

THE PUBLIC SECTOR'S EXPERIENCE AND RESPONSE TO PRIVATE COMPETITION:

THE CASE OF NEPAL

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Priyadarshani Joshi

DEDICATION

To my mother, Aparna and my father, Janardan

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ABSTRACT

THE PUBLIC SECTOR'S EXPERIENCE AND RESPONSE TO PRIVATE COMPETITION: THE CASE OF NEPAL

Priyadarshani Joshi

Emily Hannum

Private schools have become a mainstay in developing countries. The private market share in primary education in low-income countries has nearly doubled from 12% in 1990 to 22% in 2010 (World Bank, 2013)¹. There is a long-running debate amongst academics and the policy community about how increased choice, through charter, voucher, or private schools, will affect the education system. School choice advocates expect higher parental satisfaction through choice and improvements in public schooling through competition. Skeptics are concerned about the loss of shared citizenship and the potential for further stratification as the government reduces its provider role in education. Despite the fact that both advocates and skeptics have focused many of their arguments on the potential impact of choice on the public school system, these consequences remain largely uninvestigated in developing countries. In the dissertation, I provide the first comprehensive analysis of how competition from private schools affects public schools in a developing South Asian country: Nepal. I utilize a mixed methods approach to analyze a unique competition- focused dataset compiled from extensive primary and secondary data collection. I find no evidence to suggest that public schools in Nepal have improved as result of private competition. However, there is a recent surge of quasi-private policies being implemented by public schools. I show that the key obstacles to improvement include not only well-known factors such as bureaucratic rigidities and financial constraints, but also lesser-recognized

¹ The World Bank low-income group definition included 36 countries in 2013.

impediments such as direct political interference in the education sector and stigmatization of public schooling. In conclusion, the historical analysis of the Nepal context suggests that private competition is unlikely to automatically induce public school improvements in developing countries. However, the emergence of quasi-private policies in public schools suggests that competitive pressures coupled with accountability incentives can affect public school behavior. Thus, choice systems need to include well-timed accountability mechanisms and targeted financial and leadership supports to have an enduring productive impact on public schools.

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CHAPTER 1

INTRODUCTION

School choice is arguably the most influential and the most debated reform effort of the past two decades. In this period, choice has evolved in the United States from a primarily conservative, academic cause to a mainstream solution to cure bureaucratic ills and empower parents (Chubb and Moe, 1990; Friedman, 1962; Lubienski and Weitzel, 2010; Witte, 2000). In developing countries, international development partners and national governments have put forth privatization as a means to supplement ailing public school systems that have poor learning quality and limited financing and governance capacities. The recent rise in prominence of a low-fee private sector that caters to the poor in developing Asia and Africa has added another dimension to the debate (Srivastava and Walford, 2008; Srivastava, 2013). Some pro-private advocates have gone so far as to argue that the government should stop providing education, since low-fee private schools are besting the government on both equity and cost efficiency fronts. In spite of the growth in schooling options, skeptics have raised concerns over the potential for increased stratification of society through school choice, the loss of shared citizenship with the reduced government role in education, and the shift of policy focus away from other problems in education quality (Carnoy, 1997; Hsieh and Urquiola, 2006).

How do public schools respond to growth in choice or privatization? This question is critical to address, because a key justification for introducing choice in many settings was the assumption that competition would motivate erstwhile monopolistic public schools to improve to attract students (Chubb and Moe, 1990). As a result, a competitive environment should improve the quality of learning for the students who continue to study in public schools. Skeptics of public sector reform claims point to the difficulty in incentivizing public school reform due to existing bureaucratic inflexibilities, lack of resources, and the difficulty in motivating personnel

(Ni and Arsen, 2010). In spite of the centrality of the public sector improvement hypothesis in the choice argument, the investigation of whether public schools improve or not seems to have gotten lost in the shuffle. In the United States, the research on competitive effects is primarily limited to contrasting the outcomes of public schools that face different levels of competition (Betts, 2009; Ni and Arsen, 2010). Recent research syntheses have called for more in-depth investigations into local education markets to understand how competition is experienced and what policies or accountability pressures appear to make a difference in improving public schools (Lubienski and Weitzel, 2010). This strand of choice research is virtually nonexistent in the developing country literature, despite the rapid growth in the private sector.

This study is the first investigation to perform a comprehensive analysis of the implications of school choice for the public school system in a low-income country: Nepal. I frame the impact of competition as a series of interlinked processes that require public schools to first experience competition, then respond with competition-induced changes, which may eventually lead to improvements in school outcomes. Through the analysis, I provide insights into the diversity of historical and current experiences of competition, and the possibilities and constraints that public school leaders face while responding to competition. To undertake these analyses, I conducted competition-focused principal surveys in selected high privatization districts, and combined the primary data with the national and district records on education indicators, user fees, and school outcomes. I perform quantitative analysis of the linkages between competition and school responses and outcomes utilizing multivariate analysis (OLS, logistic, fixed and random effects, IV estimation). I complement these analyses with in-depth qualitative investigations of the experience of competition and the barriers to competition utilizing interview data collected from national, district and local level education officials, school principals and parents.

My research addresses four research questions:

1. How do public schools experience private competition?
2. What are public schools doing in order to respond to competition?
3. What are the factors that mediate how public schools respond to competition?
4. How are public school actions and their experience of competition linked with their outcomes?

Dissertation Outline

The dissertation is organized as follows. In Chapter 2, I review the literature on the impact of competition on the public sector by discussing the theoretical expectations and empirical findings on public school responses, the factors that mediate public school responses, and the outcome effects on public schools that face high competition. In Chapter 3, I present my conceptual framework and research questions. In Chapter 4, I discuss the national context, and the data and methodology followed for the analysis. I present the main findings of the dissertation in Chapters 5 through 8, and highlight the key findings from the research questions below. Chapter 9 concludes with a summary of the findings, policy implications, and an outline of areas for further research. The policy discussion highlights the need for better targeting of currently available finances and mobilizing more domestic resources, and describes the circumstances required for public schools to productively compete despite unfavorable political climates.

Research Question 1: How do Public Schools Experience Private Competition?

To answer this question, I analyze both the historical and current experiences with privatization, and the principals' subjective opinions on competition. In the early phase of privatization (1980s), public schools and private schools alike were witnessing growing enrollments due to high fertility rates, growing populations, and mass education expansion. The main impact of competition on public schools in the early phase was the flight of higher SES students and influx of lower SES students. In recent years, public schools in urban areas have

begun facing enrollment decline as a larger proportion of lower SES students have begun switching to the growing private sector. In recent years, competitive pressures on public schools grown as new accountability mechanisms now link public school financing to public school enrollment. Public schools that cannot maintain enrollment may be compelled to close down or merge with other schools in the future. Despite the growing presence of private schools, not all public schools mention private schools as competition when asked to list competing schools. Even in such a competitive climate, some public schools may not consider private schools as competition because they may believe that they exist in parallel systems, governed by different motivations and regulations, or that private schools do not really provide better quality.

Research Question 2: What are Public Schools doing in order to Respond to Competition?

My work suggests that public schools are primarily responding to growing competition by mirroring policies that make private schools more attractive to parents. These strategies include transitioning from Nepali to English medium of instruction, providing extra tuition classes for the high-stakes examination results, and improving uniforms by requiring ties and belts. Importantly, schools that had principals who mentioned private schools as competition were significantly more likely to have attempted quasi-private policy changes than schools with principals who did not mention private schools as competition. Despite the lack of public school improvements in the past, there may be room for more optimistic prognostications as competition seems to be inducing productive changes by motivating principals in some schools.

Research Question 3: What are the Factors that Mediate how Public Schools Respond to Competition?

Public school officials face a variety of sociopolitical, bureaucratic and financial conditions that reduce their motivation and impede their efforts to compete. The most substantial constraints reported in interviews with school principals and education officials were the direct external political interference in school functioning that limits their decision-making control, the

lack of proper incentive mechanisms to motivate teacher effort, and the pervasive stigmatization of public schools.

For instance, principals mentioned that the teaching force in public schools also worked as party affiliates of the main political parties. As a result, despite the fact that principals have the bureaucratic authority to sanction teachers, principals are unable to hold teachers accountable for their schooling performance. Some principals mentioned that if they tried to hold teachers accountable for their negligence or absenteeism, then teachers would utilize their political connections to threaten the principal with school transfer or physical harm. Additionally, the national-level policy decision to decentralize authority to school management committees from district level education offices seems to have had the unintended consequence of increasing political interference in public schooling. According to many principals and education officials that I interviewed, many party members have joined the management committees to use it as another opportunity for political interference – for instance, by providing teaching jobs to members of their political party.

Many national education officials conceded that the national level education agencies had been unable to strictly implement accountability criteria to assess, reward or reprimand schools and teachers for their performance. Many of the high performing public school principals talked about how they had devised creative methods within their schools to motivate teachers since the government monitoring and financing structures did not differentiate between well-functioning or poorly performing public schools.

A substantively related problem was that due to the climate of pervasive political and bureaucratic incompetence, citizens appear to distrust all types of public provision of services, including education. There was near unanimous agreement among public school officials that there was significant sorting of students into private schools by income and ability, which significantly disadvantaged public schools. Over time, the sorting of students, and other public

sector inefficiencies had led to stigmatization of public schooling, particularly in urban areas. Some public school teachers professed how choosing a public school for your child would be considered embarrassing by society and peer groups. Consequently, parents try and enroll their children in the relatively politics-free and more socially acceptable private schools instead of public schools if it is financially feasible.

However, there are noteworthy variations in the extent of political interference and community support faced by public schools. Firstly, some of the public school principals are able to demonstrate effective leadership and incentivize teacher teams to be accountable for student learning, and deflect most of the political pressures. Secondly, community support for public schooling is higher in rural schools and regions where there has not been as significant a growth in private market share, due to the lack of sorting in these regions. The school principals that have been able to demonstrably improve the school through better student results or higher test scores have also experienced growth in community support over time.

Research Question 4: How are Public School Actions and their Experience of Competition Linked with their Outcomes?

Public school examination outcomes do not seem to have significantly benefited or worsened because of private competition, but there are signs that indicate growing inequalities between the public and private sectors. Specifically, my analysis shows that there does not seem to be a significant positive or negative association between public school test scores (high-stakes school-leaving examination) outcomes and the extent of private competition in recent years. However, there is evidence to suggest that the gap between public and private school test scores is higher in localities with high privatization. This finding may be a result of higher competition between the larger number of private schools in the most urbanized and populous regions of the country. Another noteworthy finding is that the public schools that have better outcomes are also more likely to use selection criteria during admission. This finding highlights the variation in

public schools and may suggest that sorting does exist within the public school system as well. Finally, it may be too early to tell if the school policies instituted in the last two or three years have induced significant changes in school outcomes. Nevertheless, the most recent data show that enrollment in lower grades in public schools continue to decline, indicating that parental perceptions that favor private schooling have still not changed noticeably.

Contributions

To the best of my knowledge, there has not been a systematic investigation of the public sector consequences of competition in developing countries. I add globally relevant theoretical and empirical insights to advance our understanding of competitive effects by analyzing the consequences of competition in terms of its evolving, local and subjective nature. My contributions focus on how researchers should conceptualize the experience and response to competition, while recognizing the barriers public schools in developing countries may face while responding to competition.

My analysis suggests that researchers need to analyze the variations in financial supports, community supports, personnel motivation, and policy changes to fully elucidate how the public sector experiences and then responds to private competition. While economists and sociologists have long recognized that sorting of students by income and ability is a likely consequence of unregulated choice programs, researchers have not fully recognized how long-run sorting can encumber the public schools' ability to compete with private schools. In particular, researchers should not conceive of the public sector as a uniform entity while assessing the sector's capacities to compete with private schools. They should recognize that the local experience of competition will vary significantly by the school's urban or rural location, availability of additional income sources, community supports, and the extent of private competition. Researchers should also account for the fact that school leadership's motivation to respond to competition will depend on the individuals' decision-making control and capacities

along with the incentives and barriers that they face. Consequently, competition should also be analyzed as a subjective experience, since principals' perceptions of private competition seem to drive their behavior to change policies, along with the actual number of private schools in close proximity to their public schools. In addition, more researchers need to investigate the policy actions that public schools engage in to respond to competition since these behaviors provide the most transparent indication of school efforts. These school responses should be conceptualized as intermediate outcomes that can give a sense of whether policy or systemic changes are creating distortionary incentives or aiding achievement.

I find that public schools face bureaucratic inefficiencies, poor accountability mechanisms, difficulty in incentivizing personnel, and financial limitations that limit their ability to function effectively or implement competitive responses. These factors are consistently highlighted in the school choice and effectiveness literature in the United States. My work also highlights the additional constraints that researchers need to be aware of while analyzing obstacles to public school improvements in developing countries. Firstly, researchers should recognize that a significant additional impediment to competitive responses not highlighted in the literature is the extent of direct political interference in decision-making in the public school system of conflict-affected developing countries. Secondly, researchers need to be aware that financial barriers are a higher order constraint in low-income developing countries, particularly for schools that are located in the most economically deprived communities. Finally, researchers have to be aware that the lack of community ownership and social stigma is a substantial hurdle to overcome for public schools as parents in developing countries (who do not have to pay direct taxes for education) may consider "fee-charging" private schools as an investment decision and may relegate "free" public schools provided by an untrustworthy government to second-tier status.

Insights for Policymaking

Choice has been a popular policy reform for policymakers due to the enormity of the policy challenges that exist in education systems, and the theoretical promise of better learning, higher parental satisfaction, and improved public sector in choice environments. Public schools play an important role in educating the majority of the world's poor and also receive substantial government financial and policy attention. I argue that policymakers in developing countries need to carefully calibrate the timing of choice policies, targeted supports, and accountability mechanisms if choice is to yield public school reform.

My research indicates that public schools will require significant supports, accountability pressures, and strong implementation of regulations to have the capacity and incentive to compete with private schools. It is unlikely that these conditions will be met in developing countries that have inadequate resources and poor governance. Thus, in a hypothetical scenario with no school choice, the introduction of choice will not be the most efficient means of trying to induce public sector competitiveness in developing countries.

However, in situations where private schools have been allowed to expand, policymakers need to take steps to improve public schools in the following ways. First of all, they need to keep track of the outcome and sorting consequences of private competition on public schools. Policymakers need to track this evolution since there may be a tipping point in terms of erosion of community support after which public schools will be unable to respond to competitive pressures. As a result, the later the accountability and support systems are tagged on to an existing choice system, the larger the magnitude of the public sector problem, and the more difficult it will be to stage a reversal and regain parental acceptance. Policymakers need to focus on tracking public school policies and facilitating needs-targeted financial and leadership improvements to address the inequalities that exist within the public sector, and eventually reduce the disparities between the public and private sectors. Targeted policy attention can

ensure that more public schools are in a better position to compete in the future, and will especially benefit public schools in regions with nascent privatization that have not faced significant middle class flight from public schools.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews the education choice literature that is relevant for the dissertation. I first briefly review the trends and central debate in school choice, and then discuss the relevant empirical analysis on the impact of competition on public schools' policies and outcomes. I conclude by summarizing the literature and identifying the gaps in the literature that I try to address with this research study.

Trends in School Choice

Education alternatives (choices) are defined as variations in financing and management to the most common method of provision, the publicly funded (through taxation) and publicly operated education system. In general, as shown in Table 2.1, these have been previously classified into four types of schools according to combinations of public and private management and funding. However, it may be appropriate to think of choice possibilities as a continuum – for instance, there are plenty of services within government schools that may be privately contracted (transportation, food), and there may be government operated schools that cannot rely exclusively on government funding because of resource limitations. There is a wide variety of public-private operation and management possibilities that continue to proliferate as choice ideas gain greater global policy and consumer acceptance (Plank and Sykes, 2003).

The private sector provision of primary and secondary education, supported or independent of government intervention, is a growing phenomenon in many developing countries (Srivastava and Walford, 2008; Srivastava, 2013; Tooley and Dixon, 2005), including the context of study, Nepal (Carney and Bista, 2009). The past decade has seen the role of the private sector in education provision grow from providing education access to an elite or upper middle class constituency to a growing group of middle and lower class consumers. These developments have coincided with a growing empirical consensus among institutions,

policymakers and academics that even low-fee private schools are able to provide a better quality of schooling than traditional public schools in developing countries. In fact, the significant support for private schools in these contexts may even seem warranted and more palatable given the poor learning achievements documented through new assessment tests. For instance, recent calculations have suggested that fewer than 10% of youth in many countries are reaching minimal literacy and numeracy levels, even when school attainment seems to have improved rapidly (Hanushek and Woessmann, 2008).

Choice reforms have gained enduring popularity due to some substantial shifts in intellectual, institutional, demographic and political environments (Plank and Sykes, 2003). Among the intellectual shifts include the popular critique of the traditional system as being overly bureaucratic and political (Chubb and Moe, 1990); the “choice with equity” argument which argues that public education was already unequal to begin with (Jencks, 1970); and the constant quest to reinvent government. Institutionally, the rise of influential transnational organizations such as the World Bank has also aided the advocacy of choice and decentralization globally. Politically, school choice reform can be appealing from a public finance perspective as it gives governments a chance to shift financing burdens off the budget. Additionally, parental preferences have also shifted in favor of increased differentiation (through quality, peer groups) due to reductions in fertility and universal access to schooling. These interlinked arguments and influential institutions are likely to ensure the continued expansion of decentralization and choice based reforms globally in the near future.

The Choice Debate

The question of whether choice improves or worsens the overall system has been one of the central debates in education policy. The theoretical expectation is that choice will allow parents to better match their children to preferred schools; and that these competitive pressures will incentivize improvements in bureaucratic public schools (Chubb and Moe, 1990; Friedman,

1962). Importantly, these benefits are likely to come as a result of increased alignment. School choice could narrow the gap between schools and parents' objectives through higher parental involvement, reduced information asymmetry, and strengthened accountability (Schneider, Teske and Marschall, 2000). The hypothesis also includes the expectation that public and private schools that are unable to compete will die out ("creative destruction"). In conjunction, these processes are expected to improve the functioning of the overall system, incentivize innovation, and result in better student outcomes and parental satisfaction.

Critics of choice are particularly concerned that choice policies will increase the stratification of the system as more informed, educated and concerned parents opt out of the traditional system (Fiske and Ladd, 2001; Hsieh and Urquiola, 2006). The potential for stratification is a logical concern as parents and schools have incentives to focus on sorting. Given the choice, parents may use peer selection to improve their children's life chances, and schools may try to attract the best students to minimize their effort in producing good outcomes (Chakrabarti and Roy, 2010; Epple and Romano, 1998; Nechyba, 2009). Additionally, there is skepticism over whether there will be positive competitive effects on public schools. Choice may not lead to better outcomes as parents may not choose based on academic quality, and thus not provide the market-based accountability required to improve public schools through competitive pressures (Lubienski and Weitzel, 2010). The public school students could instead be harmed as they have to deal with adverse peer effects, and schools may be negatively affected due to turbulence and potential reduced funding (Ni and Arsen, 2010). Institutional theory arguments question whether choice can incentivize innovation. Institutional theory conceptualizes educational organizations as large bureaucracies with loosely coupled structures, little control or evaluation of instruction, and with a focus on categories or rules called "ritual classification." Based on this conceptualization, schools may not be motivated to innovate but rather focus on emulating others that they perceive to be more successful when faced with any uncertainties

(DiMaggio and Powell, 1983; Meyer and Rowan, 1977). Finally, there is also recognition that the policy adoption of school choice is strongly politicized. While the expectation is for market-based accountability driven improvements in outcomes to drive future policy direction, policymakers may not have the patience or the neutrality to use the evidence (Lubienski and Weitzel, 2010). The concern is that political ideology or advocacy will solidify a policy direction, even if the outcomes do not seem to pan out. Consequently, these new policy problems may exacerbate the problems rather than resolving them. As a result of these complexities, researchers have argued for more analysis on the systemic implications of choice rather than just a focus on education outcomes (Levin, 2002).

Most of the outcomes-based quantitative evidence aims to examine the theoretical expectations of quality and equity consequences from choice (McEwan, 2000; Zief, Maynard, Bradley, Keefe, and Kralik, 2005). The vast literature on private, voucher and charter literature have concluded that there are mixed to slightly positive outcomes of education choice in the United States (McEwan, 2000; Miron, Evergreen and Urschel, 2008). The results appear more positive in developing country contexts that have conducted voucher experiments such as Colombia (Angrist, Bettinger and Kremer, 2006). However, there is more consistent evidence that there was sorting by both income and ability under large-scale systemic changes (Chile, New Zealand) or primarily by ability when there is an income based restriction (USA). In addition, the validity of most of the literature is questioned due to the fact that it is based on findings from nonexperimental programs², such as the Chilean voucher program.

The main relevant empirical literatures for the dissertation are the competitive effects on outcomes literature and the literature on public school responses to choice systems.

² A brief overview of the public-private outcomes differences literature is presented in Appendix 2.1.

Do Private Schools Improve Public School Outcomes? Competitive Effects Literature

Defining Competition

Competitive effects are typically studied in quantitative models by conceptualizing student outcomes or school resources as a function of the competition measure and a variety of school and community covariates (Dee, 1998; Geller, 2006; Payne, 2010). The main measures used to operationalize the extent of competition faced by the schools include measures that (i) compute the concentration of enrollment (the Herfindahl index³), (ii) count the number of choice schools that are in close proximity (geographic proximity), and (iii) compute the share of choice schools in overall enrollment (market share) (Thapa, 2012a). These measures suggest that public schools that have alternatives nearby, or are located in regions with high private market share will experience more competition than public schools that face less competition nearby. A more direct strategy for studying competitive pressures is to focus on schools that lose students to specific alternative schools (school-by-school switching) and then to see whether schools that have faced significant losses in enrollment are the ones that step up their efforts for improvement.

Issues in Causal Inference

As discussed in Table 2.2, all of these measures have substantial validity issues, especially if there is only cross-sectional data available for the analysis. A central issue in these analyses is the difficulty in conclusively identifying the competitive effect – that is, how can one determine whether any fluctuations in outcome is conclusively *caused* by the competition they face and not by other factors such as the existence of more schools in urban markets predisposed to higher outcomes? Conducting causal analysis is a major problem since choice programs are typically not initiated using some sort of randomized strategy, and there is limited data on

³ The Herfindahl index is computed as the sum of the squares of the enrollment share of all the schools. A higher index suggests less competition. The index allows one to incorporate all schools and not just private schools in competition measures.

students before they started experiencing choice. In general, there is consensus that the empirical analysis would be better served with more longitudinal student-level data, and detailed school-level data. For instance, a panel dataset with repeated observations can help take the analysis from a correlational cross-sectional analysis to a before-after analysis and enable one to ask: does the public school outcome improve after the charter school opens up? Other major issues that complicate the identification is that choice schools may locate where public schools are failing to produce outcomes, and public and choice schools may have different compositions of students. One of the main strategies to resolve the endogeneity problem is by using instrumental variable (IV) strategies. The goal is to find an instrumental variable that is correlated with the competition measure but not with the outcomes (Wooldridge, 2009).

Empirical Findings from the United States

In the United States, researchers have studied the impact on public school performance of private competition using the private market share in enrollment as the main competition measure. Most of the earlier studies found limited effects of competition on public school students' educational outcomes (Belfield and Levin, 2002; McEwan, 2000). Some of these studies aimed to use an IV measure of the density of Catholic population in the area in order to improve causal inference. However, future studies questioned the validity of religious concentration as an instrument for private schooling (Cohen-Zada and Sander, 2007; Figlio and Stone, 2000) because these measures were found to be correlated with outcomes.

The main analysis from voucher competitive effects comes from the pioneering Milwaukee program. Chakrabarti (2008) analyzed how vouchers affected public school outcomes by investigating the effects of the two major phases in Milwaukee's voucher program, the initial 1990 small scale voucher program and the later expansion in 1998 which allowed religious private schools and increased the revenue loss experienced by public schools. The author uses difference-in-difference strategies and finds the effects on public school performance

to be higher in the second phase compared to the initial phase. Carnoy, Adamson, Chudgar, Luschei and Witte (2009) utilize methodology from Chakrabarti (2008) to confirm that there was an enhancement in public school performance right after the increased competition in Milwaukee. However, they argue that it appears that the positive achievement outcome appears to have been a one-time response, and that more analysis is needed on exactly what changes were introduced in the public schools to bring about improvements. They hypothesize that teachers were motivated to enhance performance on examinations when they perceived a strong threat, but were not able to do any more as the threat of competition persisted.

New evidence on voucher competitive effects comes from neo-voucher options whose design has benefited from years of previous experiences. Figlio and Hart (2010) study the Florida Tax Credit (FTC) Scholarship Program using fixed-effects approaches. They examine whether students in schools that face a greater threat of losing students to private schools due to the introduction of tuition tax credit scholarships improve their test scores more than students in schools that face less pronounced threats. They find evidence that public schools subject to more competitive pressures⁴ (elementary and middle schools in particular) raised their test scores the most following the introduction of the program, and that the positive effect also extended to students who were not eligible for voucher programs. The authors argue that they could better isolate the competitive effect of the voucher threat compared to previous studies due to the fact that there was a year lag between policy announcement and when students actually started attending private schools.

The majority of the competitive effects research comes from the charter school experiences in the United States. Three recent reviews of charter school research (Betts, 2009;

⁴ The competitive measures used by Figlio and Hart (2010) included greater ease of access to private school options, measured by geographic proximity and whole district measures; the options that students have in terms of the religious or secular affiliations of private schools, a diversity measure; and the Herfindahl index, a measure of concentration of student enrollment.

Zimmer and Buddin, 2010; Ni and Arsen, 2010) identified 13 studies that did state-level analysis on competitive effects in Arizona, California, Florida, Michigan, North Carolina and Texas. The evidence is decidedly mixed - of states that had more than one study, Michigan and North Carolina show mixed results, while Texas has positive competitive effects on public schools. These reviews contend that it may be too early to draw firm conclusions on the competitive effects of charters on public schools.

Betts (2009) argues that since many of the studies use data from periods when charters were only two to three% of market share, it is only natural that public schools do not feel highly incentivized to reform and improve their quality. Betts (2009) recommends more “black box” analysis of charter induced mechanisms – that is, more research to figure out if charters are actually innovating, and then study if public schools are adopting any of these innovative practices. Betts (2009) also suggests that research needs to expand to indicators beyond test scores to aspects that matter to parents using insights from parent decision-making analysis.

Ni and Arsen (2010)’s analysis is more informed by implementation of charters and appear less optimistic about choice-induced improvements. They provide a policy design based explanation for Texas’ positive effects. They argue that since Texas charter school policies were focused on ensuring at-risk students left district schools that it might have enabled district schools to focus on improving programs for the benefit of higher performing students who stay behind. An added study in their review is a school-level analysis by Ni (2009) which used 11 years of Michigan data to compute short and long run impacts of competition. The author reviews Hoxby (2003)’s influential work which documented positive competitive effects on Michigan and Arizona. Ni (2009) finds that charter competition exceeding 6% of district enrollment, Hoxby(2003)’s measure of competition, actually hurt student achievement and school efficiency in Michigan. Importantly, the negative competitive effect became more substantial in the long run. Ni and Arsen (2010) also comment on the political realities in

education policymaking. They point out that policy debates may not be patient enough to let the evidence mature before pushing for other alternatives. In their conclusion, they remain noncommittal as to whether competitive effects may result in the future, but strategically mention Hess' argument about how choice may not lead to dramatic theoretically suggested improvements because of the organizational and institutional rigidities of public schools.

Empirical Findings from other Contexts

The international evidence is quite limited in terms of studies on public school impacts. Hsieh and Urquiola (2006)'s analysis of systematic sorting suggests that there were long-term negative effects on public schools as a result of the Chilean voucher choice program. The study found that between 1982 and 1996, communities that had higher increases in private school enrollment also had lower public school test scores, higher gaps in test scores between elite private and public schools, and higher socioeconomic gaps between public and private school parents. The empirical analysis on New Zealand (dezoning and not an introduction of market-based choice) used teacher and principal surveys of 10% of primary schools to show that the quality of student learning and teaching style were more negatively affected in schools facing competition rather than those not facing competition (Ladd and Fiske, 2003).

In contrast, Thapa (2011)'s cross-sectional analysis on Nepal finds significant positive effects on public school performance of private competition using instrumental variable analysis. Thapa (2011) studies competitive effects utilizing a comprehensive cross-sectional dataset on schooling, the high stakes examination (SLC) 2004 Study (MoES, 2005). In the author's model, the dependent variable is the SLC examination test scores (the aggregate test score from the compulsory subjects), and it is regressed on a competition measure (number of private schools in the neighborhood) and a vector of controls (student, family, school, teacher and community characteristics). The author utilizes the instrument variable (IV) of the presence of a motorable road within an hour of walking distance of the school. The argument is that the presence of a

road should increase the chance of having more private schools in the location, but the presence of a road should not have any relation with current student test scores⁵. The author finds significant positive effects of private school competition on public school outcomes using the IV analysis. Thapa (2013)'s competitive effects study is a valuable contribution to the developing country research on the topic.

In summary, the competitive effects literature suggests that there are substantial analytical difficulties in isolating the competitive effect of private schools. The empirical analysis suggests that the outcomes evidence is mixed. It may be too early to tell if there have been productive competitive effects in some contexts such as charter adoption in the United States. There seem to be positive competitive effects from voucher adoptions such as the Milwaukee program and neo-voucher programs. On the other hand, it may be too late to expect productive competitive effects in contexts that have been less regulated and had systematic reforms and experienced dramatic sorting such as Chile and New Zealand. The research on competitive effects in developing countries is virtually non-existent. The analysis from Nepal is limited by data but seems to show positive competitive effects on public school outcomes from cross-sectional analysis.

Investigating Intermediate Outcomes in Choice: School Responses

The lack of conclusive evidence on the competitive effects on public school outcomes does not mean that public schools are not changing as a result of the influx of private schools. For instance, in his forward to the book "The Charter School Experiment" (Lubienski and Weitzel, 2010), Henig states "Education needed some shaking and prodding, and charter schools have delivered on that part of the promise. There are vitality and talent and resources in public education today that were flagging prior to the 1983 federal report *A Nation at Risk...*"

⁵ The author uses the Hausman test to conclude that the 2SLS model is better than the OLS model.

The subfield of education choice that studies public school responses analyzes what public schools are doing as a result of the “shaking and prodding” from the competitive pressures. The purpose behind analyzing what schools do is that while school responses may not necessarily lead to better outcomes, a lack of school response is highly unlikely to improve the schools from their initial conditions (Hannaway and Hamilton, 2008; Hess, Maranto and Milliman, 2001; Rofes, 1998; Rouse, Hannaway, Goldhaber and Figlio, 2007). These responses can also be thought of as intermediate outcomes that provide an early signal as to whether the final outcomes of learning improvements are likely to be met or not. These school responses can also give a sense of whether policy or systemic changes are creating distortionary incentives or aiding achievement, and thus improve the information available to policymakers. These studies represent a relatively small subset of the literature, which is partially attributable to the fact that there is a lack of data systematically describing instructional and organizational policies (Rouse et al., 2007).

Research in the subfield can be categorized into studies that investigate market-based choice plans’ impact on public school responses, and studies that try to utilize explicitly defined accountability systems to study responses and outcomes. The majority of the studies that look at public school responses have been qualitative in nature, and utilize interviews (principals, teachers, policymakers) and document reviews, while some studies employ more representative school surveys.

Evidence from Choice Plans: what Mediates School Responses?

There are serious complications in understanding the experience of competition. For instance, do public schools start responding immediately after there is choice, or do choice schools need to take up significant market share first (Zimmer and Buddin, 2010)? Besides the number and density of private schools, a competitive response is determined by a complex set of evolving mediating factors. The response will depend on whether the competition is viewed as a

threat that requires a response, whether personnel are incentivized to respond, whether there is capacity to respond, and the school personnel's expectations of success in overcoming obstructive factors from these responses (Mohrman and Lawler, 1996). Studies such as Rouse et al. (2007) have noted that it is not clear why school personnel would be incentivized to make changes by setting different policies or investing in a different mix of inputs. Given the potential difficulties in incentivizing responses in complex organizations such as schools (O'Day, 2002) accountability systems aim to align incentives with a careful selection of rewards and sanctions. However, even with well-designed accountability systems schools need to have the human and financial resources to enact changes, and individuals within the school system need to derive satisfaction from meeting the goals set out by the reform. Given these intricacies, it is critical to understand motivations and to analyze context specific experiences while discussing the experience of competition.

Zief et al. (2005)'s systematic review of U.S. market-based choice plans provides an instructive list of factors that are likely to mediate a district's response to competition. They found that the most important factor that was important for districts to feel an impact was enrollment trends – contexts with declining enrollment felt a large competitive threat while there was a less of a threat felt in contexts with overcrowding and teacher shortages. Other factors that mediated a district's perceived impact included district size (larger districts did not feel as big a threat), financial loss (those that were compensated for enrolment loss or had little financial impact did not feel as big a threat), leadership (more reform-minded leaders were likely to respond positively to choice plans), the initial availability of private options, flexibility in the legislation, and the characteristics of students or parents who were leaving.

For instance, Hess, Maranto and Milliman (2001) examine four small and isolated Arizona⁶ school districts which lost a substantial portion of their enrollment to charter schools in a small period using qualitative comparative case study methodology. The main dimensions of context that were important in whether schools felt a competitive threat were: whether the district was growing, the quality of the charter schools that arrived as competition and the kind of students targeted by the charter schools. For instance, the authors find that districts were likely to respond if they lost students who were more mainstream and thus less expensive to educate. If districts were growing, then both charters and public schools could prosper, and in fact new schools were even welcomed as they functioned as pressure release valves in overcrowded districts.

Evidence from Choice Plans: how do Schools Respond?

Based on the U.S. evidence, schools appear to respond in three types of ways – by accommodating entry, by competing or by creating barriers to entry (Ni and Arsen, 2010). Schools' passivity may signal an inability or a lack of motivation to compete. Schools that decide to compete can try to improve quality or aggressively improve their marketing strategies and consumer relations. Other schools may react unproductively, for instance, by making the working environment difficult for choice schools by mobilizing political opposition, or by limiting access to important networks.

Schools that decide to respond have to decide to implement a few from among the feasible set of policy domains such as instructional practices, personnel decisions, student policies (admission, retention, failure), school financing (fee structure), parent interactions, and

⁶ The Arizona case is important given its status as an early adopter of charter schooling in the United States. Additionally, its minimal regulation meant that Arizona's charter system adoption somewhat approximated a free market for education in the US context. The state has had the longest and most significant adoption of charter schools, and over 20% of current market share in public school enrolments belongs to charters. A group of authors (Hess, Maranto, Milliman, Gresham) have contributed to multiple related studies on the early charter school development in the state.

infrastructure related policies (Khan, 2005; Rouse et al., 2007). Instructional strategies could include curriculum modifications, changes in classroom time or a focus on low performers. Non-classroom strategies can include leadership related changes, active promotion, fund-raising and changing decision-making roles. Besides being antagonistic towards charter schools, unproductive consequences of competition can include attempts to improve school exclusivity, or methods to game accountability systems to the school's advantage. While some experts deem non-classroom changes as being superficial or minimal, this designation is debatable as the consequences are unclear for school productivity and parental satisfaction.

In Arizona, Hess et al. (2001) finds that when faced with additional pressure, district schools were likely to respond with leadership changes. Maranto, Milliman, Hess and Gresham (1999) employ mixed methodology (interviews and surveys) and find that a large portion of the districts were happy to not do anything and have charter schools absorb extra students. It was only the highly affected districts that tried to improve their customer service, advertised the options that they had available compared to other schools, and tried to provide competitive curriculum opportunities, such as through opening magnet schools. Among the strongly negative reactions included the use of somewhat unethical spreading of false rumors to squash competition. The school survey compared the behavioral changes in the treatment group (Arizona school districts with at least 30% elementary schools as charter schools) as compared to two comparison groups, the Nevada school district (similar state, almost no competitive pressure) and less competitive Arizona school districts. The researchers find that the Arizona groups reported that principals encouraged teachers to experiment, tried to protect them from external pressures, and consulted with them more frequently. The Arizona high competition group showed the greatest change in behavioral responses, as the schools stepped up efforts to inform parents about their programs, and made teachers more responsible in decision-making. Maranto, Milliman and Hess (2010) utilize the same data to focus on pre-competition

organizational culture. They find that the threat of school entry increased teacher curriculum control for district schools which already had a highly collaborative culture but had no impact for schools with initial low collaborations. These studies provided useful methodological insights into doing in-depth analysis on the experience of competition. The major limitation of the quantitative (survey-based) analysis is the lack of acknowledgement of the methodological problems with the retrospective component of the survey – the data from 1994-1995 was collected after three years along with the 1997-1998 data, which was likely to have been affected by more serious recall issues.

There is limited evidence on responses to competition from other countries. The major reforms in New Zealand and Chile have led to significant systemic changes which should have been strong enough to incentivize responses from public schools. However, there are only a handful of studies that even tangentially discuss public school responses. Gauri (1998)'s systemwide analysis of Chile concludes that privatization and the threat of students exiting public schools did not incentive educational innovation because “Chilean parents do not choose schools for educational reasons” (p. 104). In New Zealand, the major conclusion by Fiske and Ladd (2001) is that the systemic reform lead to responses that lead to higher stratification without much positive impact on learning. For instance, the lack of zoning incentivized schools to focus on enrollment, engage in aggressive marketing and promoting of schools, and in changing the leadership in failing schools. Notably, there was not much curricular innovation, attributed primarily to the fact that the incentives in the system were to increase enrollment and popularity rather than to diversity offerings. Thus, Fiske and Ladd (2001) argue that parental choice really gave way to school choice, as oversubscribed schools held the most power. Consequently, the school choice reform kept previously disadvantaged schools in a disadvantageous position which could not be overcome despite responses such as changes in leadership and governance.

Evidence from Accountability systems: How do Schools Respond when there is an Explicit Motivation to Respond?

Accountability studies are instructive from a “school response” standpoint when they discuss how schools appear to be changing in response to accountability pressures. These studies also provide most of the quantitative empirical evidence on intermediate outcomes. The evidence from U.S. state-level accountability studies suggests that schools do appear to respond based on explicit incentives to respond from accountability systems. Schools typically focus their productive efforts on certain points of the academic distribution, depending on which grades, subjects, and parts of the academic distributions have high stakes associated with them (Figlio and Ladd, 2010; Jacob, 2005; Krieg, 2007). The evidence also suggests that high stakes may incentivize schools and classroom teachers to game the system. Sudden improvements in test scores may occur as schools and teachers strategize to respond to accountability pressures through teaching to the test or narrowing their curriculum (Deere and Strayer, 2001; Ladd and Zelli, 2002), changing the composition of students who take the examinations (Cullen and Reback, 2006; Figlio and Getzler, 2007; Jacob, 2005), or even try outright cheating (Jacob and Levitt, 2004). Rouse et al. (2007) is a unique study that combines high quality information on both intermediate and final outcomes in an analysis of Florida’s accountability system. When conducting the linked process and outcomes analysis, they find that combined with other policies, a set of key domains explain more than 15% of test score gains in reading and over 35% of test score gains in mathematics. The Rouse et al. (2007) study suggests that accountability systems can not only incentive behavioral change in schools but can also affect the type of school responses that a school engages in.

Summary and Gaps in the Literature

Early choice proponents expected improvements in efficiency, outcomes, and in the alignment between schools and parents’ goals regarding schooling. Critics were concerned that

choice would further stratify society and doubted that choice related benefits would come to pass due to a wide range of organizational concerns. Despite decades of data and methodological advances, there is still limited experimental data and a lack of conclusive evidence on the ability of choice interventions to improve school outcomes. There is some evidence to suggest that the choice may have been beneficial in terms of improving public school outcomes in developing countries. At the same time, there is consistent evidence that unregulated choice programs have caused increases in sorting by income and ability. Despite the skepticism and the limited evidence, choice has gained substantial global policy acceptance in the past three decades.

The question of how the public sector is impacted by private competition is one that is central to education choice and has significant consequences for public sector reform in the current era of growing privatization. However, the evidence on whether competition induces productive competitive effects on public schools is also limited because of the lack of experimental design in quantitative analyses, and the lack of in-depth analysis on public school experiences with competition in their local settings. The available U.S. research suggests that the evidence on charter and voucher impacts on public schools is mixed at best, and that it may be too early to tell if there are any significant effects on school outcomes since the market share of these choice schools is still very low. The U.S. research on school responses suggests that how public schools respond and experience competition is determined in a complex manner. Some recent high-stakes accountability systems seem to have been able to incentivize public schools to focus on school quality interventions such as increasing instructional time and focusing on high-stakes populations and subjects. However, depending on the accountability mechanism in place, public schools may simply not react, or may have incentives to react unproductively. Furthermore, these responses to competition may have unpredictable consequences on learning outcomes. Given these varied possibilities, it is important to understand exactly what is occurring

in the context of interest to gain a better understanding of whether choice reforms are indeed incentivizing reforms and whether stakeholders are satisfied with current trends.

There are two important gaps in the current literature. Firstly, from a conceptual standpoint, there is a lack of integrated supply (school) and demand (parent) side analysis, which would be needed to understand if school responses were linked with factors that parents appear to value (Betts, 2009). To address the gap, I conducted analysis on parent decision-making in local education markets in Nepal (Joshi, 2013a) in preparation for this dissertation. I found far less engagement between parents and school officials in public schools than in private schools. Additionally, public school parents relied strongly on their children for education decision-making and monitoring, given their own low education levels. In combination, these findings suggest that public school parents are putting very little pressure on schools to improve. Thus, it is likely that parents in Nepal's public schools are not providing the demand-side accountability required for well-functioning choice systems. My dissertation addresses the supply side piece of this integrated analysis.

Secondly, from a contextual standpoint, there is a lack of research on competitive effects in developing countries, despite their growing privatization. In order to conduct these analyses, one needs to be aware of the ways in which the choice environment in low-income countries differs from the developed and middle income countries. Many of these countries, like Nepal, have young education systems that lack a taxation-linked education financing system. These countries are still expanding access while their systems have become more privatized, and have an accidental rather than government regulated choice environment (Srivastava and Walford, 2008). Furthermore, most of these countries have a limited tradition of national data systems or longitudinal data collection. For instance, the most recent quantitative analysis of competitive effects on public school outcomes in Nepal (Thapa, 2012b) comes from a one-time 2004 cross-sectional dataset which was collected before the major private schooling expansion of the past

decade. These limitations make it more difficult to study competitive effects by only using quantitative analysis. The dissertation contributes to the research gap by offering a case study built on a research design that is mindful of these differences.

Chapter 2 Figures and Tables

Table 2.1 Classifying education systems

	<i>Public Management</i>	<i>Private management</i>
Public funding	Traditional public schools	Charter schools (USA); Voucher programs (USA, Chile, Colombia, other developing countries) Magnet schools (USA); Concession schools (USA, Latin America); City academies (USA); Education contracting for private or non-profit management (USA, Latin America)
Private funding	Government tuition schools	Private schools (global) Homeschooling (USA) For-profit tutoring and schooling (East Asia, East Asian immigrants in the US)

Sources: Adapted from Chakrabarti and Petersen (2009), p.4 and Berends, Springer, Ballou, and Walberg (2009), p. xvi.

Notes: It would be misleading to classify all traditional public schools as “unchosen” in the United States because often parents choose to live near good schools (Berends et al, 2009, p. xvi). However, moving primarily for schools is not that common a phenomenon in Chile (Elacqua, 2010) and in low-income developing countries like Nepal – there, it may be more appropriate to conceptualize traditional public schools as those that are “unchosen”.

Table 2.2 Strategies for studying the competitive effect and main validity issues

Strategy	How to measure	Hypothesis	Main issues that threaten validity
<i>Geographic proximity</i>	Count the number of choice schools within a given distance of each traditional public school	Choice schools that are closer impose greater competitive pressure than choice schools that are further away	<p><i>Endogenous decision to locate</i> – if the choice school’s decision to locate in a particular neighborhood is based on location and public school characteristics, then cannot get unbiased estimates of effects of choice schools on traditional schools, e.g. poor leadership may cause both low test scores in the public school and the emergence of choice schools; misleading if conclude that competition from choice school <i>causes</i> low test scores in public schools.</p> <p><i>Potential solutions:</i></p> <ul style="list-style-type: none"> • panel dataset with repeated observations on test scores and location of choice schools • instrumental variable that can predict whether a charter school opens up locally, and does not directly affect test scores <p><i>Composition bias</i> – may fail to capture movements of students between traditional public schools and choice schools if data is school-level</p> <p><i>Potential solution:</i></p> <ul style="list-style-type: none"> • student-level data, and get data before-after choice school enters the neighborhood <p><i>Appropriateness of distance measure:</i> Competitive pressures from choice schools may extend beyond a specified distance, thus making a distance proxy for competition only moderately appropriate.</p>
<i>Whole-district/Market Share</i>	Compute the share of enrollment of choice schools in each district	Districts with high choice share may face more overall incentives to improve	<p><i>Improvement over method 1:</i> Avoids endogeneity issue since location choice of charter within district is not a relevant concern</p> <p><i>Problems:</i> Without student level data, would still have composition bias problems</p> <p><i>Other problem:</i> A new form of potential endogeneity – district level changes that may impact charter growth and public school outcomes e.g. hiring of a more reform minded superintendent who favors charters and also wants to improve public schools</p>
<i>School-by-school switches</i>	Calculate number of students each school lost to choice schools	If there are competitive effects, schools that have lost the most students to choice schools should have improved the most	One can overemphasize the results from those who switch as these groups are not necessarily representative of the larger population of students

Source: Adapted from Betts (2009).

CHAPTER 3

CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

I conceptualize the public sector response to private competition as a set of interlinked processes in the dissertation. As outlined in the framework depicted in Figure 3.1, I argue that schools need to first experience competitive pressures to decide to respond with some policy actions. Then, the changes in school policies may eventually lead to improvements in school outcomes. Besides the extent of private competition, the school's responses to competition will additionally depend on a host of constraints and supports, such as their personnel and financial resources, their decision-making control over school policies, and the existing communal, political and bureaucratic environment.

The Experiences of Competition

The quantitative competitive effects literature suggests that competition from choice schools should be measured through geographic proximity indicators and other indicators that show the extent of private school market share in a region. The analysis would require detailed data on growth in private schooling and enrollment trends. The qualitative literature suggests that the experience of competition is additionally determined by a variety of other initial conditions such as school enrollment, district size, and legislation governing school finances, and more subjective factors such as school leadership. Historical perspectives on how public schools have been impacted by competition are also essential to describe the experience of competition in contexts that have had long-term experiences with privatization. Thus, a variety of indicators and approaches need to be triangulated to fully describe the experience of competition.

The Responses to Competition

The literature on school responses suggests that when faced with competition, public schools can decide not to respond, decide to respond with instructional and non-instructional

reforms, or decide to focus on unproductive responses such as improving the school's exclusivity or gaming the system. Providing a detailed analysis of school response to competition requires detailed data on school policies, when schools made these policy changes, and data on competition measures to assess if these policies are likely to be a consequence of competition. In contexts that lack longitudinal data from before and after policy changes, it will be highly difficult to conclusively claim that certain policies are a direct cause of private competition. However, the complementary use of stakeholder perspectives, following the qualitative literature, helps strengthen the argument on which policies are likely to be a result of private competition rather than other unobservable reasons.

The Factors that Mediate the Response to Competition

The responses to competition are additionally determined by whether there is capacity to respond, and the school personnel's expectations of success in overcoming obstructive factors from these responses. In order to be able to provide a detailed account of these factors, one would need information on principal perceptions of the benefit of responding to competition, and the constraints they may face in decision-making. Specially, these mediating factors include the macro-level political and economic environments, societal attitudes towards public schooling, and school-level personnel and financial constraints and relationships with the community.

The Linkages between Outcomes, Competition and Responses

In the competitive effects literature, most of the studies model school outcomes as a function of the competition schools face and control for other school and community characteristics. The accountability systems literature suggests that one can assess whether key policy changes have had any substantial impact on outcomes by modeling outcomes as a function of policy changes and schooling characteristics. The availability of longitudinal information or the use of instrumental variable strategies would help strengthen the causal inference of such analysis.

Research Questions

The Research Questions are the following:

1. How do public schools experience competition?
 - i. What is the extent of private competition experienced by public schools in Nepal?
 - ii. What are the other pressures faced by public schools that mediate their experience of a competitive threat?
 - iii. How do public school principals view their schools' experiences with privatization?
 - iv. What are the characteristics of the schools that public schools identify as competition or as the best schools in the district?

These questions are addressed in Chapter 5. The chapter examines the extent to which public schools experience private competition. It triangulates data from national records of school-level indicators, detailed district-level records on private schooling, a survey of public school principals, policy documents, and interviews with government officials and school principals.

2. What are they doing in order to respond to competition from private schools?
 - i. What are the policies that public schools adopt in order to compete with private schools?
 - ii. Are public schools that experience higher competition more likely to have adopted these school policies than public schools that experience lower competition?

These questions are addressed in Chapter 6. The chapter first describes the current school policies in public schools and assesses whether public school policy changes can be attributed to competitive pressures. It primarily utilizes interviews with school principals and government officials and a combined quantitative dataset (a principal survey for competition measures and school policies, linked data on school and community characteristics from the national school-level records). The analysis for Research Question 2(i) is based on descriptive statistics and

interview data. Then, research question 2(ii) assesses whether there are statistically significant differences in terms of policy adoptions between public schools that experience different levels of competition using the combined quantitative dataset.

3. What are the factors that mediate how public schools respond to private competition?
 - i. What are the barriers and supports faced by public schools in instituting reforms and responding to competition?
 - ii. Do principal perceptions on the key barriers and supports to reform differ by the extent of private competition faced by the school?

These questions are addressed in Chapter 7, using a two-step mixed methods analysis. The chapter first describes other aspects that mediate school responses after they have decided that they feel enough competitive pressures and feel the need to respond. It also describes the variations and similarities in perceptions on public school constraints among different stakeholders. In doing so, it provides an understanding of the main difficulties that schools encounter in making schooling improvements, and a sense of which of these challenges can be addressed by policies. Then, through research question 3(ii), the chapter provides quantitative analysis of how these constraints and supports vary by the extent of competition faced by the public school. The analysis primarily utilizes interviews with various stakeholders (principals, local-level officials, district-level officials, national-level officials) and perception questions from the principal survey.

