Evaluating Public-Private Partnership Schools in Punjab, Pakistan

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Ali Hasan Ansari
World Bank, Ghana

Abstract

This study evaluates four Public-Private Partnership Programmes (PPPs) in the Punjab province of Pakistan using Henry M. Levin's (2002) framework to assess implications for choice, efficiency, equity, and social cohesion. In theory, PPPs increase schooling options. However, below-market subsidy amounts, high indirect costs of schooling, and administrative requirements for switching schools may limit the reality of choice. While efficiencies might be achieved by lower salaries for teachers, learning outcomes may be tainted by filtering mechanisms, such as entrance exams and enrolment caps. Evidence for equity is mixed, as it appears PPP schools steer away from the poorest neighbourhoods. Although well-conceived curricula at many PPP schools may foster social cohesion, growth in the PPP sector stands to undermine support for public schools and lead to division.

Keywords

Public-private partnerships (PPPs); Punjab; Pakistan; privatization; schools

Statements and Declarations

There are no competing interests to declare.

Contact

Ali Hasan Ansari, ansarialih@gmail.com

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1 Introduction

According to the World Bank's learning poverty metric, 75 percent of primary school-age children in Pakistan are not proficient in reading, after adjusting for the out-of-school children population (Word Bank, 2019). This indicator captures the two main challenges in the primary education sector in Pakistan: a large proportion of children are out of school, and children that are in school are learning less than they should.

The province of Punjab has been attempting to address these challenges by introducing a series of education reforms in the school education sector. Among the most prominent of these reforms has been the establishment of Public Private Partnerships (PPPs) in education through the Punjab Education Foundation (PEF). These partnerships involve PEF providing subsidies to qualifying private schools run by private entrepreneurs and NGOs. In return, these education service providers enrol students free of cost provided that they meet minimum performance benchmarks outlined in their partnership agreements. The rationale for introducing PPPs in education in Punjab to address these challenges is largely based on the assumption that PPPs operate in a relatively cost-effective manner as compared to public schools. There is evidence from Pakistan that private schools tend to outperform public schools, although the magnitude of the achievement gap varies from study to study (Alderman and Orazem, 2001; Andrabi, Das and Khwaja, 2006; Aslam, 2009; Amjad and MacLeod, 2014; Gruijters, Alcott and Rose, 2020). On the cost side, there is also some evidence that suggests the direct cost of schooling may be less for private schools than public schools as reflected by low fee levels, driven largely by differences in teacher salaries in public and private schools (Andrabi, Das, & Khwaja, 2006).

At present, PPP programmes provide tuition-free education to approximately three million children in the province, while traditional public schools cater to 12 million students. Studies have attempted to assess the impact of PPP programmes on learning outcomes, and the results vary by PPP programme (see Barrera-Osorio et al., 2017; Crawfurd, 2018). However, there are other important consequences of the privatisation of education beyond learning outcomes that require consideration. Levin (2002) proposes a more comprehensive approach for evaluating privatization initiatives in education across several criteria. Beyond learning outcomes (in the form of productive efficiency), Levin addresses freedom of choice, equity, and social cohesion.

This paper attempts to apply Levin's framework by utilising findings from four recent studies of Punjab's PPP models in education (Author, 2020a; Author, 2020b; Author, 2021a; and Author, 2021b), supplemented with additional analyses and document reviews, to evaluate the design and impact of four PPP programmes. This study does not discuss equity implications of these programmes as these are extensively discussed in previous work (Author, 2020a). The main research questions for this study have been formulated using these criteria and are presented below:

- To what extent do PPP programmes in Punjab increase both theoretical and de facto freedom of choice for households?
- Are PPP programmes more cost-effective than traditional public schooling?
- To what extent do PPP programmes foster social cohesion in the short and long term?

The paper is structured as follows. The next sub-section presents a literature review related to the four criteria used to evaluate privatisation initiatives in education followed by an overview of the design of PPP programmes in Punjab. Section II presents an overview of the methodological approach used in this study. Sections III to VI present the main findings related

to freedom of choice, productive efficiency, equity and social cohesion. The paper concludes with some policy considerations and recommended areas for future research.

1.1 Literature Review

This sub-section presents an overview of select literature on freedom of choice, efficiency, equity, and social cohesion as they relate to the privatisation of education. Each of these topics is diverse and could warrant their own study; however, the purpose of this study is to review evidence across all four dimensions.

The general model of PPPs in Punjab is closely related to the private provision of education. For example, the largest PPP programmes in the province—the Foundation Assisted Schools and Education Voucher Scheme programmes—partner with *existing* low-fee private schools to enrol children free of cost. Therefore, understanding the arguments for and against the private provision of education is particularly relevant for this context. One of the arguments for the privatisation of education and PPPs in education is based on the principle of market-based competition. Proponents argue that by subsidising private education providers, funders will enable to choose from a variety of schooling options, and schools, in turn, will be incentivised to compete for students and improve the quality of education services offered (Friedman, 1962). Critics argue that privatisation reduces state control over education, leads to greater segregation of students based on socio-economic characteristics and ability, and would leave disadvantaged students behind in already poor-performing public schools (Patrinos et al., 2009). Keith M. Lewin (2007) cautions that privatisation programmes in

education are based on experiences from more regulated, well-developed 'marketed' education systems in high-income countries, which are very different from the reality in many low-income countries where the private schooling sector may be unregulated and not professionalised. Despite these concerns, PPP models are being implemented in high, middle- and low-income country contexts. In countries where these models are starting to scale up, developing an understanding of these programmes and their implications for freedom of choice, efficiency, equity, and social cohesion is becoming increasingly important.

The extent to which parents can exercise their freedom of choice is an important criterion for evaluating privatisation initiatives in education. Freedom of choice in this context refers to the ability of parents to choose from an array of schooling options that cater to diverse schooling philosophies, religious practices, and education goals (Levin, 2002). Studies that measure parental satisfaction report some evidence that voucher recipients and parents sending their children to charter schools in the US report higher levels of satisfaction than parents sending their children to public schools (Howell et al., 2002; Ladd et al., 2017). However, the extent of choice available is largely dependent on the tuition voucher/subsidy amount offered to schools/parents and their coverage (Levin, 2002). If these amounts are below prevailing tuition rates or if there are significant non-tuition related expenses that are borne by parents (such as transport, books, and other learning materials), then the schooling options for parents may be limited. School choice is also dependent on the relative ability of parents to select schools rather than schools having the discretion to select students (Levin, 2002). All of these factors are important when assessing the extent of school choice available to parents, particularly for disadvantaged households.

One of the main arguments used by advocates of privatisation of education is that increased competition amongst schools will lead to greater educational productivity (Levin, 2002). While educational productivity can potentially be assessed across numerous dimensions, the literature has largely focused on student test scores as a measure of such productivity. Yet there is he little if any evidence from studies of several countries that increased school competition leads to better test scores (see Carnoy, 2017). Other studies have assessed educational efficiency by comparing academic outcomes for students in voucher schools relative to students in public schools, and the evidence on the impact of education vouchers on student learning outcomes is mixed (see Epple et al., 2017). However, to evaluate productive efficiency, it is necessary to consider both the effectiveness and costs of service provision. Relatively fewer studies have assessed the cost-effectiveness of public and private schooling, and the evidence is conflicting and must be interpreted with caution. There is some evidence from developing countries that private schools outperform public schools in math and language tests and operate at lower per-unit costs than public schools (see Jimenez et al., 1991; for an example of a study from India, see Goyal, 2009). There is also evidence to the contrary—a study from Chile found that while the per-pupil cost of education was lower for private subsidised schools than public schools, public schools were able to generate higher test scores for students with similar socio-economic backgrounds than subsidised private schools (Carnoy and McEwan, 1998). In another study from Colombia, Stern (2014) argues that despite producing higher learning outcomes, it is unlikely the school vouchers led to greater productive efficiency than the previous system due to increased costs to families and society. These conflicting findings on the relative efficiency of private and public schooling could be due to a variety of reasons. Findings may be context-specific and the methods for imputing costs may vary (Levin and Belfield, 2015). Therefore,

comparing and generalising findings from cost-effectiveness studies across contexts may be misleading, particularly if the efficiency measures and the methods for computing costs are not comparable.

The impact of privatisation programmes in education on equity outcomes is of particular interest to policymakers. Ensuring inclusive and equitable quality education for all is a global commitment manifested in Sustainable Development Goal 4. Levin (2002) defines equity as the "quest for fairness in access to educational opportunities, resources, and outcomes…" for students by socio-economic status, race, gender, language and geographic location (p. 163). Privatisation proponents argue that initiatives such as vouchers and charter schools provide disadvantaged households with an alternative to generally poor-quality public schooling and thus have the potential to lead to more equitable outcomes (Frakenberg et al., 2011). Opponents of privatisation programmes argue that privatisation may lead to greater inequity because parents with greater resources are more likely to have access to more information and be better informed and thus have access to more schooling options than less advantaged parents, leading to further segregation of students (Waslander et al., 2010).

