis 4 is thus confirmed – a higher level of social donations means a somewhat higher consolidation rate at primary schools. Model E shows that if there is an increase of 1 percentage point in the share of social donations in total education expenditure, the consolidation rate at primary schools will increase by 0.07 percentage points. If the share of private school students in the total number of school students increases by 1 percentage point, the consolidation rate in primary schools will increase by 0.01 percentage points. However, control variables such as the state education budget and local fiscal expenditure per capita have no significant impact on the consolidation rate at primary schools. Comparing Model A with Model B shows that with the control variable of GDP per capita, the correlation between the level of social donations and the consolidation rate at primary schools remains close. And a comparison between Models A and C demonstrates that local fiscal expenditure per capita and the state education budget are closely correlated to the consolidation rate at primary schools. Moreover, despite these control variables, the model remains valid (see Table 6).

Thirdly, consistent with other studies of NPOs, this paper finds that the level of social donations is closely correlated to both the enrollment rate of graduates of junior secondary schools to high school and the consolidation rate at primary schools. That is to say, NPO compulsory education aid is indeed effective to a large degree. After increasing the dummy variable and using the county unit within provincial-level

municipalities as a reference, the results show that the level of economic development has a significant impact on NPO compulsory education aid. Interestingly, a comparison of counties proper, county-level cities and county-level urban districts reveals that a higher level of economic development in the county-level urban districts has only a minimal impact, contrary to the original assumption of a positive correlation. This might be due to the fact that county-level urban districts have less economic independence: it is possible that social donations were reserved by the county-level cities for compulsory education at the municipal level.

DISCUSSION

The existing literature on the non-profit sector in China mainly has been focused on improving public-service quality. While limited attention is paid to how such NPOs played the role in compulsory education aid of through complementary relationship. To examine the role of NPOs in compulsory education aid in China, the empirical analysis tested four hypotheses. Based on statistical data from five provinces (including 1 autonomous regions and 2 provincial-level municipalities), the quantitative analysis supported these hypotheses. The share of social donations in total education expenditure had a positive impact on the quality of compulsory education at the country level, suggesting that NPOs played important role in Chinese compulsory education system. While local governments are already responsive, at least to a certain degree, to social demand, there are still some major shortcomings in compulsory education in China. For example, students in most parts of rural China are dropping out of secondary school at troubling rates. Research by Shi et al. (2015) shows that the cumulative average dropout rate across all types of secondary education may be as high as between 17.6 % and 31 %. Dropping out is closely correlated to low academic performance, a high opportunity cost, low socio-economic status, and poor mental health. Such shortcomings in compulsory education in China are addressed by the NPOs and may perhaps be resolved by those organizations. In the past 30 years, many NPOs have gone to great

lengths to address the shortcomings and to achieve higher equality in compulsory education. Take Project HOPE as an example. Founded in 1989, it is one of the largest NPOs for local compulsory education aid, providing social donations to poor students and for the construction of primary schools. Project HOPE has funded the construction of 18,982 primary schools, donated a total of 11.83 billion yuan and provided aid to 5.35 million school students in China's poor rural (both agricultural and pastoral) areas (CYDF, 2017).

Furthermore, the findings of this study confirm those of Lecy and Van Slyke (2013) asserting that interdependence theory emphasizes the mutual dependency that arises both from a partnership and the nature of collaborative governance. At the same time, they challenge earlier research that suggested NPOs become dependent on government support to varying degrees (Lu, 2018); rather, NPOs have a tighter positive effect on compulsory education aid than does government funding. These findings also suggest that as government becomes increasingly reliant on NPO aid for the delivery of public goods such as education, leaders should become more concerned about the effect of such dependence on their activities. In short, NPOs have played an important role in China. They should be actively supported to achieve the improved and more effective use of compulsory education aid.

In addition, the findings echo the arguments with a government failure perspective to understand the role of NPOs in China. Yet we found that the arrangements of voluntary sector and government could be a complementary relationship. If Chinese local governments can build a closer collaborative network with NPOs, they may work together to provide better public services and improve the quality of compulsory education. There should also be concern among government leaders about the situation of compulsory education aid itself. The role of NPOs is growing in China, but the total size of NPO aid to compulsory education is still small compared with government funding. Private primary and secondary schools combined account for less than 8 % of such schools in China, while the share of private primary schools in all primary schools in China is less than 2 %. In

developed countries in the West, that share is much higher – for example, 30 % or more in the United States (Weng, 2009a; 2009b).