4. How are public school actions and their experience of competition linked with their outcomes?
 - i. Do public schools in higher competition regions have better outcomes (test scores, enrollment) than public schools in low competition regions?
 - ii. What is the relationship between outcomes (test scores, enrollment) and public school responses that intend to improve those outcomes?

- iii. Do localities with higher private competition have larger gaps between public and private school outcomes (test scores, enrollment) than localities with lower private competition?

These questions are addressed in Chapter 8. The chapter utilizes longitudinal data. To address research question 4(i), I assess whether there is a statistically significant difference in schooling outcomes (standardized test scores, low proficiency measure, and high proficiency measure, grade 1 enrollment) between schools that face different levels of competitive pressures. To address research question 4(ii), I analyze whether there is a statistically significant difference in enrollment between schools that have adopted certain policies to have a quick effect on enrollments, and whether there is a statistically significant difference in test scores between schools that have adopted examination focused policies. To address research question 4(iii), I analyze whether the public school performance relative to the private school performance differs between schools in localities that have different levels of competition. In order to improve causal inference, I utilize fixed effects regressions (for the time-variant competition measure, private market share) and instrumental variable techniques.

Chapter 3 Figures and Tables

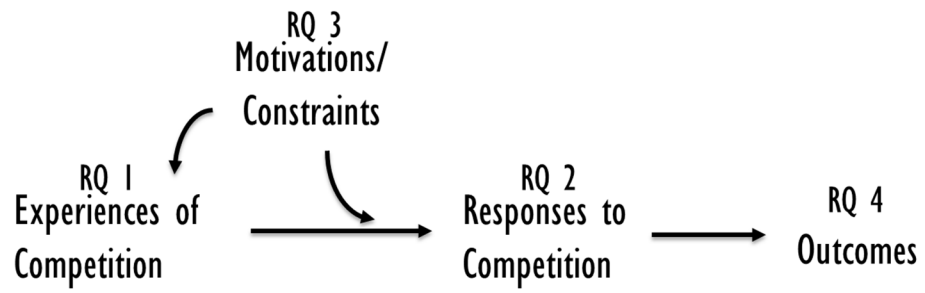


Figure 3.1 Framework: The impact of private sector competition on public schools

CHAPTER 4

DATA AND METHODS

I describe the national context, research sites and the primary and secondary data that was used for the analysis presented in the dissertation in this chapter. I provide a discussion on the needs addressed by the primary data collection and how the secondary data is being utilized throughout the dissertation. These data were collected between 2010-11 and 2012-13, as mapped in Figure 4.1. My contextual focus on Nepal allowed me to utilize insider and outsider perspectives as a Nepalese citizen who is trained in research methods in the United States⁷.

National Context

Nepal Socioeconomic Context

Nepal is a developing country situated between India and China with a population of 26.6 million and 17% urban population (CBS, 2012a). The country is administratively divided into five development regions (far-western, mid-western, western, central, and eastern), and three ecological belts (mountains, hills, Terai). Nepal's current administrative structure is based on the Local Self-Governance Act of 1999. Nepal has a two-tier system of local governance – there are 75 districts that are constituted of village development committees (VDCs) and municipalities (towns and cities)⁸. There are substantial differences in human development indicators by region, ecological belt, and rural or urban area. Adult literacy rates (15 and older) are the highest in Kathmandu valley (84%) and lowest in the far and mid-western regions (54.1%). The mountain and Terai (plains) regions have significantly higher gender disparity in adult literacy than in the

⁷ The primary and secondary data collection was completed with funding support from the World Bank's Nepal country office and with the approval of the Nepalese Education implementing agency, the Department of Education (DoE).

⁸ Each VDC is further divided into nine wards, and each municipality is divided into a minimum on nine wards.

hilly region. For instance, two-thirds of the adult men, and only one-third of adult women are literate in the mountain region of the country (CBS, 2011).

From an economic perspective, Nepal is considered a low-income, primarily rural, agrarian economy. The country has seen a recent increase in living standards due to a growth in remittances which has offset poor domestic employment growth (IMF, 2011a). Households have become increasingly reliant on remittances – over 55% of households receive remittances and these remittances constitute over 30% of these household's income. Over 29% of households have at least one absentee living abroad (CBS, 2012). Between 1995/96 and 2010/11, the country has experienced significant gains in adult literacy, and accessibility to major facilities such as schools, health services, banking services, and market centers (CBS, 1997; CBS, 2004; CBS, 2011). These continued improvements in living standards have resulted in a drop in poverty rates from over 40% in 1995 to 1996 to 25% of the population in 2010-11 (CBS, 2011). Analysis on Nepal's poverty indicates that the poverty incidence is highest among the agricultural laborers, less educated people, disadvantaged groups such as dalits and hill janjatis, families with larger households, and families with low land ownership (CBS, 2006, CBS 2012). For instance, households that have an illiterate household head are almost three times more likely to be poor than households with a household head with at least seven years of schooling, as shown in Table 4.1 (CBS, 2012b).

Despite improvements in living standards, Nepal's economic competitiveness has continued to decline over the past decade due to inadequate road connectivity, poor access to power, a fragile financial system and weak institutions (World Bank, 2011; World Economic Forum, 2011; IMF, 2011a). Perhaps the most important limitation, however, is the highly unstable political environment. Important historical markers in Nepal have been the beginning of democratic rule in 1991, the disarray caused by political volatility, and the resultant decade-long violent Maoist political struggle between 1996 and 2006. The past few years have ushered in a

new era – Nepal is finally without a monarchy, but continues to operate in an extremely fragile state with frequent changes in leadership as its political leaders try to develop a new constitution while attempting to address historical injustices in the country’s nascent democracy. Some recent positive developments have included the official incorporation of over 1300 former Maoist soldiers into the Nepal army in July 2013 (Martin Chautari, 2013) and the relatively peacefully held November 2013 elections.

Education System

The systematic development of an education system with the objective of a national universal system only began about 60 years ago. Prior to the 1950s, a 100-year oligarchic regime that was in power during the colonial era supported isolation and education suppression in the country (Wood, 1959). Between 1950 and 1990, education access expanded from a low starting point. However, aggressive expansion really took off after the 1990 Education For All international commitment – in 1951, there were 321 primary (grades 1 through 5) (8,505 students) and 11 secondary (1,680 students) schools (Bhatta, 2009). By 2012, these numbers had skyrocketed to 34,066 basic (6,595,565 students) and 7,938 secondary (848,569 students) schools (MoE, 2012)⁹.

The Nepal K-12 education system is still going through substantial transitions. The education system used to be divided into primary (grades 1 through 5), lower secondary (grades 6 through 8), secondary (grades 9 through 10) and higher secondary (grades 11 through 12) levels. There are efforts under way to build a pre-primary system and to transition the 1-12 system to basic (grades 1 through 8) and secondary (grades 9 through 12), with separate vocational and academic tracks. Politically, it has been difficult to close down the intermediate levels (grades 11 through 12) in campuses throughout the nation due to student and other

⁹ For a recent detailed discussion on Nepal’s education development, please see Thapa (2011) and Sharma (2012).

protests. Simultaneously, the Department of Education is working to mainstream religious (Hindu, Buddhist and Muslim) primary schools and to ensure that the schools stay “basic level” or “secondary level” schools and stop adding grades to transition from basic to secondary level schools. While there are nationally administered examinations in the 5th grade and 8th grade, the most important high-stakes examination taken by all students is the end of high school 10th grade School-Leaving Certificate (SLC) examination as it directly determines student placement in higher education and career opportunities.

In the early years of education access, that is, in the 1950s and 1960s, Nepal’s schooling system used to be entirely community funded and operated. In the inception phase, there were strong recommendations for the development of a tax system, but there was significant resistance from the small and elite minority of professionals and industrialists who claimed that taxation was an affront to private investors (Upraity, 1962). There were brief forays into voluntary taxation in the mid-1960s which yielded some success in increasing enrollment in a few districts (Padhye, 1976). Any mention of attempting a local taxation based financing model has disappeared since then.

The first major policy reform in Nepal was the National Education Sector Plan (NESP) of 1971 that was financed by USAID and sought to create a unified system of public education, with district level education offices empowered to administer schools. The policy emphasis was on central planning and there was a shift of the locus of control to the capital Kathmandu. The quest to increase central government responsibility was particularly significant in terms of teacher provisions and also led to a loss of influence of local interest groups in schooling. The nationalization movement did not last long – starting with the Decentralization Act of 1982, Nepal has undergone a three-decade long emphasis on decentralization, bolstered by increasingly important donor support. Private schools were re-allowed to operate starting in the early 1980s, and have since expanded significantly.

While there has been substantial growth in education access, there remain pervasive problems with poor education quality in Nepal's education system. The significant growth in education access since the 1980s have led to substantial progress in out-of-school rates in Nepal – as shown in Table 4.2, while over 36% of 6 to 24-year olds never attended school in 1995-96, the number had decreased to 8.7% by 2010-11. Of the students who did not attend schooling, schooling costs are not as prohibitive as they used to be in the 1990s. However, parents desire not to send their children to school and the need to help around the home continue to be the key reasons for lack of schooling access. Self-reports from 6 to 24-year olds, detailed in Table 4.3, suggests that poor academic progress at the school, potentially due to high repetition or lack of learning, is a dominant reason for student dropout. Nepal has very high repetition rates, particularly in early grades and there still are problems with education completion. In conjunction, these statistics point to issues caused by low schooling quality, alongside economic and sociocultural barriers.

A main policy reform initiated in the past decade to improve education quality was the Community School Support Program (CSSP), modeled after the community-focused decentralization programs in Latin America. The CSSP sought to shift management control and financing to the community level and reduce government responsibility to a facilitator role (World Bank, 2003). The main rationale for the decentralization push was the notion that pre-1971 community initiated and operated model for schooling provision was more successful than the centrally governed Nepal education system. While the program was initiated and promoted with much fanfare, there has been significant opposition to the program, particularly from teachers (World Bank 2011; GSDRC, 2011). Another important recent policy was the establishment of the per-child fund (PCF) accountability mechanism, which was initiated in 2008 with the goal of tying funding more directly to enrollment.

Furthermore, the public education system has been plagued by issues of overt politicization¹⁰. Some of the key instances of political dysfunction are found in the teaching profession. An Education Service Commission was established for the purpose of independently hiring and certifying teachers in 2001. However, the commission remained defunct for the greater part of the last decade, and has only started the process of hiring teachers in a transparent manner for the 2013-14 academic year¹¹. The country addressed the need for teachers to accompany the education expansion efforts of the 1990s by appointing temporary teachers through “rahat” (relief) quotas from the development (donor funded) budget. Local school experts frequently remarked on the questionable, subjective teacher hiring practices in the period, and suggested that the legacy of loose teacher hiring had endured and exacerbated in the present political climate. Specifically, experts suggest that these systemic problems have allowed the teaching profession to be held hostage to political interests. In such a context, private schools have thrived since they provide a relatively politics-free education environment, teach in the valued English medium of instruction, and have routinely produced better student test scores than public schools.

Financing the education system has become increasingly reliant on foreign assistance. The lack of domestic revenues¹² to support expenditures coupled with massive education expansion has contributed to the country’s increased dependence on foreign assistance¹³ in education spending.

¹⁰ The extent and dimensions of political interference in Nepal’s education system are discussed in more detail as one of the reasons for their inability to compete with private schools in Chapter 7.

¹¹ Source: <http://www.tsc.gov.np/>

¹² One of Nepal’s key financial issues is low domestic revenues. Even in comparison to other low-income countries, Nepal has a disproportionate and unsustainable reliance on import based taxation and low tax yields (IMF, 2011b).

¹³ The growing role of donor funds can be seen in the foreign role in budgetary allocations that have been made for district level expenditures, which are separately accounted for from expenditures that are made

Thus, Nepal's experience has unique context specific characteristics. Still, Nepal is a good choice for the analysis on competition since its experiences are likely to be significant in a comparative sense for a range of developing countries. Firstly, Nepal's experience is relevant for other South Asian countries, as there has been diversified private sector growth in India (Muralidharan and Kremer, 2009) and Pakistan (Andrabi, Das and Khwaja, 2008). Secondly, Nepal's experience provides insights for other developing countries with which it shares structural similarities, such as land-locked countries or countries in conflict situations that have robust private sector engagement in education. It is important to thoroughly analyze how public schools in countries like Nepal are being impacted by privatization growth so that more rigorous evidence can be used for policymaking.

Needs addressed by the Primary and School-level Secondary Data Collection

I decided to collect primary data and school-level secondary data after a careful exploration of the available datasets on education and an assessment of their limitations for the research study. Some of the comprehensive datasets were not focused on education but provided important descriptive and methodological insights. For instance, the main living standard survey that has been conducted in Nepal three times (1995/96, 2003/04, and 2010/11) was primarily useful for providing some of the key descriptive statistics on household burden of schooling expenditures and adult and child enrollment and literacy. The School-Leaving Certificate (SLC) study of 2004 is a comprehensive cross-sectional study that surveyed school principals, teachers and students, and also collected performance data. The 2004 dataset has been utilized for policymaking at the secondary school level, and a variety of interesting research studies on private tutoring, public-private differences, and competitive effects in Nepal (Bhatta, 2004; Jayachandran, 2008; Sharma, 2012; Thapa, 2011). However, the dataset suffers from three key

from the central government. In the five-year period between 2004-05 and 2009-10, district level spending quadrupled (in nominal terms) while central spending doubled. In the period, foreign grants and loans constituted over 90% of the funding for district-level expenditures (Ministry of Finance, 2009).

limitations for this dissertation. Firstly, the data come from the 2004 academic year, which makes it outdated for studying whether public schools have been impacted by the significant recent expansion of private schooling in Nepal. Secondly, since the dataset was not focused on competition, it does not capture data on school policies and perception questions that relate to public-private differences and competition. Thirdly, since the sampling strategy was focused on national representativeness, the dataset could not have captured the diversity of competitive experiences within each locality. These are important shortcomings for my dissertation approach, which is based on the argument that we need a better understanding of how competition is experienced locally (Betts, 2009; Lubienski and Weitzel, 2010; Miron, 2010).

The primary data collection addresses these issues in the following ways. Firstly, I administered a principal survey which collected relevant information on competition measures, school policies, and perception questions. The principal survey allowed me to investigate the questions raised in the conceptual framework more thoroughly from the school principal's perspective. Survey data was collected from every public secondary school that had students who participated in the School-Leaving Certificate (SLC) exam in 2008 in the two districts of study. Secondly, I conducted a variety of interviews with national, district and school-level officials in the two districts of study, and in a set of other diverse districts. The extensive qualitative data collection allowed me to gain multi-level stakeholder insights. Even though the questions were focused on how public schools were experiencing and responding to competition, the answers also come from adequate investigation of private schools, government officials, and parent perspectives on the issue.

Besides the primary data collection, I also gained access to the Nepal school-level national records in education, and detailed district level records on private school fees and establishment histories in the two main districts of study. The annual national records were essential to be able to understand the extent of private market share, and the trends in enrollment

and demographic characteristics of public and private schools. The district level records were needed to capture the historical evolution of privatization and the diversity of private schooling. These extensive datasets on schooling characteristics have not previously been made available outside the district education offices for analytical purposes.

Research Sites

Selected Districts

Within Nepal, the in-depth data collection for the research study was completed in the two districts of Kathmandu and Chitwan. These districts were chosen because they represent contrasting but fairly high privatization contexts in the nation. As shown in Figure 4.2 and Table 4.4, the five other districts (Dadeldhura, Jhapa, Kavrepalanchowk, Mustang, Sarlahi) that were selected for supplemental analysis come from diverse ecological belts and have varied population characteristics (CBS, 2008). As displayed in Figure 4.3, these districts vary substantially in schooling performance and the extent of education privatization. That is, in contrast to national discussions, there are districts with few private schools that are also performing quite well in meeting the minimum proficiency quality measure.

Kathmandu district contains the capital city, the highest population density, and the most urbanization in the country. The district also has the longest history of privatization and the highest private market share in total enrollment. Thus, Kathmandu exemplifies the extreme privatization scenario in the Nepal context. Its experience may be especially relevant for other districts with major cities such as the other districts in Kathmandu Valley (Lalitpur and Bhaktapur), and Kaski district (Pokhara). Chitwan district includes the largest municipality in the country, Bhaktapur, and is an important economic, social and tourism hub located in the Terai (plains) region of the nation. Most of Chitwan is uninhabited as it contains forests and major wildlife reservations. Compared to Kathmandu, Chitwan is much smaller, it is still urbanizing, and its population density is significantly lower. However, it is a region that has experienced

substantial, more recent privatization. Chitwan may be representative of about ten other districts that have medium-sized and growing urban regions and relatively large rural areas.

Chitwan and Kathmandu share similarities in terms of demographic composition. While it used to be a historically Newar (Tibeto-Buddhist ethnic group) region, the capital city of Kathmandu has routinely experienced significant migration from throughout the country, making it a true sociocultural melting pot (CBS, 2011). In the 1950s and 1960s, Chitwan districts underwent substantial deforestation and malaria eradication, and the government encouraged habitation in the region. The initial settlers came from throughout the country and thus Chitwan is also populated with significant linguistic and ethnic diversity. Chitwan and Kathmandu are the two most socially and politically aware districts in the country. The in-depth investigation of these two districts provided me with an understanding of how public schools are likely to respond in regions that experience high and growing exposure to private schools. Moreover, the fact that all public schools in the districts have been surveyed meant that I was able to gain insights from rural regions in the two districts, which makes the analysis relevant for the remaining districts that have primarily rural populations.

Of the other five study districts, Mustang is a sparsely populated, relatively inaccessible mountain district but is relatively wealthy due to adventure and religious tourism. Jhapa and Sarlahi are populous regions in the plains (Terai) of the country. While Jhapa has relatively progressive indicators, Sarlahi in the central plains has one of the lowest official percentages of private schools, and suffers from one of the highest gender disparities in the country.

Kavrepalanchowk and Dadeldhura represent hilly districts of the country. Kavrepalanchowk benefits from being located right next to the Kathmandu valley and thus has significantly developed infrastructure and education access. On the other hand, Dadeldhura is in the far-west part of the country, is primarily rural, and has limited economic growth opportunities. Thus,

these districts represent the ecological and economic diversity in the country, and are helpful as comparisons to the experience of competition in the two main study districts.

Datasets from Primary Data Collection

Principal Survey

A principal school survey was administered for this dissertation to principals under my supervision between July and September, 2011. The types of data collected included data on competition measures, school policies, perception questions, and education indicators. The key data components of the principal survey are outlined in Table 4.5, and discussed in greater detail in each results chapter. One of the initial decisions that I made was to restrict the analysis to the impact on public secondary schools because the only major performance assessment conducted in Nepal is at the end of high-school (10th grade), called the school-leaving certificate (SLC) examinations. I decided to survey principals since they are the main officials who are responsible for school decision-making. In the figures and tables for all chapters, I will reference this source as “Principal Survey” for simplicity.

Survey instrument design. The survey questions, particularly on school policies, were developed by primarily referencing Rouse et al. (2007)’s study on Florida and the Nepal SLC study questionnaire (MoES, 2005). I developed additional perception questions on public-private differences and motivations and expectations from competing with private schools based on my contextual knowledge, and initial qualitative fieldwork from Summer 2010. The instrument was finalized after discussions with key school principals and a formal pre-testing in June, 2011. The survey was then administered by 20 enumerators from a contracted firm.

Sampling design. The sampling frame for data collection was the list of secondary schools that had participated in the high stakes secondary examination in 2008 – 2009 academic year (Nepali year 2064). The sample was a census of the public secondary schools and a randomly stratified sample of private secondary schools. The sample consists of 212 public

schools (145 Kathmandu public schools, 67 Chitwan public schools) and 81 private schools (58 Kathmandu private schools, 23 Chitwan private schools). The rationale for collecting data on a census of public schools was to capture the diversity of experiences with competition throughout the two districts. The private school sample is primarily used to illustrate the differences between public and private schools in policy adoption and principal perceptions. There was a 100% response rate from public schools for the sections on competition measures, perceptions and policies. A random replacement procedure was followed in case of non-response from the private schools.

Data on competition. The school principals were asked to identify the number of private and public primary, lower secondary and secondary schools within one kilometer¹⁴ of their school. The data was used to define one of the objective measures of school competition, geographic proximity. School principals were also asked for their subjective opinion on their competition. They were asked for the names of up to three competitor schools. Public schools that identified at least one private school as a competitor could be defined as public schools that subjectively experience competition. They were also asked to name up to three of the best secondary schools in their district.

Data on school policies. School principals were asked whether or not they currently implemented policies on recruitment and promotion, other policies to make schools more attractive, policies on instructional time, attempt to reduce student and teacher absenteeism, policies to improve teacher quality, parental participation, and enhance selectivity in the admission process. They were asked the questions as a binary outcome (yes/no) and also asked the year they started that policy (the retrospective data), and which grades (grades 1 through 10) they were implementing the policy. The enumerators noted that principals would often ask for

¹⁴ I was debating between using one kilometer or a ten minute walk to proxy geographic proximity. I was advised by the survey firm to use one kilometer during the survey finalization process.

the assistance of other school officials to ensure accuracy of their responses, especially if they had not worked at the school for a long time.

Data on perceptions. The data on perceptions include questions on school decisionmaking, school climate and environment, public-private differences and the expectations and motivations of public schools to compete. School principals were asked to respond to these questions on a 4-point ordered Likert scale. Based on field visits, it appeared that principals were more likely to err on the side of mildly agreeing with the questions. Thus, they were less likely to strongly agree or disagree with the responses.

Statistical indicators. School principals, with assistance from the school accountants or other teachers responsible for school accounts, were interviewed to put together some key statistical data on enrollment, demographics, school performance, selectivity, fees, and school finances for the past three years. The survey also attempted to collect data from ten years ago but most of the schools were unable to provide that information. Most of the data, except for data on student selectivity, are supposed to be compiled for the national records. The rationale behind collecting the data through the school survey was to ensure a high response rate for important variables.

Qualitative Data

I collected all of the qualitative data. In the exploratory phase (Summer 2010), I conducted interviews with a few national policymakers (Department of Education), district officials (District Education Office) and visits to three public schools each in Kathmandu and Chitwan, and Jhapa, Mustang and Kavrepalanchowk districts to understand public school functioning and the key issues plaguing public schooling. In the Summer of 2011, I had narrowed my research questions to focus on public school decision-making and the experience of private competition. In Kathmandu and Chitwan, I conducted a detailed study which included discussions with district officials, local level district officials (resource persons), and interviews

with principals. I additionally visited two other districts, Sarlahi and Dadeldhura, and interviewed district level officials and four public and private school principals to understand the privatization and competitive environment in those districts. I also had discussions with a larger group of other national policymakers in the Department of Education, Ministry of Education, and National Curriculum Development Center.

In the tables and figures, I refer to detailed data collected from Kathmandu and Chitwan as “Qualitative (In-Depth) Dataset” for simplicity. I refer to the qualitative data from the five districts and the national policymakers as the “Qualitative (Supplemental) Dataset” for simplicity. Other qualitative data used for the analysis include field notes, policy documents provided by schools and district officials, and news articles pertaining to public school competitiveness. The qualitative data sample and key discussion topics are summarized in Table 4.6.

The interviews were conducted in a semi-structured manner. The interviews with national level officials focused on the historical evolution of private schools in the nation, public school actions in response to competitive pressures, the differences between public and private schools, the effectiveness of school reform efforts, the constraints faced by public schools, and their opinions on school financing policies. My interviews with the district level and local level officials were more specific since our discussions focused on similar topics but were limited to their district or their location. At the school-level, I initiated the interview with the school principal or available senior official with questions on the historical changes experienced by the school. The interviews then covered other relevant issues such as the evolution of privatization in the region and its impact on the school, their opinions on privatization and recent school policies, the reforms that they have undertaken recently, and the constraints they face while trying to improve the school.

Location and school selection within Kathmandu and Chitwan. In order to conduct more in-depth analysis in local settings, I selected three regions each within Kathmandu and Chitwan. These regions (an older city location, a newer city/semi-urban location, and a rural location) represented variations in schooling and economic contexts within Kathmandu and Chitwan districts. The locations were selected based on the earlier discussions with local education experts, and initial fieldwork. I used geographic proximity and resource center location in order to identify a plausible local education market as it is likely that parents strongly factor in distance from home while making schooling decisions. The resource center is the most disaggregated level of the education bureaucracy in Nepal and one resource person is in charge of the resource center and monitors and caters to the needs of the area's public and private schools.

The main city area in both districts consists of populations that have historical ties to the community, and feature some of the oldest schools and neighborhoods, and the earliest transportation and industrial development. The semi-urban regions are regions that were more recently urbanized. In Kathmandu, the semi-urban region is substantially populated while in Chitwan it is a much more recent population and urban center. The rural region is considered relatively remote and is more sparsely populated. The rural region selected in Kathmandu is on the outskirts of the major city and has a higher share of migrants, while the rural region selected in Chitwan is a remote village area close to the major forests with historically disadvantaged populations.

The strategy was to select a diverse set of four to six public and private schools that were geographically close enough to each other to be considered as schooling choices for the people living in the community. The final school selection decisions were made through a series of discussions with local education officials and exploratory analysis from the Summer of 2010. Since I went through a prolonged selection process, I believe that I have sampled schools that

provide a relatively accurate sense of most of the variation of options available to local middle and lower class parents in those locations.

Parent Survey and Focus Groups

The data on parent decision-making¹⁵ was collected from focus groups and parent surveys in the two districts of Kathmandu and Chitwan. Parent surveys were collected from 30 parent meetings conducted in urban, semi-urban and rural locations with sixth grade parents between June and September 2011. A team of eight survey enumerators administered brief surveys to the parents to gather data on basic parental characteristics and their responses on the reasons they chose the school, the other schools they considered, the reasons for private school attraction, their satisfaction with the school, and their involvement in and knowledge about their children's education. I conducted the focus groups myself. The focus group protocols were focused on similar themes, but allowed for less limited, specific examples to the research questions.

Datasets from Secondary Data Collection

There are six secondary sources of quantitative data that have been used for analysis in the dissertation: (1) the national school level records on education based on the Education Management Information System (National EMIS data); (2) the national school level records on the high-stakes School leaving certificate examinations (National SLC data); (3) population and community characteristics from the Population Census (National Census data), (4) district records on private school fees and establishment years from Kathmandu and Chitwan (District private school records), (5) National Living Standards Survey (NLSS) reports, and (6) the School-Leaving Certificate (SLC) 2004 study.

¹⁵ While the parent dataset is not explored fully in this dissertation, the data has been used briefly for descriptive purposes in some of the chapters. For a detailed description of the parent decision-making research design and literature, see Joshi (2013).

National EMIS data: The Education Management Information System (EMIS) is used nationally to produce annual¹⁶ reports on national schooling trends (student, teacher and infrastructure characteristics) on all public and private K – 12 schools. I use the Flash reports that provide district-level aggregates for national descriptive statistics on student characteristics. I use the Flash school-level dataset for the quantitative analysis. I used the data to compute another measure of competition – the private market share in enrollment at the disaggregated local levels (VDCs and wards). I also use it to define some of the control variables on school efficiency, teacher characteristics and infrastructure that are used for the regression analysis¹⁷ (MoE, 2012b). In the tables and figures, I refer to “Flash reports” and “Flash dataset” to denote the EMIS data being used for simplicity.

National SLC data: The Office of the Controller of Examinations publishes the school leaving certificate (SLC) examinations results (high-stakes examination outcomes). In recent years (since 2062 (2005-06)), they have been producing books with school-level data on the high-stakes examinations. I manually scanned the data for the research. These books contain district-level data, and data on the average school-level examination scores in the six compulsory subjects (English, Nepali, Mathematics, Science, Social Studies, and Health, Population and Environmental Education); the number of students who appeared in the examination, number of students who passed the exam (scored over 32%), the number of students who failed (scored less than 32%); and the number of students who scored in different percentage ranges. These data are

¹⁶ The data system was initiated in 2003. However, my discussions with officials suggested that credible data from the dataset are available from the 2007 academic year¹⁶.

¹⁷ The data collection process is as follows: these data are filled out in paper forms by the school officials twice a year (Flash I and Flash II), and submitted to the District Education Office. The data are then compiled through the use of an online reporting system by appointed school supervisors in each District Education Office. The data are further compiled at the national level by the Department of Education EMIS office and used to produce the Flash I and Flash II annual reports on the education system. The types of data collected include student characteristics, teacher characteristics, school infrastructure, school inputs, and school finances. At the beginning of the year, finance data from the previous fiscal year are collected – for instance, at the beginning of the 2011-12 academic year in April-May, the 2010 fiscal year finance data are collected.

used for outcomes analysis and to describe school variations in policy adoption and other characteristics by academic performance (OCE, 2009; OCE, 2010; OCE, 2011; OCE 2012). In the tables and figures, I refer to “SLC reports” and “SLC dataset” to denote the EMIS data being used for simplicity.

National census data: The general level of community awareness and wellbeing are also likely to affect a host of aspects such as decision for private school entry and pressures on the public schools to stay competitive. I use data on population growth rate, migrant population and literacy rates for district-level descriptive statistics. I use village development committee level disaggregated literacy rates from the 2001 Census (CBS, 2002) for the regression analyses. In the tables and figures, I refer to these data as “Census Data” or “Census Reports” for simplicity.

District-level records: Data was collected through the district education offices directly since the national school records did not include information on private school fees and the year of school establishment. These data were manually entered from hard copy records from district education offices. These data provide a sense of how private schools have expanded in the two districts of study, and a sense of the diversity in school fees in the country (DEO, Kathmandu 2012; DEO, Chitwan 2012). In the tables and figures, I refer to the dataset as “District Records” for simplicity.

National living standards survey data: I utilize various reports that utilize the national household survey (1995-1996, 2003-04, and 2011-12) to provide household-based information on education participation rates, household expenditures, and the linkages between poverty and education. I utilize published reports and some descriptive analysis of the survey data for this purpose. I refer to the dataset as “NLSS Reports” or “NLSS Data” for simplicity.

SLC study 2004 data: I utilize the nationally representative, comprehensive survey of institutions, teachers, students, and parents conducted in 2004 to provide some of the baseline indicators of the national status of policy adoptions (e.g. English medium, coaching classes). I

conduct some brief descriptive analysis for this purpose. I refer to the dataset as “SLC study 2004” for simplicity.

Methods

I utilize qualitative and quantitative procedures to answer the research questions posed in the dissertation. The mixed methods approach allows me to present analysis that focuses on the representativeness of the competitive experience while at the same time highlighting the contextual characteristics of the process. I briefly summarize the methods utilized in the dissertation here, and discuss the techniques in more detail in the respective chapters.

For the qualitative analysis, all of the interviews were transcribed and translated, and then coded using a structured approach for themes and patterns by research questions in each chapter (Yin, 2010). I was able to use the principal interviews to compare variations in thematic emphasis between public and private schools, rural and urban regions, and between districts. Using the district and local official interviews, I was able to compare rural and urban regions, and Kathmandu and Chitwan districts. I was additionally able to contrast principal, local government official, and national level officials’ perspectives on these themes.

For the descriptive analysis, I utilize the relevant national and district-level records from the Flash reports, the SLC reports, the Census reports, the district records, and the principal survey. In each chapter, I present a variety of relevant descriptive statistics such as measures of central tendency, scatter plots, bar graphs, and correlations.

For the quantitative analysis, I utilize a school-level dataset that has been put together using the principal survey and the Flash dataset, SLC dataset and the Census dataset. I refer to the dataset as “Combined Quantitative Dataset” in the regression results in the results chapter for simplicity. The dataset includes data on schooling characteristics, policies, student outcomes, and community covariates for the 212 public secondary schools in Kathmandu and Chitwan that were part of the principal survey sample. The variables that are used in the quantitative analysis

were finalized after utilizing missing imputation techniques¹⁸ and conducting descriptive analysis. In each chapter, I utilize OLS, logit and ordered logit regression techniques, depending on whether the dependent variables are continuous, ordered categorical, or binary variables respectively.

The final chapter on outcomes is the only chapter that conducts longitudinal analysis using four years of data. In this chapter, I analyze the test score outcomes and enrollment data using random and fixed effects regressions. I also use instrumental variable strategies on the test score outcomes data to improve causal inference. The final chapter utilizes two versions of the Combined Quantitative Dataset. One set of analysis is based on school-level data, and referred to as “Combined Quantitative Dataset – School-level Sample” in the tables. The school-level sample is equivalent to the sample used in the analysis for Chapters 5, 6, and 7. The other analysis in Chapter 8 is based on the locality-level, and is the same dataset that has been aggregated to the locality level. This dataset is referred to as “Combined Quantitative Dataset – Locality-level Sample.”

¹⁸ I utilized predictive mean matching to multiply impute the covariates, which were less than 5% of the sample. Since the data do not change substantially with the imputation, the results without the imputed data points are not presented here.

Chapter 4 Figures and Tables

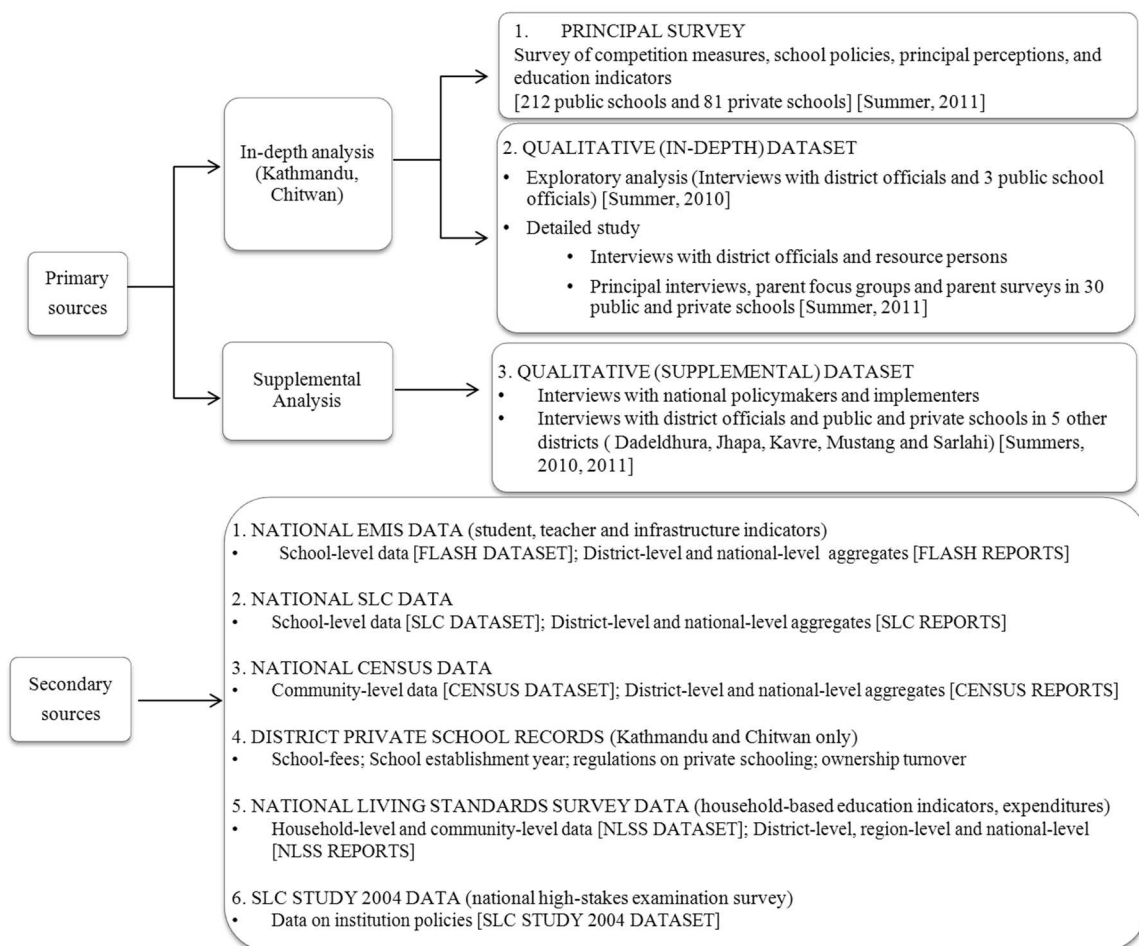


Figure 4.1 Data sources

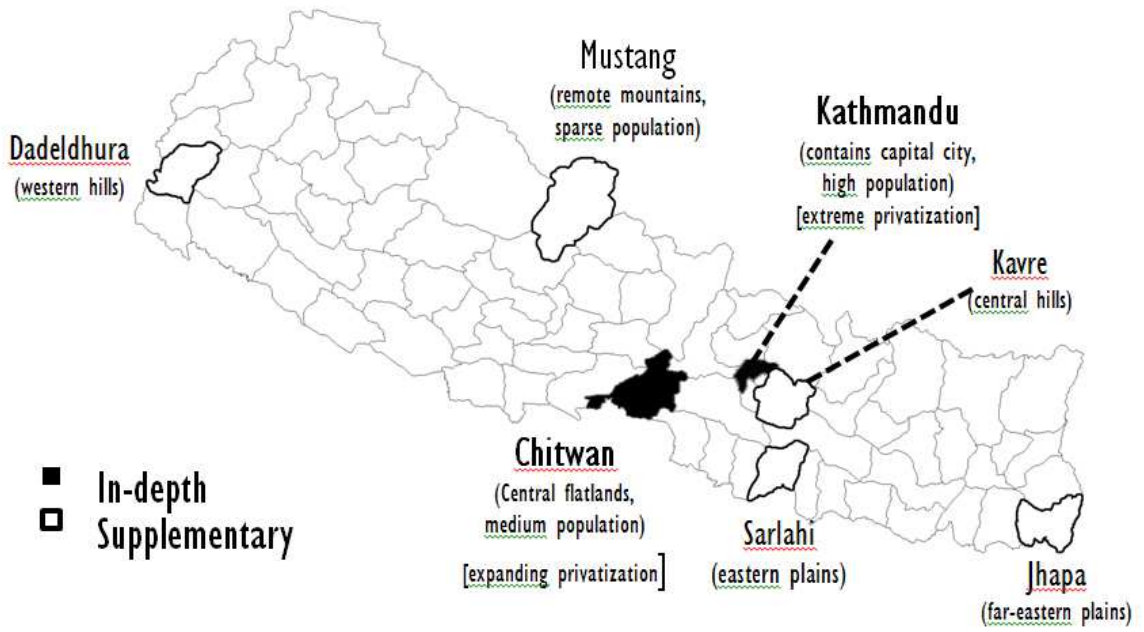


Figure 4.2 Districts of study

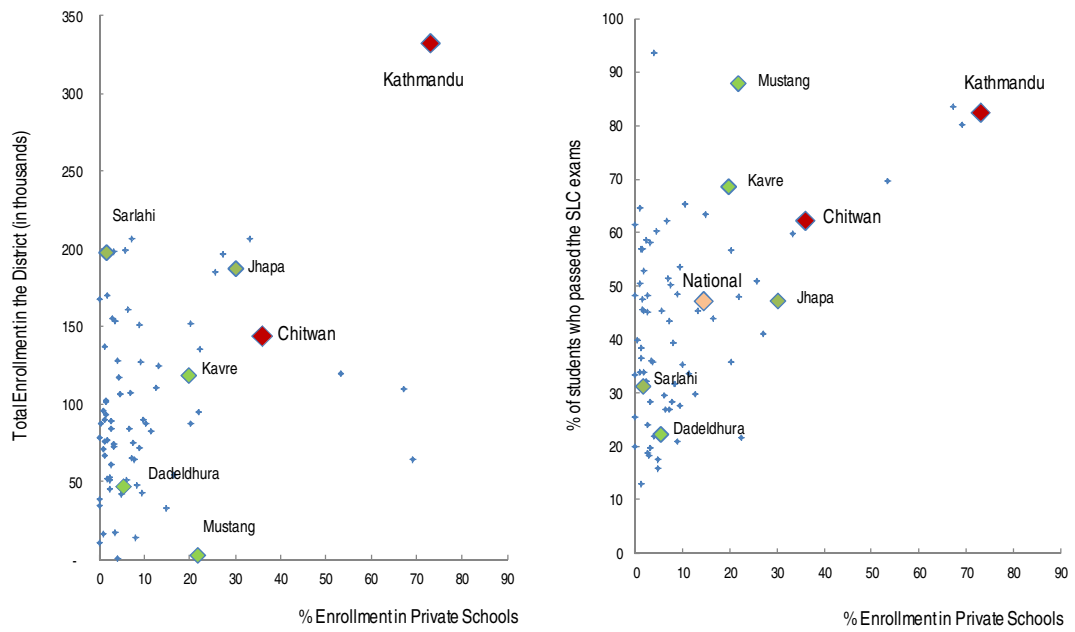


Figure 4.3 District-level schooling characteristics, 2011-12 (enrollment, private share, SLC pass percentages)

Sources: Flash Reports and SLC Reports.

Table 4.1 Incidence of poverty in Nepal

	1995-96	2003-04	2010-11
National poverty rate	41.8	30.8	25.2
Rural	43.3	34.6	26.4
Urban	21.6	9.6	15.5
Development regions			
Eastern	38.9	29.3	21.4
Central	32.5	27.1	21.7
Western	38.6	27.1	22.3
Mid-western	59.9	44.8	31.7
Far-western	63.9	41	45.6
Ecological belts			
Mountains	57	32.6	42.3
Hills	40.7	34.5	24.3
Terai	40.3	27.6	23.4
Years of schooling			
illiterate	50.9	42.0	33.5
5 or less	35.7	28.2	27.0
6 - 7	28.5	23.3	19.5
8 - 10	19.8	8.4	12.9
11 +	11.4	1.6	7.1

Sources: CBS, 2006 and CBS, 2012.

Note: The consumption aggregate based poverty line has been recomputed in 2010-11 given the fact that food and non-food consumption patterns have changed drastically since the poverty line was first estimated in 1995-96.

Table 4.2 Reasons for never attending school, 6 to 24-year olds

	% of 6 to 24 year olds who have never attended school		Self-reports of key reasons for not attending school (% of students who never attended school)					
			<i>Schooling was too expensive</i>		<i>Parents did not want the student to go to school</i>		<i>Had to help at home</i>	
	1995-96	2010-11	1995-96	2010-11	1995-96	2010-11	1995-96	2010-11
Total	36.3	8.7	19.8	7.3	29.9	30.0	20.7	25.5
Male	22.3	4.8	25.0	6.8	16.8	14.5	19.0	13.5
Female	49.8	12.0	17.6	7.5	35.5	35.3	21.4	29.6
Urban	16.3	4.3	29.5	8.6	23.6	27.9	17.1	18.2
Rural	38.0	9.7	19.5	7.2	30.1	30.2	20.8	26.3
Poorest Quintile	58.1	16.6	23.0	8.6	26.6	29.1	19.3	24.2
Richest Quintile	13.4	2.2	11.6	4.8	23.6	30.7	23.6	28.5

Sources: NLSS reports. CBS 1997, CBS 2012b.

Note: For 1995-96, the definition of “help at home” included work for home and businesses, which may have resulted in more responses from boys in 1995-96.

Table 4.3 Self-reports of key reasons for dropping out of school, 6 to 24-year olds
(% of respondents who had dropped out of school)

	<i>Had to help at home</i>		<i>Too expensive</i>		<i>Poor academic progress</i>		<i>Parents did not want it</i>	
	2003-04	2010-11	2003-04	2010-11	2003-04	2010-11	2003-04	2010-11
Total	26.8	22.0	11.5	6.5	31.6	24.6	8.5	7.4
Urban	23.1	18.1	15.7	7.0	33.4	23.0	6.1	5.4
Rural	27.5	23.0	10.7	6.3	31.3	25.0	8.9	7.9
Poorest Quintile	27.1	27.6	19.4	11.3	29.3	18.2	7.5	10.0
Richest Quintile	22.7	17.1	8.9	3.9	33.3	25.8	7.0	6.2

Sources: NLSS reports. CBS 2004, CBS 2012b.

Table 4.4 Population characteristics of the study districts

	<i>Annual Population Growth rate (2001-11)</i>	<i>Population density (sq. km.) (2011)</i>	<i>Total population (2011)</i>	<i>% absentee population (2011)</i>	<i>Average household size (2011)</i>	<i>Literacy rate (can read and write, six years and older) (2001)</i>
Mustang	-0.82	4	13, 799	10.7	3.96	51.2
Dadeldhura	1.15	92	141, 543	8.3	5.12	47.6
Chitwan	1.83	255	566, 661	8.6	4.27	64.3
Kavre	0.11	279	389, 959	3.7	4.5	53.3
Sarlahi	1.90	611	768, 649	2.7	5.49	32.9
Jhapa	1.64	505	810, 636	9.9	4.3	63.7
Kathmandu	4.76	4408	1.74 mill	5.6	3.7	77.2
Nepal	1.4	181	26.6 mill	7.1	4.7	38.0

Sources: Census Reports, 2001 and 2011.

Table 4.5 Primary quantitative data: key components of the principal survey

Sections	Data
1. Competition Measures	<ul style="list-style-type: none"> Geographic proximity (number of private secondary schools that are within 1 km walking distance from the school) Subjective definition of competition (1 = if public school mentions at least one private school when asked to list up to three schools that they are in competition with)
2. School Policies [whether they have currently adopted the policy or not; when they start adopting the policy (recall year); which grade levels have they adopted the policy for (between grades 1 through 10)]	<p><i>Private-mirroring Strategies</i></p> <ul style="list-style-type: none"> Adding English medium of instruction Providing Computer Education Adding Ties and Belts to School Uniforms Providing Homework diaries <p><i>Quasi-private instruction focused strategies</i></p> <ul style="list-style-type: none"> Tutoring sessions for high-stakes examination (general and targeted to weaker students) Add instructional time (lengthen school day, add days for those lost to strikes, keep school operational for some time during vacations, provide added lessons for weaker students) Measures to enhance control over teacher performance (monetary incentives, efforts to reduce teacher absenteeism) <p><i>Quasi-private non-instructional strategies</i></p> <ul style="list-style-type: none"> Promotional strategies (advertising in TV or newspapers; develop promotional materials) Strategies to enhance selectivity in the admission process (take entrance examinations, take initial admission fee, interview parents)
3. Perception Questions	<p><i>School decisionmaking:</i> (from no influence to complete control)</p> <ul style="list-style-type: none"> Influence of stakeholders in appointing new teachers, evaluating teachers, deciding how the budget will be spent, in monitoring teacher absenteeism and student absenteeism <p><i>School climate and environment:</i></p> <ul style="list-style-type: none"> Questions on staff morale and parental involvement (from not at all accurate to very accurate) Student role in disrupting the environment (from never to often) <p><i>Statements regarding Public-private school differences:</i> (from strongly disagree to strongly agree)</p> <ul style="list-style-type: none"> what is attractive about private schools to parents principal opinion regarding privatization differences between public and private schools <p><i>Statements regarding Expectations and motivations of public schools to compete:</i> (from strongly disagree to strongly agree)</p> <ul style="list-style-type: none"> Incentives to compete Required changes and expectations from changes Factors that affect schools' ability to compete
4. Education Indicators	<ul style="list-style-type: none"> School-leaving examination scores; student enrollment; student selectivity; student fees; income and expenditures
<i>Sample</i>	212 Public Secondary Schools and 81 Private Secondary Schools [Kathmandu and Chitwan districts]

Source: Principal Survey.

Table 4.6 Primary qualitative data: key discussion themes and study sample

Research Questions	Sub-topics of semi-structured discussions
1. On Competition (historical evolution of school and privatization environment)	<ul style="list-style-type: none"> • Historical evolution of the public school in terms of demographic characteristics of student body; enrollment; performance • Historical evolution of privatization environment • Discussion regarding impact of specific private schools
2. On School Policies (what the school has adopted, and what it still needs to)	<ul style="list-style-type: none"> • Perceptions of key public-private policy differences • What the school has adopted • What it needs to adopt in terms of policies
3. Motivations and Constraints (what motivates or constrains the schools' actions)	<ul style="list-style-type: none"> • Political influence in school decisionmaking • Bureaucratic interference, lack of monitoring • Opinions on the efficacy of key education policies • Community support • Parental awareness/ education consciousness • Principal leadership • Financial and personnel resources • Specific Examples of difficulties faced while implementing certain policies
4. Impact on outcomes (linkages between policies and outcomes)	<ul style="list-style-type: none"> • The long-term reasons for outcomes success (in terms of student enrollment and student performance) • Specific policies that have led to improvements in outcomes, or should lead to improvements in outcomes
<i>Sample</i>	
• National interviews	8 interviews
• District level public and private school officials	15 interviews
• Local education officials	7 interviews
• Public school principal interviews	30 interviews
• Private school principal interviews	22 interviews
• Parent focus groups and surveys	28 focus groups 147 parent surveys

Sources: Qualitative (In-Depth) dataset and Qualitative (Supplemental) dataset.

Notes: These topics were broadly discussed at the national level, and the discussion became more specific at the district and school levels. The table does not include an exhaustive list of all discussion themes but rather the themes that are most important for the dissertation analyses.

CHAPTER 5

THE EXPERIENCE OF COMPETITION

Abstract

This chapter addresses how public schools experience competition from private schools in the Nepal context. I argue that experiencing competition is a necessary starting point for public schools to feel the need to initiate reforms to compete with private schools. I utilize quantitative and qualitative data to elucidate how the experience of competition is linked to the extent of privatization, school and community characteristics and principal perceptions. I find that there are key temporal and demographic dimensions that determine the public school's experience of competition and their ability to respond with reforms. Public schools were shielded from experiencing substantial competitive pressures throughout the early phase of privatization (1980s and 1990s) because of growing populations and mass education expansion. Competitive pressures on public schools intensified in the 2000s due to rapid private sector growth, public school enrollment declines, and an accountability mechanism tying financing to enrollment. However, unregulated privatization allowed for long-term sorting of higher SES students out of public schools, which resulted in the stigmatization of urban public schools. The most negatively affected public schools are unlikely to be able to compete with private schools regardless of the severity of newly established accountability pressures. Moreover, the analysis of principals' subjective experiences suggests that despite growing privatization, many public school principals do not view private schools as competition because they may believe that private schools function in separate, parallel systems or that private schools do not really provide better quality. Since the historical evolution in demographic trends and public school stigmatization is a phenomenon that is likely to be found in other developing countries, policymakers need to be mindful of the role played by stigmatization of public schooling in how public schools can react to accountability pressures and compete.