Differential access to information on schooling options and its potential impact on equity cannot be overstated. An experimental study from Punjab found that providing information to parents in the form of school report cards had positive impacts on enrolment and student learning and decreased school fees in treatment villages (Andrabi et al., 2015). Researchers have also found evidence that PPP/privatisation programmes may be associated with greater inequity in education (Levin, 1998). For example, Baum (2018) utilises 2009 PISA assessment data to evaluate the effectiveness of public-private partnerships in education in 17 countries and finds that while students studying in PPP schools outperform public school students, this

achievement gap is largely attributed to peer effects due to the sorting of more capable students into PPP schools. Similarly, there is evidence from a randomised evaluation of privately managed public schools in Liberia that private operators pushed excess pupils to other government schools (Romero et al., 2020). Evidence of PPP schools cream skimming higher-achieving students has also been reported in studies that use qualitative methods (for an example from Colombia, see Termes et al., 2015). Implications for equity are likely to depend on the design of these programmes—Antoni Verger et al. (2020) argue that PPP programmes designed to generate market-like dynamics are more likely to create greater inequity compared to affirmative action type programmes such as targeted vouchers for disadvantaged populations.

Another important aspect of evaluating privatisation programmes in education is to assess their impact on social cohesion outcomes. In a general sense, one of the purposes of schooling is to create a more cohesive society, and this necessitates exposure to common schooling elements in the form of curriculum, values, language and political orientations (Levin, 2002). Opponents of education privatisation argue that private provision of education can undermine the idea of a common schooling experience (Levin and Belfield, 2003). One mechanism through which schools can enhance social cohesion is through imparting civic education, and there is evidence from the US that private schools offer more civic education than public schools (see Levin and Belfield, 2003). In a study of a voucher programme in Sweden, Shafiq and Myers (2014) found no decline in civic attitudes as a result of the voucher scheme after controlling for student, family, and peer group characteristics. These studies focus on one (albeit important) aspect of social cohesion, but there are other components that are worth considering such as, diversity in the student body for example. The evidence on the impact of

privatisation programmes in education on social cohesion is limited and this is an area that requires further study, particularly in developing country contexts.

1.2 Overview of PPP programmes in Punjab

This section briefly presents the key design features of PPP programmes in Punjab. There are currently four main programmes being implemented in the province: the Foundation Assisted Schools (FAS) programme; the Education Voucher Scheme (EVS); the New School Programme (NSP); and the Public School Support Programme (PSSP).

The FAS programme is PEF's oldest and largest programme with approximately two million children studying in FAS partner schools. The programme—introduced in 2005—offers subsidies to partner private schools in low-literacy districts on a per-student basis ranging from USD 3.3 per month to USD 9.6 varying by level of schooling. Partner schools enrol children free of cost and are not allowed to charge additional school-related fees to parents. Prospective partner schools in eligible areas submit applications to PEF to apply for partnership and must pass a PEF-administered quality assurance test (QAT) to be considered for partnership. To remain eligible for partnership, schools must meet certain infrastructure requirements and ensure that students pass annual QATs administered by PEF. Of all PEF programmes, FAS schools have the highest performance benchmark for the QAT: for schools to pass, 75 percent of students must score 40 percent or higher on the test. Failure to pass twice consecutively results in termination of the partnership (Author, 2021b).

The next programme launched by PEF in 2006 was the EVS, which currently enrols approximately 500,000 children. The programme offers tuition redemption vouchers to children ages five to 16 that can be redeemed at participating partner schools in return for tuition-free education. This is a targeted voucher programme, operating in underprivileged areas in the province that are selected based on poverty statistics. PEF seeks applications from prospective partner schools in these areas that are required to meet basic infrastructure and facility-related requirements. In the past, PEF identified deserving beneficiaries by conducting door-to-door surveys; however, currently, partner schools are tasked with identifying and providing information on voucher recipients, which PEF verifies on a sample basis to ensure that they meet the beneficiary criteria. The voucher amount ranges from USD 3.3 to USD 6.7 per month and participating partner schools cannot charge additional fees to parents. Like the FAS programme, partner schools must participate in and pass QATs to remain eligible for partnership, however, the passing criteria is lower with 50 percent of students having to score 40 percentpercent or higher. The lower performance benchmark for EVS schools is likely due to the targeted nature of the programme—itt is expected to enrol relatively more disadvantaged and lower-achieving children than FAS schools. An important aspect of the programme is that partner schools are required to admit children with vouchers (Author, 2021b).

The NSP programme was introduced in 2008 to establish new schools in underserved areas of the province with no government school within a one-kilometre radius. Currently, 270,000 children are studying in NSP schools in the province. To establish schools in these remote areas, PEF accepts applications from local entrepreneurs with a minimum of 12 years of education and from NGOs. Per-student subsidy amounts paid to partner schools range from USD 3.3 to USD 9.59 varying by school level. Successful applicants receive six months payment upfront based

upon an assumed enrolment of 50 students to allow schools to establish facilities and pay salaries until enrolment numbers stabilise. After six months, schools are paid on actual enrolment numbers. Relative to both the FAS and EVS programmes, NSP partner schools have a lower performance benchmark to remain eligible for partnership: 50 percent of students must score 33 percent or higher (Author, 2021b).

The latest PPP programme to be launched in the province in 2016 is the PSSP programme which contracts out poor-performing schools to private sector service providers. Currently, 400,000 students study in PSSP schools in Punjab. While this programme was originally initiated by PEF, it is now managed by the Punjab Education Initiatives Management Authority (PEIMA). The programme is open to NGOs, private school networks, existing PEF partner schools, and private individuals. Under-performing public schools for outsourcing are identified as schools with overcrowding, schools operating under capacity, schools with low levels of student achievement on provincial exams, and non-functional schools. The per-student subsidy levels vary between USD 3.3 (for entrepreneurs) and USD 4.2 (for NGOs/private school networks) (Crawfurd, 2018). The performance benchmark for QATs is the same as NSP schools: 50 percent of students must score 33 percent or higher for schools to remain eligible for partnership (Author, 2021b).

2 Methodological Approach

This study uses three approaches to provide evidence on the four dimensions for evaluating privatisation programmes in education. First, the study relies on findings from four recent papers focusing on the access to PPPs (Author, 2020a), the impact of PPPs on neighbouring public schools (Author, 2021a), PPP school effectiveness (Author, 2021b), and teacher

characteristics in PPP, public and private schools (Author, 2020b). Second, document reviews of official PEF notifications were conducted[1] to obtain information on the design and implementation of individual PPP programmes. Third, descriptive statistics are calculated using data on public, private, and PPP schools from the Punjab Service Delivery Indicator Survey (PSDIS) 2018. This was a school-based survey commissioned by the World Bank covering 812 public, private, and PPP schools in the province that included student assessments, school and teacher surveys, and a parent survey to obtain socio-economic information for students. Lastly, inferential statistics are also used to identify correlates of private school fees and correlates of social values of public and PPP students. Further details on methods and data utilised are presented in the relevant sections below.

3 Freedom of Choice

To what extent do PPP programmes in Punjab increase both theoretical and de facto freedom of choice for households?

Levin (2002) defines this criterion as the right of households to be able to choose schools that are aligned with their values, educational philosophies, and religious and political affiliations. An important aspect of this criterion is the extent to which parents can choose schools as opposed to schools being able to select children. In principle, the nature of the design of each of the PPP models in Punjab is meant to increase choice for households. Before the introduction of PPPs, the only tuition-free schooling option available to parents was sending their children to public school.

[1] These resources are available on the Punjab Education Foundation website

From this theoretical perspective, it may seem obvious that PPP programmes increase the number of schooling options for households. However, the extent to which the respective programmes improve de-facto choice warrants detailed consideration. This section will attempt to assess the extent of freedom of choice for parents of PPP students in Punjab.

An important aspect in evaluating school choice is determining whether the voucher or subsidy amount covers school fees and other associated expenses. There is some demand-side evidence that increases in the size of the voucher lead to increased access to private schooling for parents (for evidence from Chile, see Navarro-Palau, 2017; and Murnane et al.) and some supply-side evidence from the US that schools with higher tuition rates are less likely to participate in school choice programmes (Sude et al., 2017; and Hobbs, 2018). With regards to school fees, partner PPP schools across all programmes are not allowed to charge additional fees to parents, and parents cannot top-up (or add on to) the voucher/subsidy amount paid to schools. This policy helps ensure that parents can afford at least the direct costs of schooling. However, the amount of choice available to parents is determined by the subsidy amount offered to partner schools and the extent to which it is in line with the prevailing tuition fees in the low-free private schooling (LFPS) sector.