In the 2006 spring term, China formally exempted tuition fees for public school students in compulsory education in rural areas of the western regions and continued to provide free textbooks to poor students. Boarding expenses were paid for students under the "two exemptions and one subsidy" policy. Following the introduction of these measures, there was a reduction in the number of private school students in general and students and teachers returned to public schools. Many schools, especially those for migrants, were closed. Across the country, the development of private primary and secondary schools stalled. Data published in the National Educational Development Statistical Bulletin in 2005 and 2006 showed that the number of private primary and secondary schools was falling at this time: in 2005, there were 6,242 private primary schools and 4,608 private junior secondary schools; in 2006 there were 6,161 and 4,550 respectively – a loss of 139 private schools in just one year.

Understanding the association between NPOs and compulsory education aid was an important element of the study. Increased central government funding for compulsory education and the exemption of tuition fees for those in compulsory education seriously impacted the development of private schools, which until then had enjoyed significant momentum (Zhang, 2007). In Guangxi, Ningxia, Hunan, Guangdong, Shanghai, and Hainan, students transferred in their droves from private to public schools. In Guangxi, just one year after the implementation of the "two exemptions and one subsidy" (in Chinese: Liang Mian Yi Bu) policy, there were a total of 223,975 children who either belonged to a migrant family that returned home, went back to school after dropping out or transferred from a private to public school for another reason. In 2006, many private schools ran into difficulties that were unprecedented at that time. In large cities, many migrant schools had to close after they had come under enormous pressure from the policy of compulsory education. Under that policy,

children who went to school in another province could not enjoy free compulsory education. Many migrant students were affected by this and returned home to receive free compulsory education in local public schools.

Although they were all given places, measures had to be taken – such as increasing the number of classrooms and teachers – to ensure that the quality of the instruction at these public schools did not suffer. Taking such measures inevitably took some time. We see the need for further research into such issues. In particular, a focus of that research could be how to deal with these problems.

CONCLUSION

This paper examines the role of NPOs in compulsory education aid in China. It draws on complementarity theory (Young, 2000) to discuss the need for and feasibility of NPO compulsory education aid in China. That theory has been used to explain the nature of the government-nonprofit relationship. Data from 2006 are used to test the effectiveness of NPO aid in compulsory education at the county level and to demonstrate how and to what extent the quality of compulsory education is affected. The study shows that the share of social donations in total education expenditure can significantly impact the quality of compulsory education at the country level, with the control variables such as GDP per capita, local fiscal expenditure per capita and the state education budget. This lends powerful theoretical support for compulsory education aid.

Of course, this study is subject to some limitations. Not least, it relies on supervisor-provided data about social donations and compulsory education outcomes rather than more objective measures. Moreover, it is unclear whether this analysis can be used to explain the impact of NPOs on upper secondary education, the quality of instruction at vocational and technical schools, and higher education. For one thing, there are different approaches in these areas. NPOs are more willing to give aid to higher education because the results are less unpredictable than for compulsory

education aid and the outcomes more modest (Lin, 2009). In China, the share of expenditure on higher education is relatively large, but it is also the case that because the proportion of primary and secondary school students has grown, expenditure on education at these levels is likely to increase. But the larger the number of students attending vocational and technical colleges and university, the higher the level of expenditure on higher education is likely to be (Lin, 2009). How this funding problem can be resolved will be the subject of further research.

It is recommended that in the future, researchers supplement supervisor-provided data with more objective data. In this way, they will be better able to establish the effects on compulsory education aid.

Another limitation of this study is that the sample is relatively small, although it constitutes a valuable dataset in itself. Future research should carry out large-scale surveys and examine whether this study's findings are generalizable across countries. Moreover, the focus could be shifted to other topics – for example, how NPOs might influence higher education aids, which could be of interest to other scholars and practitioners.

To sum up, this study makes an important contribution to the public administration literature by exploring the association of NPOs and compulsory education aid in China. It expands our understanding of NPOs and can offer insights on how to improve governance. Public managers in developing countries should embrace the increased efficiency of NPO public-service delivery and more effective cross-sector collaboration.

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