Introduction

I describe the circumstances under which public schools experience competition in this chapter. I argue that public schools need to sense competitive pressures in order to feel the need to respond with policy improvements. I address the following research question in the analysis: How do public schools experience private competition? I first provide a thorough account of objective measures that would determine competition, such as the number of private schools in their locality and the accountability mechanisms that put incentivize public schools. I then highlight the subjective experience of competition, such as the principal perspectives on their school's historical experience with competition, and the characteristics of the public schools that identify private schools as competitors.

I will show that private schools have grown rapidly in the past decade, due to higher parental demand and ease of market entry into the private sector. I will then argue that public schools have recently begun to face more pressures to compete with private schools because they face enrollment declines and are now funded by a new accountability system which ties financing to enrollment. However, I will also show that principal perspectives indicate a more complicated experience of competition. I find that the public schools' historical experiences with privatization vary by the local context, and that stigmatization of public schooling is more of an issue in urban areas. When asked to identify competing schools, public school principals selected public schools that have higher enrollments than their school, and only about half of them mentioned nearby private schools. Over two-thirds of the public schools only mentioned other public schools as being among the best schools in the district. The public schools that were identified as the best schools were more selective, more expensive, and had higher test scores and higher enrollment than the sample schools. The fact that not all public schools view private schools as competition or as among the best schools in their district may indicate a lack of private schools in their proximity, the belief that private schools are governed by different

regulatory mechanisms, or principals' assessment that private schools really are no better in terms of quality.

Conceptual Framework and Research Questions

The literature and conceptual framework demonstrated that a multi-dimensional approach would be required to comprehensively describe the experience of competition. The quantitative literature suggests that public schools are expected to feel competitive pressures if there is a high private share of enrollment in their region (private market share) or if they are located near more private schools (geographic proximity). However, as discussed in the conceptual framework, there are a variety of initial policy conditions, locality and school characteristics that may obscure how the public schools actually experience competition, regardless of the number of private schools around them. To reiterate, some of these conditions include whether the districts and the school are suffering from enrollment declines, whether they are facing accountability pressures, and the characteristics of the students who are leaving for private schools. For instance, a school that is located in a context with overcrowding and teacher shortages may welcome the addition of new schools to abet their enrollment pressures rather than perceive them as a competitor that requires a systematic response. The literature posits that there is a need to conduct in-depth, qualitative analysis in districts and schools to gain a thorough understanding of how schools have experienced competition in their local education markets.

Despite the growth in private schooling in Nepal, there is very little detailed descriptive work that explains how private schools have expanded and diversified. Additionally, the research on Nepal has primarily focused on highlighting public-private differences, effects on public school outcomes, or describing the dysfunction in the education sector (Caddell, 2007; Carney and Bista, 2009; Thapa, 2011). Consequently, there is scant research that approaches the question from the public school perspective, illuminating how public schools have been affected by competition through statistical indicators or officials' own perspectives.

Bearing the framework and research gap in mind, the chapter addresses the following research questions:

- (1) What is the extent of private competition experienced by public schools in Nepal?
- (2) What are the other pressures faced by public schools that mediate their experience of a competitive threat?
- (3) How do public school principals view their schools' experiences with privatization?
- (4) What are the characteristics of the schools that public schools identify as competition or as the best schools in the district?

Data and Methods

Data

For the analysis, I triangulate data from national living standards surveys, school-level records, district-level records on private schooling, a survey of public school principals, policy documents, and interviews with government officials and school principals. Details on the primary and secondary data are presented in Chapter 4: Data and Methods¹⁹. A summary table of data sources used in the chapter is presented in Table 5.1²⁰.

Measures of Competition

The main objective measure used to describe the growth of private schooling in the descriptive analysis is the market share of private schools in total enrollment. I utilize the private market measure at the national level to show district level variations, and within the districts of study to show intra-district variations (Flash Dataset). I additionally utilize other objective and subjective measures of competition that were based on the primary survey data collection to

¹⁹ Please refer to Figure 4.1 in the Chapter for a Data Map.

²⁰ The primary quantitative data is referred to as “Principal Survey” and the qualitative data is referenced as “Qualitative (In-Depth) Dataset” and “Qualitative (Supplemental) Dataset” in the tables and figures for simplicity.

more comprehensively capture the extent of competition faced by the public secondary schools of Kathmandu and Chitwan (Principal Survey).

The geographic proximity measure of competition was defined as follows: the school principals were asked to mention the number of private secondary schools²¹ that were located in close proximity (within a one kilometer walk) of the public school²². The variable represents a well-known geographic proximity competition measure that is used in the literature, and it was adopted from the 2004 Nepal High-Stakes School-Leaving Certificate (SLC) Study principal questionnaire (MoES, 2005).

I also utilize two measures to capture the subjective experience of competition. The first subjective measure of competition is a categorical variable that equals 1 if the school principal mentions at least one private school when prompted to list three competing schools. A second subjective measure used for the analysis is a categorical variable that equals one if the school principal mentions at least one private school when prompted to list the three best schools in the district. I define these measures as the “competing” school measure and the “best” school measure respectively. I call the two “subjective” measures since the measures should capture the school leadership’s perception of competition and high quality schooling. These subjective measures were designed with reference to Elacqua, Schneider and Buckley (2006)’s approach to analyzing parent decision-making²³. I argue that asking principals to list the best or competing

²¹ Another competition measure was created using the total number of primary, lower secondary and secondary schools. This was a slightly different competition measure but it did not alter the results substantively.

²² The category cut-offs of low, medium and high competition were determined separately for the two districts since the smaller district had far fewer private schools in proximity, and because the relative experience of competition is likely to be district specific.

²³ Elacqua et al. (2006) ask parents to list three schools that they were considering for their children. The researchers argue that asking parents to explicitly mention the schools that they were considering reduces their tendency to provide socially normed responses, which would be expected if one asked them to rank whether school academics or demographics were more important in determining school choice. The authors instead utilize the question on school names to later examine the parent’s true preferences for

schools is likely to reduce their tendency to give a socially normed response on privatization, which could have been expected if I had directly asked them if they thought private schools were competition or among the best schools in the district.

Empirical Strategy

To describe the extent and evolution of privatization in the country, Research Question 1, I utilize reports from the national living standards surveys, school records and high-stakes results databases (referred to as NLSS data, EMIS data and SLC data respectively in Chapter 4). I provide descriptive statistics on principal and parent perspectives on the reasons private schools are attractive to provide an understanding of why there has been substantial private sector growth. I detail the privatization growth in the two districts in Nepal using district records on private schooling characteristics, the policy documents on regulations governing privatization, and interviews with public and private school officials. I conclude the section using the school survey data on competition to show that in these two districts, the public schools are currently surrounded by private schools, and that most regions have high private market share.

To describe the factors that mediate the public schools' experience of a competitive threat, Research Question 2, I utilize interviews with education officials, national school-level records on enrollment, and policy reports to document the evolving policy and competition climate. To describe how public schools have experienced private competition, Research Question 3, I utilize interviews with principals, and the survey items on subjective competition measures. I first present a historical account using interviews with all of the public school principals in the seven districts of study to analyze any discernible patterns in the historical evolution of public schools' experience of private competition. These interviewed public schools provide regional variation as they are located in urban, semi-urban and rural regions in diverse

demographics or academic quality by matching the mentioned schools to national records on school characteristics. I decided to use a similarly posed question to study whether public school principals thought they were competing with private schools.

districts. Finally, to address Research Question 4, I analyze the characteristics of schools that are identified as competition and the characteristics of the public schools that select private schools as competition²⁴.

Models

I model competition measures as a function of school and community characteristics to understand the characteristics of the public schools that are more likely to experience subjective or objective competition. I estimate the association between the competition measures and the school and community characteristics in the two districts of study using the following set of OLS regressions:

$$C_{obj} = \alpha + \gamma P + \delta Z + \varepsilon \quad (\text{Model 1})$$

where C_{obj} represents the continuous competition measures, geographic proximity and private market share, P represents a vector of the explanatory variables, and Z represents a vector of school characteristic controls.

Then, I model subjective competition measures as a function of a categorical transformation²⁵ of the geographic proximity measure and other explanatory variables to run the following logistic analyses:

$$C_{subj} = \alpha + C_{thirsd2} + C_{thirsd3} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 2})$$

where C_{subj} equals 1 if the public school identifies at least one private school as a “competing” school or “best” school in the district, $C_{thirsd2}$ and $C_{thirsd3}$ represents the medium and high competition as measured in terms of geographic proximity (low competition is the omitted

²⁴ I also analyze the public schools that have been identified as “competing” or “best” schools in more detail. Some brief analysis on these characteristics is presented in Appendix 5.1.

²⁵ The continuous variable, the number of private secondary schools within one kilometer of the school, was converted to a categorical variable of low, medium and high competition for use as an explanatory variable in Model 2. The category cut-offs of low, medium and high competition were determined separately for the two districts since the smaller district had far fewer private schools in proximity, and the relative experience of competition is likely to be district specific.

category), P represents a vector of the explanatory variables, and Z represents a vector of controls.

The summary statistics of the competition measures used in the analysis are presented in Table 5.2. The explanatory and control variables, including school and community characteristics and principal perceptions, used in the OLS and logistic analysis are listed in Table 5.3.

As discussed in the Chapter on Data and Methods, the combined quantitative analysis dataset, referenced in the results tables as the “Combined Quantitative Dataset”, is based on the Principal Survey, Flash dataset, SLC dataset, and the Census dataset.

Results

What is the Extent of Private Competition Experienced by Public Schools in Nepal?

Evolution of a national public-private two-tiered education system

Globally, there are a variety of school arrangements in terms of financing and management of school activities that can be classified as falling within the public-private schooling continuum (Berends, Springer, Ballou, and Walberg, 2009; Chakrabarti and Petersen, 2009). In the context of Nepal, public and private schooling have undergone a significant evolution. In the early years of education access (mid-1950s), Nepal’s schooling system used to be entirely community funded and operated. Many of these early “private” schools were supported with the leadership of community leaders and the in-kind and in-cash contributions of the local communities. These developments are probably comparable to initial schooling access in many countries, including the initial development of the U.S. education system in the 17th and 18th centuries (Tyack, 1974). In the 1970s, a decade of nationalization efforts successfully gave rise to the public school concept. Private schools were re-allowed to operate starting in the early 1980s, and truly expanded after the mid-1990s.

The bulk of the schools that are currently labeled as public or “community” schools, over 29,000 schools, are either fully or partially funded by the public sector. They vary in the extent of the district bureaucracy’s control over school management decisions. Most of the other schools, over 5000 schools, operate as for-profit enterprises and are called “institutional” schools (MoE, 2012a). These schools are jointly registered as corporations with the Business registration bureau and are approved by the District Education Office. In addition, these private schools pay a reduced corporate tax rate to the government. Due to the relatively simple private schooling regulatory structure in Nepal, private school entry is largely determined by market potential.

The development of a dual public-private education system has not gone unnoticed in Nepalese politics. In the early 2000s during the Maoist insurgency in Nepal, the private sector became a central political concern (Caddell, 2007). In the insurgency period, private schools were forced to reduce their school fees and change their curriculum, and there were routine calls for banning private schooling altogether. After the Maoist government entered the mainstream, private schools have continued to receive threats. However, it is unlikely that there will be an outright ban on private schooling. The current situation suggests that private schools have continued to thrive despite persistent political pressures; and there does not seem to be much movement to formally improve the relationships between the public and private sectors (Caddell, 2007; Carney and Bista, 2009; Thapa, 2011).

Extent of privatization. Privatization has been documented to be a rapidly growing global phenomenon, including in developing countries in Asia and Africa. Based on World Bank economic classifications and UNESCO statistics, Nepal is one of 39 low or lower-middle income countries (out of 78 with available data) where private schools educate more than 10% of the children in primary schooling (UNESCO, 2012).

There has been significant growth in private school adoption, albeit with substantial urban-rural and economic disparities throughout Nepal. The living standards survey based data

displayed in Table 5.4 show that between 1995-96 and 2010-11, the percentage of children in primary schooling grades (grades 1 through grade 5) attending private schools increased from 5.9% to 20.3% nationally. The private school participation rates divided by expenditure quintiles indicate that private schooling costs are prohibitive for most of the poor. For instance, in 2010-11 over 70% of the top quintile children attended private primary schools, while only 2% of the bottom quintile attended private primary schools. There are stark differences in private school adoption by rural and urban regions, and by ecological belts. The differences between socioeconomic groups in participation rates are not surprising since user fee data computed from household expenditures, displayed in Table 5.5, show that the per-student household expenditures were over ten times higher in private primary schools and over six times higher in private secondary schools compared to public schools in 2003-04. Most families in the bottom quintiles of Nepal would not be able to afford private schooling since on average the costs of a primary secondary school are about two-thirds of the per-capita expenditures of an average household.

Data from the census of all schools in Nepal confirm these trends and disparities. As displayed in Figure 5.1, the available national school records indicate that between the 2003-04 and 2011-12 academic years, the private share of total enrollment in primary and lower secondary grades (Grade 1 through Grade 10) has grown from about 11% to 16% of total enrollment. The data indicate that private adoption in urban areas is at least five times greater than in rural areas. District-level data, shown in Table 5.6, from the seven study districts suggests that private schooling has grown across the board in recent years²⁶.

²⁶ There are a few caveats regarding data quality in utilizing these district-level trends data. Due to the limited oversight on private schools, it is possible that private schools may have been in operation but that their information was not recorded each year. Secondly, some anecdotal discussions with officials and experts has suggested that there may be duplication in student records – for instance, enrolling the same child in two public schools to get government scholarship benefits; or enrolling a child in a public school but educating them in a private school. Finally, the quality of records may vary substantially across

Private sector growth and fee-based diversification in Kathmandu and Chitwan. The detailed data from Kathmandu and Chitwan confirm that there has been substantial growth in private market growth and some diversification in school fees. The number of private schools has expanded particularly strongly after the advent of democracy in the early 1990s, as demonstrated in Figure 5.2. These data suggest that while 100 schools opened between 1980 and 1990, an additional 200 schools opened in the 1990s alone. What is striking is the fact that there continues to be a growth in the number of private schools even in the past decade. As a result, as shown in Figure 5.3, most of the localities in Kathmandu and Chitwan have seen a growth in the private market share of enrollment between 2006-07 and 2011-12.

It is also important to analyze whether there is any diversity of private schooling options. In Nepal, the main advantage of public schools is that they are supposed to be the cheaper alternative. While there has been a historical presence of elite private schools in all of the study districts the availability of cheaper options would make private schools more desirable to lower income families. Indeed, a common refrain from all officials, parents and principals was that even poor people had started sending their children to private school. The first grade school fee data described in Figure 5.4 from Kathmandu and Chitwan confirm that newer private schools, established between 2000 and 2012, are relatively more affordable than those that were started earlier. The fee diversification is clearer in the larger Kathmandu market. The higher fees of older private schools are likely to be a result of reputation and school longevity. Still, while the newly established schools are more affordable than older private schools, the fees are still not comparable to the school fees of public schools. Most public schools do not take any fees in Grade 1. Furthermore, as shown in Table 5.7, their fees are very low compared to private school fees even in Grade 9 though they are allowed to take fees at the high school level.

districts and the prevalence of private schooling may be much higher than documented in the official statistics.

These descriptive statistics indicate that there is robust private sector growth and substantial variation in private market share penetration in the country. The detailed data from Kathmandu and Chitwan confirm that there has been significant growth in private market share and some diversification in school fees.

Implications for public school's experience of competition. Clearly, private schools have grown significantly since the early 1990s, particularly in the two districts of study. The growth in private schools should increase the urgency felt by public schools to try and attract parents. The documented unabated growth in private schooling suggests that public schools are likely to be surrounded by private schools, and to be located in regions where private schools have gained significant market share. The higher density of private schools is confirmed by data on competition measures, as shown in Table 5.2. Due to higher population density and higher privatization rates, the public schools in Kathmandu have a higher number of private schools in close proximity than in Chitwan. Only 15% of public schools in Kathmandu and 35% of public schools in Chitwan report that they have no private secondary schools that are located within a one kilometer walk from their school. In Chitwan, the public schools that have the highest number of private schools around them have between three to nine private secondary schools around them; while in Kathmandu the range for the highest thirds of competition is between six and 25 private secondary schools. Similarly, most of the public schools in Kathmandu are located in regions where private schools have taken up a significant portion of the market share. On average, the Kathmandu public schools were located in regions where private schools had taken up 36% of market share while the Chitwan public schools were located in regions where private schools had taken up 25% of market share.

The linear regression results of these objective competition measures as a function of school and community covariates, displayed in Table 5.8, confirm that the schools that face a higher number of private schools in geographic proximity or higher private market share based

competition are more likely to be located in Kathmandu district and communities with higher literacy. Higher private market share is also logically associated with population growth. Public schools that are located in higher private market share are also less likely to have a computer room or have a toilet for teachers, which signal worse infrastructure conditions.

Reasons for private school growth

Quality and sorting. The growing demand for private schools in Nepal is widely attributed to better quality provided by private schools as well as the expected increase in social status attached to attending private schooling. There are significant public-private differences in performance in the main high-stakes examination taken at the end of 10th grade, the SLC examinations, as displayed in Figure 5.5. In 2011-12, over 85 % of the private school students, and a mere 36 % of public school students, passed the examination. The public sentiment has grown strongly pro-private in recent years due to the growing distrust with public sector provision.

As shown in Table 5.9, the data on principal and parent perspectives from Kathmandu and Chitwan districts confirm that parents and principals are in agreement that private schools are attractive to parents because they teach in English medium of instruction, better monitoring of teachers, and have better high-stakes examination results. Private school parents and principals disagree that private schools are attractive due to their potential to indicate higher social status, while public school parents and principals agree that social status is one of the key reasons for private school attraction. In interviews, public school officials discussed how public schools were in a difficult position since they had to counter negative perceptions and educate more disadvantaged populations, such as girls and dalit (disadvantaged group) students. Indeed, girls and dalit students are a much higher share of the public school population, as shown in Figure 5.6. The national demographic differences by rural and urban regions are even more telling – as shown in Figure 5.7, while over 40% of all urban area children attend private schools,

only 16% of dalit children attend private schools. Public school principals argued that the systematic sorting of students over decades has led to stigmatization of public schooling, and that selecting public schools for your children would result in a loss of social status and peer derision²⁷. To quote a public school principal from the remote district of Dadeldhura:

“If you talk about other teachers, they see that the neighbors are sending their children to private school so they have to do the same for social prestige. I have to send my children to private school just to survive in society! In the villages they may admit their children in the public schools but in the district headquarters they are enrolling them in the (private) boarding schools.” (personal communication, September 4 2011)

Migration impacting private schooling demand and supply. Private sector growth is additionally aided by the strong emphasis on migration for employment, which is increasingly common in Nepal due to the lack of domestic employment opportunities and high political instability (CBS, 2011). There is high demand for private schooling due to the fact that private schools teach in English medium and are likely to be more focused on the high stakes examination results. Parents link these characteristics to the likelihood of migration and the ease with which their children would be able to adapt to foreign cultures. The fact that a substantial portion of the population receives remittances also means that private school fees are more affordable to more families now than they used to be in the past few decades. On the supply side, private schools are likely to be viewed as one of the means to make a profitable investment in a context that has very limited smaller scale investment opportunities.

Lack of regulatory mechanisms governing private entry and functioning. Private schools are able to flourish in Nepal due to a lack of implementation and monitoring of regulations governing private schooling, rather than the lack of regulations themselves. Indeed, there is a detailed listing of the rules and regulations governing private school entry and functioning, which include requirements on documentation, finances, user fees, and scholarships that have to

²⁷ A more detailed discussion on the extent and consequences of stigmatization of public schooling are discussed in Chapter 7: the factors that mediate the response to competition.

be provided to disadvantaged groups²⁸. However, since private schools do not receive any funding and get very little monitoring support from government offices, they have few incentives to strictly follow the rules. In a large private schooling market like Kathmandu, which has over 1000 private schools and 300 public schools, the overwhelmed district education office is unlikely to be able to effectively monitor private schools.

The majority of the government officials interviewed mentioned that they did not believe that private schools were meeting the government requirements on equity-enhancing scholarships or fee restrictions. The regulations on private schooling clearly state that 10% of the private school students have to be students from disadvantaged populations who need to be provided with special scholarships. These government officials argued that private schools were instead providing scholarships to their relatives or figuring out other ways to distribute the scholarship without abiding by government regulations. While the issue of dalit scholarships was not discussed by most private school principals, one of the principals I interviewed admitted that her school could not admit dalit students on scholarships because they typically had much poorer education performance. Also, while there are careful limits placed on the monthly and annual fees that schools can take, district officials in charge of private school administration acknowledged that a few private schools in Kathmandu routinely bypass these regulations, and one of their jobs is to investigate and reprimand those schools. Moreover, the majority opinion among national officials was that as long as the parents were cooperative, there should not be overtly strict regulations governing private school fees.

Principals from both private and public schools consistently brought up the issue that the government rarely utilized enrollment and population data to determine the need for new schools in any region before granting approvals. For instance, one of the rules for opening a private school is that schools need to get a no objection letter signed by at least two nearby schools.

²⁸ See a detailed list of requirements and regulations governing private schools in Appendix 5.2.

Given the high density of private and public schools in Kathmandu district, school principals mentioned that private schools typically do not face any issue with being able to get at least two schools to agree with their entry into the market. The loophole in the regulation enabled schools to open up despite the fact that a portion of the community or public schools did not see the need for new school entry.

One of the consequences of loose monitoring is the existence of unregistered schools in some districts, which means that the official records may underestimate the existing number of private schools. For instance, a district education official in the Sarlahi district, a populous district bordering India, frankly mentioned that there were plenty of private schools that were not registered officially because these private schools did not want to have to abide by district regulations. The district officials had sent the schools letters warning that if they did not register then their students would not be able to take the high-stakes examinations. A principal of one of the private schools I visited in Sarlahi mentioned that they were part of the tradition of unofficial private schools in the district:

“We do not have permission to teach up to 10th grade level. This is an old tradition in the district that the students of class 9 and 10 are registered in some public school and come to private schools to study in English medium. They sit in and appear in English medium examinations from some other schools but they are our product...

But your school name will not be mentioned anywhere in the records?

But the school is noted in our locality and it is known that it operates as a tuition center in the district. Many schools in the past operated like this and we also did the same.”
(personal communication, August 26 2011)

Thus, these findings confirm those from previous studies (Caddell, 2007; Carney and Bista, 2009) that the growth in private schooling in Nepal has been aided by the lack of implementation of regulatory mechanisms controlling the number of schools established, and the quality of schooling they need to provide.

Who runs and teaches in private schools? The loose private entry into the education system has also affected who owns and operates private schools. Some of the government officials I interviewed noted that private school rulings do not specify any professional requirements for private school ownership and management. While there were no available national records on who establishes private schools, the majority of the government officials and principals suggested that a substantial portion of the private school owners were previously public school teachers who were looking to secure permanent employment as they were unlikely to get hired as permanent teachers in public schooling. In fact, the majority of the older private school principals who participated in this dissertation had backgrounds as public school teachers.

Many public school principals and government officials argued that the owners of schools that were established since the mid-1980s were differently motivated than the school owners who helped established community private schools with the nationalistic intention of providing education to the masses. School and government officials suggested that there may be a growing group of investors with limited education affiliation who are currently operating private schools. A few of the government officials and principals also claimed that many members of the Maoist leadership, who are politically pro-public, have heavily invested in private schooling themselves. One indicator that private schools are functioning more like businesses than social institutions can be seen from the extent of ownership turnover in the large (1000 school) Kathmandu market. Official district records from the Kathmandu district show that in the past two years alone there have been over 150 different requests for private school ownership changes.

The private market appears to function somewhat differently in Chitwan district. Private school principals and private schooling board officials suggested that the majority of private schools in Chitwan were jointly founded by multiple shareholders, such as teacher groups, and comprise of unemployed or frustrated teachers or personnel qualified in education. In addition,

given the district's more socialist orientation, the school principals condemned what they found to be an aggressively profit-motive orientation in Kathmandu. They additionally suggested that private school fee structures were strictly monitored and regulated by politically motivated actors in Chitwan. Discussions in the five other districts confirmed that many of the people engaged in private schooling were former public school teachers.

The analysis further revealed that a main motivation for opening private schools was to stem the outflow of students from the district into districts or countries that had better economic prospects. For instance, in the case of Chitwan, private schools were established in the main city region of Bharatpur in an attempt to limit the migration to Kathmandu, the capital; while private schools in rural regions were interested in limiting the migration to Bharatpur. Similarly, in the sparsely populated mountainous Mustang district, the first private secondary school in the region was established to stop the flow of middle and upper class students to the nearby major city, Pokhara. Importantly, private school owners are able to take advantage of the high unemployment rates of educated youth, as private schools can pay low wages and short term contracts to large population.

In summary, private schools have grown substantially over the past two decades in the nation, and newer schools are likely to be somewhat cheaper than more established schools. Private schooling growth has been fueled by demand side factors, such as the perception of better schooling in private schools, the social stigma attached to public schools, and the growth in the ability to pay for private schooling with migrant remittances. On the supply side, private schools are attractive to entrepreneurs since private schools are easy to open, have a ready supply of available employees, loosely regulated, and have very limited direct government control, which makes them a lucrative and stable investment opportunity.

What are the Policy, Community and School Characteristics that Mediate the Public Schools' Experience of a Competitive Threat?

Population and enrollment trends

The public school's experience of competition depends on the population growth in the district. The argument behind analyzing population growth is that if the population is growing, then there should be less incentive to compete since arguably all public and private schools could thrive and share in the expanding enrollment. Data from the latest Population Census indicate that the study districts, particularly Kathmandu, have grown substantially between 2001 and 2011. As shown in Figure 5.8, the districts with the higher population growth rates between 2001 and 2011 are also the ones that have a fairly high private share in enrollment. It is not surprising to find that Kathmandu experienced a massive growth in population, as it is the financial and political capital of the country. Reports have documented that in the period of civil unrest, there was substantial internal migration from the conflict-torn more remote districts to Kathmandu (World Bank, 2011). These data do not preclude the fact that public schools could have also benefited from the growth in population – but rather it more clearly suggests that private schools are motivated by the potential for higher market share.

Despite the population growth, public schools are rapidly losing enrollment, especially in urban areas. In interviews, many of the public school principals suggested that public schools had recently registered strong declines in enrollments, and that the enrollment decline was worse in primary schooling (grades 1 through 5). The main cause for decline in primary grades was because there were many more primary private schools, and these were typically the more affordable schooling grades for poorer parents. As shown in Figure 5.9, the Kathmandu and Chitwan district data confirms these suspicions – of the subset of schools with available data, there appears to have been a significant decline in grade 1 enrollment between 2006-07 and 2012-13. It is noteworthy that some schools have grown even though the majority of schools

have lost enrollment, as demonstrated in the scatter plots comparing enrollments grade 1 in 2006-07 to enrollments in grade 1 in 2012-13²⁹.

Accountability mechanisms to increase competitive pressures

The accountability based argument suggests that if school officials are not held accountable for poor performance or loss of students, they will not be bothered to make any schooling improvements. Thus, public schools are presumably more likely to experience a competitive threat if they are penalized for enrollment loss or poor performance when private schools in their locality take up more market share and produce better results. Historically, public schools appear to have had limited accountability pressures. For most of their existence, public schools experienced few external pressures to focus on quality in Nepal as the community population continued to expand. Also, there is near universal acknowledgement and concern that the stronghold of political parties in teacher unions has meant that teachers cannot be held accountable for their work. In discussions with school principals and government officials, they often brought up stories of the difficulties encountered when trying to move or replace teachers, and in more extreme cases, merge or shut down schools³⁰. The immunity afforded to school teachers because of their role in national politics may only be subsiding now, as the country has begun the process of transparently hiring qualified teachers for the 2013-14 academic year³¹.

Over the past five or six years, there have been some changes in the accountability climate. The per-child-fund (PCF) financing mechanism, established in 2008, is a noteworthy development in Nepal's education system as it is the first explicit accountability mechanism

²⁹ Data on student gender and disadvantaged groups do not show any particular movement in the public schools in these districts. The lack of change is likely to be a result of the fact that the dramatic demographic movements (male, non-dalit) in these districts may have happened before the availability of national school-level records in 2007.

³⁰ More details of the lack of accountability and the political constraints faced by public schools is discussed in chapter 7: The factors that mediate the response to competition.

³¹ More details on evolutions in the teaching profession are provided in the National context discussion in Chapter 4: Data and Methods.

instituted in the country. Its goal is to reform how education is financed by directly linking salary and non-salary financing to student enrollment (Government of Nepal, 2009). Recent analysis suggests that the accountability mechanism may not yet be fulfilling its objectives. A mid-term evaluation of the School Sector Reform Plan (SSRP), the national education plan for 2009 to 2015, suggested that the PCF mechanism may be causing perverse incentives to inflate enrollment data, and recommends improvements in the sophistication of the mechanism to reduce these negative effects (AUSAID, 2012). As schools get used to the funding modality, the PCF reform could potentially incentivize schools to become concerned about their enrollment losses. Secondly, there has been a strong growth in the negative perceptions of public schooling, which has been popularized in the media. The negative public opinion may be putting some pressures on public schools and officials to improve their reputation. For instance, some local-level district officials talked about how they were better able to merge or collapse poorly functioning schools than in earlier years due to the growing public awareness that resources were being wasted in schools that were near collapse.

In summary, the conditions of enrollment decline and greater accountability pressures may be making public schools more susceptible to competitive pressures in recent years, despite the fact that public school officials continue to be buffered by their political affiliations. The competitive pressures are likely to be higher in schools that have experienced serious enrollment declines.

How do public school principals view their schools' experiences with privatization?

This section is based on interviews with 30 public school principals on the schools' evolution and the role of private competition in their historical evolution. These schools represented variations in public schooling in the 7 districts of study. In the two districts of in-depth study, the schools also varied in terms of rural and urban locations. I found that public schools' historical experiences with competition fell into three main narratives – (i) schools that

experienced historical middle class flight and enrollment decline, (ii) schools that are exceptionally high in quality, and (iii) schools that had experienced a flight of middle class students but not enrollment declines.

A history of middle class and male flight, and enrollment decline

The oldest schools, the “first generation” of public schools, in the district or region were typically started in the early 1950s when socially conscious elites of the country began a concerted effort to spread education to “commoners” at the end of Nepal’s oligarchic rule. These schools were initiated in large population centers in the heart of Kathmandu city and other populous areas of important districts. In their initial decades, these schools enormously benefited from the lack of private schooling in Nepal, and were considered prestigious schools and would educate children from the local community. A “second generation” of public schools included the schools that were started a decade or so later, in newer population centers within the important districts, and in the main population areas in the more remote districts of Nepal. These schools similarly thrived until the 1980s.

The principals of both the “first generation” and “second generation” of early public schools gave examples of how the school produced very good outcomes and had excellent student-teacher-parent relationships during their peak years. As a result, some of the most influential political leaders and professionals in the country were graduates from these schools. When private schools were re-allowed in the mid-1980s, these public schools started experiencing some flight of higher SES students because the local elite children of their graduates started attending elite private schools. However, these public schools’ stellar initial reputations allowed them to continue growing in terms of enrollment through the mid-1990s as the country continued to experience mass education expansion. Once private schooling substantially expanded in the country after the mid-1990s, these schools faced further enrollment declines and middle class flight. Over the decades, public schools in these unregulated choice

environments have gone through a dramatic demographic transition and no longer serve the community that they are located in. Instead, their student body is comprised of children who work as household laborers in these neighborhoods, children of migrant workers, and children who come from other highly disadvantaged economic backgrounds. Public schools typically have a higher proportion of girls as boys are more likely to be sent to private schools.

I also encountered a few public schools that represented a slightly different experience in that these schools had never experienced a significant peak in popularity in the community, the “never popular” public schools. These schools were initiated as part of the growing public schooling expansion movement, but were located close to more established public schools. Some of these schools experienced the most severe declines in enrollment as private schools expanded around them.

For these “first generation”, “second generation” and “never popular” public schools, the decline of public schooling quality reached a crescendo around the early 2000s. Since then, schools have taken divergent paths. While some schools have not been able to reverse their decline and have continued on a downward trajectory, others have been able to initiate a successful turnaround. The successful schools have been able to do so primarily due to the retirement of older principals and the influx of new leadership which dedicated itself to improving the school internally. The few schools that have made the turnaround suggested that they were still in the early phases of reform. Still, the majority of these schools in urban centers suggest that there is no local community support for their schools, unlike in villages, and as a result they cannot really flourish in their localities as “community” schools.

Exceptionally high quality schools

In the districts that have experienced high privatization, there were a few schools of exemplary quality that were flourishing. Interestingly, these “exceptional” schools had a surprisingly similar narrative. These public schools were struggling to gain a foothold well into

the mid-1980s, but then experienced leadership changes that allowed them to flourish. Many of the national government officials and the principals themselves mentioned that a major determinant of these schools' success was the principal's ability to develop a committed teaching team that was not influenced by the national political environment. The "exceptional" public schools also focused on quality through their innovations to build a child-centric learning environment, and by focusing on involving and counseling parents. The schools continued to build on their initial reputation, and have become symbols of public school exceptionalism. The principals attribute their success to effective leadership, a committed teaching team, and their belief in the need to provide high quality. However, even these public schools are typically not educating the wealthier communities' children. Rather, they produce high quality outcomes from students who come from less advantaged backgrounds.

A history of middle class and male flight, but not enrollment decline

The rest of the public schools were "large but facing difficulty." These public schools had experienced middle class flight with the expansion of private schools. However, they were either located in rural regions with limited private schools or in districts that had very large populations. Due to low level of private market saturation or high populations, these schools were not in a real danger of losing student enrollment. For instance, in the populous Terai districts (Jhapa, Sarlahi), the principals mentioned the difficulties they faced as they had to cram anywhere from 60 to a 100 students in one classroom because of the lack of teachers and facilities. In fact, many of these schools were in favor of some privatization as private schools were able to relieve their enrollment pressures. However, the majority of these public schools have also experienced middle class flight documented in the major urban centers of the country. These experiences appear similar to what was being experienced in the mid-1980s to mid-1990s in Kathmandu public schools. Schools in these districts are cognizant of the deterioration that

was experienced in Kathmandu, but are currently not under severe pressures to improve their quality because the incentive mechanisms are primarily linked to enrollment.

Negative effects of competition: who is to blame?

Throughout the nation, public schools have experienced substantial decline in social status since the mid- 1980s. The overwhelming majority of public schools place the blame of the falling status of public schools on the growth of private schooling. The public schools primarily blame bureaucratic incompetence for allowing rampant private sector expansion, for not having been able to appropriately shield them from private competition, and not providing them with adequate resources to be able to truly compete with the private schools. In regions that have had a longer privatization history, public schools tend to blame privatization in more general terms and highlight that the “mushrooming” (intense growth) of private schools of the past decade has negatively impacted their student enrollment.

Public schools that exist in smaller population centers were more likely to discuss the impact that they felt due to the entry of specific private schools. For instance, a principal from school “A” in a rural region in Kathmandu argued that the school was adequately serving the local rural population through the mid-1990s. Then, a non-Nepalese missionary organization came to the community and agreed to pay for the education of the poorest students in that neighborhood. The public school happily agreed to this arrangement as it eased their administrative burden of having to collect school fees from late fee payers. The agency collected information on all the poor households in the community in the process. Then, the missionary organization decided to open a new school and informed the parents that they would only continue to receive these funds if their children transferred to their new school. As a result of that move, the public school “A” lost half of its student body. As Kathmandu land prices skyrocketed in the next two decades, the local rural farmers became wealthy landowners and did not need to

seek out the cheaper public school. Thus, this public school was never able to recover its stronghold in the community.

However, the public schools' negative effects of privatization are not just confined to urbanizing areas. In one of the remote districts of the study, public school "B" was located very close to two private schools. A young teacher had been requested to rescue the school from near collapse. He took charge of the school and tried to institute some key reforms. However, his efforts were met with strong resistance. He received threats from the community and was discouraged by most of the education officials in the region from continuing these initiatives. He later discovered that the community had been treating him abrasively because they had heavily invested in these private schools. Since they were located in a very small population area, the community did not want the public school to succeed for the fear that it would make the private schools less profitable. This public school is an extreme example of hostile relationships between public and private school stakeholders, and the complexity of increasing "community" ownership of public schools.

Overall, the public schools' historical experience of competition suggests that different regions of the country are following similar trajectories, but may be at different stages in their struggle to compete with private schools. The experiences in Nepal suggest that it does take enrollment threats and accountability pressures to "tip" public schools into feeling competitive pressures, which is consistent with the U.S. evidence. In addition, the specific local milieu will heavily affect how the schools will experience competition from private schools. The decline of public schooling prestige in Kathmandu suggests that there is a second "tipping" point after which it may be "too late" to reestablish community trust in public sector provision of education without substantial government intervention. For instance, the community may simply not want the public school to improve. This evolution provides a cautionary tale and suggests the need for

regulations and accountability mechanisms to ensure that public schools located in other urbanizing centers do not experience the same loss of relevance.

What are the Characteristics of the Schools that are Identified as Competition or as the Best Schools in the District?

Characteristics of schools identified as competing or best schools

An inspection of the schools that have been mentioned as “competing” schools reveals that these competitor schools are primarily public and private schools that are located nearby. Figure 5.10 plots the average difference in high-school examination pass rates between public schools and the schools that they have identified as competing schools and the best schools in their districts. Perhaps not surprisingly, the schools that have been identified as the best schools have better high school examination results than the public schools, while the “competing” schools appear to have similar test scores as the schools. Thus, public schools appear to assess competition on the basis of geographic proximity and assess quality using the high-stakes examination scores, the only well-known indicator of schooling quality in Nepal.

Public schools’ perception of private schools as competition

Interestingly, not all of the sampled public schools refer to private schools as competition when explicitly asked to mention their competitor schools. As shown in Table 5.2, only 39% of Chitwan secondary school principals and 62% of Kathmandu secondary school principals mention at least one private school when asked to list up to three competing schools. Similarly, when asked to name the three best schools in the district, secondary school principals from 63% of Chitwan schools and a mere 37% of Kathmandu schools cited at least one private school among the three best schools in the district. That is, despite the proven higher test scores in private schools, many public schools are reluctant to name private schools as competition or as best schools.

The hesitance to name private schools may have varying explanations. Firstly, it may indicate that despite the density of private schools, public schools in both districts may view private schools as operating in a separate, parallel system governed by different motivations and regulations. The fact that the principals of schools in Chitwan are more likely to admit that private schools are among the best schools in the district than in Kathmandu is slightly puzzling since Kathmandu has the most prestigious private schools in the country. Kathmandu school officials may have built a more defensive stance against private schools and be more likely to focus their attention within the public sector than Chitwan school officials. However, a significant majority of Chitwan school principals also do not view private schools as competition. Some of these schools may simply not have private schools around them. However, it may suggest that Chitwan schools look to other public schools as competitors rather than other private schools that are taking up significant market share and, by their own admission, have better quality in the district.

Another plausible explanation for why private schools are not considered among the best schools or as competition may simply be that public schools do not believe that private schools are really better in terms of quality. Public schools attributed the poor examination performance of public school students to factors beyond the school's control, such as political and bureaucratic problems, student background and lack of parental involvement. They argued that private school students perform better because private schools can function more smoothly because of higher decision-making control, more educated and involved parents, and the lack of bureaucratic rigidities.

Furthermore, the majority of government officials and public school principals that I interviewed suggested that they do not believe that private schools provide a higher quality of learning. Many public school principals questioned the credibility of the methods via which the private schools procure higher results in the high-stakes examinations. The public school

principals suggested that private schools focused on rote learning methods to drill the lessons into amenable private school children. A few of the public school principals in remote districts even highlighted how the private schools were prone to have institutionalized cheating in the high-stakes examinations to shore up their results. The majority of public school principals mentioned that private school students were comparatively less likely to do as well in higher secondary and further schooling, confirming to them that private schools did not provide better quality of education. Government officials and public school principals further claimed that public schools had far superior behavioral outcomes – specifically, that private school students were socially insular while public school students were sociable, intellectually flexible, and left school equipped with the ability to tackle broader life challenges.

Characteristics of schools that identify private schools as best or competing schools

The logistic regressions results of the subjective measures, as shown in Table 5.10, suggests that public schools whose principals perceived private schools as competition were more likely to be located in Kathmandu district, and surprisingly, to be located in rural areas. Also, principals from schools that are located in high or medium competition regions in terms of geographic proximity are significantly more likely to perceive private schools as competition schools than schools that are located in low competition regions. The fact that rural area schools are more likely to mention private schools as competition may indicate that they have few private schools in the neighborhood and hence can pinpoint which private schools are competition. Additionally, rural area public schools may also feel that they are more equipped to compete with private schools because they still enjoy some community support and may not have experienced massive flight of the middle class.

The association between the perception questions and the measures of subjective competition are especially illuminating³². The public schools that had identified private schools as competing schools are much more likely to agree that their experienced teachers are excellent than principals who had not identified private schools as competition. Interestingly, the public schools who perceived private schools as competition did not agree that parents are highly involved in their school activities. The combination of these findings suggest that the public schools that consider private schools as competition trust their within-school efforts rather than their parental involvement, and thus may be likely to be motivated to make policy improvements. The public schools that had identified private schools as among the best students in the district were understandably more likely to agree that private schools were better in overall quality than public schools.

Discussion and Conclusions

The global conversation on private schooling in developing countries has often focused on the difference in quality between public and private schools. From an accountability perspective, governments may be interested in ensuring that public schools feel competitive pressures and engage in reforms so that they may improve schooling quality for the majority of the children who continue to study in public schools. The analysis of the extent and reasons for privatization in Nepal, the accountability climate, and the historical evolution of the experience of competition showed that public schools have recently been put in an accountability situation that may require the public schools to respond to competitive pressures.

Specifically, there has been strong growth in private schooling in recent years in Nepal, and particularly in the two more urbanized districts that were selected for in-depth study. The private sector growth has happened because of easy entry into the private sector, the profit-

³² A more detailed discussion of the association between measures of competition and principal perceptions are presented in Chapter 7.

making opportunities in the sector, and the solidifying community preference for private schooling. As a result, public schools are surrounded by private schools which have taken up significant market share, thus intensifying their experience of competition. In recent years, the policy climate and population and enrollment trends have also become more aligned towards making schools experience stronger competitive pressures. Consequently, public schools are likely to currently be in an accountability environment that incentivizes them to respond to competition and try to improve their quality, as measured by test scores.

However, the school officials' perspectives reveal a substantively different take on the issue of school quality and their experience of competition. Despite significant private school growth throughout the 1980s and 1990s, public schools were shielded from having to deal with private competition in the past due to the expansion of education access and the lack of accountability incentives focused on school quality. By the time accountability mechanisms that tied enrollment to financing were instituted in the mid-2000s, the majority of public schools had experienced decades of systematic sorting and had lost the public perception battle. Many of the urban public schools report that they are unlikely to be able to regain parental trust without significant government efforts to counter public school stigmatization. In contrast, public school officials in the remote parts of the country are more likely to have adequate enrollment and fewer private schools in their district. However, even this assessment is a bit problematic since in areas without a large population, the presence of one or two private schools can prove extremely detrimental to the local public school. Clearly, demographic trends in the local context play a significant role in the experience of competition in gradual, unregulated choice environments.

The historical analysis of the experience of competition suggests that there really are at least two major tipping points that policymakers need to be aware of when thinking about the likelihood of competition to induce public school reforms. Firstly, as discussed in the U.S. literature, private schools need to take up significant enrollment, and public schools need to be

penalized for their enrollment declines for public schools to be pressurized into engaging in school reforms. However, there is an additional tipping point – if the accountability systems are set in place after the private schools have become the dominant provider, then it may also be “too late” to make changes with school level efforts, requiring schools to undergo significant government intervention to regain community trust. The temporal nature of the experience of competition suggests that choice environments need to include well-timed accountability mechanisms and support systems to have an enduring productive impact on public schools. These findings on the historical evolution of public school status may be especially relevant for other developing countries, since many countries that have undergone rapid education expansion since the 1990s are likely to have experienced limited competition during the mass expansion era, followed by growing stigmatization of public schooling with unregulated private expansion.

Despite the existence of the recent accountability mechanism and the acknowledgement that private schools have been detrimental for them, not all public schools identify private schools as “competition”, and even fewer public schools acknowledge private schools as among the best schools in their district. Public schools may view private schools as operating with very different motivations and regulations, and thus operating as parallel entities. Alternatively, unlike the more popular macro consensus on quality differences between public and private schools, many public school principals appear to think that private schools are any better in terms of quality. Public school principal’s low evaluation of private school quality will affect the desire to compete with private schools, and the strategies the public schools employ if they do try to compete with private schools. Future analysis should probe deeper into the public and private school quality differences.

The analysis from the Nepal case suggests that research on the experience of competition in other low-income contexts needs to conceive of the public sector as a heterogeneous sector, with variations in community and resource supports and personnel motivations. Competition

should be analyzed as a subjective experience, influenced by the school's historic experiences with competition and the principals' perceptions of private competition, in addition to the extent of private school growth. While economists and sociologists have long recognized that sorting of students by income and ability is a likely consequence of unregulated choice programs, researchers need to especially recognize how long-run sorting can lead to stigmatization of public schooling in low-income developing countries with unregulated choice environments, as it will impact the public schools' experience of competition, and their ability to productively respond to private competition. The question of the extent to which public schools are engaging in school actions in order to respond to competition will be addressed in the next chapter.

Chapter 5 Figures and Tables

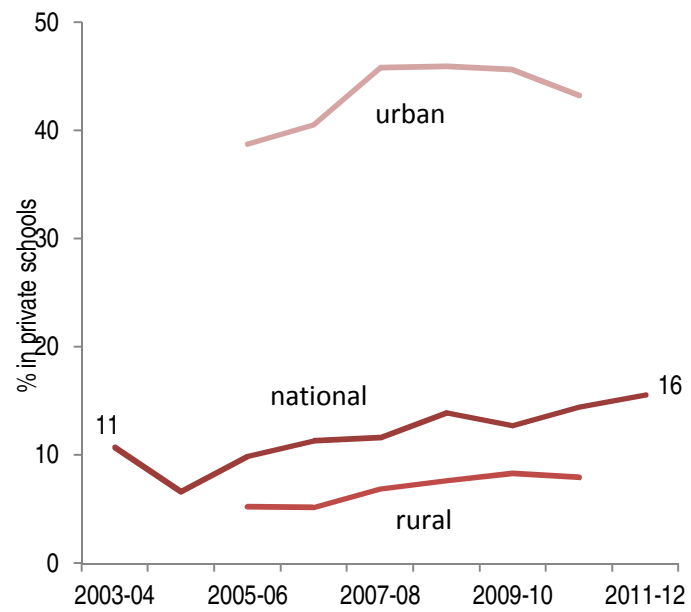


Figure 5.1 National private share of total enrollment, 2003-04 to 2011-12

Sources: Flash reports, various years and Flash dataset.

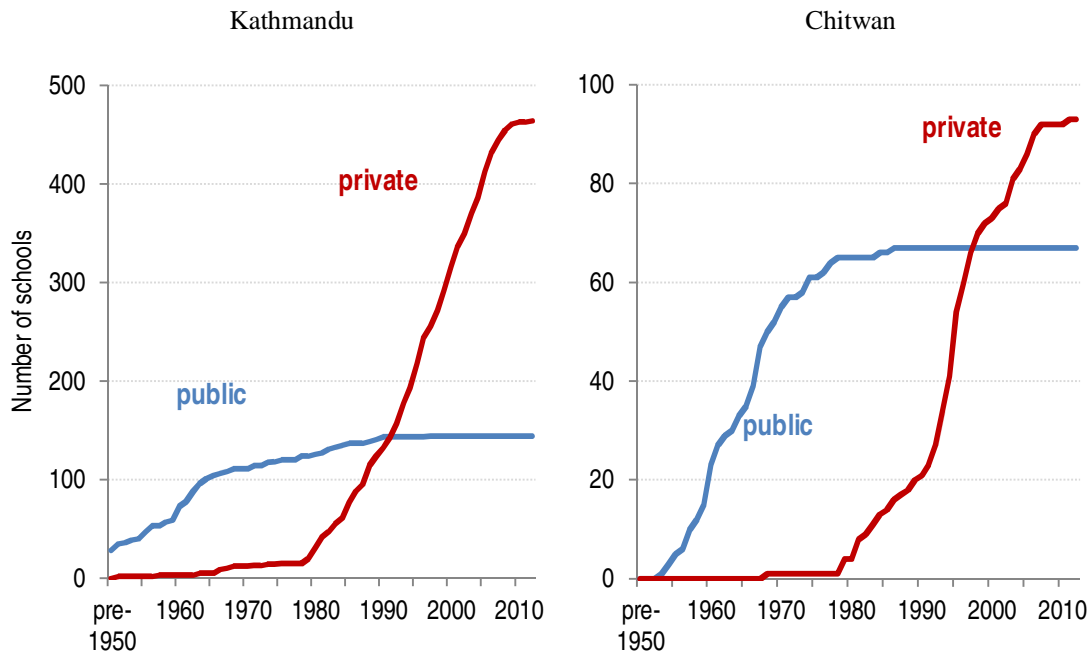


Figure 5.2 Historical expansion of private and public Schooling in selected districts (number of existing secondary level schools, by year)^{1/}

^{1/} Sources: District Records (Kathmandu and Chitwan); and Principal Survey.

This chart plots the available data on school establishment for secondary level public and private schools in these two districts. It includes 212 public secondary schools (67 Chitwan schools and 145 Kathmandu schools), and 557 private secondary level schools (93 Chitwan schools and 464 Kathmandu schools).

There are four caveats to the data. Firstly, the data is based on a one-time data collection and does not include schools that may have shut down over the years. There are indications that there is significant volatility in private schooling closures and ownership changes, particularly in Kathmandu, which would not be captured through the data. Secondly, this snapshot data would not be able to differentiate schools that may have transitioned between public and private schooling status. Thirdly, due to the large number of private schools in Kathmandu and unavailability of records, over a third of the establishment year data for Kathmandu secondary level schools is not available. Finally, there are a significant number of public and private schools that are below secondary level which could also be construed as competing schools. However, since the data for primary and lower secondary public schools was not available, I chose not to plot the primary and lower secondary private schools here.