To determine the adequacy of the subsidy amounts for each programme, a fee-forecasting exercise is conducted using the PSDIS data 2018. The sample of schools in this dataset consists of 812 public, private and PPP schools in Punjab and the survey contains information on grade four teachers, private school fees and school facilities. Since PPP schools do not charge fees to qualifying students, for this exercise the school fees are forecasted. Essentially, this will give an approximation of what school fees in PPP schools *would be* if they were to charge fees based on

school characteristics.[2] To do this, first the correlates of school fees for low-fee private schools are examined through an Ordinary Least Squares (OLS) regression with tehsil fixed effects (to account for any tehsil-specific factors that may be associated with school fees). Next, the coefficient estimates from the LFPS regression are used to predict school fees for PPP schools in the sample. These forecasted school fees are then compared with the per-student primary school subsidy amount offered to partner schools by PEF to determine the extent to which the subsidy amount is greater or lower than the forecasted school fees. The regression results are presented in table A1 in the appendix and the results of the forecasting exercise are presented in table A2. Figure 1 below presents the distribution of forecasted monthly school fees by PPP type and the dotted black line represents the per-student subsidy amount currently paid by PEF to partner schools. The majority of NSP and PSSP schools in the sample have forecasted fees that are less than the per-student subsidy amount. However, 50 percent of EVS schools and 82 percent of FAS schools in the sample have forecasted school fees that exceed the per-student subsidy amount paid by PEF (USD 3.3 per month). These results suggest that the subsidy amount paid to partner schools may not be adequate, particularly since they are encouraged to enrol disadvantaged students, who may have greater learning needs that require more support and greater resources. If this is the case, there may be many low-fee private schools that do not end up participating in PPP programmes.[3] Ultimately, below-market subsidy amounts offered to partner schools could impact the long-term supply of PPP schools and result in fewer schooling options available to parents.

Figure 1 here

[2] It is important to note that this exercise is a very crude approximation. To better predict school fees for PPP schools, more granular demand and supply side variables are required, such as the student population in the school catchment area and the local supply of schools for example.

[3] Of course school fees are endogenous, and are likely to be influenced by the subsidy/voucher amounts offered by PEF, therefore this must be taken into consideration when assessing the adequacy of subsidy amounts.

The extent of schooling options available to parents is also dependent on the indirect costs of sending their children to PPP schools. These could include stationary costs, transport costs, uniforms, and even private tuition costs (Afridi, 2018). Data from the PSDIS provides some insight into indirect costs of schooling incurred by households. One major expense which is typically incurred by households is textbooks. In both public and PPP schools, students receive free textbooks.This is accordingly one cost that parents do not have to bear. However, average non-fee expenditures on schooling for PPP and public students range from USD 3-4 per month. These expenditures may also discourage disadvantaged households from sending their children to PPP schools.

Another important dimension of freedom of choice is whether parents have choice in terms of religious/political affiliations and curriculum. Across all programmes, PEF does not prohibit religious schools from participating; however, all partner schools are required to participate in quality assurance tests that are developed and administered by PEF (Shafiq, 2006). These tests are aligned with the public school curriculum and are mandatory for schools to remain eligible for partnership. As previously mentioned, PEF provides all partner schools with free textbooks for students developed by the Punjab Curriculum and Textbook Board (PCTB), the same set of books that are also provided to public school students free of cost. By providing textbooks and administering mandatory student assessments that are aligned to the public school curriculum, PEF is ensuring (to some extent) that partner schools follow the same curriculum as public schools. In this respect, parents may have limited choice in choosing schools that follow an alternative curriculum. However, limited choice in the curriculum has potential advantages from a social cohesion perspective and this will be discussed below.

The admission criteria for schools and the extent to which schools can select students have direct implications for the degree of choice households have. The design of the education voucher scheme is such that multiple partner schools are selected within a Union Council and in theory, parents may choose to send their child to any partner school in the locality. Schools are not allowed to refuse admission to voucher students. However, since partner schools are tasked with identifying eligible students, schools have discretionary power to select students.[4] At the time of voucher distribution, PEF informs parents that they can send their child to any eligible partner school in their UC/area that can be identified as having a PEF board on the school building. However, since schools are tasked with identifying voucher recipients, parents' abilities to select schools of their choice may be limited in practice. Another related concern is the ability of PPP schools to cream skim higher achieving children. In a small study of 30 PPP schools in Punjab, schools were found to be administering entrance tests to prospective students as a means to cherry-pick higher achieving students (Afridi, 2018). Of all the PEF programmes, the programme that may be most affected by this practice is the FAS which operates in urban and semi-rural areas. This is because FAS schools have to meet higher student achievement benchmarks than other PEF programmes to remain eligible for partnership.

PSSP partner schools are prohibited from un-enrolling children after taking over operations of public schools and this is important to prevent schools from cream skimming higher-performing students to improve their chances of the school passing the QATs. New admissions generally take place once a year at the beginning of the school year in April; however, there is a cap on the percentage of new enrolments that can take place which is set at 10 percent.[5] While the new

[4] PEF validates the beneficiary information shared by schools on a sample basis.
[5] Partner schools that have enrolments of less than 100 students after the summer break are allowed to make new admissions after the summer break.

admission caps from a budgeting perspective make sense given limited resources to fund PPP initiatives, from an access perspective, this poses a challenge. It is possible that in certain localities where schools may be oversubscribed, children are not able to access PSSP schools because of these enrolment caps.

Another important component of school choice is the ease with which parents can switch schools. All PEF programmes require that schools must only enrol children that have obtained school-leaving certificates from their previous educational institutions (and they must keep records of these certificates). Although PEF mandates that partner schools cannot charge fees for issuing these certificates, there is nothing mandating other non-partner private schools in the area from charging fees for this purpose. This could potentially create an additional barrier for parents when trying to enrol their children in PPP schools. While PEF has attempted to facilitate parents who are not able to secure such certificates[6] this does pose an additional administrative burden on parents who may want to transfer schools.

The extent to which schooling options are accessible for parents also depends on the distance to school and transportation requirements. Although parents may be eligible to enrol their children in PPP schools, in practice they may face difficulties if schools are located further away and are accessible only through transport. To understand these access-related constraints, the time to school and mode of transportation taken by students to get to school is presented in figure 2 below. Although the majority of PPP students walk to school, there is a relatively large share of students who require some sort of transport to get to school. This is particularly true for students attending EVS and FAS schools: 32 percent of EVS students and 41 percent of FAS students use

[6] If parents cannot obtain school leaving certificates PEF allows them to sign an oath to attest that the previous school their child attended is not issuing a certificate.

some sort of transport to get to school. There are of course cost implications for households who opt to send their children to school using transport, and since none of the PPP programmes has provisions for transportation this could prevent many disadvantaged households from sending their children to PPP schools. The time it takes to reach school may also prevent parents from sending their children to school: 26 percent of FAS students and 20 percent of NSP students travel more than 30 minutes to reach their schools. In a previous study from Punjab, it is reported that a 500-metre increase in distance to school decreases the probability of enrolment by 9-11 percent (Andrabi et al., 2007). In this situation, households that live further away from PPP schools and require transport to get to school may have theoretical choice but may not have defacto choice.

Figure 2 here

Evaluating the extent to which PPP programmes increase schooling options for households that otherwise could only afford to send their children to public school reveals mixed results. It can be argued that at a very basic level, PPP programmes increase choice for households, by (at the very least,) providing one alternative form of tuition-free schooling. In this regard, some programmes may offer relatively less choice than others such as the NSP, which targets communities without existing government or private schools. However, the concept of freedom of choice rests on market-based principles that multiple options can cater for the diverse education requirements of parents. The extent to which PPP programmes provide multiple schooling options for disadvantaged households is questionable. The preceding analysis reports that the subsidy amount for EVS and FAS schools may be below market fees, schools may have significant decision-making power relative to parents with admissions and enrolment, particularly in EVS and FAS schools. In the long run, below-market subsidy amounts could limit the supply of schooling and have implications for the quality of service providers that are willing to partner with PEF.

Below-market subsidises could also threaten the sustainability of current PEF partner schools that rely on financial support from the government and may have to shut down operations if operating costs are not being met. Administrative requirements for transferring schools may also limit parents' willingness to switch schools; and transportation costs may further discourage parents from enrolling their children in PPP schools (particularly for EVS and FAS schools).

4 Productive Efficiency

Are PPP programmes more cost-effective than traditional public schooling?

Levin (2002) defines productive efficiency (PE) as 'maximizing educational results for any given resource constraint' (page 162). One way in which PE can be assessed is through cost-effectiveness analysis which in this context provides measures of education outcomes relative to their costs for PPP schooling and public schooling. Ideally, education outcomes should encompass more than student test results. For example, they would incorporate problem-solving skills, collaborative skills, and other skills that are valued by society (Levin, 2002). However, such information is not available for this analysis. Therefore the analysis will focus on grade four math, English, and Urdu test scores as measures of education outcomes. The approach to assess the relative cost-effectiveness of PPP schools is to estimate cost-effective ratios for FAS, EVS and public schools in Punjab.[7] Generally, this involves identifying the incremental per unit cost associated with an incremental effect (McEwan, 2012). In the subsequent paragraphs, the methods used to estimate productive efficiency of PPP schooling relative to public schooling are described

[7] PSSP schools have been excluded from this analysis because these are outsourced public schools with many overlapping costs with traditional public schools therefore disaggregating costs are difficult. NSP schools are excluded from the cost-effectiveness analysis because the coefficient on NSP schooling was not found to be a statistically significant predictor of student test scores (Author, 2021b)

beginning with a discussion of effectiveness measures followed by a description of the process used for estimating costs for PPP and public schooling.