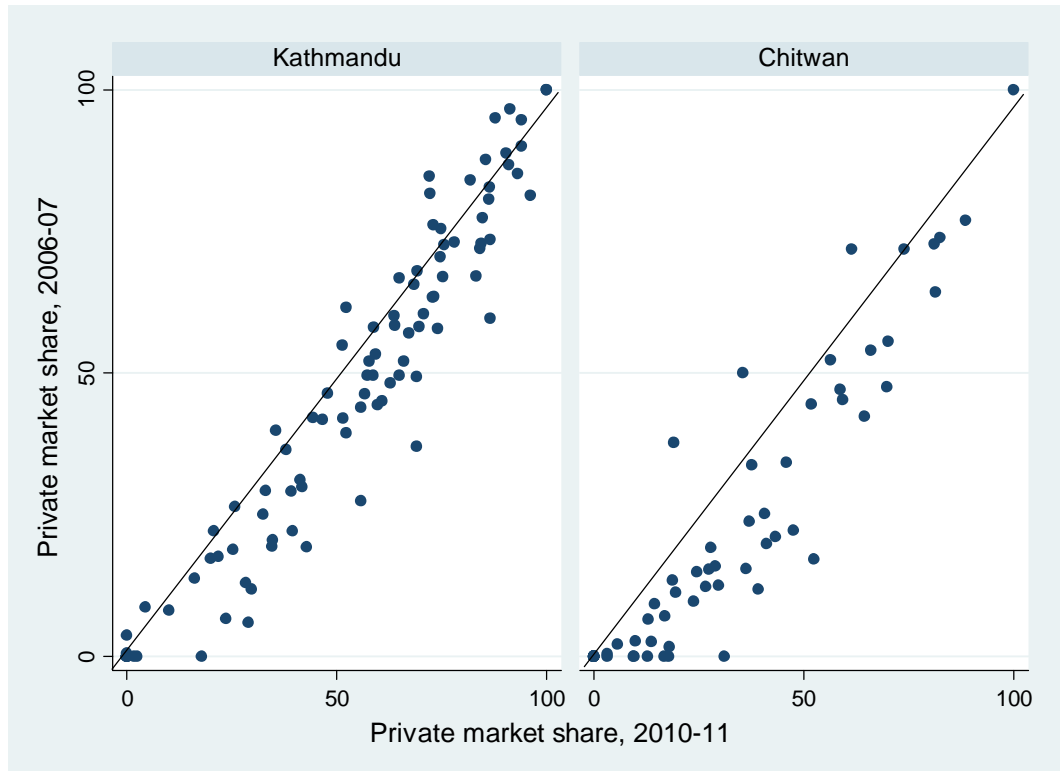


Figure 5.3 Private share of enrollment in selected districts, 2006-07 and 2011-12

Source: Flash dataset.

Note: Each data point represents the aggregated private school market share at the locality level (village level for villages, and disaggregated ward levels for the main urban areas).

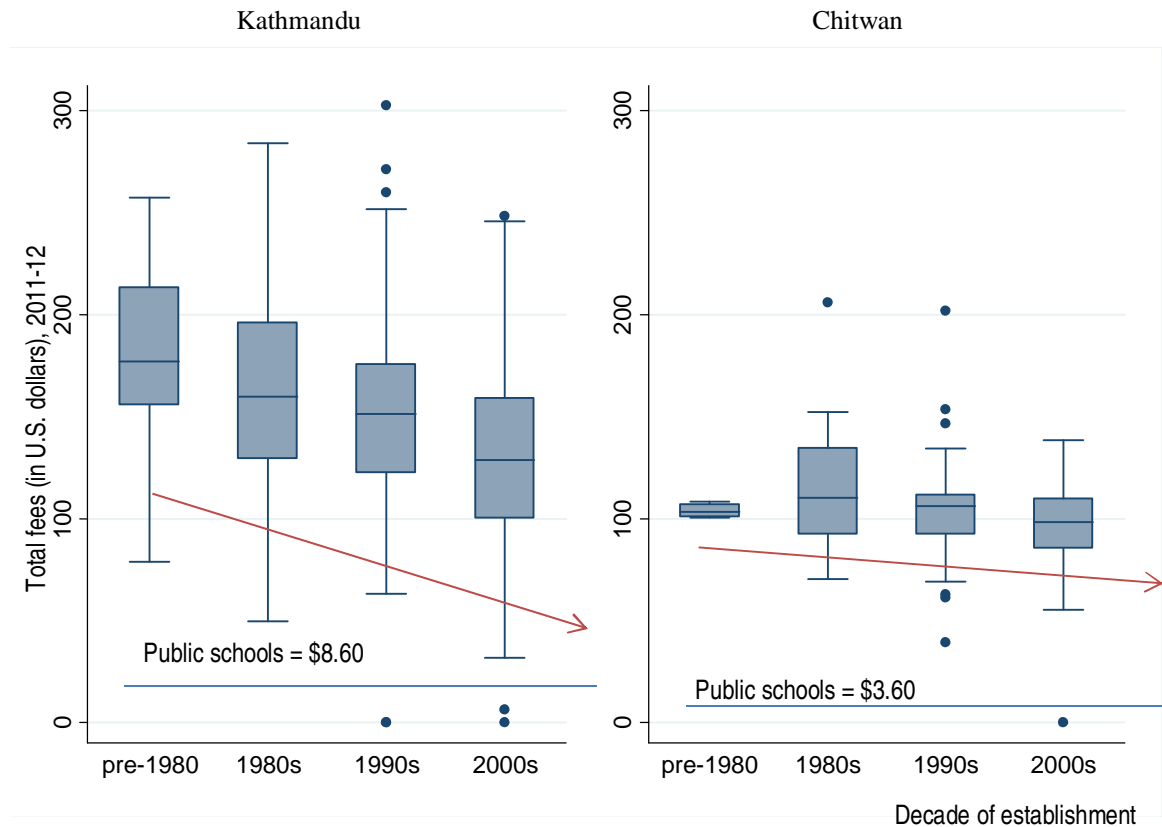


Figure 5.4 Private school annual user fees in grade 1 in selected districts, by decade of establishment (in U.S. dollars)

Sources: District Records (Kathmandu and Chitwan); and Principal Survey. The charts plot the total school fees by establishment decade for available schools in Kathmandu and Chitwan districts.

Notes: The total fees for each school were calculated as the sum of annual fees and ten months of monthly fees. The data was compiled from the available monthly and annual fee records kept in the district education offices. The U.S. dollar to Nepali rupee exchange rate used is: 1U.S. \$ = N.Rs. 86.65, which was the 2011-12 average exchange rate (based on IMF IFS statistics).

The chart includes 607 Kathmandu private schools, 113 Chitwan private schools, 145 Kathmandu public schools, and 67 Chitwan public secondary schools. The data used in the analysis represents about half of the private schools that are currently operational in Kathmandu and over 70% of Chitwan private schools. The coverage limitation is due to lack of data availability on either school establishment year or school fee data for the remaining schools.

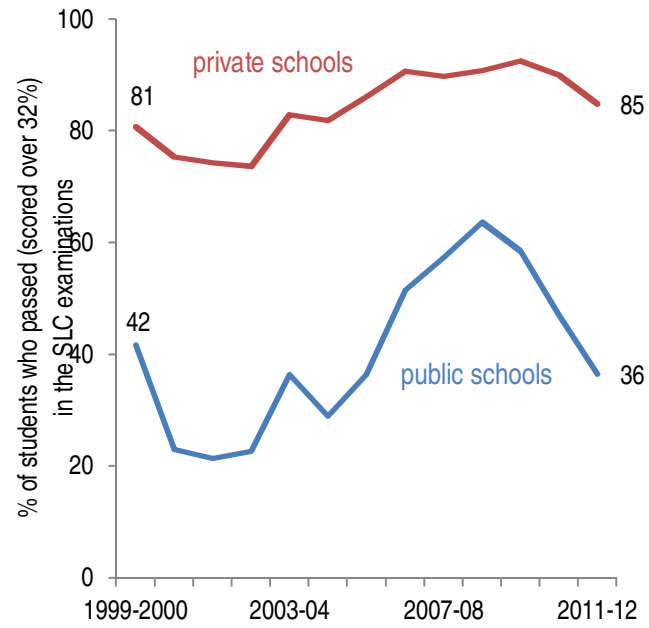


Figure 5.5 National school-level student pass rates in school-leaving certificate (SLC) examinations (By school type)

Source: SLC reports, various years.

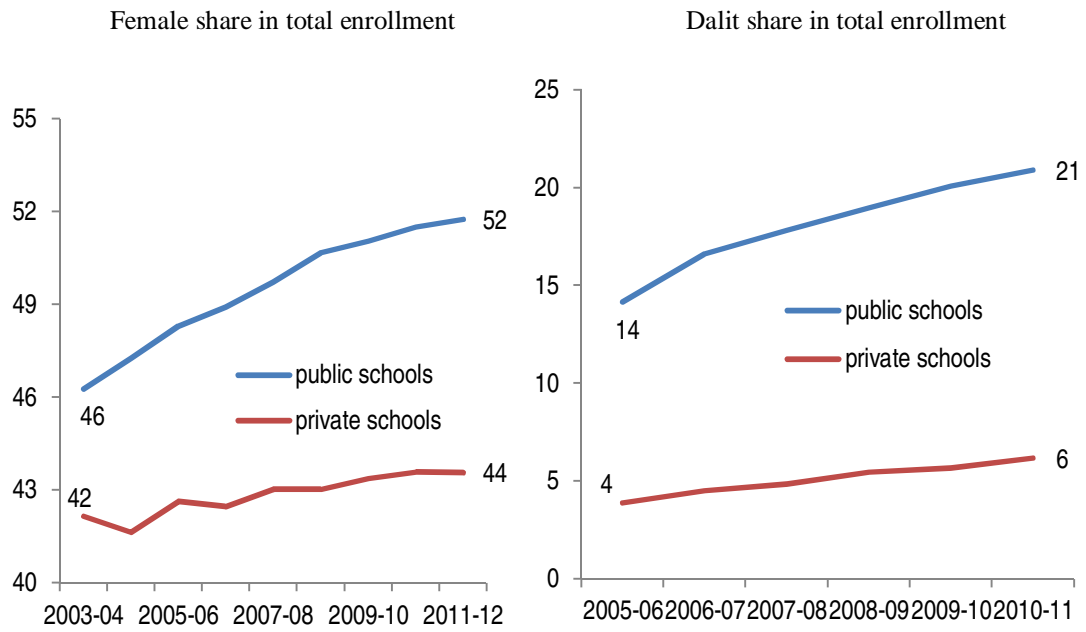


Figure 5.6 National demographic differences between public and private schools (By school type)

Sources: Flash Reports, various years and Flash dataset.

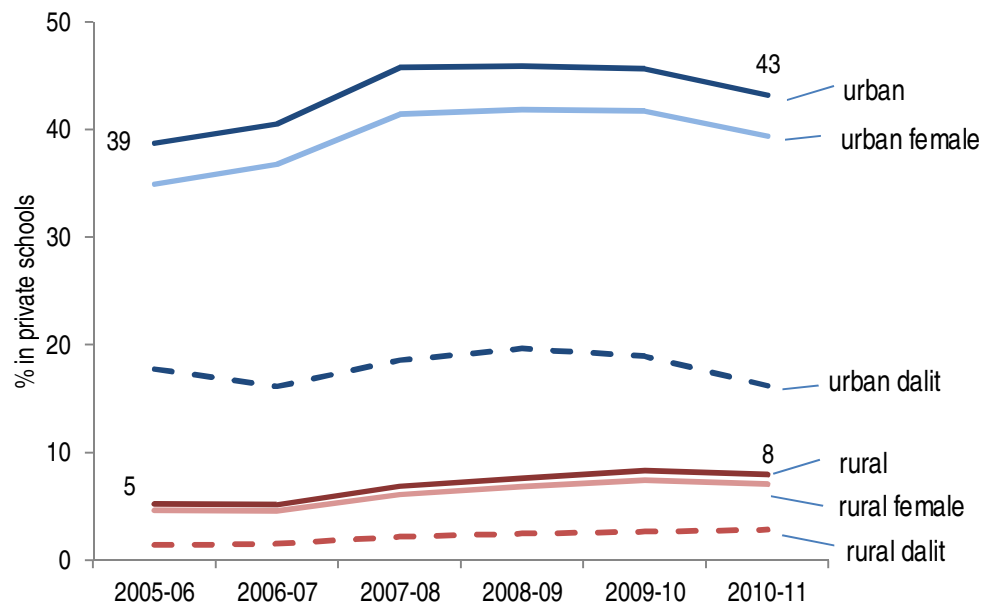


Figure 5.7 National demographic differences in private school adoption within rural and urban regions (By gender and dalit categories)

Source: Flash dataset.

National population trends
by district

Within-district population trends
(Kathmandu and Chitwan, by locality)

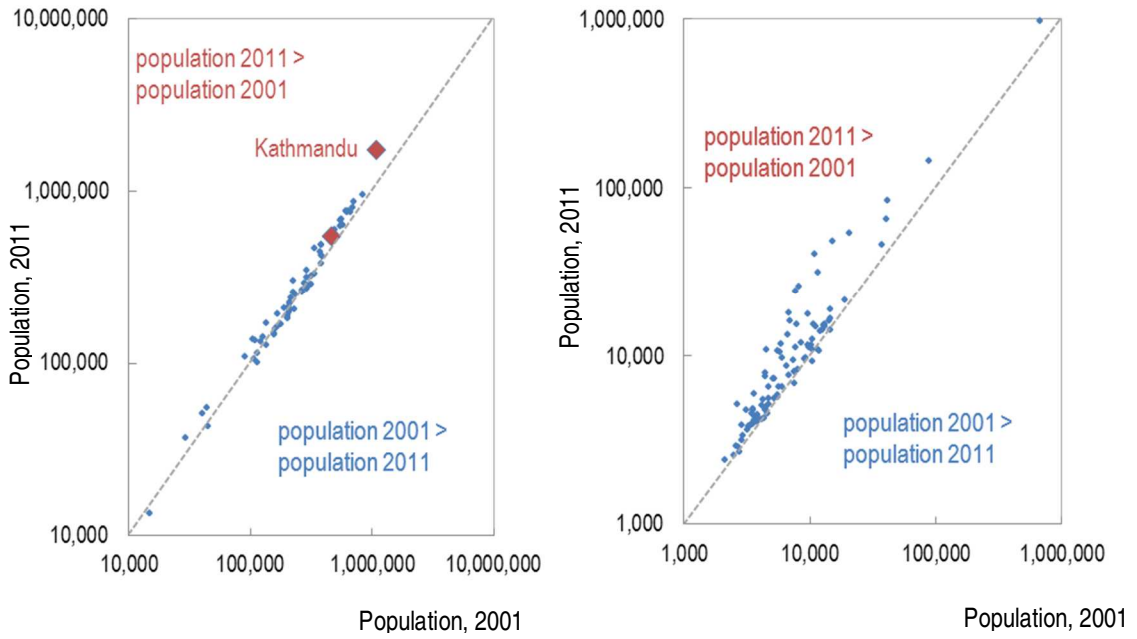
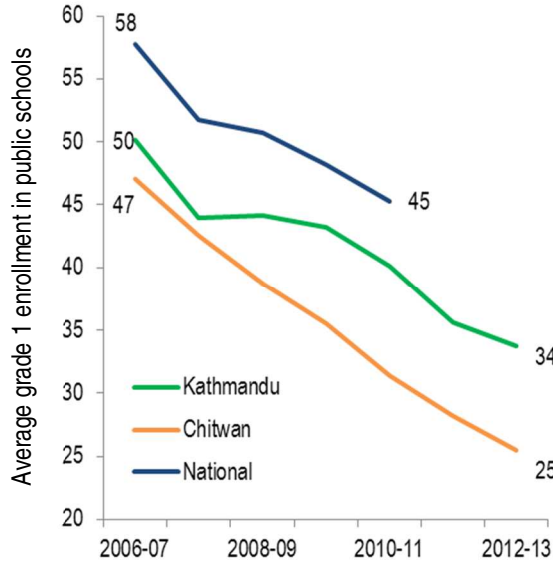


Figure 5.8 Population trends in the nation and within selected districts, 2001 to 2011

Sources: Census reports and Flash reports.

Note: The population growth rate is the annualized population growth rate derived from the Population Census of 2001 and the Population Census of 2011.

National and district enrollment trends



Within-district enrollment trends (Kathmandu and Chitwan, by school)

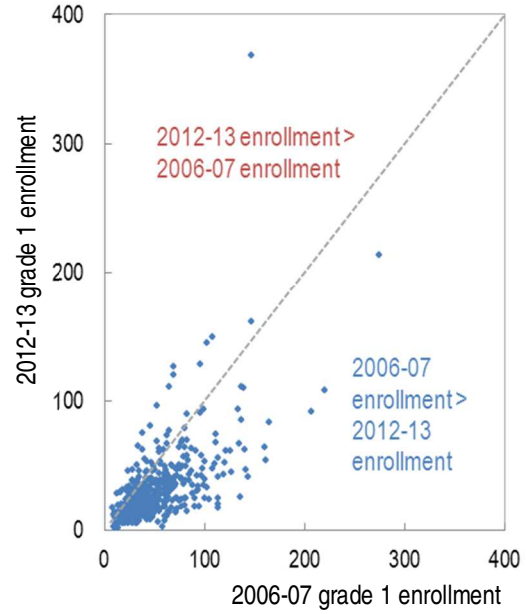


Figure 5.9 Evolution in average grade 1 enrollment in public schools nationally and in selected districts

Source: Flash dataset.

Note: The first chart plots the available data on grade 1 enrollment in public schools in the two districts and nationally. The second chart plots the within-district enrollment trends for Kathmandu and Chitwan district and compares 2006-07 enrollment in grade 1 to 2012-13 enrollment in grade 1. These charts utilize data from 22,157 public schools in Nepal, and 222 public schools in Kathmandu, and 319 public schools in Chitwan. These are all of the public schools for which all years of data were available.

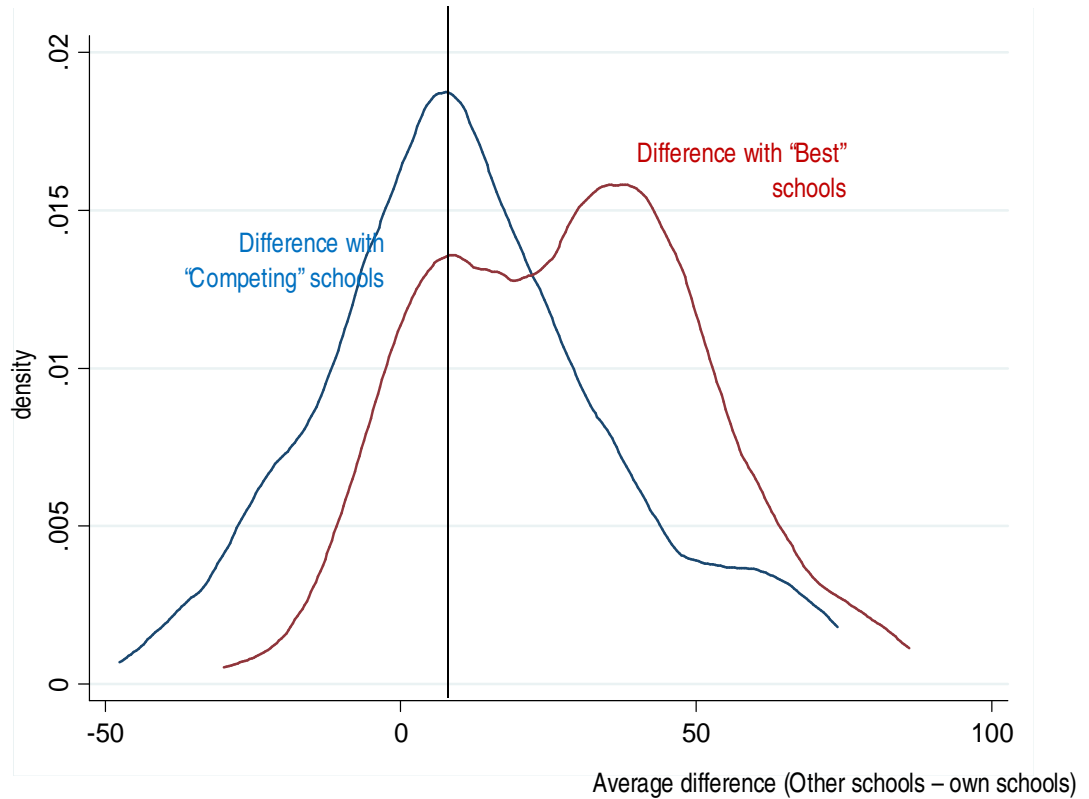


Figure 5.10 Comparison of the differences in high-stakes pass rates between public schools, and schools identified as competing or best schools

Source: Author’s calculations based on Principal Survey and Flash dataset.

Note: The chart plots the kernel density of the average difference in pass rates between public school and the schools the public schools list as competing or best schools. The plotted differences are calculated as follows. The raw data used is the high-stakes school-leaving examination pass rates at the school level. The pass rates of the public schools are subtracted from the pass rates of the three schools that they identified as competing schools and the pass rates for the three schools they identified as the best schools. Then, the average of these differences is computed for the “competing schools” and “best schools” separately. The graph is a kernel density of those averages. Thus, if the average difference is greater than 0, then the public school has a lower pass rate on average than the schools it mentions as competing or best schools. If the average difference is less than 0, then the public school has a higher pass rate on average than the schools it mentions as competing or best schools.

Table 5.1 Data sources used in Chapter 5

Research questions	Data sources
<i>What is the extent of private competition in Nepal?</i>	
<ul style="list-style-type: none"> • Evolution of public-private system 	Descriptive data on annual national records of enrollment, teaching and infrastructural indicators (Flash Reports and datasets, 2008-09 to 2011-12) (MoE, 2012a; MoE, 2012b)
<ul style="list-style-type: none"> • Private sector growth and fee diversification in Kathmandu and Chitwan 	District records on school fees (2011-12) and establishment year, Kathmandu and Chitwan district offices (District records from Kathmandu and Chitwan, 2012)
<ul style="list-style-type: none"> • Competition Measures 	Principal Survey, 2011, Kathmandu and Chitwan Regression results: Combined Quantitative Dataset (Principal Survey, SLC dataset, Flash dataset, Census dataset)
<ul style="list-style-type: none"> • Reasons for private school growth 	National records on high-stakes performance (SLC Reports, various years); Flash Dataset; Regulations governing private schooling
<ul style="list-style-type: none"> • Who runs private schools 	Interviews with government officials and principals Volatility in ownership: district records on requests for school ownership changes, Kathmandu district education office (District Records from Kathmandu and Chitwan, 2012)
<i>What are the policy, community and school characteristics that mediate the public schools' experience of a competitive threat?</i>	
<ul style="list-style-type: none"> • Population and Enrollment Trends 	Census Report; Flash dataset
<ul style="list-style-type: none"> • Accountability mechanisms 	Policy reports, interviews with parents and principals (Qualitative (In-depth) and Qualitative (Supplemental) Dataset)
<i>How do public school principals view their schools' experiences with privatization?</i>	
<ul style="list-style-type: none"> • Historical Experience of Competition 	Interviews with 30 public school principals in seven districts (Qualitative (In-depth) and Qualitative (Supplemental) Dataset) Main protocol questions: <ul style="list-style-type: none"> • Tell us a little bit about the school's evolution • When did private schools expand in the region? Have there been any recent evolutions in private schooling?
<i>What are the characteristics of the schools that are identified as competition or as the best schools in the district?</i>	
<ul style="list-style-type: none"> • Characteristics of schools identified as competition or best schools 	Principal Survey, 2011, Kathmandu and Chitwan Regression results: Combined Quantitative Dataset

Table 5.2 Descriptive statistics on competition measures

	Chitwan	Kathmandu
Number of schools	67	145
Measure 1: Private schools in geographic proximity (range in each category)		
<i>Question: List the number of private secondary schools that are within one kilometer walk of the school</i>		
low competition	0	0 - 2
medium competition	1 - 2	3 - 5
high competition	3 - 9	6 - 25
Measure 2: Private Share in Total Enrollment (range in each category)		
low competition	0 - 19	0 - 25
medium competition	20 - 38	27 - 63
high competition	39 - 72	63 - 100
Measure 3: Subjective Competition (%)		
<i>Question: List up to three schools that you are in competition with.</i>		
No private competition	61.2	37.9
At least one private school in set of competing schools	38.8	62.1
Measure 4: Subjective Competition (%)		
<i>Question: List up to three schools that are among the best schools in the district</i>		
No private schools among the best schools	37.3	57.9
At least one private school in set of best schools	62.7	42.1

Source: Author's calculations based on Principal Survey and Flash dataset.

Table 5.3 Descriptive statistics on explanatory and control variables for regression analyses

Variable description, year	Mean	S.D.	Median
Number of public schools [N = 212]			
Community characteristics			
• Female literacy rate, six years and older, 2001	60.9	11.7	60.8
• District dummy (percentage Kathmandu)	68.4		
• Urban dummy (percentage urban)	42.9		
• Population growth (decadal), 2001 to 2011	49.3	53.3	45.2
Sorting characteristics			
• Whether the school requires an entrance examination for grade 6 admission, 2011-12	49.1		
• Total fees, grade 9, 2010-11 (in Nepali Rupees)	18.9	19.3	15.0
• Fraction dalit (disadvantaged population) in enrollment, 2010-11	11.1	7.8	9.7
Principal perceptions (percentage that agree or strongly agree to the following statements)			
• Private schools are better than public schools in overall quality.	35.8		
• There is no need to compete with private schools since our competition is really with other public schools.	17.0		
• Teachers who have more than 15 years of experience are excellent in our school.	69.8		
• Parents are highly involved in school activities in our school.	46.7		
Control variables			
• Total grade 1 to 10 enrollment, 2011-12	545	314	456
• Fraction female in grade 1 to 10 enrollment, 2011-12	53.07	8.63	53.2
• Percentage of teachers with permanent contracts, 2010-11	51.3	25.6	53.2
• School age in years, 2011-12	49.1	15.0	49.0
• Percentage of schools that hired private schools due to a lack of teachers, 2011-12	79.25		
• Class size in 6th grade, 2011-12	44.7	17.1	44.5
• Repetition rates, primary grades (1 through 5), 2010-11	6.0	7.0	3.4
• Percentage newly admitted students in grade 10, 2010-11	3.6	14.3	0.0
• Percentage of schools that have inadequate desks, 2009-10	24.9		
• Percentage of schools with a computer room, 2011-12	41.0		
• Percentage of schools with a toilet for teachers, 2008-09	62.1		

Source: Author's calculations based on Combined Quantitative dataset (Principal Survey, Flash dataset, and Census dataset).

Note: The U.S. dollar to Nepali Rupee exchange rate used was: 1 US \$ = 80.0 N.Rs.

Table 5.4 Participation in private schooling, by region and expenditure quintiles
(% in private schools)

	Primary grades			Secondary grades		
	1995-96	2003-04	2010-11	1995-96	2003-04	2010-11
National	5.9	14.0	20.3	5.1	12.8	17.5
By Region						
Urban	39.2	51.2	55.7	21.9	44.7	48.0
Rural	3.5	8.9	14.5	2.9	5.3	9.4
By Ecological Belt						
Mountain	0.4	0.6	6.2	0.0	0.0	3.5
Hills	5.9	14.7	17.5	7.4	17.1	17.1
Terai	6.9	15.4	26.3	3.0	10.3	20.8
By Consumption Quintile						
Poorest	3.1	5.0	2.3	1.6	2.3	1.5
QII	1.3	2.7	7.9	1.8	1.8	3.3
QIII	2.8	6.5	12.5	0.0	2.0	5.7
QIV	4.1	14.0	33.7	1.4	6.5	14.7
Richest	18.2	55.2	72.2	10.8	33.2	52.0

Sources: Authors' calculations based on NLSS databases.

Note: Primary grades include grades 1 through 5; secondary grades include grades 6 through 10.

Table 5.5 The prohibitive costs of private schooling
(Per student household expenditures, in Nepalese Rupees, by type and level of schooling)

	Public Schools		Private Schools	
	1995-96	2003-04	1995-96	2003-04
Primary level (per student household expenditures)	326	387	2,688	4,144
Secondary level (per student household expenditures)	455	415	4,281	6,785
Average per capita household expenditures	7,235	10,318	7,235	10,318

Source: NLSS reports.

Note: All per capita expenditure data are in 1995-96 inflation adjusted (constant) Nepalese rupees. 1 US\$ = 55.92 Nepalese Rupees in 1995.

Table 5.6 Privatization market share in study districts

	2008-09	2011-12
Chitwan	29.0	36.0
Dadeldhura	3.5	5.4
Jhapa	24.4	30.2
Kavre	16.8	19.8
Kathmandu	63.9	73.1
Mustang	11.8	21.8
Sarlahi	0.5	1.7
Nepal	11.6	14.5

Sources: Flash reports, various years.

Table 5.7 A comparison of user fees in public and private schools, 2011-12
(9th grade, in U.S. dollars)

	N	Mean	Median	Std. Dev.	Min	Max
Kathmandu						
public schools	145	25.86	19.62	34.17	0.00	369.32
private schools	775	335.36	280.45	336.99	0.00	6,959.42
Chitwan						
public schools	66	10.62	3.46	35.02	0.00	227.36
private schools	112	156.26	158.98	36.94	66.94	304.69

Sources: District records, Kathmandu and Chitwan and Principal Survey. These data come from the district private school records in Chitwan and Kathmandu, and school survey of public secondary schools, 2011.

Notes: The total fees for each school were calculated as the sum of annual fees and ten months of monthly fees. The data was compiled from the available monthly and annual fee records kept in the district education offices. The U.S. dollar to Nepali rupee exchange rate used is: 1U.S. \$ = N.Rs. 86.65, which was the 2011-12 average exchange rate (based on IMF IFS statistics).

There are two main caveats to the data. Firstly, these data may not exhaustively capture all the user fees that parents have to pay the schools, but should be the most significant recurrent expenses incurred by the parents. Secondly, due to the large number of private schools in Kathmandu and unavailability of records, over a third of the data for Kathmandu secondary level schools is not available. However, there is unlikely to have been a systematic underreporting of cheaper schools.

Table 5.8 Linear regression models of objective competition measures on school and community characteristics
(Estimated OLS coefficients)

<i>Dependent variable</i>	Number of private secondary schools that are within one kilometer walk of the school	Private share of enrollment in the location
	<i>cobj</i>	<i>psvw</i>
School examination performance		
<ul style="list-style-type: none"> Percentage of students who passed the high-stakes examination with a score over 60%, 2010-11 	-0.0117**	0.03
Community level characteristics		
<ul style="list-style-type: none"> Female literacy rate, six years and older, 2001 District dummy (1 = Kathmandu) Urban dummy (1 = Urban) Population growth (decadal), 2001 to 2011 	.953*** 2.78*** 1.04** 0.05	6.32*** 14.2*** 3.40 1.38***
Sorting characteristics		
<ul style="list-style-type: none"> Whether the school requires an entrance examination for grade 6 admission, 2011-12 Total fees, grade 9, 2010-11 (in Nepali Rupees) Percentage dalit (disadvantaged population) in enrollment, 2010-11 	0.01 0.01 0.00	-4.40 0.09 0.26
Other school characteristics		
<ul style="list-style-type: none"> Total grade 1 to 10 enrollment, 2011-12 Whether school has inadequate desks, 2009-10 Whether the school has a computer room, 2011-12 Whether school has a toilet for teachers, 2008-09 	.467*** 0.49 0.03 -.943*	1.9*** -2.06 -8.06*** -5.09*
N	212	212
R-squared	0.46	0.40

Sources: Authors' calculations based on Combined Quantitative Dataset (Principal Survey, Flash dataset, SLC dataset, Census dataset).

Notes: Model specification includes other school characteristics (fraction female, 6th grade class size, percentage of teachers with permanent contracts, primary school repetition rates, 10th grade new student admission rates) as controls.

Table 5.9 Principal and parent perspectives on the reasons for private school attractiveness
(% of principals and parents that agree to the following statements)

	Principals		Parents	
	Public	Private	Public	Private
<i>N</i>	212	81	72	75
<i>Parents are attracted to private schools because...</i>				
Quality				
• Private schools teach with English as medium of instruction	93.9	93.8	98.6	94.6
• Private schools provide computer skills	58.5	82.7	87.9	84.9
• Compared to public schools, the private schools get better SLC examination results	83.5	98.8	67.2	87.8
Management				
• Compared to public schools, the teachers feel more responsible for the students	69.8	97.5	82.5	89.2
• Compared to public schools, the teachers teach well because they are fearful for their jobs	78.8	44.4	87.5	79.2
• Compared to public schools, there is less external pressure on school management	82.1	84.0	83.3	74.3
• Compared to public schools, private schools have more monitoring of teachers	85.4	74.1	84.4	90.3
• Compared to public schools, parental involvement is higher	68.4	87.7	85.5	77.0
• Compared to public schools, schools operate for more days	71.7	88.9	80.3	77.0
Social status				
• Parents feel social prestige because parents have to pay high fees	73.1	40.7	62.1	36.5
• Compared to public schools, more well-to-do families send their children to private schools	80.7	37.0	70.6	31.1

Sources: Authors' calculations based on Principal Survey and Parent Survey.

Note: The sampling procedures utilized for parent and principal surveys are quite dissimilar. Hence, they should not be used for more detailed comparative analysis. The principal survey included a census of public secondary schools and 81 randomly stratified private secondary schools. On the other hand, the parent surveys were conducted in a purposeful sample of 30 private and public schools, and the parents were selected by the principal.

Table 5.10 Logistic regression models of subjective competition measures on objective competition, principal perceptions, and school and community characteristics
(Estimated odds ratios)

Dependent variable	Principal lists at least one private school when asked to list three competing schools	Principal lists at least one private school when asked to list three best schools in the district
Variable name	<i>csubj</i>	<i>bsubj</i>
School examination performance		
<ul style="list-style-type: none"> Percentage of students who passed the high-stakes examination with a score over 60%, 2010-11 	1.01	1.01*
Objective Competition		
<ul style="list-style-type: none"> Medium number of private secondary schools nearby 	3.09**	0.77
<ul style="list-style-type: none"> High number of private secondary schools nearby 	4.06***	1.74*
Community level characteristics		
<ul style="list-style-type: none"> Female literacy rate, 6 years and older, 2001 	1.15	1.4*
<ul style="list-style-type: none"> District dummy (proportion Kathmandu) 	3.96***	.308*
<ul style="list-style-type: none"> Urban dummy (proportion urban) 	.287**	0.73
Sorting characteristics		
<ul style="list-style-type: none"> Whether the school requires an entrance examination for grade 6 admission, 2011-12 	0.69	0.78
<ul style="list-style-type: none"> Total fees, grade 9, 2010-11 (in Nepali Rupees) 	1.02*	0.99
<ul style="list-style-type: none"> Percentage dalit (disadvantaged population) in enrollment, 2010-11 	0.98	0.97
Principal perceptions (1 = agree or strongly agree to the following statements)		
<ul style="list-style-type: none"> Private schools are better than public schools in overall quality 	0.95	1.95**
<ul style="list-style-type: none"> There is no need to compete with private schools since the competition is really with other public schools 	0.54	0.82
<ul style="list-style-type: none"> Our teachers who have more than 15 years of experience are excellent 	1.81**	1.26
<ul style="list-style-type: none"> Parents are highly involved in school activities in our school 	.393***	0.67
N	212	212
R-squared	0.17	0.12

Source: Authors' calculations based on Combined Quantitative Dataset.

Notes: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively. Includes other school characteristics as controls.

CHAPTER 6

THE PUBLIC SCHOOL RESPONSE TO COMPETITION

Abstract

The goal of the chapter is to describe and analyze the policies that are likely to be adopted by public schools in order to compete with private schools in Nepal. The analysis is essential since school policy changes provide the clearest indication of reform efforts, and are necessary to engender outcome improvements. Despite the rapid growth in private schooling, there is scant research on the public sector consequences of privatization in developing countries. The analysis utilizes a mixed methods approach and analyzes 30 public school interviews and a 300-school competition focused principal survey. I first analyze the principal interviews and retrospective, descriptive statistics to identify the policies that are most likely to be attributable to private competition. I then conduct logistic regression analysis to test the hypothesis that public schools that experience more competition are more likely to have implemented key policies. I find that public schools have begun responding to private competition by “mirroring” desirable private school policies. For instance, schools in high competition regions are over four times as likely as schools in low competition regions to have lengthened their school day than officially required. Furthermore, public schools whose principals mention private schools as competitors are over twice as likely to have adopted English medium as public schools whose principals do not mention private schools as competitors. The Nepal case suggests that the competitive pressures and accountability mechanisms may have incentivized public schools to respond with policy actions. The public school responses to private competition can be similarly fleshed out in other developing countries by developing policy databases, understanding public-private policy differences, and analyzing principal perceptions.

Introduction

In the chapter, I describe the policies that are being instituted in public schools in response to private competition. I address the following research question in the analysis: How do public schools respond to private competition? There are two main reasons why researchers have to investigate how the presence of a growing private sector is affecting public school policies. Firstly, the rise of private provision of education in low-income countries, including in Nepal, has often been attributed to worse quality in public schools. Private schools are theoretically expected to provide competitive pressures and incentivize public schools to respond. However, despite the rapid growth in the private sector and the documented poor quality of the public sector, the strand of research that analyzes public sector's response to competition is virtually nonexistent in developing country contexts (Thapa, 2012a). Secondly, public schools continue to provide education to the majority of children in most developing countries – 84% of all children in Nepal are documented to be enrolled in public schools in the 2012-13 academic year. So, if public schools are not providing good quality, we need them to strive to improve as a result of these competitive pressures.

Conceptual Framework and Research Questions

The literature and conceptual framework suggest that when faced with competition, public schools may adopt one of three stances – they may decide not to do anything, decide to react with instructional and non-instructional reform efforts, or decide to react unproductively. They may decide not to react to competition if they think that the private school does not have anything different to offer, or if they lack the capacity to respond with policy changes. This implies that we have to first evaluate if there are any noteworthy differences between private and public schools in the context of study that are worth emulating by the public schools.

In qualitative studies, the researchers first identify public schools that are likely to be most impacted by competition, and then investigate their reactions using descriptive statistics,

shareholder perspectives and observations. The argument that certain policies are responses to competition rests on the notion that without these competitive pressures there would be no incentives to adopt new policies. These studies have found that affected public schools have focused on trying to improve customer relations, advertising, increasing teacher decision-making control, providing better curricular options, and making the working environment difficult for their competition.

In quantitative studies, the studies typically try to collect detailed data on school policies before and after the introduction of competition or accountability measures from a representative sample of schools. Then, the methodological focus is on trying to ensure that one compares the policy adoptions in schools that are similar on all dimensions, such as community and schooling characteristics, except the level of competition they face. These studies have found that schools that face higher competitive or accountability pressures are more likely to provide more instructional time for the high-stakes populations and subjects, increase teacher control over decision-making, or game the system by cheating on the examinations.

A significant complication in describing public school responses as reactions to competition is that it is very difficult to pinpoint what causes public schools to experience and react to competitive pressures. As discussed in the conceptual framework and analyzed in Chapter 5, the public school experience of competition is subjectively determined and it will depend on a confluence of factors such as the extent of privatization, the school's initial conditions, and the leadership's motivations. These findings suggest that a well-defined subjective measure of competition may be better able to capture the less tangible aspects of competition, and thus should be used to measure competition alongside objective measures when studying responses to competition.

The main limitation in the school response literature is in causal inference – that is, in arguing that certain policies are *caused* by and not just strongly associated with competition. The

identification is especially difficult in contexts like Nepal that have limited longitudinal data on policies and privatization growth³³. In fact, there is no national or district level database on school policies that can be used to assess how public school policies have changed over time in Nepal. Additionally, while there are many allusions to the public-private differences that have made private schools attractive to parents, there are no descriptive or analytical studies that have tried to assess whether public schools are basing their policymaking decisions to correct these assumed differences in public and private schooling.

In this chapter, I analyze the policy changes that are likely to be induced by competition, a topic that has not been investigated previously in developing countries. I address the question: How do public schools respond to private competition? I assume that public schools have three main strategies that they can utilize when faced with competition - they may decide not to do anything, decide to react with quality enhancing reform efforts, or decide to react by increasing their selectivity or other means to change student composition. The specific research questions addressed are the following:

- (1) What are the policies that public schools adopt in order to compete with private schools?
- (2) Are public schools that experience higher competition more likely to have adopted competition-induced policies than public schools that experience lower competition?
 - i. Are public schools that have more private schools in close proximity, referred to as “objective competition”, more likely to have adopted competition-induced policies than public schools that have fewer private schools in close proximity?
 - ii. Are public schools where the principals perceive private schools to be competition, referred to as “subjective competition”, more likely to have adopted competition-induced policies than public schools where principals do not perceive private schools as competition?

³³ Appendix 6.1 contains a discussion of the causal inference limitations of the study.

Data and Methods

Research Site

The analysis in the chapter is focused on the two districts of detailed study, Kathmandu and Chitwan. As discussed in more detail in the Chapter on Data and Methods, these districts were chosen for their high private sector exposure, which should provide schools in these districts with enough competitive pressures to need to respond. For instance, the number of private schools in both districts has expanded particularly strongly after the advent of democracy in the early 1990s. Over the past decade, lower-income populations have also begun to go to private schools and the private education sector has grown and diversified to address the demand. Still, the data from district records suggests that the average annual 9th grade school fees are at least 15 times higher in private schools compared to public schools, suggesting that private secondary schools continue to be considerably more expensive than public secondary schools in these study districts³⁴.

In conducting the analysis on public school responses, it is important to be aware of the ways in which the Nepal context is substantially different from the U.S. context that serves as the site for much of the literature reviewed on school responses. Firstly, since Nepal is a low-income country there may be contextually different policy responses to private competition that would be required to attract students. Secondly, similar to other Asian and African countries (Srivastava, 2013) the growth in private schooling over the past twenty years has been “de facto”, that is with minimal government support or regulatory oversight, unlike the “de jure”

³⁴ This finding may appear counterintuitive given that there is so much attention paid to the growing low-fee private sector in low-income contexts. The finding may be explained in the following ways. Firstly, there is a very small group of non-profit private schools in Nepal as most private schools are run as corporations. Secondly, given that Kathmandu and Chitwan are important politically, it is likely that they have few undocumented private schools, a phenomenon that may be more common in other populous parts of the country. Thirdly, the finding also suggests that rather than lowered school fees, it is the parental demand for private schools that is pushing private sector growth. That is, parents are willing to pay a premium for the perceived or real higher quality in private schools.

adoption of voucher programs in the U.S. (Witte, 2000) and Chile (Hsieh and Urquiola, 2006). While there have been decades of policies focused on improving access and quality, the 2008 per-child-financing (PCF) modality is the first accountability mechanism in Nepal. The PCF mechanism distributes salary and non-salary funds based on student enrollment. From a school response perspective, the mechanism is likely to have substantially increased the incentives of the public school system to improve and retain students. Finally, Nepal's education system is managed at the district level by the District Education Offices that have deconcentrated power as the local level implementing agency (Bhatta, 2009). In interviews, district officials mentioned that their involvement has been primarily restricted to collecting statistics, informing and monitoring schools, and holding inter-school meetings to highlight promising practices and conduct trainings. Thus, in contrast to district-level policy responses in the United States, Nepalese public schools are likely to be primarily affected by school-led policy changes rather than district level initiatives.

Data Sources

Quantitative data

In this chapter, I utilize the school-level Combined Quantitative Dataset, which combines data on school policies, competition measures, community and school characteristics, which were compiled from a primary dataset (principal survey) and various secondary sources (national education indicators, student performance, population census)³⁵.

Policy domains. Due to the lack of representative data on school policies, I developed a school policy instrument which was developed and finalized using the key literature (MoES, 2005; Rouse et al., 2007), the initial exploratory qualitative work in 2010, and several rounds of formal testing and discussions with the implementing survey firm. The survey enumerators asked

³⁵ The various data sources are described in more detail in Chapter 4: Data and Methods, and displayed in Figure 4.1.

the school principals whether or not they had implemented a range of policies (yes/no question) and when they started implementing these policies (a recall question), and the grades that they implemented these policies for (from grade 1 through grade 10).

School principals were asked questions on policies that were more prevalent in private schools, such as English medium, providing ties and belts, homework diaries, and computer education; and other quasi-private instructional strategies (added instructional time, teacher quality efforts) and quasi-private noninstructional strategies (emphasis on recruitment and promotions and procedures for selection during admission). The summary statistics of these school policies are presented in Table 6.1, and are discussed further in the results section of Research Question 1.

Competition Measures. The main explanatory variables used in the analysis are the measures of competition³⁶. I use the survey to develop two measures of competition, which are displayed in Table 6.2. Firstly, the geographic proximity measure was developed from a survey question on the number of private secondary schools in close proximity to the public schools. The school principals were asked to mention the number of private secondary schools that were located in close proximity (within a one kilometer walk) of the public school, and the continuous variable was then converted to a categorical variable of low, medium and high competition. I decided to use a categorical transformation into high, medium and low competition because I felt that it would be better for interpretation, because competition may not have a linear relationship with the policy response. On the other hand, I felt that a binary transformation (1 = at least one private school) would not capture the variations in the competitive environment. Secondly, a subjective measure of competition was defined as a categorical variable that equals 1 if the

³⁶ Further details on the competition measures are provided in the Data section of Chapter 5, which analyzes the competition measures in more detail.

school principal mentions at least one private school when prompted to list three competing schools, and measures the school leadership's perception of competition³⁷.

Principal perceptions and high-stakes performance. The school survey dataset also included perception questions on the reasons for private school attractiveness, decision-making control, and school motivations and expectations from policy reforms. These data were first collapsed from Likert scale items to binary data, and then divided by public school academic performance quartiles. The school survey dataset also collected data on school-level pass rates in the high-stakes examination. In the analysis, those results were used to divide the public school sample into quartiles of academic performance for further analysis of differences in policy responses and principal perceptions. The principal perceptions on select public-private differences and decision-making roles by academic quartile are presented in Table 6.3.

Explanatory and Control Variables. In order to quantitatively analyze the association between school responses and the subjective and objective measures of competition, I utilize the above described school policy actions as the dependent variables. The other important community covariates of interest in the analysis are the district variable, identifying whether the district is Kathmandu or Chitwan; the urban variable, identifying whether the school is in urban or rural regions. I also add variables that may measure the school's ability to be selective, such as whether the school takes entrance examinations, the schools' total fees, and the proportion of the school students who come from disadvantaged (dalit) backgrounds. I add a variable measuring the permanent share of teachers in schooling, as the literature has suggested that it may be an indicator of the school's flexibility and the amount of leverage they would have to ensure higher teacher effort (Sharma, 2012). Additionally, I also incorporate principal perceptions on the

³⁷ A second subjective measure on the best schools in the district was based on a question that asked them to list the three best schools in their district. The question was used to identify the best public schools in the district and then highlight the policies that they had adopted. The analysis of the policies adopted by the best schools is discussed in Appendix 6.3.

public schools' ability to make changes and the resource limitations that they face since the reaction to competition is also based on subjective perceptions. In addition, I control for other school characteristics such as school and class size, the proportion of female students in enrollment, the age of the school, efficiency indicators such as the proportion of new students in secondary schooling and the fraction that have dropped out in primary schooling; and for infrastructure and resource characteristics - whether they have had to hire teachers due to lack of funds, whether they have computer space, and whether their classroom desks are in adequate condition. The descriptive statistics of these variables are listed in Table 6.4.

Qualitative Data

The qualitative data used for the analysis includes over 50 interviews of national policymakers, and district, local and public and private school principals in the two districts of Kathmandu and Chitwan, collected between July and September, 2011. The analysis focused on the portions of the discussions that were focused on public-private differences and what public schools were doing or could be doing in response to competition from private schools.

Empirical Strategy

I identify the policies that are more likely to be a response to private competition by utilizing a two step mixed methods approach based on stakeholder perspectives and survey data on public school responses. The lack of longitudinal information on policy changes and the extent of competition does not permit conclusive causal inference³⁸ analysis. However, I argue that using school principals' perspectives on public-private differences and what they have done in response to competition increases the likelihood that certain policies are "competition-induced" rather than just general improvements.

³⁸ Appendix 6.1 contains a discussion of the causal inference limitations of the study.

To address Research Question 1, identifying the policies that are likely to be induced by competition, I first analyze the descriptive statistics of school policies. I then highlight the policies that are likely to be public school responses by going through the following steps. For each policy, I studied the extent of the policy's adoption in the private school sample, and whether the policy was adopted more frequently in private schools than in public schools. I simultaneously analyzed stakeholder perspectives from interviews and principal perceptions to understand whether that policy was something that made private schools better than public schools, and thus considered worth emulating. Then, I noted the historical trends in the adoption of that policy in public schools. In this manner, I triangulated a variety of sources and perspectives to identify a set of policies that were likely to be a response to private competition.

In the presentation of the descriptive data, I categorized the school policies as “private mirroring”, “quasi-private instructional” and “quasi-private non-instructional” strategies. The private mirroring strategies include strategies that were most visible and attributed to private schools. The quasi-private instructional strategies included strategies that were more prevalent in private schools compared to public schools, but were viewed as quality improvement tactics rather than exclusively private school strategies. The quasi-private non-instructional strategies included policies focused on school promotion and selectivity during admissions. These policies were considered quasi-private but differed from other private-mirroring strategies in that these were not directly related to school quality. I show the historical trends on when schools started adopting these policies to identify if there has been a substantial increase in the frequency of any of these policy adoptions in recent years.

For the descriptive analysis, I also use information on the number of grades for which they had implemented the policy in order to understand if the policies had been sustained. The school was defined as having “sustained” policies if the school had adopted these policies for at least three grades. I developed the sustained policy definitions for the following policies:

adopting English medium, adding computer education, providing additional instructional time for days lost to strikes, providing additional instructional time by keeping the school partly operational during vacations, providing targeted additional time for weak students, and lengthening the school day. The rationale for creating this definition was that it would allow one to highlight the schools that have exerted efforts throughout the schooling cycle. Since Nepal's high-stakes examination only tests 10th grade children, all three of these grades would not have high stakes attached to them. Additionally, the fact that they have implemented these strategies for at least three grades would suggest that the school had not just initiated these efforts in this academic year.

To address Research Question 2, whether policy adoption varied by the extent of competition, I use logistic regression analysis to quantify the association between the selected school responses, identified in Research Question 1, and the subjective and objective measures of competition. The school's policy response to competition is expected to depend on the school's student, financial and physical characteristics, and community characteristics, following Rouse et al. (2007) and other empirical studies that focus on school policies. In presenting the results, I approach the question of public school responses to competition using quantitative measures and contrast schools by the extent of subjective and objective competition they face. In the regression results, I interpret the odds ratio results for the measures of competition, and key explanatory variables (the district variable, the indicator of selectivity, and principal perceptions).

Model

I estimate a set of cross-sectional school-level models which estimates the association between policy responses and the objective and subjective measure of competition using the following set of logistic regressions³⁹:

$$A_i = \alpha + \beta_1 C_{subj} + \beta_2 C_{thir2} + \beta_3 C_{thir3} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 1})$$

where A represents whether the school has implemented policy i in 2011-12, C_{thir2} and C_{thir3} represent categorical⁴⁰ indicators of competition - the medium and high number of private secondary schools in geographic proximity (the omitted category is low competition), and C_{subj} represents the subjective competition measure, whether the school had mentioned at least one private school as a competition school. P represents a vector of key explanatory variables, and Z represents a vector of school characteristic controls. The key parameters of interest are β_1 , β_2 , and β_3 , which measure the effect of competition on the likelihood of the school's policy response. As stated earlier, the summary statistics on the competition measures and explanatory and control variables are presented in Tables 6.2 and 6.4, respectively. In the presentation of the results, I refer to the analytical dataset as "Combined Quantitative Dataset", and the survey as "Principal Survey" for simplicity⁴¹.

³⁹ I also ran the following models of the objective and subjective measures separately.

$$A_i = \alpha + \beta_1 C_{subj} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 1a})$$

$$A_i = \alpha + \beta_2 C_{thir2} + \beta_3 C_{thir3} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 1b})$$

Re-estimating the model with the subjective and objective measures separately did not change the estimation results for the key covariates in any substantial manner. Hence, these results are not described in the text.

⁴⁰ The continuous variable that measured the geographic proximity measure of competition was converted to a categorical variable that took three values (low, medium and high) of competition for the analysis. I decided to use a categorical transformation into high, medium and low competition because I felt that it would be better for interpretation, because competition may not have a linear relationship with the policy response. On the other hand, I felt that a binary transformation (1 = at least one private school) would not capture the variations in the competitive environment.

⁴¹ For further details on the data, please refer to Figure 4.1's data map in Chapter 4: Data and Methods.

Results

What are the Policies that Public Schools appear to be Adopting in order to Compete with Private Schools?

Private-mirroring strategies

The set of policies that are most likely to be public school responses to competition are policies that are viewed by stakeholders to be quintessentially private school characteristics and worthy of emulation by public schools. Thus, the public schools' growing adoption of these strategies can be interpreted as their efforts to "mirror" private schools with the hope of increasing their attractiveness in the community. The policies include adopting English medium of instruction, adding computer education to the curriculum, requiring ties and belts on school uniforms, and making students keep homework diaries. These "private mirroring" strategies are also distinguishable from other reform efforts since these are more visible measures. For instance, a principal can show the school's transition to English medium by showing English textbooks, take parents for a tour of the computer class, hand out homework diaries, and show the ties and belts that their students are now required to wear on their uniforms. The historical trends in public school adoption of these policies are presented in Figure 6.1.

English medium. According to most stakeholders, private schools are primarily more attractive because they teach in the globally relevant English medium of education while public schools provide instruction in the official national language, Nepali⁴². Private schools were started, primarily in the 1980s and 1990s, to provide modern education to elite students, which included teaching in English medium. Of the 81 private schools sampled in the principal surveys, all but one of the private schools was started as an English medium school. In discussions, all parents and policymakers attributed the decline of public school attractiveness at least in part to

⁴² Nepal has experienced a complicated history in determining the main language of instruction given its complex language diversity (Yadava, 2007). While arguments were made for Nepali, Hindi and English, Nepali was chosen to foster a unified national identity (Rai, Rai, Phyak & Rai, 2011).

the medium of instruction issue. For instance, as shown in Table 6.3, over 90% of surveyed public school principals agreed that parents prefer private schools because private schools teach using English medium. In discussions, some public school officials and parents even claimed that it was the only significant difference between public and private schools.

The adoption of English medium is by far the most important “private-mirroring” strategy that could be adopted by public schools. Public and private schools have long been distinguished by their language of instruction. As shown in Table 6.5, a nationally representative study from 2004 showed that while over 75% of private secondary schools were found to be operating as English medium schools, only 1.9% of the public secondary schools were operating as English medium schools. However, English has been valued for many decades in Nepal, potentially due to the long-term importance of English in neighboring post-colonial India, Pakistan and Bangladesh. Additional macroeconomic and political events have also aided in increasing the relevance of English - the past two decades of political instability and consequent migration boom has increased the importance of English fluency and household’s ability to finance private schooling. The push for English is also reflected in a different kind of policy response, a policy directive from the district office. For instance, in Kathmandu, the District Education Office reported that he was leading an effort to get high school principals to commit to transitioning their school to English medium in 2011-12 (personal communication, August 23, 2011). Thus, the adoption of English medium is by far the most important public-private difference and the most important “private-mirroring” strategy that could be adopted by public schools. There is an expectation that public schools may have started adopting English medium instruction over the past few years to compete and survive as private schools rapidly grow in their communities, despite the considerable difficulties a school may face in adjusting to a new language of instruction.

The policy adoption trends from the survey data confirm these expectations. Nearly three-quarters of the public schools say that they have adopted English medium in their schools in the 2011-12 academic year. Importantly, the adoption of English is a fairly recent development. As seen in Figure 6.1, most of the public schools in both districts, except for a few older Kathmandu schools, mentioned that they initiated English medium teaching only in the past five to six years. It also appears that English medium efforts are in their infancy for most schools. While almost three-fourths of all public schools had adopted English medium, less than a third taught in English in three or more school grades. An additional indicator of the school's serious commitment to English medium is whether they have hired teachers specifically for English teaching purposes. About a third of the public schools appear to have recruited teachers specifically to teach in English.

Computer education in the curriculum. Based on interviews, one of the other key aspects that appear to differentiate public and private schools include their commitment to technology-based education. As shown in Table 6.3, nearly 60% of the public school principals agreed that parents find private schools to be more attractive because they provide computer skills. There has been growing recognition of the need to provide computer-based education in Nepal. Many of the sampled public schools had operational computer labs due to donations. The Nepalese government also launched a pilot One Laptop Per Child (OLPC) program in 60 schools and evaluated it for its learning benefits (Sharma, 2012). In the study, the provision of computer education as a tested subject is a proxy measure that would signal that the school has firmly integrated ICT based education into the learning environment. The data indicate that over 90% of private schools, over 50% of public schools in Kathmandu, and only 28% in Chitwan, have provided computer education as a subject. Also, efforts to provide computing skills in public schools are only just beginning – only 35% of Kathmandu public schools and 12% of Chitwan public schools provide computer classes for three or more school grades.

Adding ties and belts to the school uniform. The physical appearance of school children, based on their cleanliness and the quality of their school uniforms, are an easy way to differentiate public and private school students. Private schools in Nepal often have elaborate uniform requirements (formal blazers, sports uniforms) while public school students only require a basic blue shirt and grey pants or skirts. Interviewed principals mentioned that a tactic to lessen some of the perceived difference between public and private school students has been to require public school students to wear ties and belts on their school uniforms. About 80% of Kathmandu schools, and 40% of Chitwan schools, have added ties and belt requirements to their school uniforms as of 2011-12. The trend data in Figure 6.1 show that in Chitwan the public schools only started adding ties and belts to uniforms from around 2005-06, while it was more prevalent from the 1990s in Kathmandu.

Instituting a homework diary system. A homework diary system is a means for parents, teachers and students to collaboratively monitor student learning. In such a system, students are expected to keep a homework diary. As described by public school principals, the homework diary system expects all parties to regularly track student progress by looking at the homework records, and then signing a page in the diary to note that they have reviewed the work. The checks and balances system can ensure that parents, students and teachers are on the same page regarding student developments and are mutually accountable. While over 80% of private schools have such systems in place, the adoption in public schools is fairly low. Only 34% of Chitwan public schools and 19% of Kathmandu public schools have adopted a homework diary system.

In summary, these “private-mirroring” policies have clearly been widely adopted by private schools. There are two things worth noting with regards to the public school adoption of these policies. Firstly, the historical trends appear to show significant differences between Kathmandu and Chitwan public schools in the adoption of these strategies. As shown in the

historical adoption data in Figure 6.1, the adoption of these policies in Chitwan public schools appear to be a recent response to the private school competition in the district, while it has been a longer-term process in Kathmandu given the more pervasive exposure to private schools in the capital. Secondly, while public schools have adopted policies that require primarily school level actions, few public schools have tried to set up a homework diary system, which requires the coordinated efforts of students, teachers and parents. This finding may suggest that public school managements are less convinced of their ability to influence teacher and parent behavior.

Quasi-private instructional strategies

Other policies that public schools could implement include strategies that could be the “behind the scenes” reasons for private schools’ presumed higher quality and be more frequently adopted in private schools. The policies that focus on instruction and outcomes include an emphasis on high-stakes results through tutoring sessions for the high-stakes examinations, a focus on adding instructional time, and efforts to have better managerial control over teacher performance. The adoption of these strategies by public schools may be construed as espousing “private-like” behavior. I distinguish these quasi-private strategies from the “private mirroring” strategies because the public school principals seem to view the instructional strategies as school improvement policies rather than exclusively private school strategies. The historical trends in public school adoption of these policies are presented in Figure 6.2.

Control over teacher performance. There is a general perception among parents that private schools are better able to provide quality education and score higher test scores because these schools have better managerial control over teacher performance. Public school principals appear to concur with this assessment. As shown in Table 6.3, less than 60% of public school principals say that they have substantial control over teacher appointments and almost 70% agree that private school teachers may be viewed as being more responsible. Teacher absenteeism in public schools has been widely acknowledged as a serious reason for relatively worse education

quality in public schools in developing countries. For instance, an influential study on rural India (Muralidharan and Kremer, 2009) found that private school teachers were two to eight percentage points less likely to be absent, and six to nine percentage points more likely to be engaged in teaching activity as compared to teachers in public schools. Additionally, Beteille (2009) argues that there are deep rooted structural and institutional problems that allow for teacher absenteeism and ineffectiveness to prevail in settings such as India.

In Nepal, interviews suggested that public school teachers are heavily politicized and frequently work as local level political officials for their parties, much like the “teacher politicians” documented in the Nepal-bordering state of Uttar Pradesh (Kingdon and Muzammil, 2003). In fact, given the continuing volatile political climate in Nepal, the teacher politicization situation may conceivably be a heightened form of the complex teacher political environment that exists in India. Such a situation would adversely affect schooling. For instance, in a well-functioning public school in one of the study sites, the 6-month absence of an English teacher who could not be replaced with a substitute in time resulted in 25 failures in the high-stakes examination at the school.

The attempts by school managers to monitor and incentivize teachers are proxied in the analysis with three measures: whether the school provides monetary incentives to incentivize performance, whether the school takes disciplinary action against teacher absenteeism, and whether it has involved parents in monitoring teacher absenteeism. Two-thirds of the private schools, and half of the public schools, stated that they provide monetary incentives for teacher performance⁴³.

Additionally, about half of the private schools, and only 20% of the public schools, had policies in place to take disciplinary action for teacher absenteeism. It is rare for schools to

⁴³ Since the survey did not ask for specific information on the kinds of monetary incentives required of teachers, it is possible that the surprisingly high response rate for this question that was trying to measure performance pay initiatives may be due to an acquiescence bias.

provide reports on teacher absenteeism to the parents – only seven of the 212 public schools provide such a report to their parents, and only about 20% of public schools involve parents in monitoring teacher absenteeism. As shown in Figure 6.2, there do not seem to be any discernible historical trends in when schools started instituting policies to fine teachers for absenteeism or involve parents to monitor absenteeism. These historical trends may suggest that most schools fine teachers on a case by case basis as they experienced absenteeism.

Tutoring sessions for the high-stakes secondary school examination. The main 10th grade school-leaving (SLC) examination is the single most important indicator of school quality in the country. Public schools have historically lagged significantly behind private schools in these schooling outcomes (Thapa, 2012b). As shown in Table 6.3, over 80% of principals agree that the high-stakes outcomes are a main reason why private schools are more attractive than public schools. However, the common refrain from public school principals was that they thought that private schools were excessively teaching to the test, while public school teaching was much more conceptually based. Like the private tutoring phenomenon documented in many East Asian countries (Dang and Rogers, 2008), a popular school policy in Nepal is to add tutoring sessions, referred to as coaching classes, to ensure that students are well prepared for these examinations. Public schools also seem to have latched on to this trend early on. As shown in Table 6.5, over half of schools nationally admitted to having some type of coaching classes, especially for the more difficult subjects of Mathematics, English and Science in 2004.

The data from 2011-12 for the two districts indicate that almost all public and private schools appear to have instituted SLC coaching classes, indicating that public schools are also expending additional effort to improve their high stakes examinations. Coaching classes that cater specifically to weaker students are less prevalent. However, two-thirds of private schools and less than half of the public schools have instituted ability targeted coaching classes. As shown in Figure 6.2, there are no discernible historical trends to the adoption of these coaching

policies. It is worth noting that the quality and regularity of the coaching classes received by the students will vary tremendously depending on the school's financial condition. It is also likely that the nature of the SLC examination coaching classes has changed over time, since there has been increased awareness of how most public school students do not pass in these exams.

Adding instructional time. One of the other reasons that public schools may not perform as well in the high-stakes examinations is if they spend less time studying at the school. Indeed, as shown in Table 6.5, data from 2004 show that while almost 80% of private schools had instituted some form of remedial teaching, remedial teaching was prevalent in less than one quarter of public schools nationally. For this study, principals were asked whether their schools supplemented instruction for the days lost to political strikes and vacations, lengthened the school day, or targeted instructional time for weaker students. The interviews suggested that in public schools there was a need for added instructional time in subjects that public school students were typically weaker in such as English, Mathematics and Science.

The data from 2011-12 for the two districts indicate that sampled private schools were substantially more likely to utilize these strategies to extend the amount of studying time compared to public schools. For instance, almost 80% of the private schools, but only a third of the public schools, mentioned that they provided extra lessons for weaker students. These public schools were also less likely to have instituted these instructional time policies throughout the schooling cycle. While a third of the schools provide extra classes to help weaker students, less than 15% provided these extra sessions for at least three school grades. As shown in Figure 6.2, the effort to add instructional time by lengthening the school day, adding extra school time during vacations, and adding extra classes for weaker students (remedial classes) seem to have gained significant traction in the past decade.

To summarize, most public schools have instituted coaching classes to improve their high-stakes performance examinations. Public schools are also trying to add instructional time

beyond official requirements to make sure that the students at least complete their required course load. The fact that few schools involve parents in monitoring teacher performance suggests that school officials, in public and private schools, believe that managing teachers is the school's responsibility and not the parents.

Quasi-private non-instructional policies

Other non-instructional policies that could be adopted by public schools in their desire to compete include strategies to promote the school or strategies to enhance school selectivity. While these non-instructional strategies are considered private school behavior, I distinguish these strategies from the "private-mirroring" strategies because promotional and selectivity related strategies are rarely characterized as quality enhancing strategies. The historical trends in public school adoption of these policies are presented in Figure 6.3.

Increasing admission selectivity. A prototypical private-school strategy is to be selective during admissions. Schools can selectively admit students by using screening processes such as interviewing parents, conducting entrance examinations, requiring special admission fees, or requiring information on parent profession (Contreras, Bustos and Supelveda, 2009). The fact that private schools can employ selection strategies is often cited as a strong critique of allowing school choice in developed countries. The implication is that better student performance in private schools may be primarily attributable to the ability to filter students and not their ability to deliver quality education. In interviews, many of the public school principals highlighted that their main disadvantage was that they had to accept all students who came to the school, while private schools could sort students by income and ability. Given the discussions in the interviews, I expected to find that public schools may be interested in employing selective strategies as a means to maintain or initiate a competitive advantage since there were no strict regulations governing school admissions due to a lack of zoning and education related taxation.

The survey data indicate that private schools were more likely than public schools to collect special admission fees and use entrance examinations for student selection in the admission process. For instance, less than half of the public schools in Chitwan, but almost all private schools, had entrance examinations. These data suggest that private schools are able to utilize sorting mechanisms while taking in students. Over 60% of Chitwan public schools, and only 26% of private schools, mentioned that they conducted parent interviews. As shown in Figure 6.3, there are no historical trends in the frequency of adoption of selectivity (taking entrance examinations or requiring parent interviews) policies in public schools. These trends may suggest that schools are using interviews and examinations for baseline statistics and information gathering rather than as a means for sorting. Or, it may suggest that there are no discernible group trends to increase selectivity and the schools that change their admission requirements will do so on a case by case basis.

It is worth noting that the school's usage of these admission requirements may substantially differ between public and private schools. For instance, parents in Chitwan public schools could potentially be considered to be "interviewed" when they were just informally engaging in discussions, a product of a more community oriented school setting in the less urbanized district. Also, requiring information on parents' profession is administrative data that need not be used for selection purposes. Public schools are also less likely to take special admission fees to admit students, and are likely to charge lower fees than private schools during admission season. Similarly, the entrance examination process could serve dual purposes, depending on the desirability of the schools. While well-known public and private schools could use examinations as a strategy to selectively admit students, public school principals suggested that they used the examinations to assess baseline learning abilities even if all students had to be admitted. Nevertheless, the fact that these procedures are followed by some public schools at the

very least suggests that there is a higher order of rigor and selectivity in these public schools' admission process.

Promoting the school. Public schools principals frequently stated that private schools aggressively mislead parents and students with their promotional tactics. Despite these perceptions, less than a third of the sampled Kathmandu private schools, but 80% of the sampled Chitwan private schools, mentioned that they promoted their school by placing advertisements in television and newspapers. Advertising may be less frequent in Kathmandu than in Chitwan due to the higher costs of advertisements in that market. Still, advertising in TV and newspapers is twice as likely in private schools than in public schools. Public schools are also as likely as private schools to regularly produce banners and pamphlets promoting the school, suggesting that public schools are also aware of the need for school visibility. The adoption of these policies is particularly interesting since these are not linked to quality, and are thus not likely to be based on any parental demand for advertising. Thus, these promotional strategies are likely to be emulation of private school behavior.

Among the strategies employed by public schools to shore up their declining enrollment include promoting the school to the community. Schools were asked if they went door-to-door during admission season⁶. While the majority of public schools go door-to-door to recruit students, very few private schools are likely to have such institutionalized recruitment policies. Most of the public schools have started going door to door to recruit students in the past 5-6 years, indicating that public schools are facing a more significant struggle in recruiting students recently. As shown in Figure 6.3, the historical trends on non-instructional policies suggests that attempts to promote the school through advertisements, promotional pamphlets or by going door to door to recruit students are all recent initiatives.

To summarize, a substantial number of public schools are developing promotional materials to increase the visibility of their school, and have had to go door to door to recruit

students. Interestingly, many public schools also have a variety of admission requirements such as initial exams and admission fees, but it is unlikely that all public schools can utilize admission requirements for screening purposes⁴⁴.

Are Public Schools that Experience Higher Competition more likely to have Adopted these School Policies than Public Schools that have Lower Competition?

Descriptive Statistics

As displayed in Table 6.6, schools in higher competition areas (surrounded by more private secondary schools) were more likely to add extra instructional time during strikes and have longer school days, provide computer education, institute a homework diary system, recruit teachers to teach in English medium, and engage in selectivity practices than schools in lower competition areas (surrounded by fewer private schools). In contrast, schools that were in low and medium competition regions were more likely to have adopted English medium, require ties and belts in school uniforms, advertise in TV or newspapers, and add extra classes for weak students. These trends of a higher rate of policy adoption in low or medium competition areas suggest that public schools that are surrounded by too many private competitors may be experiencing the negative consequences of stratification.

Schools that experience subjective competition, that is, where principals identified at least one private school when asked to mention three competing schools, were more likely than

⁴⁴ There are two other pieces of analysis that illuminate public school responses that are discussed in more detail in the appendices. Firstly, there are other policies that public schools have adopted to address school quality problems which are routinely considered to be worse in public schools. These policies include the school's efforts that focus on recruiting better teachers, and its non-instructional efforts to engage with the community to reduce absenteeism, and gain higher community financing support. These actions are considered to be a separate category of responses since these are not strategies that are considered to be private school behaviors, even though these actions may have been necessitated due to high privatization. A description of these policies is presented in Appendix 6.2.

Secondly, another approach to understanding the policies that are likely to be attributable to competition is to investigate the policies that are being implemented by the best public schools in the country. Since public schools interact with each other a lot more than with private schools, the majority of public schools may be indirectly affected by private schools through the best practices instituted by the top public schools. An initial exploration of the best public schools' policy actions are presented in Appendix 6.3.

those that do not experience subjective competition to have adopted English medium of instruction and recruited teachers for English medium, provided computer education as a subject, added ties and belts to school uniforms, and adding a homework diary system. The schools that experienced subjective competition were also more likely to adopt instructional and non-instructional strategies such as taking entrance examinations during admission, taking disciplinary action for teacher absenteeism, adding instruction time by lengthening the school day, keeping the school operational during vacations, and providing extra instructional time for weak students, advertise in TV and in newspapers.

Regression Results

Private-mirroring strategies. As displayed in Table 6.7, I find that public schools that are located in high and medium competition are less likely to have added English medium of instruction. The public schools in high competition regions are less than half as likely as schools in low competition regions to have adopted English medium, and the result is significant at the 10% level. The schools in medium or high competition regions are far less likely to have recruited teachers for English medium as well. In addition, there does not seem to be a significant relationship between the extent of competition and the school adoption of other private mirroring strategies such as teaching computer education as a subject, adding ties and belts to school uniforms, or requiring homework diaries. These results may suggest that schools in areas of medium or high competition do not have the resources to be able to provide computer education for their students or recruit new teachers for English medium.

On the other hand, public schools that have principals who mentioned at least one private school as a competing school were over twice as likely to have adopted English medium (significant at the 5% level), and over one and a half times as likely to have recruited teachers for the purpose (not significant at the 10% level). Schools with principals who mentioned that they consider private schools to be competitor schools are about twice as likely to require ties and

belts in school uniforms (significant at the 5% level) and to have instituted a homework diary system (not significant at the 10% level). Interestingly, adding computer education as a subject is not significantly different between schools by perception of competition.

The results also indicate that there is a clear demarcation between the two districts of study, Kathmandu and Chitwan, in terms of school policy adoption. Chitwan public schools are more than twice as likely to have adopted English medium as Kathmandu schools, after controlling for other characteristics. However, the schools in Kathmandu were over 6 times as likely as schools in Chitwan to have recruited teachers for English medium. These results suggest that English medium is a more recently adopted initiative in Chitwan than in the capital city of Kathmandu, but that Kathmandu schools are moving towards English medium adoption more seriously. Schools in Kathmandu are over four times as likely to have added computer education and added ties and belts to school uniforms. The public schools in Kathmandu are more likely to have historically adopted quasi-private strategies given their prolonged exposure to private school practices, and better access to resources to be able to adopt computer education. The fact that Chitwan public schools are over five times as likely to require students to keep a homework diary suggests that more Chitwan schools are able to get parents, teachers and students to collaboratively commit to keeping track of student progress.

The public schools that display signs of selectivity, specifically by requiring entrance examinations for 6th grade students, are over twice as likely to have adopted English medium and recruit teachers for English medium. It seems logical to find that schools that are selective are the ones that are able to transition to English medium, since the transition would be highly expensive and time consuming in terms of textbooks, training, and teacher cooperation. Surprisingly, selective public schools seem less likely to adopt computer education as a subject. The fact that nonselective schools are more likely to adopt computer education as a subject may simply

suggest that even nonselective schools understand the importance of computer education, but further analysis would be required to understand why this is the case.

The odds ratios results from principal perceptions suggest that principals believe that English medium is what sets private schools apart from public schools, and that without English medium private schools are not really better in quality. Specifically, public schools that have principals who do not believe that they need to compete with private schools are five times less likely to recruit English medium teachers than public schools whose principals believe that they need to compete with private schools. However, public school principals who did not believe that private schools were better in overall quality were twice as likely to have adopted English medium and recruit teachers for English medium.

Quasi-private instructional strategies. As shown in Table 6.8, there are no statistically significant differences between schools that differ in the extent of competition (high, medium or low competition) in adopting extra coaching classes for weaker students to prepare for the school-leaving certificate (SLC) examinations. The main instruction related strategy that appears to be more frequently adopted in higher competition regions is the school's decision to lengthen the school day. The schools in high competition regions are over four times as likely as schools in low competition regions to have longer school days than officially required. The longer school day reform results suggest that schools in high competition regions are putting significant effort into ensuring that students are covering the instructional material. In addition, of the few schools that have involved parents in some capacity to monitor teacher absenteeism, schools that have a medium number of private schools nearby are twice as likely to have parental involvement in absenteeism as schools located in a low competition region.

Public schools that perceive subjective competition are less likely to have added SLC coaching classes for weak students but are over one and a half times as likely to have added remedial lessons. One interpretation of these findings is that the schools that perceive subjective

competition may actually be more engaged in improving school quality throughout the school cycle, and may not need special instructional targeting during the final high-stakes examinations. In addition, public schools that perceive private schools as competition are almost three times as likely to have involved parents in monitoring teacher absenteeism.

In terms of the explanatory variables, Kathmandu public schools were over four times as likely to mention that they had SLC coaching for weaker students and had fined teachers for absenteeism, compared to Chitwan public schools. In contrast, Chitwan public schools were much more likely to stay operational during vacation periods, have extra classes for weaker students (remedial classes), and involve parents in monitoring teacher absenteeism. These results suggest that Kathmandu public schools have a higher focus on the examination performance of their students and that they may encounter and have to deal with higher incidence of teacher absenteeism. On the other hand, Chitwan public schools appear to be more likely to involve parents and trying to improve schooling outcomes for students throughout the schooling cycle.

The more selective schools are significantly more likely to keep schools partly operational during vacations, and have some system of remedial education. It is not surprising that public schools that are selective are more likely to adopt these policies, since all of these interventions would require significant personnel and financial resources. For instance, teachers need to be paid extra to ensure that they come during vacations or are willing to teach remedial classes. Selective schools are less likely to institute SLC exam coaching for weaker students. The fact that schools that are selective do not have special SLC coaching for weaker students may simply suggest that they provide adequate attention in schooling and do not need to implement special measures during examinations.

Public schools that believed that they were competing primarily with public schools, and not with private schools, were twice as likely to have SLC coaching classes for weaker students and to have longer school days. These findings suggest that these public schools believe that

adding instructional time and coaching classes are quality improvements and not exclusively private school strategies. Not surprisingly, public school principals who stressed a lack of resources were less likely to have instituted the more expensive strategies of adding coaching classes for weaker students or keeping schools operational during vacations. Schools that believed that private schools are better are more likely to stay open during vacations, suggesting that added instructional time is a way to compete with private schools.

Quasi-private non-instructional strategies. As shown in Table 6.9, the strategies that may suggest selective admission practices, such as entrance examinations or parent interviews, are not more prevalent in high competition regions. This finding may imply that certain public schools adopt selection policies after they have demonstrated quality and gained a favorable reputation, irrespective of whether they are located in low or high competition areas. There are also no significant differences between public schools in low, medium or high competition regions in the adoption of school advertising, developing promotional materials or in going door to door to recruit students.

Public schools that have principals who perceive private schools as competition are not more likely to require parent interviews or entrance examinations, again suggesting that selection processes are a product of improved quality rather than a strategy to enhance quality in public schools. On the other hand, the public schools whose principals perceive private schools as competition are almost twice as likely to advertise and go door to door to recruit students, suggesting that principals who recognize private schools as competition also realize the importance of visibility and interactions with parents.

Kathmandu public schools were over 5 times as likely to require entrance examinations compared to Chitwan schools. As a district with more long-term private school exposure, it seems that it is acceptable for some public schools to also try and maintain a school quality premium using entrance examinations in Kathmandu. However, Kathmandu schools were far

less likely to require parent interviews during admissions, advertise on TV or newspapers, and go door to door during recruiting season. The adoption of these promotional policies again suggests that public schools in the smaller, less urbanized Chitwan district are more likely to try and reach the community and have more regular interactions with the parents.

Schools that are more selective do not seem to advertise (statistically significant at 5% level) or go door to door to recruit students (not significant at the 10% level), which is not surprising since it implies that selective schools get more than adequate student enrollment requests. Schools with principals who agreed that they were primarily competing with public schools were more likely to advertise, but less likely to have developed other promotional materials. This finding suggests that some public schools also view advertising as a necessity rather than a private school strategy.

Discussion

Public schools in developing countries have long held the dubious reputation of being inflexible, inefficient, corrupt institutions. The rise of a low-fee private sector that caters to the poor in developing Asian and African countries has motivated some pro-private actors to argue that low-fee private schools need to be expanded since private schools are besting the government on both equity and efficiency fronts (Dixon, 2012). On the other hand, pro-public advocates continue to argue for governance improvements and added resources to public schools, and are concerned that full-fledged privatization will exacerbate rather than ameliorate inequalities (UNESCO, 2008). In the Nepal context, the dominant narrative has been that public school system has steadily lost ground to private schools over the past two decades. In contrast to the pessimistic global and national discourse on public school sluggishness, my analysis in the Nepal context suggests that there has been a recent surge of policy adoptions in Nepalese public secondary schools as they attempt to compete with the private sector.

Public secondary schools in the study districts have begun to adopt “private-mirroring” strategies that traditionally differentiated public and private schools, and have taken measures to increase school visibility. The most striking finding is that within a span of five years (between 2005-06 to 2011-12), the majority of public secondary schools have begun the transition from Nepali to English medium of instruction. English medium teaching and computer education courses are in their infancy in both districts, and are likely to be more comprehensively instituted throughout the schooling cycle in the next few years. There also appears to be a growing recognition of the need for school visibility and communication, and public schools have started advertising, developing promotional materials, and going door-to-door to recruit students in the past decade. Interestingly, a majority of schools have admission requirements for schooling entry, which may potentially be used for screening by the best public schools. The growth in these policy adoptions are likely to have been driven by a combination of intensified private school growth, parental demand for private-like schooling, and the institutionalization of an enrollment-linked financing system.

Despite the adoption of these recently instituted policy changes, public schools appear to lag behind private schools when it comes to instructional practices that may be instrumentally related to learning outcomes. For instance, while public schools have focused on high-stakes examination tutoring lessons, less than a third of public schools have instituted remedial classes, or established policies that focus on reducing teacher absenteeism by involving parents in the process or by taking disciplinary action against teachers for absenteeism. Notably, only 24% of public schools, but almost all private schools, have instituted a homework diary system which requires the coordinated efforts of students, teachers, and parents. These trends suggest that public schools are wary of policies that require them to increase parent-teacher coordination or more closely monitor teacher performance, despite the fact that such efforts are critical for higher quality learning.

Furthermore, while the growth in policy adoption has been impressive, it is unclear if these policies will be able to improve the desirability of these public schools since school choice is inextricably based on both quality and sorting. For instance, by the time these school policies are adopted by lower performing public schools, these policies may have lost their novelty and there may be no real “catching up” to the private schools or the better public schools. For example, when everyone starts teaching in English medium, parents will differentiate schools by quality of English teaching which will presumably advantage schools with a longer history of English teaching. Since many of the policies like English medium and computer education are clearly in their infancy of adoption in Nepalese public schools, further research will be required to assess if there has been a substantial improvement in outcomes and desirability as a result of these policy changes.

The distinctions between Kathmandu and Chitwan districts reveal interesting variations in policies that may be adopted by schools that are in high privatization versus medium privatization contexts. For instance, the public schools in Kathmandu are able to adopt sorting behavior (take an entrance examination, require a special admission fee) in an environment of lax monitoring and high population densities. Kathmandu public schools clearly have a longer history and familiarity with the more visible private mirroring strategies such as English medium, computer education, adding ties and belts to uniforms. In contrast, nearly all of the policies that were adopted in higher frequency in Chitwan district (homework diary, interviewing parents, extra classes for weaker students, going door to door to recruit students) signal regular interactions with community members and a focus on improving learning quality internally. Furthermore, the major private mirroring strategies of adding ties and belts, English medium, computer education have been very recently and rapidly adopted in the Chitwan district. On the whole, the efforts made by schools in Chitwan district appear to hold more promise for future

competitiveness as they are introducing both “private-mirroring” strategies and instructional improvements.

From a policymaking perspective, having data on what schools are doing can provide policymakers with objective criteria to understand where schools are headed, steer schools in the right policy directions if needed, and help schools productively compete. Policymakers need to utilize an understanding of the policy adoptions at the school level to ensure that public schools can sustain these policies and productively compete with private schools. For instance, in the Nepal context, since public schools are adopting English medium of instruction in such high frequencies, policy efforts have to focus on assessing whether the schools are adequately equipped to provide English medium of instruction in terms of the quality of teaching and the available textbooks. In addition, public schools also need to incentivize schools to increase instructional efforts throughout the schooling cycle and adopt policies focused on improving teacher effort, particularly in the more urbanized districts that face high privatization.

From a methodological standpoint, I find that the experience of competition is best conceptualized as being based on the extent of competition (number of private schools) and the principal’s perception of competition, based on their subjective experiences. In particular, measuring the experience of competition based on principal perceptions of competition appears to accurately capture the motivation and capacity to implement important policies. The schools with principals who perceived private schools to be competition were more likely to have adopted English medium, added ties and belts to school uniforms, and provide systematic targeted instruction for weaker students, and advertise the school. In contrast, the public schools that are surrounded by a large number of private schools, instead of a medium number or a low number of schools, appear to be less able to adopt strategies that require more financial and personnel resources, such as English medium or computer education. The difference between regions with differing levels of competition in terms of policy adoptions suggests that there may

be a tipping point in terms of the level of competition beyond which public schools are faced with loss of support that impedes them from carrying out internal improvements. Future research efforts could aim to better understand the mechanism of the competitive effect, particularly by evaluating whether or not public schools are indirectly affected by competition through the actions of top performing public schools. This analysis would shed further light on the competitive effects process and their implications for outcomes.

To conclude, the Nepal case suggests that researchers in low-income contexts can understand what public schools are doing in response to competition by developing school policy databases, understanding public-private differences, and conceptualizing competition as a subjective experience. Other low-income contexts that have experienced similar gradual private sector growth may also have public schools that are responding to competition in a variety of ways that have gone unnoticed as policymakers and researchers limit their focus to student outcomes or overgeneralize public schools as sluggish institutions averse to change. To state a seemingly simple point, understanding what schools are doing will allow policymakers and researchers to develop better solutions to improve public schools. The following chapter focuses on illuminating the constraints faced by public schools when trying to compete with private schools.

Chapter 6 Figures and Tables

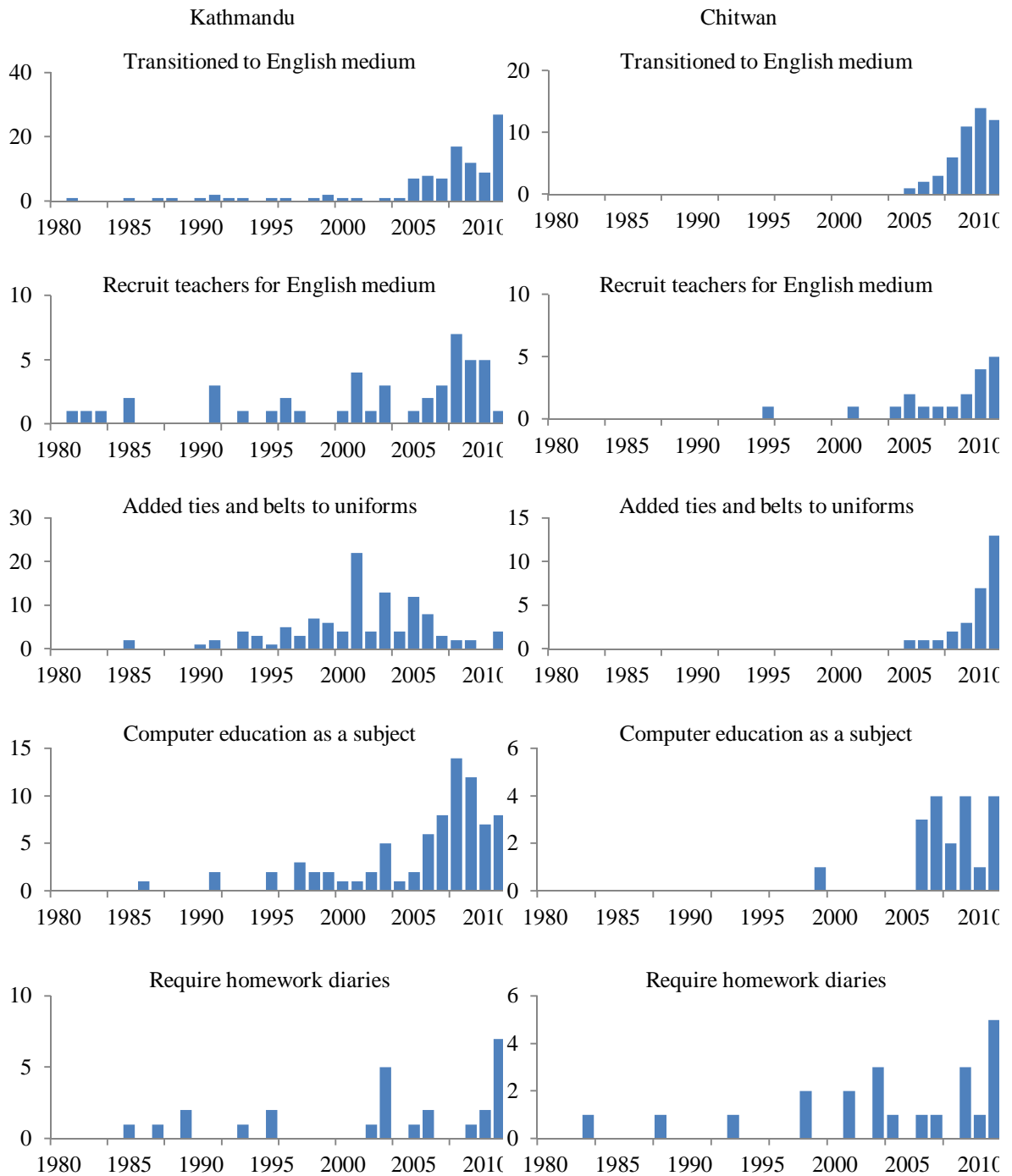


Figure 6.1 Historical trends in policy adoption: Private-mirroring strategies (Number of schools, by year the school started adopting the policy)

Source: Principal Survey.

Note: Each school was asked whether they had adopted the policy, and the year they started adopting the policy. These charts plot the historical trends based on the year of policy adoption recall question.

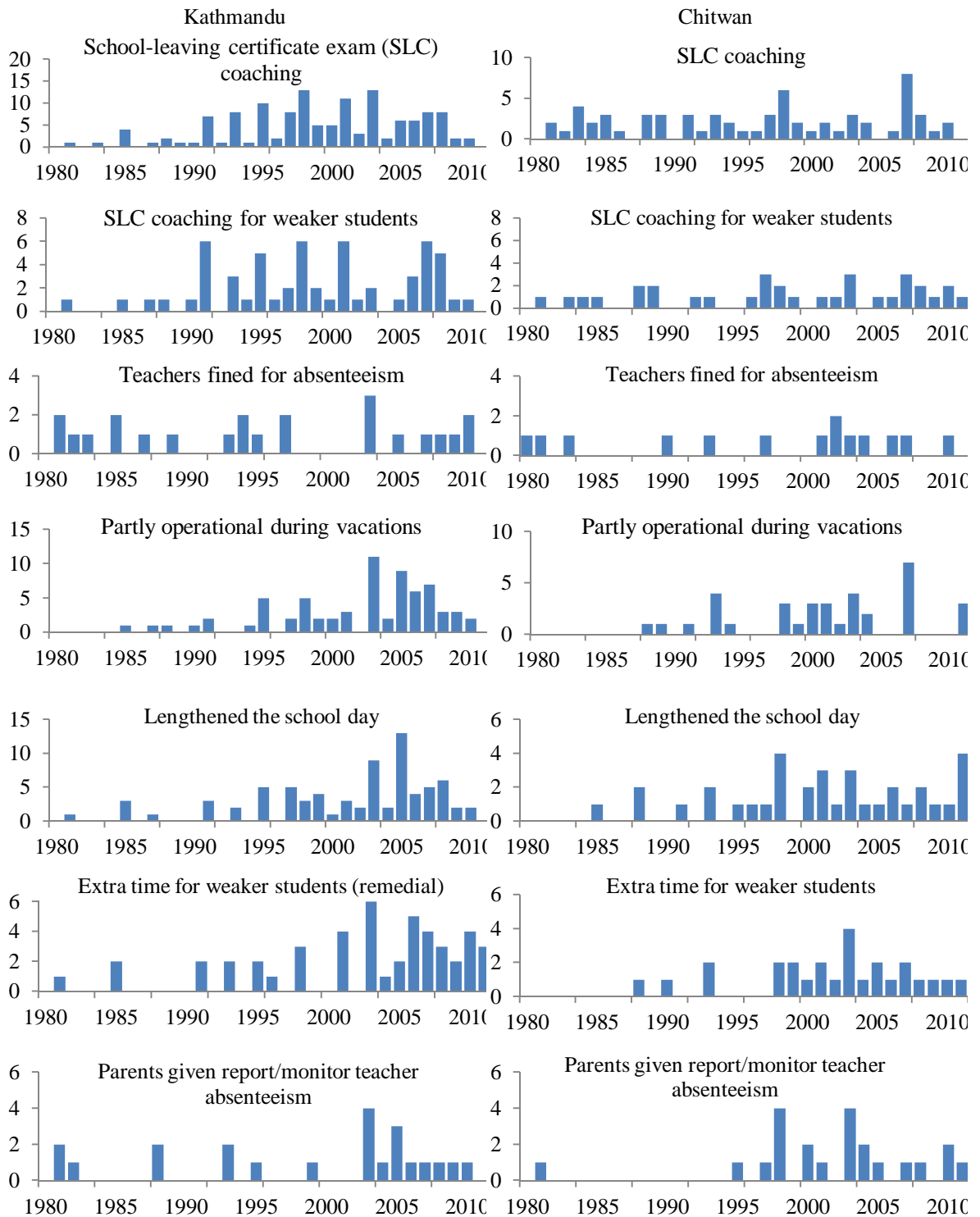


Figure 6.2 Historical trends in policy adoption: quasi-private instructional strategies (Number of schools, by year the school started adopting the policy)

Source: Principal Survey.

Note: Each school was asked whether they had adopted the policy, and the year they started adopting the policy. These charts plot the historical trends based on the year of policy adoption recall question.

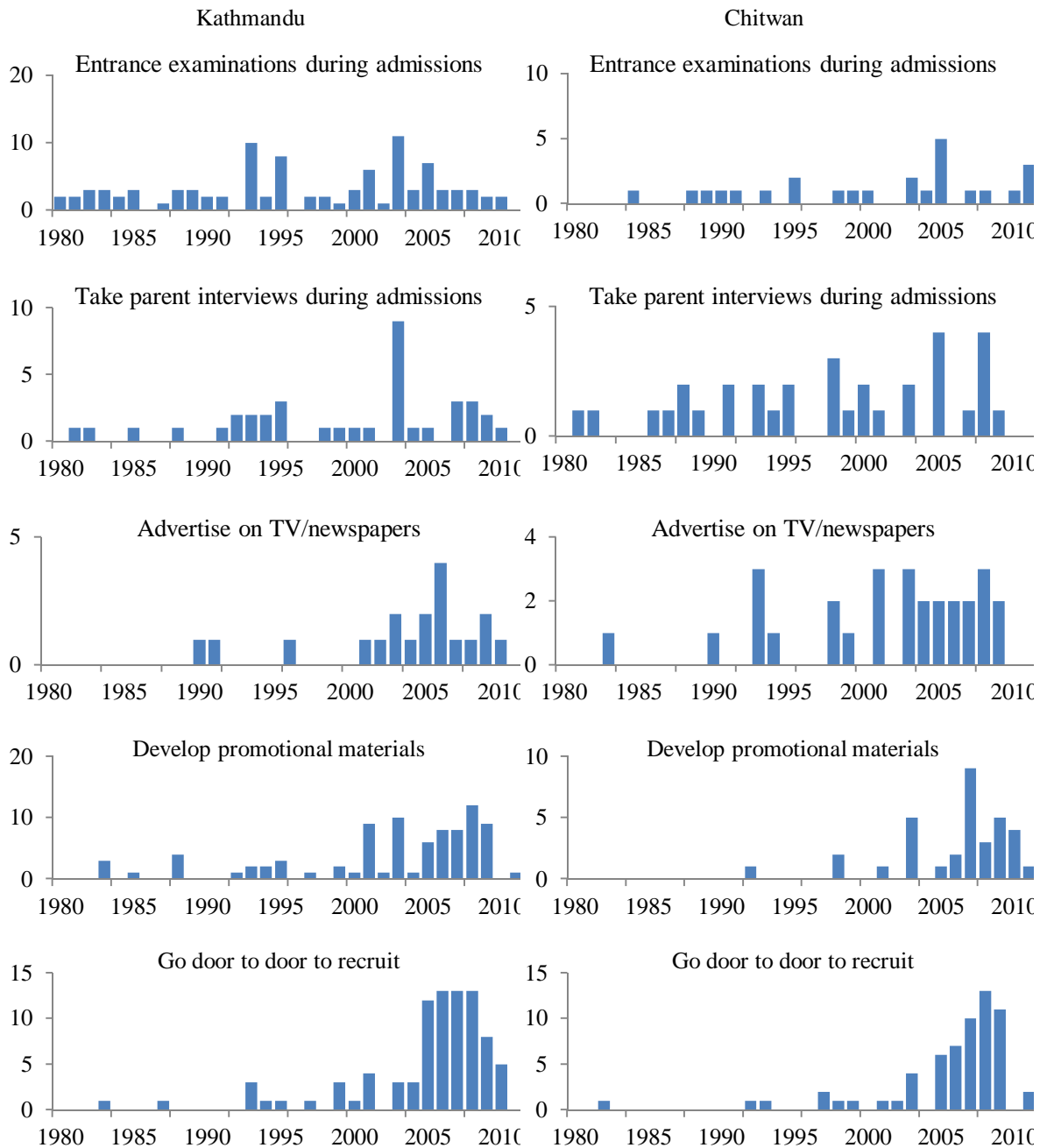


Figure 6.3 Historical trends in policy adoption: quasi-private non-instructional strategies (Number of schools, by year the school started adopting the policy)

Source: Principal Survey.

Note: Each school was asked whether they had adopted the policy, and the year they started adopting the policy. These charts plot the historical trends based on the year of policy adoption recall question.

Table 6.1 2011-2012 School response variable means
(By district and type of school)

	All schools		Chitwan schools		Kathmandu schools	
	private	public	private	public	private	public
Sample	625	212	87	67	538	145
1. Private-Mirroring (visible) strategies						
Adopt English medium of instruction	1.00	0.73	0.97	0.73	1.00	0.73
Recruit teachers for English medium	0.91	0.32	0.53	0.30	0.97	0.33
Computer education as a subject	0.97	0.46	1.00	0.28	0.98	0.54
Students keep homework diary	0.99	0.24	0.84	0.34	0.92	0.19
Require ties and belts in school uniforms	0.97	0.67	1.00	0.42	0.96	0.79
2. Quasi-private instructional strategies						
<i>Control over teacher performance</i>						
Provide monetary incentives to teachers	0.68	0.48	0.68	0.55	0.68	0.44
Take disciplinary action for teacher absenteeism	0.48	0.21	0.54	0.24	0.47	0.19
Parents given report on or monitor teacher absenteeism	0.20	0.22	0.25	0.36	0.19	0.16
<i>Tutoring for high-stakes examination</i>						
Coaching classes for SLC examinations	0.97	0.96	0.91	1.00	0.99	0.94
Coaching classes for weaker students	0.68	0.45	0.57	0.49	0.70	0.43
<i>Additional instructional time</i>						
Add school time missed during strikes	0.75	0.37	0.65	0.30	0.76	0.40
School partly operational during vacations	0.60	0.50	0.64	0.52	0.59	0.49
Longer school days	0.70	0.53	0.55	0.52	0.73	0.53
Extra classes for weaker students	0.79	0.35	0.83	0.40	0.78	0.33
3. Quasi-private non-instructional strategies						
<i>Admission requirements (potentially for screening)</i>						
Require parent interview	0.50	0.41	0.26	0.61	0.54	0.31
Require entrance exam	0.98	0.67	0.95	0.46	0.98	0.76
Require a special admission fee	0.86	0.40	0.97	0.25	0.84	0.46
Require parent's profession's information	0.97	0.81	0.97	0.78	0.97	0.82
<i>Promotional efforts</i>						
Advertise in TV or newspapers	0.29	0.22	0.83	0.42	0.20	0.13
Develop banners or pamphlets	0.54	0.58	0.45	0.52	0.55	0.61
Go door-to-door to recruit during admission	0.13	0.71	0.0	0.92	0.15	0.61

Source: Authors' calculations based on Principal Survey.

Notes: The public school sample is a census of the public secondary schools that participated in the school-leaving examinations of 2008-09. The private school sample was a random sample, stratified on school size in Kathmandu and Chitwan, and additionally on economic classification in the more diversified Kathmandu. The sampling frame for private schools included 538 private schools in Kathmandu and 87 public schools in Chitwan out of which 58 Kathmandu private schools and 23 Chitwan private schools were sampled.

Table 6.2 Descriptive statistics on the competition measures

	Chitwan	Kathmandu
Number of schools	67	145
Measure 1: Private schools in geographic proximity (range in each category)		
<i>Question: List the number of private secondary schools that are within one kilometer walk of the school</i>		
low competition (cthirds1)	0	0 - 2
medium competition (cthirds2)	1 - 2	3 - 5
high competition (cthirds3)	3 - 9	6- 25
Measure 2: Subjective competition (percent)		
<i>Question: List up to three schools that you are in competition with. (csubj)</i>		
No private competition	61.2	37.9
At least one private school in set of three competing schools	38.8	62.1

Sources: Author's calculations based on Principal Survey and Flash dataset.