For this analysis, effectiveness measures are obtained from a recent study on the relative effectiveness of PPP schooling in Punjab (Author, 2021b). The study presents the correlates of grade four student achievement in math, English, and Urdu, using the PSDIS survey data from Punjab. This paper utilises point estimates derived from coefficient estimates (which are standardised test scores) for FAS, EVS, and NSP schooling, with public schooling as the comparator category. Utilising standard deviations of test scores is particularly useful when comparing effectiveness across studies and contexts (Dhaliwal et al., 2013). As mentioned, the CE analysis is only conducted for PPP programmes that were found to be statistically significant predictors of test scores (relative to public schooling). The confidence intervals of the point estimates are used for the sensitivity analysis to assess the robustness of the results. Following the approach of Dhaliwal et al. (2013), the total impact of a particular type of schooling on student learning is calculated as follows:

$$TI_s = I_s \times N_s \times T$$

where TI_s is the total impact of programme type *s* (that is public, FAS and EVS), I is the per unit (or student) impact which in this case is the point estimate, N is the total number of students enrolled in a particular programme, and T is the duration of the programme which is one year.

One of the central challenges in cost-effectiveness studies is being able to adequately capture the costs of programmes. The gold standard for calculating costs is to follow the ingredients method outlined by Levin and McEwan (2000), which involves identifying and assigning value to all the ingredients used (such as personnel, facilities, equipment, and materials,

and client inputs) based on market prices, and summing these values for each school type (that is, public schooling as the comparator case, FAS, and EVS). For this analysis, such detailed cost information is not available, therefore PEF audit reports are utilised to impute expenditure data for PPP programmes for 2018-19, while the costs of public schooling are based on public education sector expenditure reports. The purpose here is to provide a crude approximation of costs associated with different types of schooling in Punjab. Since the outcome measures are grade four test scores (which were administered over two rounds in the fiscal year 2018-19), public school expenditures only include expenditure on primary education plus development expenditure[8] incurred in the fiscal year beginning on July 1st, 2018, and ending on June 30, 2019. In addition to public expenditures, private expenditures made by households on their child's education were also included as costs associated with public schooling.[9] Cost breakdowns are presented in table 1 below. Additional details on costs are presented in Appendix A, and limitations of the costing approach and the comparability of costs for public and PPP schooling are discussed towards the end of this section.

Table 1 here

To compare cost-effectiveness, the total programme impact for each type of programme is divided by programme costs to determine the total gain in student learning in math, English and Urdu per USD 100 spent. These figures are presented in table A3 in the appendix along with lower and upper bound CE estimates. Figure 3 presents a graphical representation of the cost-effectiveness of public, FAS and EVS schooling. In the figure, higher values represent greater learning taking place at a lower cost and incidences of overlapping confidence intervals between

[8] Development programmes classified as PEF, PSSP and Daanish schools were excluded from the cost analysis
[9] These figures were obtained from the PSDIS survey data

public schools and PPP programmes suggest that results are not robust to the sensitivity analysis. As the figure depicts, both FAS and EVS schooling are more cost-effective than public schooling in math: FAS schools are associated with 0.26 standard deviation higher scores per USD 100 spent while for EVS schools the corresponding number is 0.15 standard deviations. However, these results only hold for FAS schools under the sensitivity analysis. For English and Urdu, FAS schooling is found to be more cost-effective than public schooling. However, these results are not robust to sensitivity analyses.

Figure 3 here

This section presents some evidence (albeit correlational) that FAS and EVS schools may be more efficient than public schools in producing greater learning outcomes. When costs are accounted for, it is evident that the FAS programme, in particular, is more cost-effective than traditional public schooling only when it comes to math achievement. The results for English and Urdu are not robust to the sensitivity analysis. There is evidence that suggests school-level factors matter more when it comes to math achievement than language achievement, and this could potentially explain why a positive impact was only observed for math achievement (Luyten, 1998; Ortega et al., 2018). It is worth noting, however, that costs for public schooling may be overstated in this study given that costs associated with accountability mechanisms used to supervise both public and PPP schools fall under public schooling using this accounting approach. Further, it is also possible that PPP costs may be understated in this analysis, as it does not take into account any additional resources that PPP partner school owners may be investing in their schools out of their own pockets.[10] If school owners are investing their own resources in their schools, then the

[10] This could be in the form of providing lunch for students, utilising volunteer teachers, or providing teaching and learning supplies that are not covered by the subsidy payments received from PEF.

relative cost-effectiveness of PPP schools is likely overstated. Another important distinction in terms of costs is that public schools operate on state-owned premises while PPP schools operate largely on rented premises. In this analysis, it was not possible to take into account capital costs by, for example, calculating the opportunity cost of operating a school on state property. Another limitation of cost-effectiveness analysis is that by definition, it is dependent on both cost and effectiveness measures. Therefore, higher CE values can be obtained through low costs even if test score gains are low. In the context of this study, however, it is evident that higher CE values associated with FAS schooling are driven by both substantial gains in student learning and lower per-unit costs, relative to public schooling.

5 Equity

> *Do PPP programmes target deserving areas, households, and do they cater for the needs of disadvantaged children?*

Equity concerns are likely to have implications for the productive efficiency of PPP programmes. For example, if the objective of PPP programmes is to target disadvantaged populations it may be more costly to reach these populations and educate them (Sabates et al., 2020). The equity criterion focuses on the impact of programmes on populations that are disadvantaged in terms of socio-economic status, gender, students with special education needs, and geographic region (Levin, 2002). This section will focus on various aspects of equity including geographic access to PPPs, the profiles of children who attend PPP schools, 'cherry picking' of PPP students, and learning outcomes for socio-economically disadvantaged students in PPP schools. The evidence provided in this section stems from three recent studies (Author, 2020a; Author, 2021a; Author, 2021b).

Findings from the study on access to PPP schools in Punjab (Author, 2020a) provide insight into the geographic targeting of PPP schools across the province. The results reflect that PPP schools are more likely to be located in districts that had relatively higher shares of out-of-school children in 2011. While this is true for all four PPP programmes in this study, certain programmes are more likely than others to target relatively disadvantaged districts. For example, NSP, FAS, and PSSP schools are more likely to be located in more rural districts, while EVS schools are more likely to be concentrated in more urban districts (Author, 2020a). This is not to say that the EVS does not target disadvantaged areas—when the EVS was incepted, the programme initially targeted urban slum areas (Shafiq, 2006). At present, the programme uses poverty statistics to identify expansion sites in poor Union Councils in the province. The NSP also targets disadvantaged areas focusing on rural, undeserved communities where there are no government schools present within a one-kilometre radius. Similarly, the PSSP programme selects schools that were either non-functional or low-achieving[11] and by doing, are likely to be targeting disadvantaged students and localities. Overall, it seems that the PPP programmes in Punjab are designed to target disadvantaged areas in the province.

There is also evidence from the same study that PPP schools are targeting deserving households and children. PPP students are no more or less likely to come from higher socio-economic status households than public school students and PPP students are more likely to be female than public school students (Author, 2020a). Given that girls are less likely to enrol in school than boys in Punjab, this finding has important implications for gender-based equity. When examining the results by programme, EVS students are more likely to be female than public school students. For EVS students, while boys tend to have similar profiles as compared to public school

[11] Low achieving in terms of student performance on grade five exams

students, girls are less likely to have educated fathers. For FAS students, while girls tend to have similar profiles as compared to their public school counterparts, boys are less likely to belong to affluent households as compared to boys attending public schools. Of the various programmes, however, it seems that NSP and PSSP programmes tend to target relatively more disadvantaged households. Boys and girls enrolled in NSP schools are less likely to have educated parents than their public school counterparts while boys enrolled in PSSP schools are less likely to have fathers who are working and are more likely to belong to less affluent households than public school students. However, as noted in the study, both PPP and public school students may not be targeting the poorest populations in the province as only 30 percent of PPP students and 23 percent of public school students belong to the poorest two wealth quintiles (Author, 2020a).

As mentioned earlier, there is some evidence that PPP schools administer entrance tests, and may cherry-pick higher achieving students (Afridi, 2018). A recent study on the impact of establishing PPP schools close to public schools has found that one year after establishing a FAS school near a public school, primary school enrolment in the neighbouring public schools decreases by three percent. This effect is concentrated in Katchi Abadis, class one and class two, and impacts female enrolment in public schools (Author, 2021a). These findings, when viewed in parallel with the finding that the socio-economic profiles of girls attending FAS schools and public schools are quite similar, suggesting that some girls may be leaving public schools to attend FAS schools. If admission tests are administered in PPP schools, then it is possible that higher-achieving girls[12] are the ones that are leaving public schools, while their less able peers may not be able to secure admission in PPP schools. If this is the case, then PPP programmes, particularly the FAS,

[12] Or girls that have more socially networked parents

may be leading to greater inequity by leaving behind lower-achieving students in public schools and depriving them of their relatively higher-achieving peers.

Although PPPs may be increasing access to education for socio-economically disadvantaged households, an important aspect of equity is whether PPP schools are improving education outcomes for these populations (relative to public schooling). There is evidence that students attending PPP schools (namely FAS schools) outperform students in public schools in grade four math achievement (even after accounting for differences in student intake) (Author, 2021b). However, there is no evidence to support the claim that PPP schools are relatively more effective than public schools at improving learning outcomes for students in the poorest two wealth quintiles.