Table 6.3 Public school principal perceptions
(By academic quartile)

	Q1	Q2	Q3	Q4	Total
Sample	54	55	51	52	212
<i>Principal opinions on why private schools are more attractive to parents</i> (% that agree)					
• English medium	94.4	92.7	98.0	90.4	93.9
• Computer skills	63.0	58.2	62.7	50.0	58.5
• Extracurricular programs	50.0	45.5	47.1	38.5	45.3
• Better SLC results	88.9	89.1	84.3	71.2	83.5
• Teachers are more responsible	74.1	69.1	72.5	63.5	69.8
• Longer school days	74.1	70.9	80.4	61.5	71.7
• Trust in school safety	53.7	58.2	70.6	48.1	57.5
<i>Principal opinions</i> (% that agree)					
• Private schools have better SLC results than public schools	77.8	89.1	84.3	80.8	83.0
• Private schools are also better on other indicators of quality	31.5	40.0	41.2	30.8	35.8
• Quality problems are systemic and cannot be fixed by school-level efforts alone	90.7	89.1	82.4	78.8	85.4
<i>Decision-making Roles</i> (% that report that they have significant influence)					
• Role of principal in appointing teachers	50.0	60.0	60.8	63.5	58.5
• Role of principal in evaluating teachers	88.9	87.3	86.3	96.2	89.6

Source: Authors' calculations based on Principal Survey.

Notes: All public schools in the sample were divided into academic quartiles. The academic quality definition that was used was the percentage of students who passed the school-leaving examinations in 2010-11. The sample was separated into quartiles separately for the two districts and then combined into one measure, since there may be district-specific idiosyncrasies in terms of the school-level results.

The perception questions were asked on a 4-point Likert scale. The table represents the results after collapsing the Likert-scale data into binary variables.

Table 6.4 Descriptive statistics on other explanatory and control variables for regression analysis

variable description, year	Mean	S.D.	Median
Number of public schools [N = 212]			
Community characteristics			
• District dummy (percentage Kathmandu)	68.4	...	...
• Urban dummy (percentage urban)	42.9	...	...
Sorting characteristics			
• Percentage of schools that required an entrance examination for grade 6 admission, 2011-12	49.1	...	...
• Percentage dalit (disadvantaged population) in enrollment, 2010-11	11.1	7.8	9.7
Principal perceptions (percentage of schools that agree or strongly agree to the following statements)			
• There is no need to compete with private schools since our competition is really with other public schools	17.0	...	...
• Our school lacks physical or financial resources to make improvements to compete with private schools	38.2	...	...
• Private schools are better than public schools in overall quality	35.8	...	...
Control variables			
<i>Community</i>			
• Female literacy rate, six years and older, 2001	60.9	11.7	60.8
• Population growth (decadal), 2001 to 2011	49.3	53.3	45.2
<i>School-level</i>			
• Total fees, grade 9, 2010-11 (in U.S. dollars)	18.9	19.3	15.0
• Total grade 1 to 10 enrollment, 2011-12	544.5	314.0	456
• Percentage female in grade 1 to 10 enrollment, 2011-12	53.1	8.6	53.2
• Percentage of teachers with permanent contracts, 2010-11	51.3	25.6	53.2
• School age in years, 2011-12	49.1	15.0	49
• Percentage of schools that hired private schools due to a lack of teachers, 2011-12	79.2	...	...
• Percentage that had inadequate desks, 2009-10	24.9	...	...
• Class size in 6th grade, 2011-12	44.7	17.1	44.5
• Percentage that had a computer room, 2011-12	41.0	...	...

Sources: Author's calculations based on Principal Survey, Flash dataset, and Census dataset.

Note: The U.S. dollar to Nepali Rupee exchange rate used was: 1 US \$ = 80.0 N.Rs.

Table 6.5 Instructional and language policies in Nepal, 2004

	Public schools		Private schools	
	N	mean	N	mean
Medium of instruction				
School teaches at least some grades in English medium	308	1.9	134	75.4
Coaching for the high-stakes examination				
School has coaching classes	307	58.6	134	76.9
School takes fees for coaching classes	305	46.9	133	47.4
Coaching classes for Nepali subject	308	11.0	134	17.2
Coaching classes for English subject	308	56.8	134	30.6
Coaching classes for Mathematics subject	308	57.5	134	71.6
Coaching classes for Science subject	308	52.6	134	66.4
Other instructional policies				
Teachers assign homework	304	53.3	131	79.4
School has some form of remedial teaching	302	23.8	131	80.2

Sources: Authors' calculations based on the SLC Study 2004, a nationally representative stratified sample of 308 public schools and 134 private schools from 2004 data.

Table 6.6 2011-2012 School response variable means
(By competition measures)

Sample	All public	Subjective measure		Objective measure		
		No Compn	Compn	low	med	high
	212	96	116	76	83	53
1. Private-Mirroring (visible) strategies						
English medium						
• Adopted English medium of instruction	0.73	0.66	0.79	0.74	0.73	0.72
<i>Teach in English medium, at least three grades</i>	0.30	0.23	0.36	0.37	0.29	0.23
• Recruited teachers for English medium	0.32	0.28	0.35	0.29	0.31	0.38
Computer education						
• Provided computer education as a subject	0.46	0.42	0.50	0.43	0.43	0.55
<i>Teach computer classes for at least three grades</i>	0.28	0.28	0.28	0.25	0.27	0.34
Students keep homework diary	0.24	0.22	0.25	0.21	0.20	0.32
Require ties and belts in school uniforms	0.67	0.57	0.76	0.68	0.71	0.60
2. Quasi-private instructional strategies						
<i>Control over teacher performance</i>						
• Provide monetary incentives to teachers	0.48	0.51	0.45	0.47	0.43	0.55
• Take disciplinary action for teacher absenteeism	0.21	0.17	0.24	0.13	0.30	0.17
• Parents given report / monitor teacher absenteeism	0.22	0.17	0.27	0.17	0.30	0.17
SLC coaching classes for weaker students	0.45	0.50	0.41	0.45	0.37	0.57
<i>Instructional time</i>						
• Add school time missed during strikes	0.37	0.40	0.34	0.34	0.34	0.45
<i>Add school time during strikes, three grades</i>	0.23	0.27	0.20	0.18	0.23	0.30
• School partly operational during vacations	0.50	0.47	0.53	0.50	0.48	0.53
<i>Add school time during vacations, three grades</i>	0.19	0.22	0.17	0.20	0.20	0.17
• Longer school days	0.53	0.50	0.55	0.41	0.53	0.70
<i>Longer school days, three grades</i>	0.27	0.28	0.27	0.16	0.35	0.32
• Extra classes for weaker students	0.35	0.32	0.38	0.36	0.35	0.36
<i>Extra classes for weaker students, three grades</i>	0.14	0.10	0.16	0.12	0.18	0.09
3. Quasi-private non-instructional strategies						
<i>Admission selectivity</i>						
• Take entrance examinations	0.67	0.61	0.71	0.61	0.61	0.83
• Require parent interview	0.41	0.44	0.38	0.38	0.46	0.36
• Require a special admission fee	0.40	0.40	0.40	0.36	0.41	0.43
<i>Promotional efforts</i>						
• Advertisements on TV and in newspapers	0.22	0.20	0.24	0.18	0.27	0.21
• Developing banners or pamphlets	0.58	0.57	0.55	0.55	0.57	0.66
• Go door-to-door to recruit	0.71	0.69	0.72	0.78	0.77	0.51

Sources: Authors' calculations based on Principal Survey.

Notes: Subjective measure is defined as equaling 1 if the public school principal mentions at least one private school when asked to list three competing schools. The objective measure is a categorical indicator based on the number of private secondary schools in geographic proximity to the public schools.

Table 6.7 Logistic regression models of “private mirroring” policies adopted by public schools, 2011-12
(Estimated odds ratios)

<i>Binary Dependent Variables</i>	Adopt English medium	Recruit teachers for English medium	Teach computer education as a subject	Require students to keep a homework diary	Require ties and belts in school uniforms
Subjective Competition					
• Principal lists at least one private school when asked to list three competing schools	2.25**	1.61	1.06	1.94	1.95**
Objective Competition					
• Medium number of private secondary schools nearby	0.57	.346**	0.87	0.71	1.43
• High number of private secondary schools nearby	.446*	.109***	1.15	1.31	0.76
Community level characteristics					
• District dummy (1 = Kathmandu)	.366*	6.75***	4.83***	.21**	5.14***
• Urban dummy (1= urban)	0.43	0.83	0.70	3.32***	1.27
Sorting characteristics					
• Whether the school requires an entrance examination for grade six admission, 2011-12	2.53**	1.84*	.525*	1.10	1.22
• Percentage dalit (disadvantaged population) in enrollment, 2010-11	0.98	1.02	1.03	1.05*	1.03
Principal perceptions (1 = agree or strongly agree to the following statements)					
• There is no need to compete with private schools since the competition is really with other public schools	0.40	.2***	1.9*	0.90	0.75
• The school is unable to make changes because of a lack of resources	1.87	0.92	.426***	0.94	0.98
• Private schools are better than public schools in overall quality	.542*	.316**	1.48	0.79	0.86
N	212	212	212	212	212
R-squared	0.15	0.30	0.13	0.12	0.17

Source: Authors’ estimations based on Combined Quantitative Dataset (Principal Survey, Flash dataset, SLC dataset, Census dataset).

Notes: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Low number of schools within one kilometer of the public school is the omitted category for objective competition.

Other control variables used in the analysis were: community characteristics (female literacy rates, population growth) and school characteristics (9th grade school fees, school enrollment, percentage female in enrollment, percentage of teachers with permanent contracts, the school’s age, whether the school had hired private schools due to a lack of teachers, 6th grade class size, whether the school reported having inadequate desks, and whether the school had a classroom).

Table 6.8 Logistic regression models of quasi-private instructional policies adopted by public schools
(Estimated odds ratios)

<i>Binary Dependent Variables</i>	SLC coaching for weaker students	Teachers fined for being absent	Parents involved in monitoring teacher absenteeism	School partly operational during vacations	Longer school days	Extra classes for weaker students
Subjective Competition						
• Principal lists at least one private school when asked to list three competing schools	.602*	1.22	2.95**	1.39	1.18	1.59*
Objective Competition						
• Medium number of private secondary schools nearby	0.87	1.43	2.42*	0.82	2.17**	0.83
• High number of private secondary schools nearby	1.15	0.76	1.00	0.88	4.38***	0.76
Community level characteristics						
• District (1 = Kathmandu)	4.83***	5.14***	.171***	.241**	0.84	.312**
• Urban dummy (1 = urban)	0.70	1.27	1.30	1.09	2.13	0.89
Sorting characteristics						
• Whether the school requires an entrance examination for grade 6 admission, 2011-12	.525*	1.22	1.48	3.96***	1.86	2.79***
• Percentage dalit (disadvantaged population) in enrollment, 2010-11	1.03	1.03	0.98	0.98	1.03	0.99
Principal perceptions (1 = agree or strongly agree to the following statements)						
• There is no need to compete with private schools since the competition is really with other public schools	1.9*	0.75	0.81	0.59	2.06**	1.19
• The school is unable to make changes because of a lack of resources	.426***	0.98	1.64	.529**	0.77	0.54
• Private schools are better than public schools in overall quality	1.48	0.86	0.65	1.77*	0.79	0.60
N	212	212	212	212	212	212
R-squared	0.13	0.17	0.15	0.14	0.15	0.13

Source: Authors' estimations based on Combined Quantitative Dataset.

Notes: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Low number of schools within one kilometer of the public school as omitted category for objective competition. Other control variables used in the analysis were: community characteristics (female literacy rates, population growth) and school characteristics (9th grade school fees, school enrollment, percentage female in enrollment, percentage of teachers with permanent contracts, the school's age, whether the school had hired private schools due to a lack of teachers, 6th grade class size, whether the school reported having inadequate desks, and whether the school had a classroom).

Table 6.9 Logistic regression models of quasi-private non-instructional policies adopted by public schools
(Estimated odds ratios)

<i>Binary Dependent Variables</i>	Require parent interview	Take entrance exams	Advertise on TV or in news papers	Develop banners or pamphlets for promotions	Go door to door during recruiting season
Subjective Competition					
• Principal lists at least one private school when asked to list three competing schools	1.06	1.06	1.98**	1.17	1.87*
Objective Competition					
• Medium number of private secondary schools nearby	1.49	0.65	1.63	1.01	1.40
• High number of private secondary schools nearby	0.79	1.34	1.25	1.06	0.88
Community level characteristics					
• District dummy (1 = Kathmandu)	.26***	5.65***	.126***	1.24	.254***
• Urban dummy (1 = urban)	1.74	0.67	1.22	3.82***	0.90
Sorting characteristics					
• Whether the school requires an entrance exam for grade six admission, 2011-12	...	...	.448**	0.94	0.59
• Percentage dalit (disadvantaged population) in enrollment, 2010-11	1.00	0.98	0.98	1.04*	1.09***
Principal perceptions (1 = agree or strongly agree to the following statements)					
• There is no need to compete with private schools since the competition is really with other public schools	1.33	0.90	3.02**	.538*	0.71
• The school is unable to make changes because of a lack of resources	1.61	0.75	1.05	0.80	0.74
• Private schools are better than public schools in overall quality	1.08	1.45	1.51	0.79	0.86
N	212	212	212	212	212
R-squared	0.12	0.21	0.20	0.09	0.37

Source: Authors' estimations based on Combined Quantitative Dataset.

Notes: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Low number of schools within one kilometer of the public school as omitted category for objective competition.

Other control variables used in the analysis were: community characteristics (female literacy rates, population growth) and school characteristics (9th grade school fees, school enrollment, percentage female in enrollment, percentage of teachers with permanent contracts, the school's age, whether the school had hired private schools due to a lack of teachers, 6th grade class size, whether the school reported having inadequate desks, and whether the school had a classroom).

CHAPTER 7

THE FACTORS THAT MEDIATE HOW PUBLIC SCHOOLS RESPOND TO PRIVATE COMPETITION

Abstract

This chapter analyzes the factors that mediate public schools' ability to productively respond to competition from private schools. An understanding of impediments can help policymakers better target their attention to the key bottlenecks and the most disadvantaged populations. I conduct a two-step mixed methods analysis. I first conduct qualitative analysis of interview data and descriptive statistics of principal perceptions to describe the barriers to reform that generally affect public schools more frequently than private schools. Then, I analyze whether the barriers (and supports) to reform can be systematically linked to the extent of privatization by conducting logistic regressions of the perception indicators of barriers and supports to reform on competition measures, school and community covariates. I find that the obstacles to improvements include not only well-known factors such as bureaucratic rigidities and financial constraints, but also lesser-recognized impediments such as direct political interference in the education sector and stigmatization of public schooling. Over time, a growing lack of trust has led to middle class flight from public schools, leaving public schools with a concentration of students from disadvantaged backgrounds. The regression analyses indicate that the barriers to reform are especially heightened in public schools that face higher levels of private competition. These findings are consistent with the notion that the combination of a lack of community involvement and political interference in public education may have significantly reduced the school personnel's motivation to reform.

Introduction

This chapter was motivated by the question, can public schools in developing countries respond effectively to increased competition from the private sector? An understanding of impediments and supports to public school reform efforts is critical for the long-term survival of public schools since private schools are growing in popularity in emerging Asia and Africa (Thapa, 2011; Tooley and Dixon, 2005; World Bank, 2013). Specifics on the key constraints and challenges to reforms can improve policy targeting on the key bottlenecks and disadvantaged populations. Moreover, the strand of choice research that investigates public school constraints in responding to competition is absent in the developing country literature. Specifically, I analyze the factors that facilitate or constrain public school officials' attempts to productively respond to competition from private schools. I show that public schools face intense political interference, a lack of parental engagement and community support, and a lack of well-defined accountability incentives that impede their ability to effectively compete with private schools. In addition, I highlight the substantial variations within the public sector in their experience of these constraints, as some schools have been able to thrive despite difficult bureaucratic and political conditions. Furthermore, I find that principals of public schools that face more competition are more likely to highlight poor government monitoring and the lack of parental educational awareness than principals of public schools that face less competition.

Conceptual Framework and Research Questions

As discussed in the literature review, previous research into the processes of school choice has suggested that a competitive response is determined by an evolving set of mediating factors, such as resource constraints and personal motivation and expectations (Hess, Maranto and Milliman, 2001; Mohrman and Lawler, 1996; Zief, Maynard, Bradley, Keefe, and Kralik, 2005). In fact, it is the complexity of the competitive process that has led to the rise of explicit accountability pressures to incentivize productive public school behavior in many developed

countries (Rouse et al., 2007). In Chapter 5, I discussed some key accountability pressures that may have begun to motivate public schools to consider private schools as competition. Once they have decided to respond to private competition with policy actions, which are described in Chapter 6, public schools' success in instituting these policies are dependent on adequate supportive conditions from the bureaucracy, community, and policy environment. It is likely that these conditions vary significantly between the public and private sectors, and also within the public sector.

In the chapter, I address the research question: What are the factors that mediate how public schools respond to competition? Specifically, I ask:

- (1) What are the barriers and supports faced by public schools in instituting reforms and responding to competition?
- (2) Do principal perceptions on the key barriers and supports to reform differ by the extent of private competition faced by the school?

Data and Methods

Data sources

Qualitative data

The qualitative data includes over 80 interviews that I conducted with public and private school principals, education officials, and a smaller sample of teachers and school management committee members. The education officials I interviewed included resource persons and school supervisors (responsible for local level school supervision), district education officers and section officers (responsible for the entire district's supervision), and deputy directors at the Department of Education, Ministry of Education, National Planning Commission and National Curriculum Development (responsible for national level planning and implementation). The stakeholders provided their perspectives on the factors that constrain public school reform efforts. I compiled these varied perspectives to highlight the variations in constraints that were

stressed by stakeholders in different districts and at different levels of the education bureaucracy. National level policymakers provided perspectives on the national state of affairs, a discussion of the efficacy of current and past policy trends, and their assessments of why public schools are not able to compete with private schools. District level officials' opinions provided their understanding of the variations in school quality that exist within the district, and of the impact of the rise of privatization for their district. Local level officials provided clarity on the heterogeneity in public school quality in smaller local education markets. Finally, public and private school principals provided a sense of the constraints and supports that public schools faced as they attempted to compete with private schools.

Quantitative data

I utilized primary and secondary data sources compiled into a “Combined Quantitative Dataset” to analyze the relationship between principal perceptions on the barriers and supports to reform, competition measures, and school and community variables⁴⁵.

Principal perceptions. Principals were asked questions pertaining to the extent of decision-making control of different stakeholders, the stigmatization of public schooling, school climate and political interference, public-private differences, and the expectations and motivations to compete. School principals were asked these questions on a 4-point ordered scale. By responding to these questions, the school principals revealed their opinions on the factors that constrain or support their ability to reform or respond to competition. The majority of the statements were phrased in a manner that if they agreed to the statement then that would imply that the public school faced barriers to reform. Specifically, if public schools agree that they face more political interference or more disadvantaged student backgrounds than private schools, then it would be a significant barrier for the public school as they attempt to implement any kind of

⁴⁵ The data sources are mapped in Figure 4.1, and are described in more detail in Chapter 4 on Data and Methods. The competition measures are discussed in more detail in Chapter 5's data section.

systemic reform. In terms of decision-making, if the principals perceive that the district education officers have a large role in school related decisions or that the principals themselves have limited influence, then it would suggest that principals have less flexibility to suggest reforms. If the principals agree that their schools (or public schools in general) lack the motivation to compete because of a lack of government monitoring, financial resources, teacher quality, or greater political interference, then it may suggest that the school officials have been frustrated by having to deal with these specific barriers to reform. In contrast, some of the statements were phrased in a manner that if they agreed to the statement then that would imply that the public schools had supportive conditions. For instance, if the principals agreed that the parents were actively involved in the school or that the teachers were of high quality, then that would suggest that the school has important supports that would facilitate their quality improvement efforts.

Empirical Strategy

I conducted a two-step mixed methods analysis. I first analyzed the qualitative interviews and the descriptive data on the barriers to reform. Then, I conducted logistic regression analysis on the perception indicators on the key barriers to reform. To address Research Question 1, the identification of the key constraints faced by public schools, I coded all interviews for stakeholder's views on motivations and expectations, and the main supports and constraints available to function effectively, or encountered while responding to competition. I highlighted the key supports and constraints, and also discuss how perspectives on these key factors vary by district, urbanicity, and by types of stakeholders. To complement the qualitative analysis, I descriptively analyzed the differences between public and private school principals' perceptions on the political, social and policy environment barriers to reform. In the analysis, I transformed the Likert 4-scale perception questions to binary data.

To address Research Question 2, whether perceptions vary by the extent of competition, I quantitatively analyzed some key principal perceptions on barriers to reform. I only analyzed the perceptions on the barriers to reform that had substantial variation (that is, where public schools did not universally agree or disagree to the perception statements). I ran the logistic regressions of perception questions on competition measures, community and school-level variables. I argue that constraints faced by public schools will be heightened in high privatization (primarily urban) regions as they may experience a more intense lack of community support and political pressure. Therefore, I test the hypothesis that principals of public schools in high competition regions are more likely to perceive severe constraints and limitations than public schools in low competition regions.

Limitations. All public schools require supportive conditions to be able to function well and to be able to respond to competition. A limitation of the study is that when officials and parents talk about school responses, they are generally referring to school functioning overall and not exclusively about their ability to respond to competition. However, the conditions that aid or impede their ability to function are also linked to those that aid/impede their ability to respond to competition. There are some instances when they discuss specific changes they made in a desire to compete, for instance, by transitioning to English medium of instruction. While these comments were limited they were useful to paint a picture of how schools view their challenges as they make improvements. I additionally try to address this limitation with the quantitative analysis to provide a sense of the association between competition and principal perceptions.

Model

The cross-sectional model for the logistic regression analysis is of the following form⁴⁶:

⁴⁶ I also ran the following models of the objective and subjective measures separately.

$$P_i = \alpha + \beta_1 C_{subj} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 1a})$$

$$P_i = \alpha + \beta_2 C_{thir2} + \beta_3 C_{thir3} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 1b})$$

$$P_i = \alpha + \beta_1 C_{subj} + \beta_2 C_{thir2} + \beta_3 C_{thir3} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 1})$$

Where P_i is the perception of a public school principal of perception question i , discussed in Research Question 1; C_{thir2} and C_{thir3} represent categorical indicators of competition⁴⁷ - the medium and high number of private secondary schools in geographic proximity (the omitted category is low competition, i.e. low number of private secondary schools in geographic proximity), and C_{subj} represents the subjective competition measure, whether the school had mentioned at least one private school as a competing school; and Z includes explanatory and control variables. The key parameters of interest are β_1 , β_2 , and β_3 , which measure the effect of competition on the principal perceptions on key constraints. The variable definitions and descriptive statistics on the explanatory and control variables are listed in Table 7.1.

Results

What are the Key Barriers and Supports Faced by Public Schools in Instituting Reforms and Responding to Competition?

Political interference

All of the stakeholders at the national, district, local and school levels unanimously agreed that the politicization of education was *the* central problem hindering public school improvements, and consequently, their ability to compete with private schools. They argue that political interference pervades every aspect of society, and consequently, the school system functioning in Nepal. In fact, politics is so pervasive that one school principal even closed down

Re-estimating the model with the subjective and objective measures separately did not change the estimation results for the key covariates in any substantial manner. Hence, these results are not described in the text.

⁴⁷ The continuous variable that measured the geographic proximity measure of competition was converted to a categorical variable that took three values (low, medium and high competition for the analysis). I decided to use a categorical transformation into high, medium and low competition because I felt that it would be better for interpretation, because competition may not have a linear relationship with the policy response. On the other hand, I felt that a binary transformation (1 = at least one private school) would not capture the variations in the competitive environment.

their budding alumni association because these alumni started “playing politics” and fighting for their party’s rights. To quote a Department of Education Deputy Director:

“The political situation and thinking is what has hampered the determination and ability of the team to work hard. Politically, all the teachers are divided. And so are the school management committees (management boards). And so is society. When you talk about children, they ask “whose child” they are and “which party” they belong to.” (personal communication, July 28 2010)

While the Nepal education system consists of a large private sector in urban markets, officials argue that the private system is relatively insulated from ongoing political interference, despite being used as political targets by left-wing politicians. As shown in Table 7.2, there is near universal agreement among public and private school principals that public schools experience more political pressures than private schools.

The omnipresence of political influence has interlinked manifestations for decision-making and policy implementation at different levels of the education system. Firstly, the lack of political stability and almost annual changes in government over Nepal’s two decade-long democratic rule has implied that there are significant challenges in planning for education. Public school officials and national officials acknowledge that there is a dearth of people who are actually interested in developing an educational vision as everyone is focused on preserving their jobs. For instance, most planners are risk averse since jobs are linked to people rather than institutions, and each transitional government leads to a change in positions in important institutions like the National Planning Commission and the Ministry of Education. To quote a ministry official:

“The national plans are made by the National Planning Commission. The problem there is that people are changed frequently due to political change...Everybody gets their share in leadership... in Nepal, we only design the plan of the one who becomes the minister. Then, when the next minister comes, he will say that the previous plan was the worst, and he will design another one. So that is the dilemma in Nepal.” (personal communication, June 7 2011)

National policymakers also pointed out the difficulty caused because of incomplete cycles of reforms in the country, stressing how a country like Nepal differs from developed countries in how they implemented and evaluated policies. To quote a national expert who has been active in education planning for the past four decades:

“They (the U.S.) are doing reforms with a rationale in their mind, and do an evaluation to verify the output at the end. They do cycles of reform over there, but they complete the cycle. I think that changes happen because of a change in political leadership. But the problem over here is that at times we won’t even have started the cycle or may have just started the cycle and then we have to stop it. We never complete it. Even if we complete it, it is not evaluated at all and then changed without any evaluation.” (personal communication, July 5 2010)

Within the education system, a hallmark of the Nepalese system is the excessive political influence which has led to a situation where teachers are more focused on political interests than on professional development. There are as many teacher unions as political associations, which are divided on ideological lines and support left-wing and right-wing policies. Due to the multitude of teacher unions jostling for political power, they are unlikely to make unified decisions and thus hamper school functioning even further. Leftist ideology based politics pervades various aspects of schooling and have led to regular protests or strikes on politicized issues as varied as banning private schooling, forcing teachers to teach their children in public schools, and ensuring that public schools take no user fees.

Interestingly, the policy planners and implementers stressed how these differences in ideology were superficial at best, particularly in the current private schooling landscape. Many principals, district and national officials talked about the hypocritical system where national political leaders who supported or initiated the public campaign of banning private education were actually owners of private schools. As expounded by a Department of Education Deputy Director:

“Of the 4000 private schools, over 1200 are owned by the Maoist leaders! Never mind them sending their children to private schools – they are in charge of 25% of the sector! And the party policy is to “take out all of your children from private schools and send

them to public schools”. So they have to say one thing in their agenda and do something else while in power. They can't close all private schools either... But they still have to say that we have to shut down the schools. They are not in a position to be able to say we will allow them to exist because it seems like the private schools are necessary.” (personal communication, June 29 2011)

National policymakers particularly lament the powerful role of politically affiliated teacher unions and claim that they are unable to fix the major problems in education, specifically the need to redistribute teachers between and within districts that have an excess number of teachers and an inadequate number of teachers to equalize student-teacher ratios. A national expert involved in school policymaking stated the following:

“I talked with one undersecretary about the government allotted teachers and he replied in the same way. If there is a high ratio of teachers in certain schools they cannot adjust transfers and they wait for directives from above because even if they try and change it they will face revolt from the teachers – this is all due to politics.” (personal communication, July 5 2010)

Nepal has been on a path towards decentralization of authority to the district and local levels for well over three decades. However, the implementation of more aggressive national policies to decentralize authority to the school level, the Community School Support Project (CSSP) launched in 2003, seem to have been particularly affected by political resistance. The CSSP project was met with substantial resistance by teacher unions, as many teachers were concerned about the changes implied in their job security. Teachers and party leaders typically portrayed the policy as the government trying to shirk its responsibility from the education sector, handing over authority for teacher transfers and teacher hires to less educated local community members. Many national, district and school level officials pointed out how these debates continue to rage years after the policies were first adopted.

At the district level, problems with political interference were typically reflections of the national political climate, barring a few exceptional districts. For instance, all district officials mentioned that they needed to engage with the political parties' district level officials to ensure that they could implement policies. Due to the decentralized and politicized nature of education,

district education officials talked about how they lacked authority to truly sanction schools or teachers. At a more extreme level, district officials supposedly face threats from political parties as politicians tried to intervene in district decision-making and planning. As recounted by a teacher:

“There is an association in my district - there were no teachers in that association. All of them were political party members. They went to the district office and told the district education officer – “we will kill you right now. If you don't do what we tell you to do, then we will just kill you before you reach the door.” They were trying to get people from their association into the district education committee (planning board in the office). That organization has no teachers, and that is not allowed because of the regulations. And without the district education committee, when will they convene and when will they recommend that certain schools go through certain procedures?” (personal communication, July 28 2010)

A local level official gave a specific example of how their efforts to redistribute teachers in a Kathmandu location were ceased due to political authority a few years ago.

“We have also tried to do this earlier - about two years ago, we were really dedicated to complete the teacher equalization process... Then, the process was stopped because we got one phone call from the topmost level of political power. He just said – “don't do this” and that was that.” (personal communication, September 13 2011)

At the school level, the stakeholders particularly highlighted the role played by political pressures in teacher appointments and accountability, budget distribution, and school improvements. Many of the principals suggested that public school teachers, including teachers at their school, frequently work as local level political officials for their parties. Allegedly, the political party affiliation is instrumental in teacher hiring and transferring decisions, and provides teachers with protection against sanctions. For instance, in a well-functioning public school in one of the study sites, the English teacher was absent for six months, and could not be replaced with a substitute in time. The irresponsible behavior of the teacher resulted in an unprecedented high number of failures in the high-stakes examination at the public school.

Most officials regarded public school teachers as highly qualified and trained professionals, compared to relatively inexperienced private school teachers. However, there was

near unanimous agreement that many teachers felt immune from accountability, and principals were typically unable to hold teachers accountable for their schooling performance. As described by a Department of Education Deputy Director:

“It is not that there is no system for reward and punishment.... For example, the principal has been given the authority to cut seven days of pay for the school teacher. But the head teacher cannot cut the pay. The reason for this is that if they cut the salary for seven days – then the teacher will be affiliated with some political party and that party might threaten to attack him. Because of these reasons, he will not be able to implement this available policy. So, it's not like there are no rules. But since this is a transitional period in terms of politics, we have not been able to implement these policies.” (personal communication, July 28 2010)

A principal from the capital noted that politically appointed teachers were a historically accepted phenomenon in Nepal, but that there was a substantial rise in these appointments after the Maoist civil war.

“The simple reason is that these party people fought in the battle, did so much, and then begged to have a job. Then where can you get work? The easiest place to get a job is in teaching. So, they were asked whether they would like to be a teacher. Now who will they place in teaching positions? Put yourself in that person's shoes...Obviously you will choose your political person who had helped you in the past.” (personal communication, July 5 2011)

Besides teacher absenteeism and limited teacher effort, other substantial examples of teacher political interference focused on the difficulties encountered in trying to transfer teachers. For instance, a teacher mentioned how after trying to transfer one teacher, the district education officer was transferred instead. Some parents and teachers also talked about additional instances of within-school political activities that affected students more directly, such as how teachers held political meetings within school grounds, or took their students to political rallies.

Politics apparently also played a significant role in budget distributions and school financing. A few principals alleged that the lack of party affiliation and networks often hurt schools when it came to procuring additional budgeting support. The majority of public school principals argued that the national-level decentralization policy to empower communities seems to have had the significant unintended consequence of increasing political interference.

Allegedly, community members who are divided along party lines have joined individual school management committees to use it as another opportunity for political influence – for instance, with the goal of providing teaching jobs to members of their political party. The increased community role is also accompanied by an increase in nepotism in the school management committee – for instance, the desire and the power to hire your own children as teachers. Some school management committee related tensions included the absence of an SMC for years on end, because of party politics. As a result, some schools were unable to complete outstanding building renovation projects. In other schools, ongoing disputes with the community meant that schools could not utilize the available land as an asset to generate additional revenues for school improvements. A local education official (resource person) who was regularly part of school-management committee formation discussions in Chitwan said the following:

“I haven't seen anyone talk about quality at all in even one place (while attending school management formation discussions). It's all about politics. This is the major frustration and constraint here.

How do you handle this (politics) then? What is your role?

We have such a major difficulty here. It's as if we are administrators who are involved in an election campaign. We should not have to do this. There is so much time that we lose doing all this. When we go to the schools we have to spell out the rules in the education act regarding the school management committee – that only the “real” relatives (whose child studies at that school) can come in. And even within the real relatives, the discussion is based on politics. Among these relatives, there is a discussion about how the head of the committee has to be from my party, that in the 10-member SMC, there have to be at least four from my party, and so on.” (personal communication, August 7 2011)

Contradictory findings. However, there are some schools and districts that talked about how they were able to thrive despite the claustrophobic political environment due to their focused teamwork. The most striking examples came from the principal of nationally renowned school “A” who mentioned that he was able to work with a teaching team from various political affiliations by insisting that all teachers “leave politics outside the school gates during school hours.” He argued that he was able to do so because of his transparency in terms of school

financing and the efforts he put into the school to ensure high quality. As a result, the principal was able to work with school management committee members, teachers and parents who came from a variety of political parties. The school was frequently mentioned by national officials as a school where there was trust that was no political within-school activities despite the principal's own active role in politics. A highly successful school in another district (School "B") had very similar schooling related characteristics, but allegedly had a completely different modus operandi when it came to political influence in schooling. Stakeholders from nearby schools mentioned that the schools in the district had been divided along party lines. These stakeholders argued that School "B" was able to concentrate on schooling related activities due to a lack of political friction. Neighboring principals also mentioned how this particular school received political concessions to take fees while they faced severe restrictions.

There were also district level differences in political involvement. While most of the district (Dadeldhura, Chitwan, Jhapa, Kathmandu, Sarlahi) officials highlighted the intensity of political involvement, another district (Mustang) official mentioned that due to their remoteness, there was limited interest from politicians. One district (Kavre)'s officials focused on how they were able to operate fairly systematically in the political environment because of their transparency and their willingness to listen to and adopt suggestions made by political parties. In addition, a few of the education officials also suggested that the dominant role of politics in the teaching profession was on a receding trend. For instance, local officials talked about how principals would now be chosen through a fair competition rather than through someone's recommendation.

(Lack of) bureaucratic and financial support

Public schools are under the jurisdiction of the public education sector bureaucracy which is comprised of the Ministry of Education which works out the details of education policy, and the Department of Education, which is responsible for the implementation of policies and

supervision of schooling. The authority of the Department of Education is devolved to 75 district-level District Education Offices (DEOs), who in turn have resource persons and school supervisors who are expected to provide local level support and monitoring to schools in their catchment areas. The efforts of the past decade to decentralize authority have increased the decision-making role of the local level players in school management committees. A consequence of the decentralization initiative is that public schools are now beholden to numerous stakeholders at the national, district and local level, much like in developed countries.

The difference in decision-making control between public and private schools is clearly demonstrated in Table 7.3. Private school principals suggest that they have almost all control while public school principals have to share authority with other stakeholders in the bureaucracy (district education office) and the local community (school management committee members). While district education officers play a substantial role in public schools in appointing teachers, evaluating teachers, and deciding how the budget will be spent, their role is nonexistent in private schools.

The top-level official at the Department of Education argued that there was very limited politics within bureaucracy, as compared to the rest of the country.

“When we talk about this politicization of education, how can we take it out of the bureaucracy?”

There isn't that much in the bureaucracy. There is a small thorn in the bureaucracy and if you go digging for it, you can take out the weed. However, in other sectors, there is so much of that that it's pierced through and has entered the bloodstream. So that's very difficult to get rid of.” (personal communication, June 29 2011)

However, public school principals mentioned a long list of other complaints that were attributed to bureaucratic inefficiencies and inadequacies, including dissatisfaction with monitoring and supervision, resource provision, wrong-minded policies and poor implementation.

Monitoring and supervision. At the district level, district education officers, school supervisors and resource persons highlight the various tasks they perform to support education quality directives from the central agency, the Department of Education. These tasks include conducting regular monthly meetings to discuss school performance, addressing technical support needs in schools through teacher trainings, school visits and classroom observations, and collecting statistics and monitoring them for misuse.

However, almost all of the interviewed public school officials thought that local level resource persons and supervisors, who were expected to be in more direct contact with schools, were a waste of resources. One principal derogatorily labeled resource persons as “postmen” travelling from the school to the district education offices delivering statistics and district-level requests. Yet another principal disparagingly called them “son-in-laws” of the district education office, implying that they were shielded from accountability. While the resource person job is supposed to be balanced between school-level support activities and district-level activities, school principals contend that the job has primarily been implemented as the local arm of the district education office. To quote an experienced principal:

“The government’s monitoring is completely absent. The supervisors, they don't even have to note their attendance. They have field work jobs - and they are just simply earning salaries. The resource center doesn't do school visits, teacher training, feedback and observation, or teacher counseling. They basically collect paperwork from our schools and make sure that they get to the DEO. They officially support DEO and therefore do not really support the teacher. The education agencies should be supportive for the headmaster and the teachers, but I haven't found any of that.” (personal communication, July 30 2010)

The resource persons themselves agree that such a negative perception exists. They attribute part of the problem to the variation that exists in effort expended by each resource person and school supervisor as there is no performance-based criteria to judge local officials’ performance. However, all of the interviewed resource persons argued that the main problem

was that there was too much work assigned to the resource person, including administrative duties, and that the main issue was a lack of more streamlined terms of reference.

“We have not been able to do the work that we were supposed to be hired for. We should actually be kept completely separate from the administrative work really! We would be incredibly happy if they would say – you don't have to deal with any of these forms, your job is to observe classrooms, monitor them, and give feedback and interact with the teachers. Then we would also be able to really interact and get to know the teachers.” (personal communication, August 7 2011)

The district officers and the resource persons admit that they have not been able to provide the adequate monitoring support in the classroom since the district's bureaucratic responsibilities take up much of their time. They also suggest that they lack adequate manpower to effectively handle all the required tasks, since they have not had an increase in manpower in over two decades.

“The District Education Office and staff numbers were envisioned 20-30 years ago for the number of schools that existed back then. It still is in the same structure now – and given that, how much can we really manage and observe? There is a need for a re-envisioning and transformation of the system.” (personal communication, August 9 2010)

Some officials noted that newer projects that focused on teacher professional development, and included requirements for teacher project work and goal setting was increasing the frequency of face-to-face interaction with teachers. In addition, district and national officials countered public school accusations by suggesting that school officials were too focused on blaming bureaucratic officials, who were far away from schools and lacked manpower, while community members and principals were not adequately monitoring locally even though it was expected of them in a more decentralized conception of school management.

Finance. When discussing financial and personnel resource constraints, school principals focused on the foundational needs for daily operations, and additional supports needed for making productive changes. Many schools complained about the lack of adequate foundational resources, such as an adequate number of subject-wise teachers, lack of funds for support staff, and poor physical facilities, which meant that they had to find additional funds or go under-

resourced. Public schools additionally argued that they would require funds for innovation, such as additional English teachers, more extra-curricular activities, or better laboratory facilities. In contrast, most public school officials argued that finance was not a major problem in public secondary schools. Instead, they critiqued the lack of good management and the lack of effort to creatively utilize existing resources in public schools. A few bureaucratic officials provided a more nuanced finance related discussion. While they agreed that the government provided the majority of funds for school functioning, they agreed that it was unable to provide all of the funds necessary for a good school environment.

Thus, the government provided funds are often inadequate for foundational expenses, let alone additional costs. As a result, the schools would require funds from the community and parents, even though public schooling is widely advertised as “free” schooling. For instance, even though schools were allowed to take fees after basic education (8th grade), many schools do not have the ability to raise such fees. For instance, some schools exclusively educate disadvantaged communities that balk at even minor fees raised for additional activities, such as extra classes in English and Mathematics. Additionally, given that public schools are heavily politicized any attempts to raise fees, even with parental agreements, were met with protests and threats from political parties. Thus, the funding shortage problem is magnified in communities that have higher concentrations of disadvantaged populations.

A major reason for low financial efficiency was the general consensus that there was a lack of utilization of needs-based criteria in government budgeting processes. While financing formulae tried to implement the same policy throughout Nepal, these blanket approaches ended up being unequal due to the disparities in district living standards and public school resources. All national policy implementers, districts and principals sought policies that differentiated schools and districts by needs. However, district officials also argued that differentiated policies were unlikely since resolving this difficult problem would require a real investigation into the

details of the districts, which would be too inconvenient to be pursued by an indifferent national planning system based in the capital, Kathmandu.

Similarly, all stakeholders noted the lack of equity in the major equity related initiative, a scholarship system that provides scholarships for girls, dalit and janjati students, and for the remote Karnali region. While these are disadvantaged populations and regions, national and district officials argued that these scholarships are likely to be inefficient since they lack income-based criteria on which to identify children for scholarships. That is, scholarships were likely to be provided through an informal guessing game and may reach the more privileged among these targeted groups. One public school principal had instituted a novel approach to remedy the problem, and had assigned the scholarship responsibility to students.

“When it comes time to give scholarships, I ask the students regarding whom I should be giving scholarships to. Here we don't take recommendations from the assistant headmaster, teachers, ward, village development committees (VDC), and so on... We go to the class and say – you have two scholarship quotas here. Who are your friends who need the financial support - let me know in 15 days... They bring such a correct report – it's basically 99% correct. The VDC and ward people's reports are 100% wrong...

Here, we also try to limit the psychological damage. The government says... put up the notice regarding scholarship availability and ask for them to give you their names. But we don't do that. The one who has received the scholarship knows about it, and the one who has recommended the scholarship knows about it. No one else knows... No one really wants to be called poor... So, we don't publicly out the children – we don't yell at them. The teacher cannot scold them and say – I gave you a scholarship, you need to study. If the teacher uses such methods, then the teachers get reprimanded.” (personal communication, August 22 2011)

Another type of finance related complaint brought up by public schools was the fact that the bureaucrats did not seem to listen to public school officials' recommendations. In the sparsely populated district of Mustang, the schools received plenty of government and international donor supports. One year, the principals got together and submitted a proposal on which school should get additional improvement funds in the next cycle. However, they found that the district did not listen to their recommendations and provided the extra funding to a school that had no need for it.

The discussion of funds is generally accompanied by an analysis of misuse and corruption in developing countries, and Nepal is no exception. Recently established projects such as the per-child funding accountability mechanism, which provided schools funds based on the number of children in the school, had invariably led to corruption. National officials mentioned small-scale “misuse” incidents such as schools trying to inflate their student enrolment data in order to gain extra resources for their schools, and more egregious corruption, such as the invention of fake schools and students to “pocket” funds. On the other hand, principals and local officials cited macro incidents such as ministers who were fired for siphoning off funds from the budgets.

Governance and language policies. Almost all of the schools mentioned that government policies regarding decentralization and language policies were inadequately planned and implemented, and not tailored to school or district needs. Public school officials and bureaucrats alluded to how the policy of governance decentralization had not borne fruit, primarily because of a lack of real devolution of responsibility, and because the program was developed without adequate participation from teacher groups.

Many national officials conceded that the decentralization approach was “imposed” rather than demanded. Furthermore, such a management system would invariably depend on the capacity and willingness of communities to participate in the system. Many school officials questioned the viability of the community concept in urbanized, individualized societies. According to teachers, one of the key problems caused by the increasing focus on decentralization has been a consistent confusion over the boundaries of authority between the district education office, the national Department of Education, and the school management committee. Most stakeholders also argued that the community management concept was brought in without focusing on adequate consensus and capacity building. One of the complaints was that despite the almost two-decade long effort to decentralize authority, the functioning of the

bureaucracy remains obstinately “top to bottom” while it was supposed to transition to “bottom to top” management. That is, while the majority of the stakeholders agreed that decentralization was best for democracy, they questioned the applicability of the community management strategy given the current national political context, urbanization, and erosion of communities.

In terms of language policies, the government had introduced mother tongue education to help ease the transition to schooling of children whose mother tongue was not Nepali. However, in most regions the current demand was for English, and mother tongue education apparently has not been relevant for decades. Furthermore, the policy was only instituted in public schools while the bulk of students in urban centers studied in private schools, which are referred to as “boarding” schools in Nepal. A local official described a peculiar situation in a historical urban neighborhood:

“So even in this school (the school with the Resource center) – the children nearby don't go to school here?”

Not at all – not even one of the local children go to school here. The funny thing here is that – there are Nepal bhasa (Newari) teachers at that school. This locality, of course, is the center of Kathmandu proper, the heart of the Newari community. Because of that, they have added Newari as one of the languages for children so that they are able to learn in that local language (mother tongue). But when you go to that class, there isn't even one Newar child there. That's because all of the local children go to boarding schools. The ones who are in government schools now are migrant children and others who are not Newar.” (personal communication, August 22 2011)

Inability to regulate private school practices. Furthermore, public school officials also discussed the lack of systematic regulations governing private school growth and functioning as having caused public school decline. The inability of the government to regulate the private system is also chalked up to bureaucratic inefficiencies and the loose functioning of the private sector is often blamed by public school officials for their inability to compete. Most public and private school officials believed that approval for schools was given too liberally. Some public school officials even argued that perhaps privatization was the end goal of the government and these lax regulations signaled that the government was trying to escape from its responsibilities

to provide education. There were frequent mentions of the fact that key political leaders had invested in private schools. The school officials argued that many national officials were indifferent in supporting public school improvements, despite having a deep understanding of the problems in public schooling.

Public school teachers were highly dissatisfied with private school practices, and they focused their discontent on what they deemed as unfair practices that prevented public schools from competing with private schools. Given the high unemployment of educated youth, private schools can pay low salaries to short-term teachers. Many private schools continue to have differentiated salary structures and have the ability to hire and fire teachers, which exerts additional pressures on private school teachers to improve their performance. While these accountability systems could also be construed as a positive aspect of private schooling, many public school principals discussed the low teacher wages in the private sector as “exploitation”, despite new regulations governing wages for privately hired teachers. For instance, a public school official in an urbanizing district even argued that if all the private schools were to pay teachers required wages then only a quarter of all private schools would remain in business.

“The boarding schools, if they were to follow all government regulations, then only 25% would really last. Because, now in primary schools the salary is Rs. 11,100 – no matter what their (private or public) status. But, in private schools, they have two teachers under the same salary. If the government were to follow up on this (private school salaries), then most would not be able to function as well.” (personal communication, August 10 2010)

Additionally, public school principals also argued that private schools practiced unhealthy competition by targeting the best students from public schools – that is, private schools lie in wait to see if the children showed any promise after the public schools put their blood and sweat into them, and then they are attracted to the private schools with the promise of scholarships and special incentives. As a result, public school teachers were demoralized while private school teachers gained another easy way to improve their test scores.

Private schools are also expected to contribute to improving equity, but many national officials argue that this was not the case. While private schools are required to give scholarships to disadvantaged students, national officials argue that they are likely to not have provided scholarships to disadvantaged students and instead giving them to their relatives given the inability to effectively monitor their scholarship distribution schemes. Additionally, many of the national level officials argued in favor of a voucher scheme that would allow the existing scholarship funds for dalit, janjati and girls to be utilized by the poor students to go to private schools. They argued for it as a right to choose, and as a means to mix up students who are now living in segregated societies and are ripe for future conflict without any significant government intervention.

The dimensions and consequences of public school stigmatization

In this environment of growing national political instability and bureaucratic inefficiencies, many national, district and school officials, and parents agreed that public schools were perceived to be inferior to private schools. With the passage of time, the flight of middle class students away from the increasingly abundant public schools gave way to the stigmatization of public schooling and erosion of community support.

Public schools concentrated with disadvantaged students. Firstly, as a result of the dual education system (public and private), public schools experienced the negative consequences of sorting by income, capacity, and behavioral traits. Private schools were attractive to parents since they taught in English medium, and provided a relatively politics-free, disciplined environment. Public school officials argued that there had been a gradual, historical flight of middle and high SES students away from public schools to private schools. With the transformation of the education system and migration, a growing group of lower-income families also began to select the increasingly abundant private schools. Some public school officials also mentioned that due to stigmatization of public schooling, students who were behaviorally difficult to manage where

transitioned from private to public schools, while good students were encouraged to attend private schools. The stratification had escalated to such an extent that urban area public schools were now concentrated with difficult-to-educate low SES students, and many public schools had to be merged or collapsed because of a lack of enrollment. Public school officials mentioned that there was social pressure to send your child to private school and that it was embarrassing to send your child to public school. A teacher described his personal experiences to demonstrate the widespread stigmatization of public schooling:

“The thing is here – the culture in Nepal is – whether you can or you cannot; whether they teach or they don't – you still have to send your children to boarding school. If you don't send them to boarding school, your neighbor, your relatives, your well-wishers - all of them will criticize you.

I have experienced it myself. I brought my child here for two years. He was studying in a private boarding school. But, he couldn't read Nepali. He had passed 6th grade, but when I asked him to read in Nepali, he couldn't read the text from any pamphlets or newspapers. And I was alarmed by that and decided that was not good, and brought him here (to the public school I was teaching in). So, I kept him here for two years. In those years, there were just so many people who yelled at me – you couldn't even keep that one son in boarding school. Why did you take him to a government school?

Because of this trend, people send children to boarding school because they feel compelled as well, even when they cannot afford it. Since it's a question of a need for a cultural change, it's not something that we can do all by ourselves.” (personal communication, August 10 2010)

A key aspect of the stigmatization was the thinking that public schools were “schooling for the poor”. Many principals illustrated the stigmatization by citing that their schools were full of children of footpath dwellers, migrant laborers, and anyone who did not have a stable income and was living “hand to mouth”. One of the reasons for this perception was the fact that public schools have been mandatorily free by law. While some principals were in favor of free education, most talked about how they were handicapped by the policy since parents now perceived of public schools as education for those who could not afford user fees. For instance, a local official described how parents would discriminate between children sent to public and private schools, and how this discrimination had clear gender-based dimensions.

“Because the parents have paid fees ...they continually ask the (private) school how their child is doing, and whether their quality is improving. They go to the school, have discussions with the teacher and the principal, take tiffin (lunch) for their child. And then at four pm, they arrive on time to get them from the school. They make sure that they have done their homework as well.

In the same household, the older sister goes to the public school – no one is sure what she has eaten, what she wears and how much she has studied as she makes her way to the school. They send the son to the boarding school, but the older sister has to come back from the school and wash the brother's uniform, she has to polish his shoes, and get her tiffin ready.” (personal communication, August 7 2011)

Interestingly, there were noticeable differences in opinions between public and private school principals on the parental background and social status of public schools, as shown in Table 7.4. Almost all public school officials agree that public schools face more challenging home environments, less education conscious parents, and low social prestige. About half of the private school principals disagreed that public schools face substantial demographic disadvantages, primarily because they also educate poorer students nowadays. However, these differences in opinion are arguably due to the fact that private school officials may not have accounted for the fact that they are educating a smaller group among the poor while the rest of the more disadvantaged students go to public schools.

Lack of community support. Over time, the flight of middle class parents and the institutionalization of the free education policy have resulted in a loss of community support since none of the community members with historical ties to the community send their children to public schools. A typical type of lack of support experienced by the public school was indifference or lack of interest in the public school's functioning since their children did not study there. Urban area school principals painted a narrative about the importance of public schooling as a symbol of pride and progress in villages, which has all but disappeared in urban regions. Additionally, an unforeseen consequence of globalization is the fact that many children in wealthy urban communities have migrated to foreign countries after going there to study abroad. There has also been significant migration from villages to the cities and to neighboring

countries due to the conflict and continued lack of employment. As a result, public school principals argue that there is a dearth of local people to lead the community and participate in public schooling or other community activities.

A higher level of friction between the community and school existed where the community actively resists improvements in the school because it does not serve their self-interest. For instance, the school officials from a historically important all girls' school claimed that many of their local neighbors threw their garbage into the school compound, and had tried to steal some of the expensive urban land from the school.

“We also get to hear that the schools in village regions that have gone through the community handover have gotten better. And the reason this happens is because the community themselves show a lot of interest. On the other hand, in our school our neighbors all they are thinking about is how to take over our land holdings here. When you have a situation like that, it becomes self-explanatory how involved they will be in helping the school. For us, it has been difficult just maintaining the school.” (personal communication, July 29 2010)

Furthermore, the decentralization policy which handed significant authority to the school management committee exacerbated the situation and created an increasingly hostile environment between teachers and communities. A more extreme scenario of lack of community support for the public school was seen in the highly negative resistance to public school improvements in a remote village in a far-western district. In this public school, the principal who was trying to institute some key reforms, such as implementing English, began receiving threats and faced significant opposition from the district education office and even members of the public school's management committee. The main reason for this extreme reaction was that the community members had invested in the local private schools, and were worried that the improvements in the public school would lead to private school failure, given the small market.

Many principals also highlighted the precarious situation they found themselves in after the community gained so much authority over teachers. To quote a principal's interpretation of how community started viewing teachers:

“The community handover idea must be to give incentives and then mobilize the community?”

What the community and parents understood from this (handover program) was that the teachers have to listen to what we say. They thought that all of the teachers are their shepherds and workers. And when that sentiment exists, that creates a problem between parents and teachers.” (personal communication, July 19 2010)

Contradictory findings. While national officials mainly talked about the dire situation in public schooling, there were district level and regional differences in stigmatization and the level of community support. Some remote district officials and rural region principals mentioned that due to the lack of private schools there was not much stigmatization of public schooling and that all types of students would study together. However, even these district officials acknowledged that the main reason for the lack of stratification was the lack of private schools and the lack of parents’ ability to pay. Some public school officials highlighted the generosity and trust of the local community that had helped their school flourish over time. Other principals talked about their harmonious working relationships with their management committee, and how the well-functioning school management committee worked efficiently on all managerial aspects of schooling while the principals focused on the academic aspects. There were also some officials who claimed that since public schools were on a serious rebound, there had been gradual progress in reducing public school stigmatization.

Motivations and expectations of school personnel

A public school official who is expected to carry out reforms will base his decision to conduct these reforms on the likelihood of success of these strategies, and the accountability mechanisms that incentivize these efforts. Given the lack of community support and stigmatization of public schooling, the extensive political influence in decision-making, and problems with the bureaucratic support systems, it would not be surprising for public schools to have limited motivation to carry out reforms.

The principals' opinions on parental involvement and awareness and teacher quality in their schools, displayed in Table 7.5, confirm these suspicions. While almost all private school principals agree that parents are highly involved in schooling activities and communicate their academic concerns to the school, less than half of public school principals confirm the same. On teacher quality, public school principals are more likely than private school principals to believe that the more experienced teachers are of high quality.

However, as discussed earlier, a major problem with the national accountability system was the inability to utilize existing bureaucratic norms to sanction schools and teachers, given the political influence. In addition, the principals and public school officials decried the fact that the accountability systems made no attempts to differentiate between well-functioning and poorly functioning school teams, and incentivize better schools. One principal stated, "why would it matter if I work harder? There is no incentive system that promotes good teaching." Thus, there is very little reward for individual good behavior and even less punishment for poor behavior. Government support for public schooling is limited to praising and rewarding schools that produce good results in the school-leaving examinations and asking why other schools are unable to produce similar results. However, even the best schools are unhappy with the existent accountability mechanisms that do not utilize performance-based criteria to assess and reward schools and teachers.

"The policy of the government is that "shit and gold are equal". Government won't conduct inspections to distinguish between the schools and teachers that are good and bad....Whether it is an organization or a person it is necessary to add more value. If I have done a good job, the government won't add any more budgets for my school neither it will raise my salary. Then how will the people be encouraged to do well? To do well, the government must encourage the schools by saying, "you have practiced well, and we will support your school and increase your facilities." Those kinds of policies are needed, but our government doesn't have those policies." (personal communication, August 22 2011)

Public schools argued that the no fee system was a politically sensitive government regulation which has decreased parental involvement and has also handicapped their efforts to

innovate. While some schools are able to come to an agreement with political party members and parents to raise additional funds through fees and community fundraising to pay for additional costs and innovative efforts, other schools argue that they lack real community interest or supports.

“The other problem we have is the no-fee situation. This is because government schools have been told that we cannot raise fees. We had a discussion with the policy level people then. We talked about how the situation is akin to them telling us to swim after tying our hands and feet together. In that situation, can we swim? There is no means of raising resources. And without financial support, we cannot really innovate. All we can do is maintain whatever we are currently doing.” (personal communication, August 10 2010)

The public school officials also highlighted the lack of other individual incentives to really improve. One of the other reasons cited for the lack of motivation for teachers to perform was that these teachers’ children also often do not study in these public schools which lowered the stakes for poor quality of education for these officials. A district official highlighted how a school in his district was successfully able to increase ownership by requiring that teachers send their children to the same school.

“One of our model schools – what it has done is that it has instituted a system whereby all of the teachers and school management committee members have to send their children to the same school. One example was that the teacher put their child in a private school and that teacher was then fired from the job.

What I have been saying is that even a cook will not work hard or may even spit in your food if he has predetermined that he will not eat that cooking. If you have to eat it yourself, then you will focus on cleaning up the food and making sure that it is well prepared overall. Similarly, one should be able to think that public schools provide an appropriate or adequate education for my children if they were to study here. That's how we need to approach it.” (personal communication, August 9 2010)

A national official pointed to the inability to utilize school personnel’s expertise as limiting personnel’s motivation and effort. That is, given their long-term experiences of frustrations in the system, many teacher resign themselves to just keeping their jobs and working, rather than focusing on innovations.

“The other thing we find is that there are not that many people who have had good experiences. Many of them are quite frustrated – they say, well they've never listened to what we have to say, let it just continue on as it is....So, there are those people who think that it won't matter what I say, I should just finish the job and retire. There are only a few who think that they need to struggle for the country. The person will have spent a lot of time gathering expertise and then he will retire and that expertise will leave with him.” (personal communication, July 28 2010)

Many public school officials talked about how they had developed an internal accountability system so that teachers felt motivated, despite the lack of monetary or other incentive structures in the public school system. Arguably, the only substantial external motivation for productive changes is the fact that the dramatic negative reputation of the public schools may one day lead to school closure and loss of employment. One national level official talked about how there was a heightened awareness for the need of increased teacher effort, and for teacher unions to focus primarily on the profession since public school credibility reached the figurative “bottom of the barrel.”

“We conducted a journalist meeting recently and the topic of the meeting was “teachers can make a difference.” In that discussion the best performing teachers from many districts discussed how they were making a difference even under the current policy environment ... the teachers union and organizations are gradually changing their mental attitude. They are concerned now that the general people's outlook towards them is sinking. They feel that they are now in a shameful situation...I have felt that they have come to a realization that the situation is worsening because of the teachers themselves, and not just because of government policy and resource issues. The union and profession teacher leaders are saying that they will convince teachers to teach and work effectively. So some sort of attitudinal change is happening.” (personal communication, July 4 2011)

These qualitative findings on expectations and motivations to compete are corroborated by the descriptive statistics as shown in Table 7.6. The majority of public school teachers agree that there is lower motivation for public schools to improve because of lack of monitoring, a higher number of politically appointed teachers, and because teachers don't send their children to their public school. Additionally, over four-fifths of the public school principals agree that public schools face systemic problems that cannot be fixed with school-level efforts alone. However, public schools express optimism and satisfaction when the questioning is directed towards their

specific experiences. For instance, most public schools do not agree that they lack personnel or financial resources to conduct reforms, and agree that the government does an adequate job monitoring their school. In addition, they almost unanimously express urgency for school-level improvement efforts and optimism of making improvements with school-level efforts.

An Example: Factors that Mediate the Implementation of English Medium of Instruction

Public school experiences with implementing English medium of instruction highlight the variety of constraints and supports experienced by the diverse public schools in the sample. There was unanimous agreement among public school principals and district officials that public schools needed to adopt English medium, since it was a consumer demand that public schools had to provide if they were to survive in the modern age.

The public schools varied in terms of internal management and resource support, and hence had very different experiences with transitioning to English medium. In the best case scenario, school principals who had efficient teams and strong reputations expressed their confidence that they could implement English medium as the teachers were enthusiastic and highly qualified. Some schools mentioned that they had regained enrollment as the community acknowledged their efforts to improve by implementing English. Many public school officials also provided additional support for extra English classes and received district supports for English teacher training. These principals discussed the medium of instruction challenge as just one of the policies they needed to institute:

“It's ok, maybe there is an issue of medium of instruction and that not matching up. If you have the will and capacity, then why not make them English medium then. That's the only shortcoming we have in comparison to them (private schools) – we teach in Nepali and they teach in English.” (personal communication, July 30 2010)

However, the majority of the public schools faced a myriad challenges in their implementation of English. The foremost amongst these problems were related to teachers. Firstly, most public school principals argued that the current teacher pool would have difficulty

teaching in a new medium of instruction, given their lack of English fluency. The problem was exacerbated by older teachers' resistance to change, since unlike private schools they could not be compelled to exerting effort to improve their English medium teaching.

“Here, actually most of the teachers of Kathmandu don't have condition to teach in English medium. For me, for example, at this place if I tried to convert into English medium then it will be the greatest problem for me. I can't remove the existing teachers. I can't take it into totally English medium along with the existing teachers. So, my concept will remain in thought only.” (personal communication, July 9 2011)

Other school officials highlighted a host of problems that plague public schools in Nepal. Firstly, some principals highlighted that the extremely disadvantaged home background of public school students would prevent them from realistically teaching in English.

“We have also said we have started it (English) from (Grades) 1 to 5 – but it remains as is, inconsequential. There is English medium I guess, but English won't just happen out of thin air – it needs an environment. We don't have the manpower that can teach English. There are children who come in here without shoes on their feet, and who are hungry in the afternoon because they can't afford lunch. You can't just force English to happen – it will be unnatural and artificial.” (personal communication, August 10 2010)

Another school principal focused on the difficulty in implementing English medium due to student population volatility. Given the fact that the school was a public school, they lost students to better schools in the transition to secondary school, and did not have the authority to deny admission to other students. As a result, public schools faced a lack of continuity in student populations to adequately continue providing English medium.

“In the lower grades, we teach Math and Science in English. We have a goal of teaching in English in Math and Science through 10th grade. But in order to be able to do that, we need continuity. In our school, the ones who we have taught with English medium in primary schooling leave for other schools. And the ones who come in towards the end of primary are those who have only learned in Nepali medium. So how do we get them to study in English medium then? That's been a big problem for us.” (personal communication, August 10 2010)

Many teachers expressed concerns over their inability to teach well in English because of the poor learning levels. Many of the schools had to teach English mixed in with Nepali given the student's initial English backgrounds. In fact, one district local official suggested that even

the best public schools were actually dealing with the transition by teaching one section in English and the other section in Nepali, thus sorting the student population by ability and capacity. To quote a teacher in a struggling school:

“I teach English, and there is variety within the classroom. For instance, some students understand and enjoy English speaking in the classroom. For another student, if you ask them to speak in English, they don't understand any of it. Even with just eight students there is that kind of gap. And the reasons for that is the family background and not being able to give that kind of time afterwards. They are with us for six hours of the day after all.” (personal communication, August 2 2010)

With regards to external supports, a principal in a remote district recounted that he had a particularly harsh experience implementing English since he received significant resistance from the local community, the management committee, and even the district education office. He recalled how he had very little bureaucratic help in implementing English medium, and could not even get them to provide teacher training, and thus had to continue with the effort in a fairly isolated manner.

Given the fact that transitioning to English medium would require systematic efforts from the schools, some schools had also experienced a lack of funds, and the government's rigid rules regarding fees made the costs prohibitive for them as they tried to institute English medium.

“We should teach in parallel, in both the English and Nepali medium but could not do so. Firstly we do not have necessary number of teachers and secondly we are not allowed to receive the school fees. Sometime back we started to receive a nominal amount of donation Rs.100-150 from each student but then we received the letter from the DEO office to return it. We tried to do something but we were not allowed to do so.” (personal communication, September 4 2011)

Another teacher pessimistically highlighted that even if they taught in English medium, the parents would not trust their ability to deliver quality English since they were perceived to be inferior.

“In order to stop the flow out from here to boarding school as much as possible, we have said that we will teach in English medium in 1-2 grades. With that English medium, some of the classes have been operated in that way. But, even then, it's not like the

parents are convinced that we will definitely do it in a competent manner. In boarding schools, they think that they will definitely do it – there is more trust in their competence.” (personal communication, August 10 2010)

Thus, the problems encountered while implementing English consistently reflect the supports and constraints that plague schools, and demonstrate the variations in public school capabilities. Schools that have a strong reputation, good resources, and are able to ensure a stable student population appear to be at ease with initiating and consistently maintaining English language education to meet consumer demand. Other schools face difficulty in maintaining English medium education because of student backgrounds and learning levels, teacher quality and effort, and lack of funds. The least advantaged schools feel that they are in such an unfavorable position in terms of these inputs that they think it best not to try to institute the policy, despite the fact that it is highly valued. There is also great variability across districts. While English medium education is a known intervention and supported strongly in the capital, public schools that are in remote regions have to do a lot more of the work and struggle by themselves. In summation, these findings call for more recognition of the variation in teaching resources and income sources in the public schools.

In summary, public schools appear to face myriad political, bureaucratic, and motivational barriers to reform. Interestingly, in the context of Nepal, politics is not just an external impediment – for instance, politicians stopping or forcing certain policies – but rather a cancer that is debilitating school functioning internally. In particular, the systematic involvement of teachers and school management committee members in politics, and the linkages between the bureaucracy and political parties, has allowed for public schools to be used as hotbeds for political machinations. The fact that politics has seeped into every aspect of Nepalese society implies that governance reforms to decentralize the responsibility for education will likely shift authority from a small group of political interests to a larger group of political players who are beholden to the political elite. As a result, unless politics can be taken out of the entire

bureaucracy, it is unlikely that decentralization reforms will help public schools be as autonomous as private schools.

Public schools are also in a precarious position because of the dysfunction in the bureaucracy as each stakeholder looks to blame another for its systemic ills. For instance, public school officials at the national and district level officials highlight the lack of teacher effort and the inability of local actors to truly take responsibility for education governance. On the other hand, public school officials highlight the lack of thoughtful policy formation and systematic financing strategies, and the red-tape laden yet poorly functioning monitoring system as having allowed private schools to leapfrog over public schools. Interestingly, both local level officials and school principals lament the lack of classroom monitoring. While public school officials believe that the lack of classroom monitoring is a product of loose accountability, local level officials responsible for that monitoring highlight the misalignment of tasks. Consequently, better targeting of financing and policies, and better delineation of responsibilities could greatly improve the functioning of the existing bureaucratic support structure.

Lastly, public schools have lost significant community support, particularly in urban areas, since the mid-1990s. When everyone who could afford to pay some school fees began to send their children to private schools, public schools became far less relevant for urban populations with stable incomes. As a result, public schools became concentrated with girls (in a country with son preference) and poor children, or even emptied out in some instances. Public schools appear to have lost the perception battle to private schools. Resurgence in public schooling in urban neighborhoods would require systemic interventions tied to school-level efforts, and a re-examination of the no user fee policy of public education systems in developing countries.

The fact that public school officials are mostly optimistic about their ability to improve from their current conditions and compete with private schools through their individual efforts

may be attributable to an attenuation bias. That is, public school principals may have felt that they needed to acquiesce with these seemingly positive statements when these questions were specifically about their schools. However, the fact that they readily admitted the difficulties faced by most public schools because of politically appointed teachers, poor government monitoring, and disadvantaged student backgrounds suggests that public school principals do feel that public school reform requires systematic interventions along with school-level efforts.

Even in such a dire political, bureaucratic and social environment, some public schools have been able to beat the odds and gain respectability and parental trust. Predictably, the credit for exceptional, thriving public schools is given to the hardworking, engaging and dynamic principals. In some instances, schools' turnarounds or efficient functioning are credited to well-functioning school management committees, but primarily given their ability to successfully recruit a reliable principal. The literature on school leadership has thoroughly detailed the powerful transformative role of principals in public schools in the United States and other developed country contexts (Tyack and Hansot, 1982; Leithwood and Jantzi, 2005). Clearly, the role of the principal in maintaining public school quality is heightened in less politically stable environments as these principals need to motivate teachers and students in an environment of minimal external accountability, strong stigma against public schools, and navigate political and bureaucratic demands.

Do Principal Perceptions on the Key Barriers and Supports to Reform Differ by the Extent of Private Competition Faced by the School?

As demonstrated in the earlier discussion, the key barriers to reform faced by public schools include the politicization of the public school system, the lack of adequate monitoring and financial support, and the stigmatization of public schooling, which in unison may reduce public school officials' motivation to reform. In this section, I analyze whether the barriers, and some supports, to reform can be systematically linked to the extent of privatization or their

perception of private schools as competition. I argue that the barriers to reform are likely to be heightened in public schools that are located in regions with higher privatization. For instance, important urban regions are likely to be targets of political attention and have more individualized societies that primarily send their children to the more abundant private schools.

Table 7.7 presents the logistic regression estimation results of key decision-making related barriers to reform. In a decentralized era, significant district influence in appointing or evaluating teachers, limited principal influence on these decisions, and high management committee influence in dealing with teachers could be a product of undue external interference and may suggest that the principal has limited flexibility in making decisions to improve school quality. Principals of public schools that are located in high competition regions were statistically significantly more likely to suggest that the District Education Office (DEO) had a significant role in appointing teachers than principals of schools from lower competition regions. While principals of schools located in higher competition regions were also more likely to suggest that the school management committee had higher involvement in evaluating teachers, these results were not statistically significant. The schools with principals who perceive subjective competition, controlled for the geographic proximity to private schools, were significantly less likely to suggest that the school management committee plays a role in evaluating teachers.

Table 7.8 focuses on principal perceptions on parent engagement with their school and the general level of awareness of public school parents. Principals of public schools located in medium or high competition regions were over three times as likely to suggest that public school parents were not very aware of the importance of education, which may suggest that these public school principals had to face a concentration of educationally deprived parent populations. Tellingly, principals of more selective public schools were more likely to agree that parents were active in the school and that they monitored their children's academic progress, and less likely to agree that public school parents were not education conscious. These findings logically suggest

that principals of selective schools encounter a different group of parents than principals of nonselective schools. Importantly, public school principals who considered private schools competitors are less likely to suggest that parents are highly involved in school activities, or that parents monitor their children's academic progress compared to public school principals who did not mention private schools as competition. These findings suggest that principals who perceive private schools as competition have seen parents play a limited or less than adequate role in helping their school improve⁴⁸.

Table 7.9 highlights principal perceptions on teacher quality and effort, which are key determinants of school performance. Interestingly, principals who perceived private schools to be competition were almost twice as likely to suggest that their experienced teachers were of excellent quality, compared to principals who did not mention private schools as competition. Principals of school in high competition regions were substantially more likely to agree that their new teachers were of excellent quality than principals of schools in low competition regions. This finding could suggest that the schools with principals who perceived private schools as competition were more likely to have higher quality older teachers, and probably were more capable of implementing instructional policies to compete with private schools. There is a possibility of reverse causality in this argument since public school principals who have a higher regard for their experienced teachers may be more likely to believe that private schools are competitors. The fact that schools in higher competition regions believe that their new teachers are of high quality may suggest that new recruits coming in are of a better quality in those schools in contrast to experienced teachers. As discussed earlier, teachers who are politically involved are a main hindrance to school improvements in the Nepal context. Significantly, I find that the principals of public schools in higher competition regions were over four times as likely

⁴⁸ A brief analysis of the association between perceptions of principals of selective schools by the extent of private competition is presented in Appendix A7.1.

to say that they lacked the incentives to perform because of politically appointed teachers compared to principals of public schools in low competition regions.

Table 7.10 focuses on perceptions on the adequacy of government provided supports. Principals from public schools in high and medium competition regions were over four times as likely to agree that public schools lacked incentives to reform because of a lack of government monitoring. Consistently, principals of public schools in high and medium competition regions were less likely to agree that the government does an adequate job monitoring their school. Principals of public schools in high and medium competition regions were also more inclined to agree that the school management committee members do not care about improving schooling quality and that they lacked adequate teachers, although these results were not statistically significantly different.

In summary, the regression results suggest that public schools that are located in high competition regions face heightened barriers to reform. The school principals in high competition regions experience significant district influence in teacher hiring and agree that public schools lack incentives to compete due to a lack of monitoring supports and a higher number of politically appointed teachers. Furthermore, principals in regions with high privatization are much more likely to agree that public school parents are not education conscious than principals in public schools in low competition regions, which provides suggestive evidence of flight of middle class and educated families to private schools in regions with higher privatization. These results suggest that the public schools that are located in high privatization regions face a higher order of constraints, and may be unable to respond to competition without significant targeted government intervention.

In contrast, public school principals who perceive private schools as competition, regardless of the number of private schools around them, seem to encounter favorable within-school conditions. The principals who perceive private schools to be competing schools believe

that they have high quality experienced teachers but are also more insistent on the lack of parental involvement in public schools. These findings suggest that principals who report that they are competing with private schools are really highlighting the fact that they are able to provide adequate within-school efforts that enable them to compete, and are not just listing schools that are nearby or have proven detrimental to them.

Discussion

Public schools require supports from the bureaucracy, community, parents and students to be able to function effectively. I find that most public schools face a variety of barriers, and do not receive adequate supports, as they attempt to make quality improvements. Public schools face bureaucratic inadequacies, such as a lack of monitoring and financial support and adequate decision-making control. In addition, a significant impediment to competitive responses that is not regularly highlighted in the literature is the extent of direct political interference in decision-making in the public school system. The public school system is perceived as being bureaucratically inefficient and politically entangled, and inferior to the private school system. Over time, the lack of trust in public schooling has led to significant middle class flight, an erosion of community support for public schooling, and led many public schools to become concentrations of disadvantaged populations. The combined effect of bureaucratic, political, and community issues, and a lack of individualized accountability systems has led to a situation where school officials have little motivation or capacity to initiate competitive reforms. In fact, the main reason public schools are initiating some new reforms is arguably because public schools have reached an all-time low in credibility, and are fearful of school closures and loss of employment.

Thankfully, the pessimistic summation is not the complete story. The few schools that have been able to flourish despite the problematic political and bureaucratic environment have developed internal systems of accountability, harnessed creative solutions that are not dependent

on external funding or personnel supports, and have a proven track record of education performance. National and government officials, and principals, agree that the headmaster plays the most important role in ensuring effective functioning, as he needs to expertly sidestep the political infringement to focus on education, motivate less educated parents to focus on their children's education, motivate students, run a well-functioning teacher team without the help of a monetary rewards system, and work with the school management committee on administrative tasks.

While the problems of public school quality tend to be generalized in national and global discussions, my analysis suggests that researchers need to analyze the variations in community supports, personnel motivations and policy implementations while responding to private competition. Policymakers need to prioritize the recruitment of principals who are adept at functioning in political conditions, and the development of more equitable, better targeted financing criteria. Policy also needs to focus on the public schools that exist in high competition regions since these schools appear to suffer the most from a lack of community and bureaucratic support, experience substantial political interference.

Chapter 7 Figures and Tables

Table 7.1 Descriptive statistics on explanatory and control variables

variable description, year	Mean	S.D.	Median
Number of public schools [N = 212]			
Geographic proximity measure of competition (continuous)	3.5	2.5	3.9
Community characteristics			
• Female literacy rate, 6 years and older, 2001	60.9	11.7	60.8
• District dummy (percentage Kathmandu schools)	68.4		
• Urban dummy (percentage urban schools)	42.9		
• Population growth (decadal), 2001 to 2011	49.3	53.3	45.2
School-level indicators			
• Whether the school requires an entrance examination for grade 6 admission, 2011-12	49.06		
• Total fees, grade 9, 2010-11 (in U.S. dollars)	18.87	19.25	15.00
• Percentage dalit (disadvantaged population) in enrollment, 2010-11	11.13	7.83	9.70
• Total grade 1 to 10 enrollment, 2011-12	544.53	313.99	456.00
• Percentage female in grade 1 to 10 enrollment, 2011-12	53.07	8.63	53.19
• Percentage teachers with permanent contracts, 2010-11	11.13	7.83	9.70
• School age, 2011-12	49.08	15.00	49.00
• whether private teachers were hired due to lack of teachers, 2011-12	79.20		
• whether school has poor, inadequate desks, 2009-10	24.90		
• whether the school has a computer room, 2011-12	41.00		
• Class size in 6th grade, 2011-12	44.52	17.11	44.15

Source: Authors' calculations based on Combined Quantitative Dataset.

Note: Exchange rate used to compute total fees in U.S. dollars: 1 U.S. \$ = 80 Nepali Rupees.

Table 7.2 Extent of political interference in public schools compared to private schools

	Public school principals		Private school principals	
	% that disagree/strongly disagree	% that agree/strongly agree	% that disagree/strongly disagree	% that agree/strongly agree
<ul style="list-style-type: none"> Parents are attracted to private schools because there is less external pressure on school management in private schools 	17.9	82.1	16.0	84.0
<ul style="list-style-type: none"> There is more political influence in the school management committee in public schools compared to private schools 	5.2	94.8	2.5	97.5
<ul style="list-style-type: none"> There is more political influence among teachers in public schools compared to private schools 	8.5	91.5	3.7	96.3

Source: Authors' calculations based on the Principal Survey.

Table 7.3 Extent of decision-making control of different stakeholders

Perception Questions	Public school principals		Private school principals	
	% that agree that the stakeholder has little or no influence	% that agree that the stakeholder has a lot of influence or complete control	% that agree that the stakeholder has little or no influence	% that agree that the stakeholder has a lot of influence or complete control
<i>Extent of decision-making control in...</i>				
Appointing teachers				
District Education Office	62.7	37.3	98.8	1.2
Principal	41.5	58.5	13.6	86.4
School Management Committee	32.5	67.5	49.4	50.6
Evaluating teachers				
District Education Office	55.7	44.3	97.5	2.5
Principal	10.4	89.6	0.0	100.0
School Management Committee	51.9	48.1	48.1	51.9
In deciding how the budget will be spent				
District Education Office	55.7	44.3	98.8	1.2
Principal	19.8	80.2	19.8	80.2
School Management Committee	17.5	82.5	44.4	55.6

Source: Authors' calculations based on the Principal Survey.

Table 7.4 Demographic and social status differences between public and private schools

Perception Questions	Public school principals		Private school principals	
	% that disagree /strongly disagree	% that agree / strongly agree	% that disagree /strongly disagree	% that agree / strongly agree
Demographic differences				
• Compared to public schools, private schools can select the students they take in	11.3	88.7	22.2	77.8
• Comparatively speaking, the home environment of public school students is more challenging	4.2	95.8	37.0	63.0
• Most of the parents of public school students do not understand the importance of education	40.6	59.4	80.2	19.8
Social prestige				
• Public schools are equated with poor or low status schooling	9.0	91.0	45.7	54.3
• There is social pressure to send your child to private school	27.4	72.6	37.0	63.0

Source: Authors' calculations based on the Principal Survey.

Table 7.5 Parental involvement and awareness and teacher quality at the school

Perception Questions	Public school principals		Private school principals	
	% that say the statement is rarely or never accurate	% that say the statement is somewhat or very accurate	% that say the statement is rarely or never accurate	% that say the statement is somewhat or very accurate
Parental involvement				
• Parents are highly involved in school activities	53.3	46.7	21.0	79.0
• Parents monitor the academic progress of their children closely	34.4	65.6	4.9	95.1
• Parents communicate their academic concerns to the school	47.6	52.4	6.2	93.8
Teacher quality				
• Teacher absenteeism is a big problem	85.8	14.2	91.4	8.6
• Teachers who have less than three years of experience are excellent	59.0	41.0	49.4	50.6
• Teachers who have more than 15 years of experience are excellent	30.2	69.8	35.8	64.2

Source: Authors' calculations based on the Principal Survey.

Table 7.6 Expectations and motivations to compete

Perception Questions	Public school principals	
	% that disagree/strongly disagree	% that agree/strongly agree
Lack of motivations to change for public schools		
<ul style="list-style-type: none"> There is less incentive to improve quality in public schools because no one is monitoring or holding the schools accountable 	46.2	53.8
<ul style="list-style-type: none"> There are more politically appointed teachers who are not concerned with teaching in public schools 	34.4	65.6
<ul style="list-style-type: none"> The SMC members in public schools do not care about schooling quality 	56.6	43.4
<ul style="list-style-type: none"> The school officials' children do not study in public schools, so there is no incentive to try and improve the school 	22.6	77.4
Resources and monitoring supports at the school		
<ul style="list-style-type: none"> This school cannot bring about required improvements because it does not have the physical or financial resources 	61.8	38.2
<ul style="list-style-type: none"> This school does not have adequate or the right kind of teachers to make the required improvements 	73.6	26.4
<ul style="list-style-type: none"> The government does an adequate job monitoring at your school 	39.2	60.8
Changes that should be made at the school		
<ul style="list-style-type: none"> This school does not need to make any private-like changes because we are getting enough students 	85.4	14.6
<ul style="list-style-type: none"> This school does not need to make private-like changes because we are competing with other public schools and not with private schools 	83.0	17.0
<ul style="list-style-type: none"> This school needs to make changes to survive and compete with private schools 	4.7	95.3
Expectations from making changes at the school		
<ul style="list-style-type: none"> With the changes you make to compete, this school should be able to improve your schooling quality 	0.9	99.1
<ul style="list-style-type: none"> The quality problems are systemic and cannot be fixed through efforts at your school level alone 	14.6	85.4
<ul style="list-style-type: none"> There is no use in making changes because parents have a preference for private schools that is not linked to education quality 	86.8	13.2

Source: Authors' calculations based on the Principal Survey.

Table 7.7 Odds ratios: Logistic estimation results of decision-making barriers and supports to reform

<i>Perception questions (agree/strongly agree)</i>	DEO - appointing teachers (barrier)	SMC - appointing teachers (support)	Principal - appointing teachers (support)	DEO - evaluating teachers (barrier)	SMC - evaluating teachers (barrier)	DEO - spending the budget (barrier)
<i>Variable</i>						
Geographic proximity measure of competition						
medium competition	1.50	0.82	0.85	0.81	1.30	0.97
high competition	2.08**	0.94	0.61	1.47	1.26	1.04
Subjective competition	0.97	0.67	1.04	0.59	.526**	1.53
Female literacy rate	1.27	0.76	0.73	1.06	0.92	1.04
District dummy	2.04*	3.08**	5.43***	0.54	1.73	0.37
Urban dummy	0.77	1.39	1.13	0.70	0.56	1.15
Population growth	.95*	1.01	0.99	0.99	0.99	0.97
Selective school	1.31	0.60	1.46	1.25	1.81	1.61
Total grade 9 school fees	0.99	1.00	1.00	1.02	0.99	1.02
Fraction dalit in total enrollment	0.98	0.98	0.99	1.01	0.98	1.01
Total enrollment	1.04	1.06	1.04	1.05	1.08	1.01
Fraction female in total enrollment	0.94	1.6*	1.13	0.87	0.86	1.06
Fraction of teachers with permanent contracts	.88**	0.97	1.03	1.01	0.97	.844**
School age	1.03	0.91	.92*	1.05	.854***	1.04
Hired private teachers due to lack of quota	2.16**	0.92	0.93	1.39	0.94	1.20
Poor quality of desks	1.06	1.61	1.85	0.81	1.04	1.05
Have a computer room	.509***	1.65	1.21	.572*	.496**	1.31
Class size, 6th grade	0.87	0.82	0.93	0.95	.784**	0.81
Toilets for teachers	0.86	1.39	2.18**	0.86	1.68	0.78
Primary, repetition rate	0.98	0.99	1.01	1.04	1.00	0.98
10th grade new student rate	0.98	1.00	0.99	1.01	1.00	0.95
First division percentage rate	.986*	0.99	1.01	1.00	1.00	1.00
pseudo R-squared	0.09	0.10	0.17	0.09	0.11	0.09
chi-sq.	66.80	46.10	80.50	36.50	62.20	38.70

Source: Authors' estimations based on the Combined Quantitative Dataset.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table 7.8 Odds ratios: Logistic estimation results of parental background and involvement related barriers and supports to reform

<i>Perception questions (agree/strongly agree)</i>	Parents are highly involved in school activities at the school <i>(support)</i>	Parents closely monitor the academic progress of their children <i>(support)</i>	Parents communicate their academic concerns at the school <i>(support)</i>	Most of the parents of public school students do not understand the importance of education <i>(barrier)</i>
<i>Variable, year</i>				
Geographic proximity measure of competition				
medium competition	1.16	1.04	0.55	3.13***
high competition	1.02	0.81	0.52	4.01**
Subjective competition	.422***	.504*	0.68	0.97
Female literacy rate	.698*	0.94	0.95	1.05
District dummy (1 = Kathmandu)	1.51	0.98	1.60	.131***
Urban dummy (1 = urban)	0.83	0.86	1.27	1.20
Population growth	1.06	0.99	1.00	0.98
Selective school	1.83*	2.25*	1.95**	.532**
Total grade 9 school fees	1.01	1.01	1.00	1.00
Fraction dalit in total enrollment	1.00	1.00	1.01	0.98
Total enrollment	1.04	1.1*	1.01	.867**
Fraction female in total enrollment	1.53***	0.92	1.05	1.02
Fraction of teachers with permanent contracts	1.02	0.96	1.01	0.98
School age	0.93	0.93	0.94	0.96
Hired private teachers due to lack of quota	0.79	0.87	0.94	1.01
Poor quality of desks	0.80	0.51	1.25	0.89
Have a computer room	.469*	0.92	0.93	1.68**
Class size, 6th grade	.729**	0.84	0.99	1.00
Toilets for teachers	1.96**	1.27	1.86**	1.09
Primary, repetition rate	1.02	0.98	1.00	0.97
10th grade new student rate	1.00	0.99	0.98	0.99
First division percentage rate	1.01**	1.01*	1.01**	1.00
pseudo R-squared	0.16	0.11	0.11	0.15
chi-sq.	67.40	38.60	39.50	70.40

Source: Authors' estimations based on the Combined Quantitative Dataset.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table 7.9 Odds ratios: Logistic estimation results of teacher quality and effort related supports and barriers to reform

<i>Variable</i>	<i>Perception questions (agree/strongly agree)</i>	Teachers with less than three years of experience are excellent <i>(support)</i>	Teachers with more than 15 years of experience are excellent <i>(support)</i>	Public schools lack incentives to perform due to politically appointed teachers <i>(barrier)</i>
Geographic proximity measure of competition				
medium competition		1.33	0.83	1.42
high competition		2.47**	1.03	4.01***
Subjective competition		0.59	1.8**	0.79
Female literacy rate		1.01	0.78	0.82
District dummy (1 = Kathmandu)		6.17***	0.77	3.02*
Urban dummy (1 = urban)		.214***	1.12	0.66
Population growth		1.01	1.05	1.02
Selective school		2.21**	0.86	0.95
Total grade 9 school fees		1.01	0.99	1.04**
Fraction dalit in total enrollment		1.00	0.99	0.98
Total enrollment		0.98	0.99	0.94
Fraction female in total enrollment		1.15	1.03	0.86
Fraction of teachers with permanent contracts		1.08	0.98	1.08
School age		.891*	0.99	1.15
Hired private teachers due to lack of quota		.273***	0.83	0.69
Poor quality of desks		0.64	0.78	0.67
Have a computer room		0.94	1.26	0.78
Class size, 6th grade		0.81	1.02	1.08
Toilets for teachers		1.68	1.20	0.99
Primary, repetition rate		1.05	1.01	1.02
10th grade new student rate		0.98	1.00	1.00
First division percentage rate		.979***	1.01	1.00
pseudo R-squared		0.18	0.06	0.16
chi-sq.		76.50	45.30	78.30

Source: Authors' estimations based on the Combined Quantitative Dataset.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table 7.10 Odds ratios: Logistic estimation results of the main reasons public schools lack motivation to reform

<i>Perception questions (agree/strongly agree)</i>	Lack of government monitoring & accountability (barrier)	SMC members do not care about schooling (barrier)	Too much external pressures (barrier)	Lack financial resources (barrier)	Lack adequate or appropriate teachers (barrier)	Government does adequate job monitoring the school (support)
Geographic proximity measure of competition						
medium competition	4.26***	1.41	0.52	0.94	1.16	.441**
high competition	4.12**	1.49	0.61	1.00	1.33	0.46
Subjective competition	1.20	1.43	1.18	0.79	0.89	0.94
Female literacy rate	.728*	1.12	1.06	1.00	2.03***	1.11
District dummy	1.41	2.98**	0.63	2.80	1.25	1.43
Urban dummy	1.11	0.53	2.12	1.86	.336**	0.60
Population growth	0.99	0.98	1.00	1.00	1.01	0.98
Selective school	.514*	1.02	0.69	0.88	1.95	1.15
Total grade 9 school fees	1.02*	1.01*	1.02*	1.03***	1.02	1.00
Fraction dalit in total enrollment	0.99	1.05**	1.00	0.99	1.03*	0.98
Total enrollment	.914*	1.01	1.00	1.00	0.93	1.04
Fraction female in total enrollment	1.13	0.95	1.34	1.11	0.91	.712**
Fraction of teachers with permanent contracts	0.92	1.06	0.96	1.03	0.95	1.06
School age	1.05	0.96	1.11*	0.99	0.97	0.93
Hired private teachers due to lack of quota	0.68	0.78	1.55	2.44**	10.5***	1.69
Poor quality of desks	0.96	1.03	2.16**	1.22	0.92	0.99
Have a computer room	1.64*	1.20	1.25	.342**	0.59	0.66
Class size, 6th grade	0.95	1.13	1.22*	1.08	0.86	1.20
Toilets for teachers	1.37	0.83	1.58	1.61	1.82	1.45
Primary, repetition rate	1.02	0.99	1.00	1.04	1.03	1.00
10th grade new student rate	0.99	1.01	1.01	1.00	1.02**	1.01
First division percentage rates	1.00	.983**	0.99	0.99	.988*	0.99
pseudo R-squared	0.12	0.08	0.11	0.13	0.18	0.09
chi-sq.	51.60	36.40	84.70	60.80	119.00	53.90

Source: Authors' estimations based on the Combined Quantitative Dataset.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

CHAPTER 8

DOES PRIVATE COMPETITION IMPROVE PUBLIC SCHOOL QUALITY OR INCREASE THE STRATIFICATION OF THE EDUCATION SECTOR?

Abstract

In this chapter, I contribute evidence to address the fundamental debate in school choice, whether competition leads to improvements in public school outcomes or increases stratification. I utilize a 4-year longitudinal dataset of 212 public secondary schools to analyze the associations between public school outcomes (test scores, enrollment), public school policies intended to improve outcomes, and measures of private competition. In order to address stratification, I compute locality-level relative ratios of the public school outcomes and all locality school outcomes. I attempt to improve the causal inference of the analysis by utilizing fixed effects estimation (for the time-varying private market share competition measure) and instrumental variable strategies (for all test score based outcome measures). I find no discernible evidence to suggest that public schools that are located in higher competition regions have higher test score outcomes, after controlling for community and school characteristics. In addition, policies instituted to emulate private schools have not yet been able to stop the enrollment hemorrhage from public schools. The most consistent evidence comes from the locality-level stratification analysis. I find that localities that have higher private market penetration are likely to have larger gaps between public and private school test score and enrollment outcomes. Significantly, the fixed effects estimation suggests that the gaps in student pass rates and grade 1 enrollment have widened in recent years with an increasing private sector. Despite the limitations of the causal analysis, the evidence from the Nepal case is consistent with previous analysis from Chile and New Zealand, which suggested that a key consequence of unregulated choice is the stratification of the education system.

Introduction

A central question in the school choice debate is whether public schools will improve as a result of experiencing competition from private schools or whether providing choice will instead lead to more stratification of the society. However, there is scant evidence on the outcome and sorting consequences of increased choice in developing countries. In chapters 6 and 7, I described how public schools respond to private competition and the constraints and supports they face while trying to stay competitive. The ultimate goal of these policy changes is to influence student performance as it is the most accessible gauge of school quality that influences parents' schooling decisions. Therefore, it is also important to understand whether privatization and policy responses to competition are having desirable effects on school outcomes.

In order to address research gaps in the outcomes literature, I conduct longitudinal analysis of the associations between school outcomes (test score performance, enrollment), competition measures, and school responses in this chapter. I utilize fixed effects regressions and instrumental variable techniques to improve the causal inference of the analysis on how test scores are affected by competition measures. I show that public schools that experience higher competition, that is, public schools that are located in regions with higher private market share or that have a high number of private schools in their geographic proximity, do not have discernibly different test scores outcomes compared to public schools located in regions with lower competition. Rather, there is suggestive evidence of stratification as localities with higher private penetration have a greater gap between private and public school test score outcomes than localities with lower private market penetration. In terms of the policy responses attempted by public schools in order to stay competitive, public schools that have implemented policies to add instructional time (by lengthening their school day or adding remedial classes) appear to have higher average mathematics test scores, and higher number of students meeting high and low proficiency cut-offs. On the other hand, policy responses that were initiated in order to improve

enrollment have not yet been successful in abating the outflow of students. For instance, public schools that have added English medium of instruction are significantly more likely to have lower enrollments in grade 1. It is important to note that the findings on the linkages between the policy responses and student outcomes (test scores, enrollment) may indicate reverse causality. For instance, public schools that suffered enrollment losses a few years ago were probably more inclined to feel the need to introduce policies, but may not yet have been able to regain parental trust. Similarly, public schools that have higher test scores are likely to have more favorable conditions, and to have the resources to add remedial classes or lengthen the school day.

Conceptual Framework and Research Questions

The chapter follows an economics of education approach to estimate the impact of competition on test score outcomes. As discussed in the literature review, competitive effects are typically studied in quantitative models by conceptualizing student outcomes as a function of the competition measure and school and community covariates (Payne, 2010). A central issue in these analyses is in conclusively identifying the competitive effect – that is, how can one determine whether any fluctuations in outcomes are *caused* by the competition public schools face and not by other factors such as the existence of more schools in urban markets predisposed to higher outcomes? (Dee, 1998; Geller, Sjoquist and Walker, 2006; Thapa, 2012a). Some of the problems in the estimation may include the fact that private schools may be able to attract a higher caliber of students (“cream-skimming”), private school entry may be significantly related to public school quality, and the estimation may omit relevant variables. To improve causal inference, these analyses typically require longitudinal data, information from before and after policy changes, or instrumental variable (IV) strategies⁴⁹ for cross-sectional datasets

⁴⁹ In IV estimation, the first-stage regression utilizes the competition measure as the dependent variable, with the instrument and other explanatory and control variables. Then, the fitted values from the first-stage regression for the competition measure are substituted into the second-stage regression of outcomes on competition and other variables.

(Wooldridge, 2009). The lagged value of competition is a measure that has been previously utilized in the competitive effects literature (Geller, et al., 2006). In order to analyze the relationship between policies and outcomes, I reference the literature on accountability systems and competitive effects of competition (Rouse et al., 2007) to model the linkages between key policy adoptions, competition measures, and outcomes. In order to understand the sorting implications of unregulated choice, I analyze the relative outcomes (the ratio of public school outcomes and all outcomes) through a locality-level analysis, in reference to Hsieh and Urquiola (2006).

The research question addressed in the chapter is: How is the extent of private competition linked with public school outcomes and public school responses? The specific questions that are analyzed are the following:

- (1) Do public schools in higher competition regions have better outcomes (test scores, enrollment) than public schools in low competition regions?
- (2) What is the relationship between outcomes (test scores, enrollment) and public school responses that intend to improve those outcomes?
- (3) Do localities with higher private competition have larger gaps between public and private school outcomes (test scores, enrollment) than localities with lower private competition?

Data and Methods

Data Sources

Given the data limitations in the Nepal context, the data collection strategy included primary and secondary data collection that was completed over a two year period. I compiled a 4-year (2007-08 to 2010-11) school-level longitudinal dataset of 212 public schools by combining a competition-focused principal survey conducted for the dissertation, national school records on education indicators (the EMIS database) and national records on high-stakes

examination performance (the OCE database), and community characteristics from the national population census (Census database)⁵⁰. I refer to the data set here as “Combined Quantitative Dataset - School-level sample” for simplicity. The dependent variables are various school outcomes from the end of high school 10th grade examination results and school enrollment in grade 1. The competition measures are the private market share and geographic proximity measures. These dependent variables, competition measures, and explanatory variables used in the analysis are described more fully in the Descriptive Statistics section⁵¹. In order to conduct locality-level analysis, I simply aggregate the school-level statistics for all dependent variables, competition measures, and the explanatory and control variables. In reporting the results, I refer to the locality-level dataset as “Combined Quantitative Dataset -locality-level sample” for simplicity.

Models

In order to address Research Question 1, I test the hypothesis that public schools that face higher competition will have better outcomes (test scores, enrollment) than public schools that face less competition (Thapa, 2012).

The most comprehensive specification of the first set of models estimated is of the following form:

$$Y_{pt} = \alpha + \beta_C C_{pt} + \beta_x X_{pt} + \beta_y Y_{p(t-1)} + \beta_D D + \varepsilon \quad (\text{Model 1.1})$$

- Y_p = school-average mathematics scores, school-level pass percentage rates, or school-level first division percentage rates in public school p in year t (used separately)

⁵⁰ The datasets merged to develop the competition focused dataset used for the analysis are described in greater detail in Chapter 4, Data and Methods, and mapped in Figure 4.1.

⁵¹ Appendix 8.1 displays descriptive graphs of all outcome measures, competition measures and explanatory variables used in the model specifications.

- C_p = measures of competition faced by the public school p (Private market share at the VDC or ward level in year t (psvw); or the number of private secondary schools in close geographic proximity in 2011-12 (cobj)) (used separately)
- X_{pt} = school characteristics in year t, including total student enrollment (time-variant)
- $Y_{p(t-1)}$ = lagged test score outcome (used separately)
- D = community and school characteristics (time-invariant)

The models estimated for enrollment as the dependent variable includes a lagged school outcome, the percentage of students who achieved first division pass rates (scored over 60%) since enrollment is likely to be associated with the school's performance. The model specification is of the following form:

$$E_{pt} = \alpha + \beta_C C_{pt} + \beta_X X_{pt} + \beta_E E_{p(t-1)} + \beta_D D + \varepsilon \quad (\text{Model 1.2})$$

- E_{pt} = enrollment in grade 1 in school p in year t
- C_p = measures of competition faced by the public school p (Private market share at the VDC or ward level in year t (psvw); the number of private secondary schools in close geographic proximity in 2011-12 (cobj)) (used separately)
- X_{pt} = school characteristics in year t, including first division pass rates in year t-1 (time-variant)
- $E_{p(t-1)}$ = enrollment in grade 1 in year t-1
- D = community and school characteristics (time-invariant)

In order to address Research Question 2, the relationship between outcomes (test scores, enrollment) and policy adoptions intended to improve those outcomes, I run two models. Firstly, I analyze the association between test score outcomes and the school's adoption of interventions focused on increasing instructional time (coaching classes for weaker students, extra classes for weaker students (remedial classes), and lengthening the school day). These interventions are

quasi-private instructional efforts that arguably should have a direct impact on test scores. I test the hypothesis that schools that have adopted these policies at least two years earlier will have higher test score outcomes than schools that have not adopted these policies.

$$Y_{pt} = \alpha + \beta_s S_{p(t-2)} + \beta_C C_{pt} + \beta_x X_{pt} + \beta_y Y_{p(t-1)} + \beta_D D + \varepsilon \quad (\text{Model 2.1})$$

- Y_p = school-average mathematics score in public school p in year t; school-level pass percentage rates in public school p in year t; school-level first division percentage rates in public school p in year t
- $S_{p(t-2)}$ = whether school p has adopted the policy of coaching classes for weak students in year t-2; whether the school p has adopted the policy of adding extra classes for weaker students in year t-2; whether the school p has lengthened the school day in year t-2
- C_{pt} = measures of competition faced by the public school p (Private market share at the VDC or ward level in year t (psvw); the number of private secondary schools in close geographic proximity in 2011-12 (cobj)) (separately analyzed)
- $Y_{p(t-1)}$ = test score outcome in year t -1
- X_{pt} = school characteristics in year t, including enrollment (time-variant)
- D = community and school characteristics (time-invariant)

Secondly, I analyze the association between enrollment, policy adoptions and the test score outcomes⁵². I test the hypothesis that schools that have adopted certain “private-mirroring” policies with the express attempt to attract students (adopted English medium and added ties and belts to their uniforms), are likely to have higher enrollment. I utilize two-year lagged values of policy adoptions since it is likely that it will take some time for communities to hear of and trust the improvements in the public school efforts. I also include lagged test score outcomes, the first

⁵² The selection of the key policy responses used for the analysis were based on interviews with 30 public school principals who shed light on the possible mechanisms via which enrollment and test score outcomes could be linked to policies. A brief discussion of policy- outcome mechanisms are presented in Appendix 8.2.

division pass rates, since schools that have higher test score outcomes are likely to attract more students. In essence, Model 2.2 analyzes if there are any changes in parents' acceptance of public schools in response to public school policy efforts.

$$E_{pt} = \alpha + \beta_s S_{p(t-2)} + \beta_Y Y_{p(t-1)} + \beta_C C_{pt} + \beta_E E_{p(t-1)} + \beta_X X_t + \beta_D D + \varepsilon \quad (\text{Model 2.2})$$

- E_{pt} = enrollment in grade 1 in public school p in time t
- $S_{p(t-2)}$ = whether the public school p has adopted the English medium of instruction in time t-2; whether the school has added ties and belts to school uniforms in time t-2;
- $Y_{p(t-1)}$ = school-average first division rates in public school p in year t-1;
- C_p = measures of competition faced by the public school p (Private market share at the VDC or ward level in year t (psvw); the number of private secondary schools in close geographic proximity in 2011-12 (cobj));
- $E_{p(t-1)}$ = enrollment in grade 1 in year t -1;
- X_{pt} = school characteristics in year t (time-variant);
- D = community and school characteristics (time-invariant)

In order to address Research Question 3, I conduct a locality-level analysis of relative outcome measures, defined as the ratio of a locality's public school outcomes and the locality-wide average. The locality is a government defined area, such as a village development community or ward. The relative outcome measure is computed as the ratio of the public school outcomes to all school outcomes in the locality. I test the hypothesis that the communities that have higher or growing competition have worse relative outcomes (test scores, enrollment).