The extent to which schools cater to the special education needs (SEN) of students is another important component of equity. There is evidence from Pakistan that children with moderate to severe disabilities are less likely to attend school and have lower levels of literacy and numeracy than their peers (Singal et al., 2015). Descriptive data from the PSDIS reflect that 24 percent of public schools report having SEN students as compared to 34 percent of PPP schools (table A4). Disaggregating these numbers by PPP programmes uncovers that 39 percent of PSSP schools report having SEN students, as compared to 37 percent of EVS schools, 32 percent of FAS schools and 30 percent of NSP schools. However, less than one percent of public schools in the PSDIS sample, and two percent of PPP schools in the sample report having special education classes or having at least one toilet facility for SEN students.[13]

[13] It is worth acknowledging that PEF has implemented an inclusive education pilot programme with partner schools. Under this pilot, eligible PEF partner schools received a top-up to the voucher/subsidy amount for each child with a disability that they enrolled and received a one-time grant to upgrade school infrastructure. However, this programme is operating at a relatively small scale having only been implemented in a few hundred schools in the province.

Overall, the evidence on whether PPP programmes enhance equity for disadvantaged groups is mixed. On the one hand, there is evidence that PPP schools target deserving districts (and perhaps even UCs), and target somewhat similar populations as public schools rather than cream skimming. On the other hand, PPP schools and public schools may not be catering to the poorest households in the province. At the same time, there is no evidence to support the claim that PPP schools are more effective than public schools in improving learning outcomes for the poorest students. Admission policies and evidence that girls may be leaving public schools to enrol in newly established FAS schools also increase the possibility that girls who remain in public schools may be worse off after the departure of their higher-achieving peers. Lastly, although schools report having students with some sort of special education needs, both PPP and public schools are unlikely to have appropriate facilities and arrangements for catering to the needs of special education students.

6 Social Cohesion

To what extent do PPP programmes foster social cohesion both in the short and long term?

Education plays an essential role in promoting social cohesion to empower individuals to actively participate in social, political, and economic institutions (Levin, 2002). Green et al., (2013) hypothesise that education impacts social cohesion through socialisation[14], increasing skills (to enable cross-cultural understanding and to create an informed and engaged citizenry) and through the distribution of opportunities. Key aspects of social cohesion as they pertain to the evaluation of privatisation programmes in education include the extent to which students are

[14] For example, by instilling values that are conducive to social cohesion through the curriculum.

exposed to a common curriculum, common values, language and political institutions (Levin, 2002). This section focuses on a subset of these issues—the diversity of the student body in PPP and public schools, the medium of instruction and curriculum, the disparity/variation in student learning in PPP and public schools, social values, and the long-term implications of PPP programmes on public sector financing.

Ensuring diversity within the student population in a school is an important means through which children can interact with a diverse group of peers, learn to be accepting of others', and can ultimately lead to greater levels of societal cohesion (Mikulyuk and Braddock, 2018). While the equity section of this study presents information on the backgrounds of students attending different school types, from a social cohesion perspective the *diversity* in student backgrounds within schools is of particular interest. To compare the diversity of the student populations in public and PPP schools in Punjab, two measures are derived from the PSDIS dataset. The first measure compares the diversity of student backgrounds (in terms of wealth) in public and PPP schools using wealth quartiles of an asset index measure derived from principal components analysis and the second measure explores the diversity in student background in terms of fathers' education levels. To assess the level of within-school diversity in terms of the share of children in different wealth quartiles and father's education, the Herfindahl-Hirschman Index (HHI) is used to calculate a school-level measure of diversity using the following equation:

$$HHI_c = \sum_{i=0}^{k} p_i^2$$

Where HHI_c represents the Herfindahl-Hirschman Index score for school, *c* and *p* is the proportion of students within a school in category *i*. For this analysis, there are four possible categories for wealth quartiles (k=4), and five possible categories for fathers' education levels (k=5). Index

values close to zero represent greater student diversity in terms of wealth and father's education, while values closer to one indicate relative homogeneity in student backgrounds. To determine whether there are statistically significant differences in the degree of diversity in student backgrounds, t-tests are conducted. The mean index scores for public schools are compared (pair-wise) to overall PPP schools, FAS, EVS, NSP and PSSP schools, and the results are presented in table 3 below. Overall, PPP schools have slightly higher average HHI scores than public schools for both wealth and father education levels. This implies that there is (marginally) greater diversity in student backgrounds in public schools relative to PPP schools. However, exploring the results by PPP school type, it is evident that for both variables, there are no statistically significant differences in mean HHI scores between FAS schools, EVS schools, PSSP schools, and the mean HHI scores of public schools. The only difference in HHI scores is between NSP schools and public schools, indicating that NSP schools are slightly more homogeneous in terms of student backgrounds as compared to public schools.

Table 2 here

It can be argued that possessing basic literacy and numeracy skills is a prerequisite for participation in economic and political institutions. Therefore, if PPP programmes are more likely to be associated with higher learning outcomes than public schools, they may be contributing to greater social cohesion by providing foundational literacy and numeracy skills. As discussed earlier, there is correlational evidence that students in FAS and EVS schools have higher grade four math achievement than public school students after controlling for baseline student achievement (Author, 2021b). The achievement gap in math between FAS students and public school students (after controlling for baseline achievement, sex, and age) is 0.4 standard deviations while for EVS students it is 0.2. On English tests, FAS students scored 0.2 standard deviations

higher than public school students after controlling for other variables, while in Urdu PSSP students scored 0.08 standard deviations higher than public schools, all else equal (Author, 2021b).

Exposure to a common curriculum and medium of instruction are important elements of a common educational experience for students to ultimately enter adulthood and engage effectively in civic participation (Levin, 2002). An important question in this regard is to what extent are PPP students and public school students exposed to the same curriculum and medium of instruction? As discussed earlier, the School Education Department distributes free textbooks to both PPP and public school students that are designed by the PCTB. Further, PEF requires all partner schools to follow the provincial curriculum and administers quality assurance tests to partner schools that are aligned to this curriculum. From this perspective, it can be argued that this requirement has helped incentivise more low-fee private schools that are partnering with PEF to follow the public school curriculum. It is also worth noting that the Federal Education ministry has recently launched the Single National Curriculum (SNC 2020). Public, private, and religious schools across the country are required to adhere to this curriculum, which was rolled out beginning March 2021. If this curriculum is to be implemented as envisioned, then it has the potential to contribute towards social cohesion outcomes by ensuring one curriculum is being followed across all schools in the country.

Using PSDIS data, one can determine both the language spoken at home for grade four students and the primary medium of instruction in public and PPP schools. Punjabi is the main language spoken at home for 61 percent of public school students in the sample, while Siraiki is the predominant language at home for PPP students with 60 percent of students reporting it as their primary language (Table A4). The difference in the language spoken at home is due to differences in the geographic location of PPP and public schools in the province—PPP schools are more likely

than public schools to be located in southern districts where Siraiki is more widely spoken (Author, 2020a). Despite differences in the language spoken at home, Urdu is the predominant medium of instruction for both public and PPP schools—96 percent and 97 percent of public and PPP schools in the sample, respectively, report Urdu as the medium of instruction. From a social cohesion perspective, these findings are reassuring, as both public and PPP schools seem to be following the same curriculum and are utilising the national language as the medium of instruction.

An important role of education in promoting social cohesion is instilling socially-desirable values within children. How socially desirable values are defined is very subjective but a useful point of reference is the newly formulated SNC 2020 which highlights among other attributes honesty, tolerance, empathy, and peaceful coexistence as important principles and attributes for children. These values are difficult to measure and even if they are quantified, it is not possible to attribute differences in values to different types of schools. These limitations notwithstanding, understanding whether students in PPP schools are more likely to exhibit these values than public schools is useful. Using PSDIS data, a composite variable is created, *social_values_score*, consisting of seven categorical variables measuring empathy, honesty, volunteering and sharing (see appendix B for additional details). The responses to the questions are based on a three-point ordinal scale, coded as 1 if the statement is not true, 2 if it is somewhat true, and 3 if it is certainly true.[15] To assess whether this composite variable (*social values score)* is correlated with public or PPP schooling, an OLS regression is estimated with *social_values_score* as the outcome variable and controls for parental education, household wealth, child age, math test scores, sex, whether the

[15] Questions on whether the child steals, lies/cheats, fights/bullies were recoded to rate the positive behaviour as the highest value. For example, the responses for whether the child steals are coded as 1 if the statement is certainly true, 2 corresponds to somewhat true, and 3 corresponds to not true. The values of the composite indicator range from 10 to 24 with a mean value of 21.6 and a standard deviation of 2.49

child reads non-school related books at home, school type, and geographic region. Table 3 below presents the regression results with overall results for PPP and public schools presented in column one, results for EVS schools and public schools presented in column two, results for FAS and public schools presented in column three, and NSP and public schools and PSSP and schools presented in columns four and five respectively. The results suggest that students in PPP schools are associated with higher social values scores than students in public schools after controlling for sex, age, socio-economic characteristics, geography, and student math test scores. This finding holds for all PPP programmes except PSSP schools. It is important to note here that adjusted r-squared values are very low for all models, indicating that the models explain very little variation in *social_values_score.* Another caveat is that while this analysis allows for identifying correlations, it does not in any way demonstrate that PPP schools are more likely to inculcate socially desirable values in children than public schools.[16]

Table 3 here

Another more philosophical point of consideration related to social cohesion is whether PPP models are undermining the long-term provision of public education (Patrinos et al., 2009). School choice brings expectations that competition will improve the standard of education however, this may undermine efforts to improve standards across the board for both PPP schools and public schools. Moreover, the provincial government's promotion of PPPs in education may also undermine the general public's perception of public education. If the desire to scale up PPPs is viewed as a reflection of the failure of the traditional public education system, then this sends a

[16] The causal direction of the association is unclear-it is equally possible that students demonstrating social desirable attributes are more likely to enrol in PPP schools than in public schools however, this is beyond the scope of this analysis.

signal to parents that public education is an inferior good as compared to private education. In this scenario, if more advantaged parents opt to send their children to PPP schools, this could lead to a two-tiered education system which could have negative implications for social cohesion in the long run. The potential undermining of public education in favour of PPPs is also evident from a budgeting perspective. The provincial government allocates funds for PPPs to PEF and PEIMA through the development budget. In 2020, while only six percent of the total provincial school education budget (that is, recurring and development/capital budget) was allocated to PPP programmes, this amounts to 79 percent of the school education department's development budget. Generally, the development budget is reserved for financing improvements in public school infrastructure and facilities and piloting new education initiatives. It is also worth noting that allocations to PEF have been increasing—between 2015-16 and 2019-20 allocations to PEF increased by 67 percent in nominal terms. It is evident that PPPs consume a large proportion of the development budget and ultimately this means less fiscal space for other development initiatives such as improving or maintaining public school infrastructure, upgrading public schools to higher levels, and expanding the provision of early childhood education in the province. In the long run, if public school infrastructure is not maintained, then greater financing will be required to repair school buildings. Another related concern is related to non-salary budgets that are allocated to public schools using a needs-based formula. Enrolment is a major determinant of non-salary budget allocations to public schools; therefore, if there is an exodus of students from PPP schools to public schools, non-salary budget allocations to affected public schools will decrease, leaving them worse off. Given limited financial resources, policymakers must decide how to balance the desire to scale up PPPs and ensure adequate development funds are available for public schools. This decision has implications for the quality of education in public schools in the long

run. If insufficient resources are allocated towards public sector schools for development initiatives, and support to PPP programmes continues as per its trajectory, this could create disparities between public and PPP schools. This would have a detrimental impact on social cohesion objectives, particularly on limiting the government's ability to provide a common educational experience for students in public and PPP schools.

Overall, the evidence on the potential relationship between PPP programmes and social cohesion in Punjab is positive; however, the long-term impact of PPPs could result in two vastly different schooling streams. There are some positive findings for PPP programmes: the extent of diversity in student composition in PPP schools is similar to that of public schools, and there is correlational evidence that FAS schools in particular may produce greater learning outcomes than public schools. PPP programmes require partner schools to follow the public school curriculum, and PPP schools utilise the same medium of instruction as public schools. Students enrolled in PPP schools are more likely to possess some of the socially desirable values outlined in the SNC 2020, although this relationship may not be causal. However, in the long run, there may be a trade-off between support for PPP programmes at the expense of public schools that could lead to greater disparity between public and PPP students.

7 Conclusion

This study attempts to evaluate the design and impact of PPP schooling in Punjab, across four dimensions: freedom of choice, productive efficiency, equity and social cohesion. The evidence presented here is based on four recent studies and supplemented by document reviews, and additional analysis using household and school survey data from Punjab. This study addresses an important gap in the literature by providing evidence on all four dimensions using this systematic

approach. Before summarising the key policy implications of this study, it is important to acknowledge a limitation of the preceding analysis. The main limitation is that the analysis is only as robust as the underlying analysis presented in the referenced studies. The evidence presented here is descriptive and correlational and it is not possible to determine the causal impact of PPP schooling on each of the four dimensions. Nonetheless, the study provides useful information to policymakers about the extent of choice, efficiency, equity, and social cohesion in PPP schools. The study finds that while PPP programmes may increase theoretical schooling choice for households, the extent of de facto choice may be limited particularly for disadvantaged households due to below-market subsidies offered to partner schools, substantial indirect costs of schooling, power asymmetries between partner schools and parents, and administrative requirements for switching schools. There is some evidence that the FAS programme, in particular, is more cost-effective than public schooling; however, this is not necessarily the case for EVS or NSP schools. The evidence on equity-related outcomes is mixed. PPP schools target deserving areas, and target similar populations as public schools, however, there is evidence that both public and PPP schools may not be catering to the poorest populations in the province. There is some concern that PPP schools may be cream skimming more able students by administrating entrance tests and through the existence of enrolment caps mandated by PEF. This concern is particularly troublesome given the evidence that girls' enrolment decreases in public schools neighbouring newly established FAS schools. Both public and PPP schools do not cater to the needs of special education students as evidenced through the lack of facilities. There are some positive indications that PPP programmes may be contributing to social cohesion in Punjab: there is evidence that PPP schools, particularly those affiliated with FAS and EVS, are associated with greater learning than public schools, and a literate population is a prerequisite for engaged participation in political and economic institutions.

PPP schools may also be contributing to social cohesion by mandating partner schools to follow the provincial curriculum, and there is correlational evidence that PPP students are more likely to possess socially desired values than public school students. However, the long-run continued support to PPPs may undermine support for public schools in the province. This could potentially lead to a greater divide between public and PPP schools in the long run.

The research frontier is vast. More in-depth study is needed about the uptake of PPPs in impoverished areas and identifying whether disadvantaged households require additional support to cover the indirect costs of schooling. Research on school choice in this context will also be important to understand parental decision making when it comes to selecting schools, and their knowledge of available schooling options.

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Tables

Table 1

Costs of PPP and Public Schooling 2018-2019 (in PKRs)

Expenditure Category	FAS	EVS	NSP	Public
Direct programme expenditure	11,632,216,092	2,645,731,744	1,533,565,461	
Indirect programme expenditure	109,588,261	27,681,582	16,268,878	
HR expenditure	400,527,348	101,171,699	59,460,114	
Administrative and general expenditure	83,009,080	20,967,781	12,323,077	
Other expenditure	18,509,743	4,675,491	2,747,856	
Total public expenditure	12,243,850,524	2,800,228,297	1,624,365,386	157,043,748,800
Private expenditure by households	22,917,152,936	5,808,541,060	3,560,963,612	61,470,219,273
Total expenditure (including private expenditure)	35,161,003,459	8,608,769,357	5,185,328,998	218,513,968,073
Total expenditure per student	18,897	18,317	18,772	43,300

Note: (a) Direct programme expenditure includes payments made to partner schools, expenditure related to Academic Development unit, early childhood education initiative (b) Indirect programme expenditure includes monitoring costs and capacity building of staff (c) Administrative and general expenditure includes traveling costs, rent, and office related expenses (d) other expenditure include advances and finance charges (e) private expenditure is calculated using SDI data on household expenditures on education for children enrolled in FAS, EVS NSP and PSSP respectively (f) total public expenditures on public schooling are calculated as total public expenditure on primary education excluding expenditures on PEF and Daanish schools (g) amounts are in PKR, for the fiscal year 2019 . In 2019 the average PKR to USD exchange rate was PKR 150 to 1 USD.

Table 2

Descriptive statistics for Herfindahl-Hirschman Index Scores

	(1) Mean	(2) sd	(3) Public mean	(4) Public sd	(5) Difference	(6) t-value	(7) prob	(8) Df
HHI_Wealth_quartile								
PPP	0.242	0.052	0.237	0.045	-0.005	-2.988	0.003	640
FAS	0.235	0.031	0.237	0.045	0.001	0.247	0.805	456

EVS	0.244	0.073	0.237	0.045	-0.007	-1.119	0.264	453
NSP	0.276	0.091	0.237	0.045	-0.039	-5.732	0.000	452
PSSP	0.244	0.040	0.237	0.045	-0.007	-0.731	0.465	452
HHI_Father_education								
PPP	0.215	0.059	0.203	0.052	-0.012	-3.516	0.005	640
FAS	0.212	0.042	0.203	0.052	-0.010	-1.057	0.291	456
EVS	0.207	0.050	0.203	0.052	-0.004	-0.469	0.64	453
NSP	0.253	0.082	0.203	0.052	-0.050	-6.128	0	452
PSSP	0.217	0.050	0.203	0.052	-0.014	-1.391	0.165	452

Notes: (a) PPP denotes Public Private Partnership schools. (B) FAS denotes Foundation Assisted schools; (c) EVS denotes Education Voucher Scheme schools; (d) NSP denotes New School Programme schools and (e) denotes Public School Support Programme schools. (f) Differences in column 5 correspond to the difference in means between public schools and the respective PPP school category

Table 3

Correlates of social_value_score grade 4 students

	(1) PPP	(2) EVS	(3) FAS	(4) NSP	(5) PSSP
Female	0.514***	0.558***	0.496***	0.467***	0.582***
	(0.115)	(0.14)	(0.138)	(0.139)	(0.14)
Age	0.063	0.084*	0.077*	0.059	0.085*
	(0.039)	(0.047)	(0.046)	(0.046)	(0.046)
reads_books	-0.279**	-0.248	-0.284*	-0.224	-0.263
	(0.133)	(0.165)	(0.16)	(0.164)	(0.164)
math_score	-0.297	-0.707	-0.719	-0.606	-0.864*
	(0.411)	(0.493)	(0.488)	(0.489)	(0.495)
Rural	0.148	0.179	0.212	0.175	0.123
	(0.149)	(0.177)	(0.169)	(0.181)	(0.179)
lives_in_south	-0.106	-0.311*	-0.324**	-0.355**	-0.250
	(0.134)	(0.159)	(0.156)	(0.161)	(0.155)
asset_index_score	0.027	0.007	0.023	0.030	0.011
	(0.039)	(0.047)	(0.047)	(0.047)	(0.048)

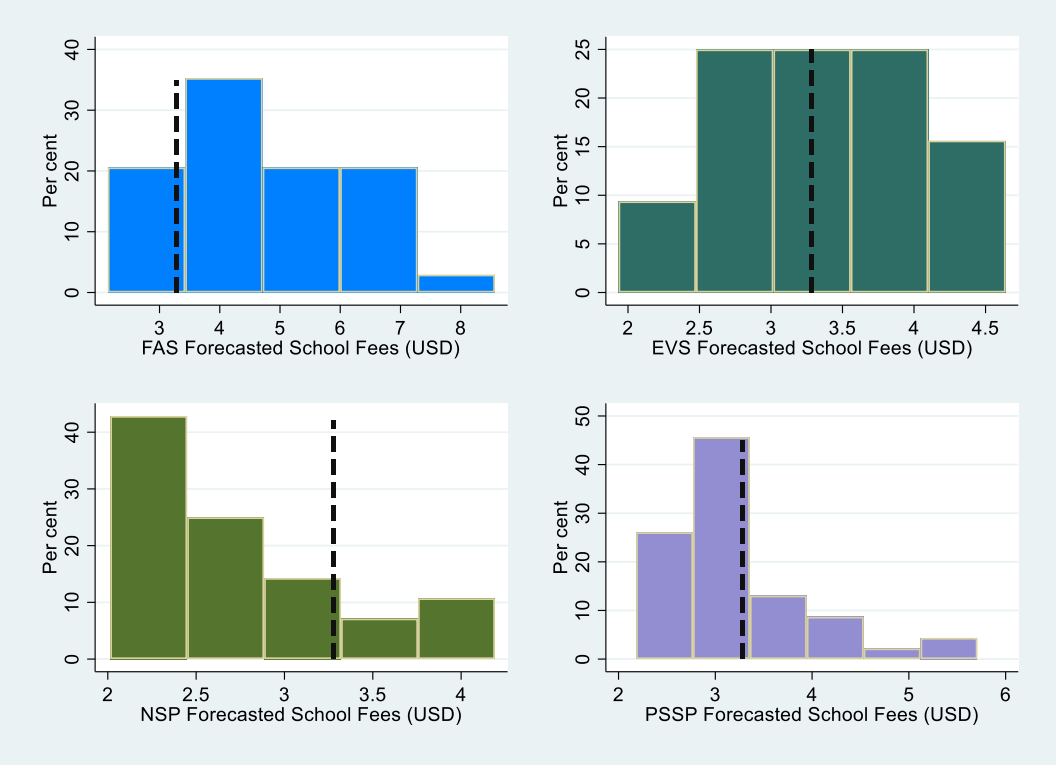
father_educated	0.162	0.005	0.038	0.009	0.083
	(0.136)	(0.164)	(0.162)	(0.162)	(0.165)
mother_educated	-0.214	-0.099	-0.090	-0.124	-0.173
	(0.133)	(0.159)	(0.154)	(0.157)	(0.158)
father_works	-0.382***	-0.522***	-0.432***	-0.420***	-0.422***
	(0.092)	(0.107)	(0.106)	(0.106)	(0.108)
Ppp	0.665***				
	(0.138)				
Evs		0.621**			
		(0.264)			
Fas			1.485***		
			(0.264)		
Nsp				1.007***	
				(0.271)	
Pssp					0.136
					(0.230)
Constant	20.84***	20.91***	20.92***	21.13***	20.90***
	(0.468)	(0.555)	(0.550)	(0.547)	(0.560)
F	7.13	5.24	6.44	4.85	4.31
adj. R-sq	0.035	0.033	0.042	0.030	0.025
N	1,869	1,368	1,376	1,374	1,408

Note: (a) outcome variable is *social values score* (b) the base category for PPP, EVS, FAS, NSP and PSSP variables is public schooling (c) standard errors are reported in parentheses * denotes significance at the 0.10 level, ** denotes significance at the 0.05 level, *** denotes significance at the 0.01 level.

Figures

Figure 1

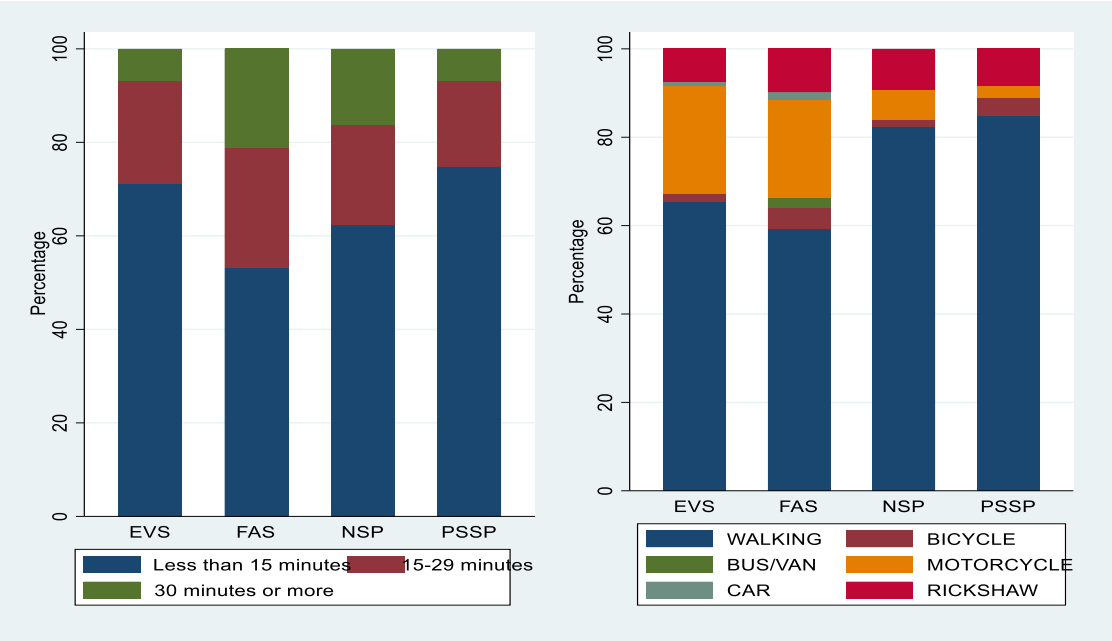
Distribution of forecasted school fees



Notes: The figure presents the forecasted fees for PPP schools by PPP programme type using coefficient estimates from Table A1. The dashed lines represent the per student subsidy amount offered by PEF for primary school students which is approximately USD 3.3 per student per month.

Figure 2

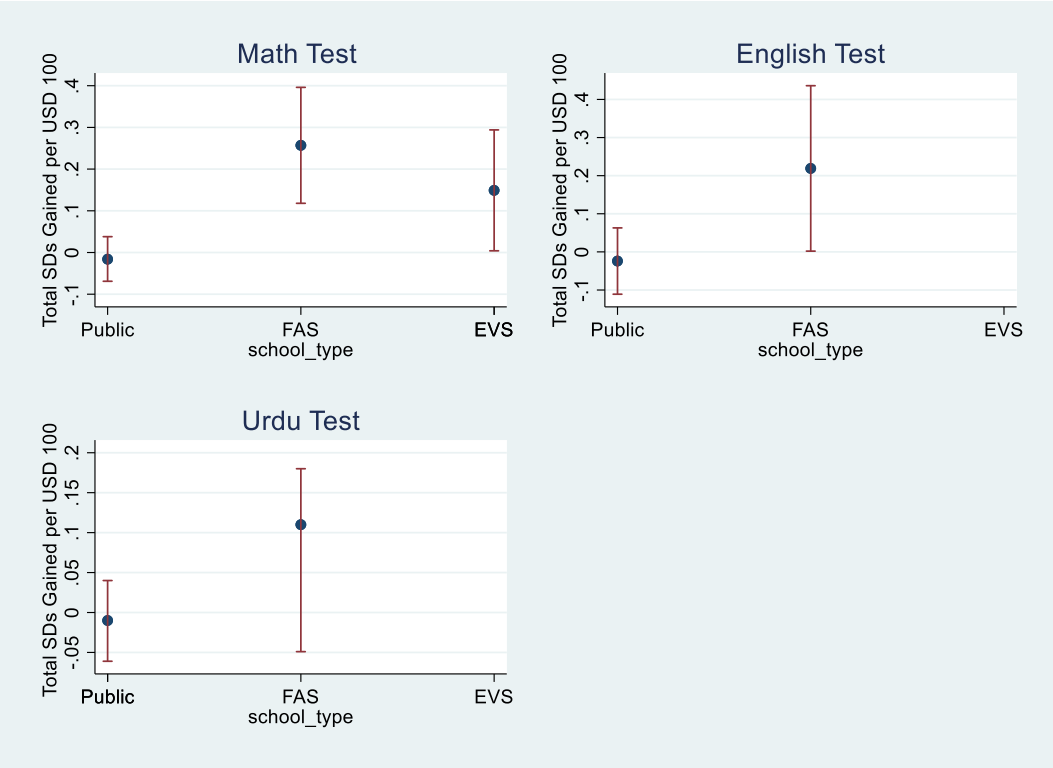
Time to get to school and mode of transport



Notes: Statistics adjusted for sample weights and derived from the Punjab Service Delivery Indicator Survey 2018-19.

Figure 3

Total standard deviations (SDs) gained per USD 100 spent on public, FAS and EVS schooling



Note: Blue dots represent point estimates of standard deviations gained per USD 100 spent. The red bars represent 95 percent confidence interval bands for the point estimates. EVS estimates are excluded from English and Urdu test since these were not statistically significant from public schooling estimates

Appendix A

Ideally, in CE analysis costs should also include costs to beneficiaries that is (in this context), direct and indirect costs incurred by households associated with enrolling their children in PPP schools (Belfield, 2011; Dhaliwal et al., 2013). For example, parents of PPP students may spend more time having to engage with the school administration and obtaining documents such as school leaving certificates than parents of public school students. This time has cost implications that should be accounted for to make an adequate comparison with public schooling.

Costs associated with PPP schools are based on PEF audit reports for 2016-17 and 2015-16 obtained from PEF's website. Since audit reports for 2018-19 were not available, costs had to be imputed based on previous audit reports and for this various assumptions were made. First, direct programme expenditures (that is the payment made from PEF to partner schools) were calculated by multiplying PEF subsidy amounts by enrolment numbers for the year 2018-19. Next, annual salary increments were assumed to be 10.5 percent, while pension increases were assumed to be 9.5 percent. Other costs such as administration costs and monitoring costs were adjusted for inflation using the GDP deflator method.[17] Any common costs that were not disaggregated by programme (such as monitoring costs, staff salaries, textbook costs, and administration expenses) were portioned to individual PPP programmes based on the relative student enrolment in the programmes. Lastly, household expenditures for students in FAS, EVS and NSP schools were also calculated and included in programme costs for this analysis. Using this approach, costs for public, FAS, EVS and NSP schools are calculated separately in dollar terms using 2019 values.

[17] Inflation and pension increases were based on forecasts mentioned in the audit reports

Appendix B

In the PSDIS parents were asked to assess the behaviours and attributes of their grade four children. The three survey questions used to measure empathy include the parents' assessment of whether the child is kind to younger children, whether a child is considerate of others' feelings, and whether the child is helpful if someone is hurt or ill. Measures of honesty are based on two survey questions: the parents' assessment of whether their child steals and whether their child lies or cheats. Lastly, peaceful co-existence is also captured by two survey questions: whether their child volunteers to help others, whether their child fights or bullies other children.

Table A1.

Correlates of School Fees (Low-Free Private Schools)

	(1) log school fee	(2) log school fee
rural	-0.186***	-0.15*
	(0.067)	(0.081)
time to district HQ	-0.001*	-0.001
	(0.001)	(0.001)
co-educational	-0.400***	-0.426***
	(0.134)	(0.138)
english medium	0.339***	0.353***
	(0.091)	(0.1)
number of toilets	0.028**	0.031**
	(0.012)	(0.014)
computer	-0.031	-0.061
	(0.065)	(0.069)
armed_guard	0.255***	0.296***
	(0.077)	(0.084)
total teachers	0.013	0.016*
	(0.009)	(0.009)
share of teachers with bachelor's degree or higher	0.325***	0.354***
	(0.090)	(0.100)
primary enrolment	-0.001*	-0.001**
	(0.000)	(0.000)
STR	0.003**	0.003**
	(0.001)	(0.001)
Log_total_teacher_salaries	0.159***	0.129**

	(0.048)	(0.052)
constant	4.930***	5.178***
	(0.458)	(0.483)
Fixed Effects	District	Tehsil
N	185	185
number of clusters	6	24
R squared	0.636	0.621

Notes: outcome variable is log of monthly school fees. * denotes significance at the 0.10 level, ** denotes significance at the 0.05 level and *** denotes significance at the 0.01 level.

Table A2.

Forecasted Fees for PPP Schools (in USD)

PPP Type	(1) Share exceeding subsidy amount	(2) mean	(3) Lower CI	(4) Upper CI	(5) N	(6) Sd
EVS	0.50	3.339	3.326	3.351	32	0.668
FAS	0.82	4.768	4.754	4.781	34	1.541
NSP	0.21	2.714	2.701	2.727	28	0.625
PSSP	0.37	3.234	3.221	3.247	46	0.723
Total		3.526	3.513	3.539	140	1.206

Note: The figures presented in column 2 are point estimates for PPP schools using the regression results in Table A1. The figures in column represent the share of schools in the sample for whom the forecasted school fee exceeds the per student subsidy amount paid by PEF.

Table A3.

Cost-Effectiveness of Public, FAS and EVS schooling

Panel 1. Math Test Scores							
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
	Total Programme Impact (1 year)			**Programme Cost (1 year)**	**Total standard deviations gained in Math per USD 100 spent**		
	Estimate	Lower	Upper	(2019 USD)	Estimate	Lower	Upper
Public	-227,091	-1,009,294	555,111	1,454,804,530	-0.02	-0.07	0.04
FAS	600,999	277,241	926,617	234,092,070	0.26	0.12	0.40
EVS	85,540	2,350	168,260	57,314,765	0.15	0.00	0.29
NSP	not statistically significant			34,522,462			
Panel 2. English Test Scores							
	Total Program Impact (1 year)			**Programme Cost (1 year)**	**Total standard deviations gained in English per USD 100 spent**		
	Estimate	Lower	Upper	(2019 USD)	Estimate	Lower	Upper
Public	(353,253)	(1,619,916)	913,411	1,454,804,530	-0.02-	-0.11	0.06
FAS	511,686	3,721	1,019,651	234,092,070	0.219	0.002	0.436
EVS	not statistically significant			57,314,765			
NSP	not statistically significant			34,522,462			
Panel 3. Urdu Test Scores							
Urdu	**Total Programme Impact (1 year)**			**Programme Cost (1 year)**	**Total standard deviations gained in Urdu per USD 100 spent**		
	Estimate	Lower	Upper	(2019 USD)	Estimate	Lower	Upper
Public	-1,513,940	-888,178	580,344	1,454,804,530	-0.10	-0.06	0.04
FAS	258,634	-115,362	420,513	234,092,070	0.110	-0.049	0.180
EVS	not statistically significant			57,314,765			
NSP	not statistically significant			34,522,462			

Notes: Total programme impact calculated using point estimates. Lower and Upper estimates represent bounds for 95 percent confidence interval

Table A4.

Descriptive Statistics PSDIS Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Public			PPP			FAS			EVS			NSP			PSSP		
	M	Sd	N	M	Sd	N	M	Sd	N	M	Sd	N	M	Sd	N	M	Sd	N
Household monthly expenditure on Private Tuition (PKR)	599	328	1415	604	338	810	620	350	184	592	326	176	619	339	159	582	323	163
Household non-fee expenditures (PKR)	620	527	1503	636	515	836	611	504	198	644	534	173	670	486	161	543	511	178
Share of schools offering special classes	0.027	0.164	101	0.053	0.225	83	0.066	0.257	16	0.109	0.321	18	0.000	0.000	15	0.048	0.220	20
Share of schools with SEN students	0.241	0.428	419	0.345	0.476	245	0.316	0.469	50	0.366	0.487	50	0.303	0.464	50	0.391	0.493	51
Travel time (in minutes) to district education office	67.08	45.29	419	62.71	49.71	239	65.56	47.57	50	67.90	45.19	49	80.55	58.79	48	56.20	51.39	48
Math Score	0.353	0.163	2371	0.462	0.153	1137	0.496	0.149	518	0.409	0.132	238	0.383	0.151	203	0.392	0.150	178
English Score	0.420	0.145	2371	0.469	0.131	1137	0.487	0.130	518	0.446	0.126	238	0.383	0.151	203	0.392	0.150	178
Urdu Score	0.441	0.172	2371	0.508	0.144	1137	0.523	0.139	518	0.494	0.147	238	0.411	0.116	203	0.432	0.133	178
Average sd (all subjects)		0.160			0.143			0.139			0.135			0.146			0.144	

Notes: (a) Statistics derived from Punjab Service Delivery Indicator Survey (2018) and have been adjusted for sample weights. (b) m denotes mean and sd refers to standard deviations.