These measures have been developed in reference to Hsieh and Urquiola (2006)⁵³, who utilize

⁵³ The Hsieh and Urquiola (2006) strategy was used here because like in Chile, there was differential growth in private market share in different localities, based on community trends. However, there are some important differences. Firstly, while the change in private market share occurred in Chile as a result of the adoption of a voucher program in 1982, in Nepal the changes in private market share occurred because private schools were re-allowed to exist in the early 1980s. Secondly, while Chile had specific communes that handle schools and other public services, Nepal has localities but no regulations governing where

community level definitions to provide suggestive evidence for the indirect measure of sorting. The authors argue that the measure can be used to measure sorting since test scores are a by-product of both sorting and productivity changes in any community that has seen changes in private market shares.

The model specifications for locality-level test score outcomes are of the following form:

$$RY_{it} = \alpha + \beta_C C_{it} + \beta_X X_{it} + \beta_D D_i + \beta_Y Y_{i(t-1)} + \varepsilon \quad (\text{Model 3.1})$$

- RY_{it} = ratio of the locality l 's weighted average public school test score outcomes and the locality-wide weighted average test score outcomes (all public and private schools) in year t
- C_{it} = measure of competition at the locality level (private market share in the locality year t , average number of private secondary schools in geographic proximity to the public schools in the locality, 2011-12) separately
- $Y_{i(t-1)}$ = locality-level weighted averages of the public school outcomes in year $t-1$
- X_{it} = average characteristics of the public secondary schools at the locality level in year t (time-variant)
- D_i = average community characteristics in the locality (time-invariant)

The model specifications for locality-level grade 1 enrollment are of the following form:

$$RE_{Ct} = \alpha + \beta_C C_{Ct} + \beta_X X_t + \beta_D D_t + \beta_E E_{(t-1)} + \beta_Y Y_{(t-1)} + \varepsilon \quad (\text{Model 3.2})$$

- RE_{Ct} = ratio of the locality's average public school grade 1 enrollment and the locality-wide average grade 1 enrollment (all public and private schools) in year t
- C_C = measure of competition at the community level (private market share in the locality year t , average number of private secondary schools in geographic proximity to the public schools in the locality, 2011-12) separately

children need to go to school. While students arguably attend schools in their localities, one cannot be absolutely sure to consider these as different markets. Thus, the locality definitions in the Nepal case are less accurate definitions of "markets" compared to the Chilean case.

- $E_{(t-1)}$ = locality-level average public school enrollment in year t-1
- $Y_{(t-1)}$ = locality-level average first division pass percentage rates in year t-1
- X_t = average school characteristics of public secondary schools at the locality level in year t (time-variant)
- D_1 = average community characteristics in the locality (time-invariant)

Estimation Strategies

I first estimate the models with OLS by pooling data over the four years for which data are available. In order to utilize the longitudinal nature of the sample, I then run random effects and fixed effects regressions⁵⁴. The fixed effects estimation also addresses some of the endogeneity issues since it controls for time-invariant community or school trends and only captures the within-school or within-locality variations. In the model specification, I added population growth data in order to control for a key pre-existing trend that could be correlated with private sector growth.

In addition, I utilize the well-known solution of instrumental variable estimation to attempt to resolve the endogeneity problem for the test score outcomes in the school and community samples. The instrument used in the analysis is the number of private schools that existed in 1982. I argue that this measure is a good instrument because the number of private schools in the early 1980s, when private schools were re-allowed to enter the Nepalese market, is likely to be correlated with the current number of private schools or private market share, since private schools in Nepal were likely to enter in areas with higher market potential. However, the historic number of private schools should not have any direct impact on the current public school test score outcomes. Given the time-invariant nature of the measure, I do not use IV estimation

⁵⁴ I utilize a Hausman test (or the Sargan-Hansen chi-sq statistic) to test whether the fixed or random effects should be used. While the Sargan-Hansen statistic suggests that the fixed effects model is preferable in this analysis, I present the analysis for all types of regressions that I attempted.

for the fixed effects estimation. I also do not use IV estimation for the enrollment dependent variables since the validity checks did not suggest the need to use 2SLS over OLS methods.

Variable Description and Descriptive Statistics

Dependent variables

The dependent variables for Model 1.1 (and Model 2.1) are three school-level outcomes based on the high-stakes School-Leaving Certificate (SLC) examination that is taken by all students at the end of high-school (10th grade) in Nepal. These measure are the school-level average raw mathematics test score (0 to 100), the percentage of students who passed in the SLC examination (scored over 32%, a low proficiency measure) and the percentage of students who got first division results in the SLC examination (scored over 60 %, a high proficiency measure).

As shown in Table 1, the test scores and the proficiency measures show that public schools have improved results between 2007-08 and 2010-11. For example, the median school passed 64% of its students in 2007-08, while the median school passed 80% of its students in 2010-11. However, the descriptive statistics also indicate high variation in school performance across public schools, and suggest that learning levels are quite poor overall. For instance, the worst performing school in 2010-11 was only able to get less than 15% of its students to secure passing grades. The dependent variable for Model 1.2 (and Model 2.2) is the enrollments in grade 1. The descriptive statistics show that the median enrollment in first grade for the public secondary schools in the sample has steadily decreased from 44 students per school in 2006-07 to about 31 students per school by 2011-12.

The dependent variables for Model 3.1 are the locality-level relative test score outcomes. The relative test score outcomes are (1) the ratio of the weighted average public school mathematics score outcomes and the locality-wide weighted average mathematics score of all public and private schools; (2) the ratio of the weighted average first division pass rates in public schools and the locality-wide weighted average first division pass rates; and (3) the ratio of the

weighted average pass rates in public schools and the locality-wide average pass rates of all public and private schools. The descriptive statistics of the relative measures suggest that public school students are on average performing relatively decently but that there are some localities where public schools are performing far worse than private schools. For instance, the median relative mathematics score is 0.88. However, in some localities the ratio of public school average score to locality-wide average scores is as low as 0.45.

The dependent variable for Model 3.2 is the ratio of the average first grade enrollment in public schools and the community-wide average enrollment in grade 1 in all public and private schools. In the median locality, the public school average grade 1 enrollment was 0.61 times the overall grade 1 enrollment in 2007-08. The enrollment data suggest that private schools have not only rapidly expanded but also, on average, have more students than public schools. Moreover, the median locality's public school average grade 1 enrolment was 0.53 times the overall grade 1 enrollment in 2010-11. These trends suggest that there has been a further decline in enrollment in public schools in recent years as more parents choose private schools for their young children.

The descriptive graphs in Figure 8.1 show the association between the four relative outcome measures and private market share. Obviously, when there are few private schools in the locality, the public schools' relative test scores are close to 1. There is a clear negative relationship between the relative measures and the locality's private market share.

Competition measures

The key explanatory variables of interest are the competition measures. As shown in the descriptive statistics in Table 8.2, the private market share have grown from about 37% of total enrollment in 2006-07 to about 46% of the enrollment share in 2011-12. While there has been substantial private sector growth in the six-year period, the data also suggest that these two districts have had a longer history of high privatization. The second measure of competition, a

geographic proximity definition⁵⁵, was derived from the principal survey question that asked school principals to list the number of schools within one kilometer of the school. The descriptive statistics suggests that on average, there were four private secondary schools in close geographic proximity to the public schools in 2011-12. The descriptive statistics of these measures demonstrate that there is wide variation in the extent of competition in the localities in the districts. That is, along with growing private competition, there continue to be more scarcely populated or rural regions that have few or no private schools in the locality.

Other explanatory and control variables

As shown in the descriptive statistics in Table 8.3, I include community characteristics, and school-level explanatory variables and other control variables in the empirical specifications. The important explanatory variables include whether the school is selective (requires an entrance examination test), the proportion of students who are female and dalit (indicators of disadvantaged populations), school age, and the new student admission rate in grade 10. While it would have been ideal to have more indicators describing student and teacher backgrounds, the variable selection was based on data availability and quality.

Instrumental Variable Validity Check

After conducting correlational analysis and first-stage equations based validity checks, I confirm that the instrument is valid and a strong predictor of both competition measures. As shown in Table 8.4, the basic correlation between these measures shows that the instrumental variable, number of private schools in 1982 (nvw1982), is fairly highly correlated with the competition measures (between 0.48 and 0.50), and is less correlated with the school-level outcome measures (between 0.20 and 0.25). The locality-level relative outcome measures are

⁵⁵ The geographic measure may more accurately represent the extent of competition experienced by the private school than the private school market share measure because parents are not restricted by zoning regulations in their choice of school. The private market share definition of competition is time-varying, and thus useful for fixed effects estimation.

slightly negatively correlated with the instrumental variable. The instrumental validity checks from first-stage equation results show that there seems to be some support for the use of 2SLS over the OLS method. Table 8.5 displays first-stage equation results of the instrumental variable on the competition measures which demonstrate that the instrument appears to be a significant predictor of both the private market share and geographic proximity competition measures⁵⁶.

Results

Do Public Schools in Higher Competition Regions have Better Outcomes (Test Scores, Enrollment) than Public Schools in Low Competition Regions?

Table 8.6 provides a summary of the estimates of the competition measures on the test score and enrollment measures utilizing a variety of estimation techniques (pooled OLS, random effects, fixed effects, and IV estimation for pooled OLS and random effects). Overall, I find that there is no consistent, statistically significant difference in test score outcomes between public schools that face different levels of private competition after controlling for other explanatory and control variables.

For the regressions with mathematics test score as the dependent variable, the pooled OLS regression results without covariates indicate that a 1 percentage increase in private market share is associated with a 0.06 point increase in the school-average mathematics test score, which ranges from 0 to 100. In standard deviation terms, a 1 SD increase in private market share is associated with a 0.15 SD increase in mathematics test scores. After instrumenting for competition, with the number of private schools from 20 years ago, the coefficients rise in magnitude. However, the coefficient ceases to be significant after the inclusion of other explanatory variables into the model. The random effects specification results follow patterns that are similar to the pooled OLS results. That is, there isn't a significant relationship between competition measures and the mathematics test score after controlling for covariates. The fixed

⁵⁶ Further detailed tables and discussion of the instrumental validity checks are provided in Appendix 8.3.

effects specification also gives somewhat similar results. However, the main difference is that the relationship between the number of private schools and the mathematics test score is found to be negative to begin with.

The results for the high proficiency outcome measure, the percentage of students who scored above 60% in the SLC examination, yields similar results. For instance, while increasing the number of private secondary schools by 1 school increases mathematics scores by 0.92 points (weakly significant at the 10% level), the coefficient is not statistically significant after controlling for other variables.

The results for the low proficiency measure, the percentage of students who scored below 32% in the SLC examination, are not consistent across specifications and competition measures. The geographic proximity (cobj) measure suggests that the positive, significant relationship between school pass rates and competition measures becomes negative and significant after controlling for other variables. However, the estimate becomes positive and insignificant in the instrumental variable estimation. In addition, the private market share (psvw) measures do not indicate any sign of a negative relationship, except in the statistically insignificant results from the fixed effects estimation.

In terms of enrollment, the OLS and random effects estimates show that public schools in higher competition regions appear to have higher enrollments in grade 1 compared to public schools in lower competition regions. Using the private market share definition of competition, I find that the enrollment is not significantly related with competition once one controls for lagged enrollment data. In contrast, the geographic proximity measure for competition finding suggests that having a higher number of private schools in close proximity is associated with higher enrollment, even after controlling for community characteristics such as population growth and urbanicity. The difference in these findings may be attributable to the fact that the public schools that are surrounded by private secondary schools are more likely to be in the densest urban

neighborhoods. I do find the fixed effects results from the private market share analysis to be consistent with the anecdotal discussions. That is, the fixed effects estimation results suggests that public schools that are in localities that have experienced private market share growth in the 4-year period between 2007-08 and 2010-11 have also experienced a significant reduction in grade 1 enrollment.

The coefficients on the other explanatory variables have the expected signs, and suggest that public schools that have more favorable conditions and are in higher demand are more likely to have higher test score outcomes and higher enrollment. Specifically, the other explanatory variables⁵⁷ that were frequently significantly correlated with test score outcomes included: whether the school had conducted any entrance examinations or not (positive association), school fees (positive association), whether the school had a computer room or not (positive), the school's age (negative), the fraction of newly admitted students in grade 10 (negative) and the district (Kathmandu has higher test scores). Some of the explanatory variables that were significantly associated with enrollment included: migrant population (positive association), selectivity of the school (positive), age of the school (negative), repetition rates (positive), and the percentage of teachers with less than a bachelor's degree (negative).

Public schools in Kathmandu valley are likely to have higher test score outcomes and enrollment, suggesting that there is greater emphasis on test scores in the larger district. The inclusion of the lagged dependent variable improves the goodness of fit of the model, and has a statistically significant and sizeable positive association with the test scores and enrollment measures. However, in the fixed effect estimation the lagged dependent variable is negatively associated with the outcomes.

⁵⁷ The detailed results are presented in the 18 tables in Appendix 8.4.

What is the Relationship between Outcomes (Test Scores, Enrollment) and Public School Responses that Intend to Improve those Outcomes?

In this section, I summarize how outcomes (test scores, enrollment) are associated with the policies adopted by the public schools. Table 8.7 summarizes the regression results between test score outcomes (mathematics test score as an example), the policy adoptions targeting instruction (coaching classes for weaker students, extra classes for weaker students), and measures of competition. Table 8.8 summarizes the regression results between enrollment in grade 1, policies adopted to boost enrollment (adopted English medium, added ties and belts), and measures of competition⁵⁸.

As shown in Table 8.7, I find that there does not seem to be any association between student test scores and the fact that they have adopted coaching classes for weaker students two years ago. However, the schools that added remedial classes for weaker students two years ago seem to have higher mathematics test scores than schools that did not have remedial classes. For instance, the pooled OLS regression results, which controls for lagged test scores and other variables, suggests that the school had instituted remedial classes for weaker students two years ago had 0.74 points higher mathematics scores compared to schools that had not instituted these remedial classes two years ago. The fixed effects model results suggest that schools that had opted to have longer school days at least two years ago had over five points higher mathematics scores compared to schools that had not lengthened their school day.

The results for the enrollment in grade 1 as dependent variable, shown in Table 8.8, suggest that an increase in private competition is linked to a decrease in public school enrollment. Perhaps surprisingly, the association between school enrollment and policies intended to improve enrollment (school's adoption of English medium, adding ties and belts to

⁵⁸ The detailed results of all models linking outcomes with policy responses are presented in the 18 tables in Appendix 8.5.

school uniforms) is negative for all empirical specifications. This association may be a product of reverse causation – that is, schools that had begun losing enrollment a few years ago may have been the ones that started adopting these policies as shorter term fixes in the hopes of stemming enrollment declines. The empirical specification does try to control for this reverse causation by including lagged enrollment in order to capture existing trends in enrollment, and by using lagged policy adoption data. An implication of these findings may be that the schools have not been able to regain parental trust despite their best efforts. For instance, parents may still want to attend private schools due to the easy access to private schools, and the lack of trust that the public schools will be able to make serious improvements with these recent changes.

Do Localities with Higher Private Competition have Larger Gaps between Public and Private School Outcomes (Test Scores, Enrollment) than Localities with Lower Private Competition?

As shown in Table 8.9, the relative outcome measures are consistently, significantly negatively associated with competition measures. For instance, the pooled OLS specification without controls suggests that a 1% increase in private market share is associated with a 0.004 decrease in the ratio of the public mathematics score and the overall locality mathematics score. In standard deviation terms, these results imply that a 1 SD increase in private market share is associated with a substantial 0.78 SD decrease in the relative mathematics test scores. Similarly, a 1 SD increase in the number of private secondary schools that are in geographic proximity is associated with a 0.68 SD decrease in the relative mathematics scores. The statistical significance and magnitude of these results are robust to added controls, random effects specifications, and instrumental variable specifications. The fixed effects specification estimates show that the relative mathematics test scores are negatively associated with private market share, but these results are not statistically significant.

The results for relative pass rates and first division rates in the locality show similar negative results. The main exception is that the estimates for the relative pass rate measure are weakly significant (at the 10% level) even for the fixed effects specification. That is, after controlling for all time-invariant measures, the schools that are located in growing private markets have experienced widening gaps between private and public school pass rates. The relative enrollment measure also indicates that localities with higher private competition have a larger gap between public and private school enrollments in grade 1. The fixed effects specification suggests that schools in localities that have grown over the past four years have seen growing gaps between private and public school average grade 1 enrollments.

The other explanatory variables that were significantly associated with relative locality-level outcomes include: average school selectivity of the locality's public secondary schools (positive association), district (Kathmandu has worse relative outcomes), average fraction dalit in locality's public secondary schools (negative association), average fraction female in locality's public secondary schools (positive association), average student to teacher ratio in locality's public secondary schools (negative association), and the average share of teachers with permanent contracts in the locality's public secondary schools (negative association)⁵⁹. The fact that Kathmandu district, which has the larger private market, has worse relative outcomes compared to Chitwan, is consistent with the notion that more private schooling leads to higher stratification. Similarly, localities with public schools that have high dalit populations, larger class sizes, and more teachers on permanent contracts appear to have relatively worse outcomes, which are consistent with the suggestion that public schools face difficulty to educate student populations, and less flexible teachers. It is also logical that localities with more selective public schools are able to shore up average relative outcomes.

⁵⁹ The detailed results of all relative outcome models are presented in the 18 tables in Appendix 8.6.

Discussion

Public schools in Nepal are widely perceived by academics, policymakers, and the media to be worse performers in comparison to private schools. All of the existing large-scale studies on Nepal, albeit based on the same comprehensive cross-sectional dataset from 2004, have found that private schools have better high-stakes performance than public schools, even after controlling for student, school and community characteristics. These findings remain robust to various sophisticated nonexperimental techniques, such as propensity score matching (Thapa, 2012) or careful sample selection and instrumental variable strategies (Sharma, 2012). The existing competitive effects evidence on Nepal, again using 2004 data, shows that public schools that experience competition have better student test scores than public schools without private competition when one uses the instrumental variable of motorable road (Thapa, 2013). In essence, these findings suggest both the superiority of private schools and a likely positive impact of private schools on public school outcomes.

However, in my analysis of more recent data on outcomes in the high privatization districts I do not find evidence of a causal, significant or sizeable relationship between measures of competition and test score measures. While the association between competition measures and outcome measures were significant without covariates, the inclusion of explanatory variables removes this association. The differences between my findings and Thapa (2013) may in part be attributable to different sample sizes, different dates of study, and the use of different instrumental variables. The lack of a significant competitive effect suggests that while schools that are located in high competition regions may have slightly higher test scores than schools in lower competition regions, the effects may be attributable to other factors, such as school selectivity, age of the school, and community characteristics rather than competition itself. A lack of competitive effects evidence is not all that surprising since it may be presumptuous to expect major improvements in public schools without significant competition-related

accountability pressures. The only accountability mechanism that has currently been instituted in Nepal, the per-child funding system, may have initiated reforms in schools but this may not yet be transitioning to test score or parental acceptance improvements.

In my analysis of the association between lagged policy adoptions and current enrollment, I do not find any evidence to suggest that recently implemented policies that have been instituted to boost enrollment have had their desired effect. The finding may imply that school policies have not been implemented for long enough to be able to reverse on-going enrollment trends, given the easy availability of private schools and the prevalent stigmatization of public schooling. However, I do find that schools that have adopted policies of lengthening the school day and adding remedial classes have higher test score outcomes. These results are not surprising and suggest that adding targeted instructional time is important for improving high stakes outcomes. Still, the schools that mentioned that they had additional targeted coaching classes for the high-stakes examinations did not have significantly better test scores than schools that did not have targeted coaching classes. These additional findings suggest that targeted teaching to the test last minute just for weaker students do not contribute to test score results as much as instituting remedial classes or longer school days throughout the schooling cycle. While these findings are suggestive, it is important to note that it is difficult to make a causal argument linking public school policies and school outcomes when there are no exogenous variations in the policy interventions or records on implementation of policies that can be exploited for identification.

I find more compelling, suggestive evidence of stratification between the public and private systems. The relative locality-level outcome measures, the ratio of public school outcomes and all school outcomes, are consistently and significantly negatively associated with competition measures. That is, I find that there is higher gap between public and private school outcomes (test scores, enrollment) in higher competition regions than in lower competition

regions. Moreover, the fixed effects estimations suggests that schools in localities that have experienced recent increases in private competition are more likely to have widened the gaps in student pass rates and early grade enrollment between private and public schools. As discussed by Hsieh and Urquiola (2006), a growth in the gap between public and private school outcomes can have several explanations. A potential interpretation of these findings it that as more parents lose trust in the public schools and gravitate to private schools, the public school officials have to work with an increasing concentration of highly disadvantaged and vulnerable populations that are not able to dedicate as much effort to schooling. Another explanation for a large gap between public and private school outcomes may be that private schools have entered where public schools were already failing. The history of private school expansion in Nepal seems to suggest that private entry is associated with urbanization and market potential rather than specific public school failures. While it is near impossible to disentangle the sorting and outcome effects of long-term privatization, it is perhaps more likely that the causality runs in the opposite direction. That is, the long-term growth in private schooling may have contributed to current public school examination performance. Perhaps the most likely explanation for the larger gap between public and private schools in high privatization localities is that the high number of private schools in the market may have motivated private schools to do better to ensure their competitiveness, while public schools were less affected or motivated due to lack of bureaucratic pressures and other barriers.

In conclusion, public school outcomes are not substantially better in high competition regions than in lower competition regions, despite the fact that they have more exposure to high performing private schools. This finding contradicts the Friedman (1962) argument that competition will automatically lead to better public school performance. Instructional time focused policies are associated with higher test scores while policies to boost enrollment have not yet stemmed the enrollment hemorrhage from public schools. The dominant finding from the

analysis is that public schools that exist in localities with higher private market penetration seem to be far behind the area's private schools, which is likely to be reflective of both higher private sector performance and more stratification. The public schools in high private share regions appear to be caught in a vicious cycle of falling enrollments and worsening relative test scores. These findings are consistent with the evidence from Chile (Hsieh and Urquiola, 2006) and New Zealand (Fiske and Ladd, 2000) which suggest that a predominant effect of long-term, unregulated school choice is the stratification of the system.

Chapter 8 Figures and Tables

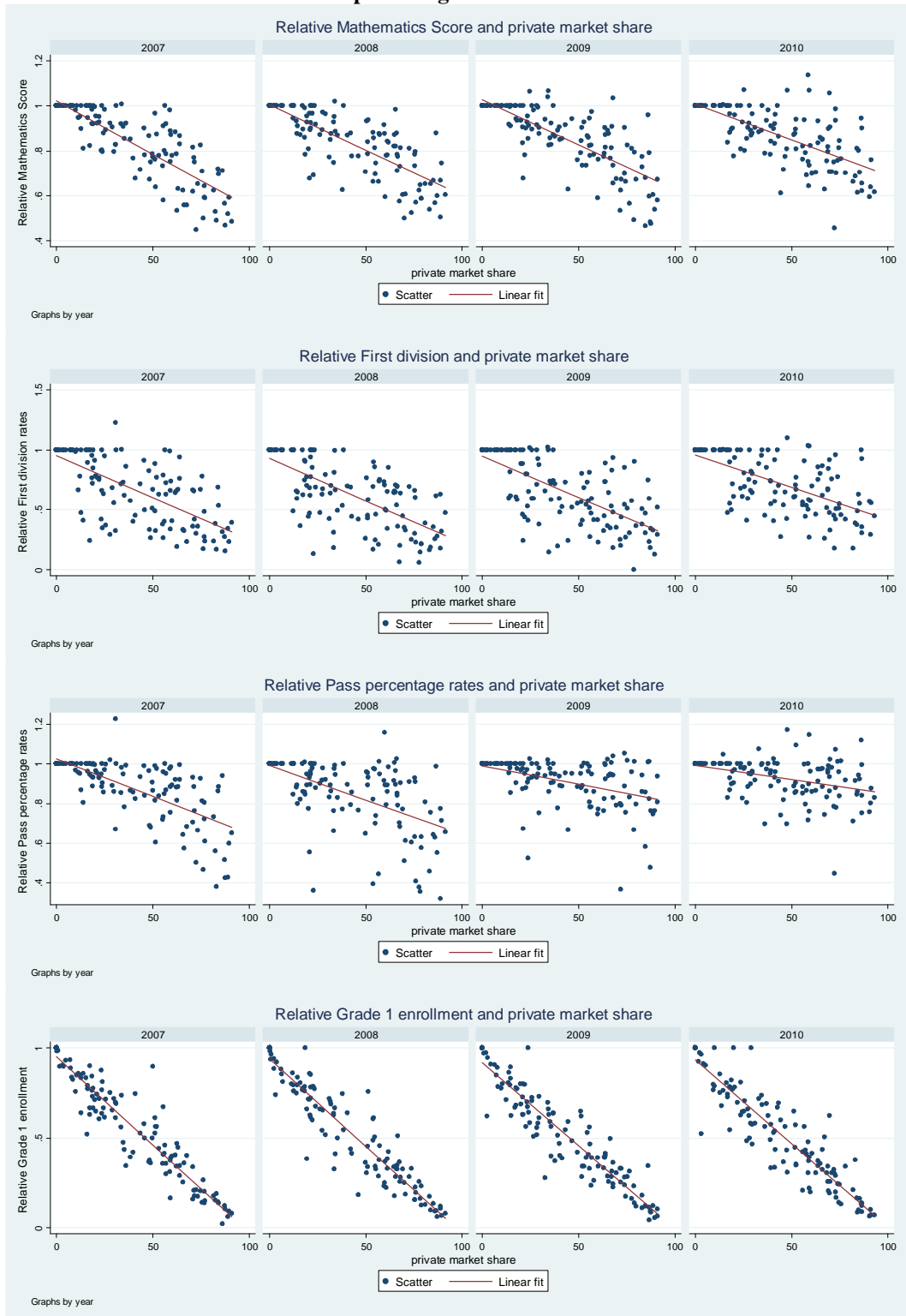


Figure 8.1 Relative outcome measures and private market share
Source: Authors' calculations based on the Combined Quantitative Dataset.

Table 8.1 Descriptive statistics of the dependent variables

Variable	Obs	Mean	Std. Dev.	Median	Min	Max
<i>Dependent variables for school-level analysis (Models 1 and 2)</i>						
School-average mathematics test scores in the SLC examination (mat)						
2007-08	202	39.6	9.4	38.6	16.7	72.2
2010-11	212	53.0	12.1	52.5	21.3	93.4
Percentage of students who passed in the SLC examination (scored over 32%) (ppct)						
2007-08	202	62.6	20.1	64.0	0.0	100.0
2010-11	212	75.9	20.9	80.2	14.3	100.0
Percentage of students who got first division results in the SLC examination (got above 60%) (fpct)						
2007-08	202	27.6	19.8	22.2	0.0	90.3
2010-11	212	40.6	26.2	35.1	0.0	100.0
Enrollment in grade 1 (enr_t1)						
2006-07	212	56.6	40.5	44.0	8	275
2011-12	212	39.6	29.7	31.0	6	206
<i>Dependent variables for community-level analysis (Model 3)</i>						
Relative mathematics test scores in the locality (public schools / all schools) (pubsvwmat)						
2007-08	126	0.84	0.16	0.89	0.45	1.01
2010-11	131	0.88	0.14	0.90	0.46	1.56
Relative pass rates in the locality (public schools / all schools) (pubsvwps)						
2007-08	126	0.88	0.15	0.94	0.38	1.23
2010-11	131	0.94	0.12	0.96	0.45	1.69
Relative first division rates in the locality (public schools / all schools) (pubsvwfs)						
2007-08	125	0.68	0.28	0.72	0.16	1.23
2010-11	129	0.73	0.26	0.73	0.18	1.69
Relative enrollment in grade in the locality (public schools / all schools) (pubsvwenr_t1)						
2007-08	158	0.58	0.30	0.61	0	1
2010-11	158	0.54	0.30	0.53	0	1

Source: Authors' calculations based on the Combined Quantitative Dataset.

Note: I present the first and last years of data only for the sake of brevity.

Table 8.2 Descriptive statistics of the competition measures

Variable	Obs	Mean	Std. Dev.	Median	Min	Max
Private market share in each locality (psvw)						
2006-07	158	36.4	30.2	34.0	0.0	100.0
2007-08	158	39.7	29.7	38.9	0.0	100.0
2008-09	158	41.6	30.4	39.5	0.0	100.0
2009-10	158	43.0	30.2	39.7	0.0	100.0
2010-11	158	44.0	30.2	43.0	0.0	100.0
2011-12	158	45.8	30.6	49.0	0.0	100.0
Number of private secondary schools in geographic proximity (school-level) (cobj)						
2011-12	212	3.5	2.5	3.9	0	25

Source: Authors' calculations based on the Combined Quantitative Dataset.

Table 8.3 Descriptive statistics of the explanatory and control variables,
2010-11 or latest available year

Variable description, year	Mean	St. Dev	Median
Subjective measure of competition	54.7		
Community characteristics			
• Female literacy rate, 6 years and older, 2001	60.9	11.7	60.8
• District dummy (percentage Kathmandu schools)	68.4		
• Urban dummy (percentage urban schools)	42.9		
• Population growth (decadal), 2001 to 2011	49.3	53.3	45.2
Explanatory variables			
• Whether the school requires an examination for grade 6 admission, 2011-12 (percentage selective)	49.1		
• Total fees, grade 9, 2010-11 (in U.S. dollars)	18.9	19.3	15.0
• Whether the school has a computer room, 2011-12 (percentage)	41.0		
Other control variables			
• Total enrollment (grade 1 to grade 10)	544.5	314.0	456
• Percentage female in enrollment, 2010-11	53.1	8.6	53.2
• Percentage dalit in enrollment, 2010-11	11.1	7.8	9.7
• School age, 2010-11	49.1	15.0	49.0
• Repetition rates, primary grades (1 through 5), 2010-11	6.0	7.0	3.4
• Percentage newly admitted students in grade 10, 2010-11	3.6	14.3	0.0
• Student to teacher ratio, 2010-11	26.6	12.4	24.7
Infrastructure variables			
• Inadequate desks in the classroom, 2009-10	24.9	43.3	0.0
• Have a toilet for teachers, 2008-09	62.1		
Teaching related variables			
• Whether teachers were hired privately due to lack of teachers, 2011-12	79.2		
• Percentage of teachers who have permanent contracts, 2010-11	51.3	25.6	53.2
• Percentage of teachers with less than a Bachelor's degree	32.1	24.4	31.2

Source: Authors' calculations based on the Combined Quantitative Dataset.

Note: I only present the latest year's statistics for the sake of brevity.

Table 8.4 Correlation matrix: competition measures, outcome measures and the instrumental variable, 2010-11

	Instrumental variable	Competition measures	
	nvw1982	psvw	cobj
Instrumental variable			
• Number of private schools in 1982 (nvw1982)	1		
Competition measures			
• Private market share (psvw)	0.48	1	
• Number of private secondary schools in geographic proximity (cobj)	0.50	0.59	1
School-level Outcome measures			
• Mathematics test score (mat)	0.20	0.22	0.21
• Percentage of students who got first division results (scored over 60%) in the SLC examination (fpct)	0.24	0.24	0.17
• Percentage of students who passed (scored over 32 %) in the SLC examination (ppct)	0.25	0.31	0.20
Locality-level Relative Outcome measures			
• Relative mathematics test scores (pubsvwmat)	-0.12	-0.65	-0.29
• Relative student first division rates (pubsvwfs)	0.11	-0.32	-0.05
• Relative student pass rates (pubsvwps)	-0.03	-0.55	-0.23

Source: Authors' estimations based on the Combined Quantitative Dataset.

Table 8.5 First-stage equation results (IV check) – OLS and random effects estimates

competition measure regression method	Private Market Share (psvw)				Geographic proximity (cobj)			
	OLS	OLS	RE	RE	OLS	OLS	RE	RE
with controls?	N	Y	N	Y	N	Y	N	Y
First-stage regressions								
Instrument variable								
coefficient	12.95	7.12	13.03	7.17	1.84	0.89	1.84	0.90
t-stat	9.97	8.52	17.51	8.37	16.55	7.23	18.52	7.10
P-val	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F-stat	99.45	63.73		229.59	273.77	141.35		1046.87
Test of overidentifying restrictions: fixed versus random effects								
Sargan-Hansen								
Chi-sq statistic				1247.78				1074.76
P-val				0.00				0.00

Source: Authors' estimations based on the Combined Quantitative Dataset.

Note: Estimates control for robust and cluster-standard errors.

Table 8.6 Estimated coefficients from OLS, random effects and fixed effects regressions of school-level outcomes (test scores, enrollment) on measures of competition

<i>Competition Measures</i>	Measure 1: private market share (psvw)			Measure 2: number of private secondary schools in proximity (cobj)		
	without controls	with controls	w/ controls & lagged dep. var	without controls	with controls	w/controls & lagged dep. var.
<i>School-average mathematics test scores in the SLC examination (mat)</i>						
Pooled OLS	.06072*** [0.15]	-0.01 [-0.03]	0.00 [0.004]	.3928*** [0.14]	-0.06 [-0.03]	0.04 [0.01]
Pooled OLS, IV	.1187***	0.09	0.03	.8197***	0.75	0.25
Random Effects	.05273**	-0.02	0.00	.3851***	-0.03	0.04
Random Effects, IV	.1177***	0.09	0.03	.8121**	0.64	0.25
Fixed Effects	-0.08 [-0.11]	-0.10 [-0.26]	-0.07 [-0.19]	... ...	... ...	... ...
<i>Percentage of students who got first division results in the SLC examination (got above 60%) (fpct)</i>						
Pooled OLS	.1728*** [0.2]	-0.03 [-0.04]	-0.01 [-0.01]	.9186*** [0.16]	-0.51 [-0.09]	-0.14 [-0.02]
Pooled OLS, IV	.3197***	0.09	0.05	2.209***	0.77	0.40
Random Effects	.1412***	-0.06	-0.01	.8908***	-0.52	-0.14
Random Effects, IV	.3143***	0.08	0.05	2.177***	0.62	0.40
Fixed Effects	-0.26 [-0.22]	-0.23 [-0.31]	-0.11 [-0.16]	... ...	... ...	... ...
<i>Percentage of students who passed in the SLC examination (scored over 32%) (ppct)</i>						
Pooled OLS	.1675*** [0.22]	0.02 [0.02]	0.02 [0.02]	.7261** [0.14]	-.4862** [-0.09]	-.3056* [-0.06]
Pooled OLS, IV	.2936***	0.23	0.14	2.028***	1.89	1.14
Random Effects	.1527***	0.00	0.02	.7096**	-.4581**	-.3056*
Random Effects, IV	.2914***	0.24	0.14	2.017***	1.94	1.14
Fixed Effects	-0.32 [-0.33]	-0.35 [-0.42]	-0.33 [-0.4]	... ...	... ...	... ...
<i>Enrollment in grade 1 (enr_t1)</i>						
Pooled OLS	.3503*** [0.28]	.1758*** [0.15]	0.03 [0.03]	2.838*** [0.31]	1.441** [0.17]	.2919** [0.03]
Random Effects	0.09	0.03	0.03	2.838***	2.08***	.3005***
Fixed Effects	-.7513*** [-0.32]	-.663*** [-0.3]	-.6006*** [-0.28]	... ...	... ...	... ...

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Notes: *, **, and *** indicate significance at 10%, 5% and 1% level respectively. The brackets contain the proportion of a standard deviation change in the dependent variable with a one standard deviation increase in the competition measure. The other variables in the specifications included community characteristics (female literacy, district dummy, urban dummy, population growth); explanatory variables (selectivity, school fees, computer room); and other student, teacher and infrastructure variables (enrollment, fraction female and dalit students, school age, repetition and new student admission rates, student to teacher ratio, inadequate desks in the classroom, toilet for teachers, teachers hired privately due to the lack of teachers, fraction teachers who have permanent contracts, fraction teachers with less than a Bachelor's degree).

Table 8.7 Estimated coefficients from regressions of mathematics test scores on measures of competition, policies intended to improve test scores, and other variables

	Private market share			Geographic proximity	
	OLS	OLS, IV	FE	OLS	OLS, IV
Competition Measure	0.004	0.035	-0.06	0.03	0.29
SLC extra coaching	0.616	0.782	-1.09	0.59	0.57
Remedial classes	.7398*	.8547*	-0.43	.7301*	.7919*
Longer school days	0.237	0.121	5.438*	0.23	-0.01
Subjective Measure of Competition	0.154	-0.040	...	0.17	0.01
Literacy rate	0.057	-0.123	...	0.06	-0.21
District dummy (Kathmandu == 1)	2.082	1.514	...	2.09	1.39
Urban dummy (urban == 1)	0.035	-0.194	...	0.05	-0.14
Population growth (decadal)	0.053	0.009	...	0.06	0.04
Selective school	1.597***	1.635***	1.99	1.591***	1.591***
9th grade total school fees	-0.002	-0.005	.429***	0.00	-0.01
Availability of a computer room	0.795	0.944	-0.21	0.78	0.85
Total Grade 1 to 10 enrollment	0.116	0.056	-0.29	0.11	0.00
Fraction female in enrollment	0.013	0.093	-0.68	0.00	-0.07
Fraction dalit in enrollment	-0.003	-0.009	-0.09	0.00	0.00
		-			-
School age in years	-.2328***	.2448***	...	-.2333***	.2555***
Repetition rates, primary grades	-0.003	-0.004	0.01	0.00	-0.01
		-			-
Fraction of newly admitted students in grade 10	-.01621**	.01662**	0.00	-.01612**	.01573**
		-			-
Student to teacher ratio	-.0781**	.07673**	-0.02	-.07828**	.07753**
Inadequate desks	0.407	0.418	...	0.39	0.25
Teacher restroom dummy	.9039*	.9913*	...	.9121*	1.121*
Teacher privately hired dummy	-0.200	-0.436	...	-0.17	-0.22
Share of teachers with permanent contracts	0.112	0.104	.2917*	0.11	0.12
Percentage of teachers with less than a bachelor's degrees	0.641	0.544	0.51	0.66	0.72
		-			-
Lagged test score	.5812***	.5837***	.193***	.5813***	.5853***
N	838	817	817	817	817
R-squared	0.53	0.52	0.77	0.53	0.52

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table 8.8 Estimated coefficients from regressions of enrollment in grade 1 on measures of competition, policies intended to improve enrollment, and other variables

	Private market share		Geographic proximity
	OLS	FE	OLS
Competition Measure	0.036	-.5463***	.3244**
English medium	-2.485*	-3.26	-2.431*
Adding ties and belts	0.193	-5.20	0.41
lagged test score	.07017**	-0.0018	.0723**
Subjective Measure of Competition	-0.846	...	-0.90
Literacy rate	-1.122	...	-1.19
District dummy (Kathmandu district == 1)	5.166**	...	5.041**
Urban dummy (urban == 1)	2.134	...	2.11
Migrant population rate	0.763	...	0.73
Selective school	2.347**	7.05	2.243**
9th grade total school fees	0.018	0.09	0.02
Availability of a computer room	2.116*	-2.02	1.969*
Fraction female in enrollment	-0.331	-4.41	-0.53
Fraction dalit in enrollment	0.136	0.23	.147*
School age in years	-0.019	...	-0.02
Repetition rates, primary grades	0.101	0.08	0.10
Student to teacher ratio	.2562***	0.12	.2521***
Teacher privately hired dummy	-0.375	...	-0.22
Percentage of teachers with less than a bachelor's degrees	-3.856	-6.208**	-3.72
lagged enrollment	.7721***	0.08	.7701***
N	817	817	817
R-squared	0.80	0.90	0.80
adj R-squared	0.79	0.86	0.79

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.
 Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table 8.9 Estimated coefficients from OLS, random effects and fixed effects regressions of relative locality-level outcomes (test scores, enrollment) on measures of competition

<i>Explanatory variable:</i>	Measure 1: private market share (psvw)			Measure 2: number of private secondary schools in proximity (cobj)		
	without controls	with controls	w/ controls & lagged dep. var.	without controls	with controls	w/ controls & lagged dep. var.
<i>Relative Locality-average mathematics test scores in the SLC examination (pubsvwmat)</i>						
Pooled OLS	-.00399*** [-0.78]	-.00417*** [-0.82]	-.00404*** [-0.794]	-.0239*** [-0.68]	-.0137*** [-0.39]	-.0119*** [-0.34]
Pooled OLS, IV	-.00383***	-.0032***	-.0033***	-.0339***	-.0372**	-.0385**
Random Effects	-.00382***	-.00375***	-.00385***	-.024***	-.012***	-.012***
Random Effects, IV	-.00383***	-.00328***	-.00328***	-.0339***	-.0418**	-.042**
Fixed Effects	-0.001 [-0.03]	-0.001 [-0.09]	-0.001 [-0.1]	... ...	... ...	... ...
<i>Relative Locality-average first division results in the SLC examination (got above 60%) (pubsvwfpct)</i>						
Pooled OLS	-.00661*** [-0.7]	-.00803*** [-0.86]	-.00773*** [-0.83]	-.0385*** [-0.59]	-.0307*** [-0.48]	-.0251*** [-0.4]
Pooled OLS, IV	-.00561***	-.00782***	-.00751***	-.0494***	-.0945**	-.0915**
Random Effects	-.00638***	-.00723***	-.00744***	-.0387***	-.0278***	-.0274***
Random Effects, IV	-.00563***	-.00768***	-.0076***	-.0496***	-.0983**	-.0975**
Fixed Effects	-0.0028 [-0.52]	-0.0030 [-0.6]	-0.0028 [-0.62]	... ...	... ...	... ...
<i>Relative Locality-average pass percentage rates (scored over 32%)(pubsvwppct)</i>						
Pooled OLS	-.00264*** [-0.53]	-.00308*** [-0.63]	-.00308*** [-0.63]	-.0144*** [-0.41]	-.00969*** [-0.3]	-.00849*** [-0.26]
Pooled OLS, IV	-.00178***	0.00	-.00175*	-.0158***	-0.02	-0.02
Random Effects	-.00264***	-.00299***	-.00304***	-.0145***	-0.01	-.00748*
Random Effects, IV	-.00179***	-0.002	-0.002	-.0158**	-0.02	-0.02
Fixed Effects	-.0028* [-0.36]	-.00341** [-0.41]	-.00385** [-0.52]	... ...	... ...	... ...
<i>Relative Locality-average Enrollment in grade 1 (pubsvwenr_t1)</i>						
Pooled OLS	-.00953*** [-0.94]	-.00969*** [-0.95]	-.00865*** [-0.85]	-.062*** [-0.88]	-.0453*** [-0.64]	-.0304*** [-0.42]
Random Effects	-.00956***	-.00963***	-.00902***	-.062***	-.0456***	-.0404***
Fixed Effects	-.00981*** [-0.95]	-.00962*** [-0.93]	-.00931*** [-0.91]	... ...	... ...	... ...

Source : Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Notes: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively. The brackets contain the proportion of a standard deviation change in the dependent variable with a one standard deviation increase in the competition measure. The other variables in the specifications included community characteristics (female literacy, district dummy, urban dummy, population growth); and explanatory variables for public schools in the community (selectivity, school fees, computer room); and other student, teacher and infrastructure variables (enrollment, fraction female and dalit students, school age, repetition and new student admission rates, student to teacher ratio, inadequate desks in the classroom, toilet for teachers, teachers hired privately due to the lack of teachers, fraction teachers who have permanent contracts, fraction teachers with less than a Bachelor's degree).

CHAPTER 9

CONCLUSION

I motivated this dissertation project by arguing that the public sector consequences of private competition remain largely uninvestigated in developing countries. This research gap was puzzling, since a central justification for school choice advocacy (in developed countries) has been the expectation that the presence of competition will catalyze public sector reform. On the other side of the choice debate, skeptics have long contended that school choice is more likely to lead to more stratification, and that competitive pressures are unlikely to instigate public school improvements. The growth of private schooling in developing countries has heightened the global significance of these enduring choice debates.

Through this dissertation, I attempted a comprehensive analysis of the process of competitive effects in the case of a low-income country that has experienced substantial, unregulated private sector growth: Nepal. The goal was to provide an in-depth, neutral case study by triangulating qualitative and quantitative evidence on the public sector's experiences and responses to private competition, the factors that determine whether public schools can productively compete, and the impact competition has had on public school outcomes and the stratification of the education sector.

I begin the conclusion by integrating the research findings from the four analytical chapters (Chapters 5 through 8), bearing in mind the conceptual framework and research questions I posed at the beginning of the dissertation. I then speak to the limitations of the research and present some of the policy suggestions that result from these findings and limitations. I end with a discussion of the dissertation's implications for the global choice debate and developing country experiences, followed by an outline of some future research possibilities.

Integrating the Research Findings

I framed the impact of competition on public schools as a series of interlinked processes. To reiterate, I argued that experiencing competition was a necessary starting point for public schools to feel the need to initiate reforms to compete with private schools. If public schools experience competition, then they would initiate policy actions, signaling their attempts to improve from their initial conditions. These policy efforts may eventually lead to improvements in public school outcomes, such as test scores and enrollment. Besides the extent of competition, public schools' ability to respond productively to competition would depend on the school's personnel and financial resources, the principal's decision-making control, and the school officials' experiences with the existing community, and the political and bureaucratic environment. In integrating these findings, I argue that the experience of competition needs to be understood in terms of the historical evolution of privatization and accountability pressures, bearing in mind the heterogeneity in public school experiences.

The historical and sociopolitical context of Nepal casts a long shadow on the nation's public schools' experience of competition and its consequences on outcomes. In the early phase of privatization (1980s), the presence of a few private schools was not a significant competitive pressure on public schools as public and private schools were growing due to mass education expansion and high fertility rates. In this period, the main impact on public schools was the loss of high SES students and the influx of middle SES students. After Nepal became a democratic nation (in the early 1990s), there was a rapid growth of private schools in urban areas. Private school demand strengthened in the 2000s due to growing national political volatility. Parents valued private schools as they provided English medium education, had higher high school pass rates, and seemed to be a better option for the purposes of migration. By the mid-2000s, urban areas were saturated with private schools that were catering to families of diverse backgrounds. The political influence in the public education system included politically influenced hiring of

teachers and management committee members, which had a deleterious effect on public school quality. The decades of gradual sorting of higher SES students out of urban area public schools led to the stigmatization of public schooling as “schooling for the poor.” The stratification of the education sector is also evident from the outcomes analysis in the two highly privatized districts – the more highly privatized a local education market, the larger the gap between private and public school enrollments and test score outcomes. Consistently, the principals of public schools that were located in localities with high privatization were more likely to agree that public schools lacked the motivation to reform because of politically appointed teachers, lack of monitoring support, and the lack of education conscious parents.

However, the analysis of current policies suggests that there may be some signs of a public school-level turnaround. Some recent government efforts to incentivize public sector improvements have included a financing reform, which ties public school financing to student enrollment, and a large scale governance reform, which attempts to decentralize public school governance to local level school management committees to foster community ownership of public schools. In recent years, public schools may have begun to feel more competitive pressures due to falling enrollment, negative portrayals of public schools in the media, and the new financing mechanism. The policy implementation trends in the highly privatized districts of Nepal show that there has been a dramatic increase in the past five years in the adoption of “private-mirroring” policies such as English medium of instruction and adding ties and belts to school uniforms. While some schools have the capacity to make some of the most sought after policy changes, many of the public schools’ efforts are marred by bureaucratic and financial inadequacies, the cancerous politicization of the education system, and a lack of community support. In terms of outcomes, the recent adoption of these policies does not seem to have stemmed the enrollment decline in early grades in the public schools. This finding may have one of two explanations. The stigmatization of public schooling may be so deep rooted that parents

are unlikely to consider public schools even when public schools demonstrate improvements. Alternatively, parents may be opting to “wait and watch” if the policy efforts yield sustained changes in their neighborhood public schools.

Throughout the dissertation, I also argue that understanding the experience of competition requires a closer examination of the local and subjective experience of competition. The subjective experience of competition, as reported by principals in interviews and through responses to subjective indicators, is based on their experiences given the historical and current context of public schools and their school’s specific attributes. The in-depth analysis of subjective experiences help shed light on the differences in public school policies, constraints, outcomes and local conditions, and also provide evidence that questions strongly held assumptions.

For instance, a vital assumption behind analyzing how public schools respond to competition is the notion that private schools may be providing higher quality or more innovative education that has made them popular to parents, which may be worthy of emulation by public schools. However, in the course of my interviews, I realized that the majority of the principals take issue with the presumption that private schools provide better quality. While the majority of public school principals conceded that private schools produce better test score outcomes, only a third of the principals agreed that private schools were also better on other indicators of quality. Most of the bureaucratic officials and public school principals argued that public school students had far superior noncognitive outcomes, such as sociability and sense of civic responsibility, and the less tangible cognitive outcomes, such as intellectual flexibility compared to the socially insular, examination focused private school students. Furthermore, public school officials attributed better test score outcomes in private schools to more rote learning, narrow curriculum focus, amenable students, managerial control, and outright cheating practices. Consequently, it is not surprising that the key policies adopted by public school principals were private “mirroring”

policies such as English medium and adding ties and belts to their school uniform that are visibly attributed to private schools. Furthermore, public schools that had principals who mentioned at least one private school when asked to list three competing schools, a subjective measure denoting experience of private competition, were significantly more likely to have implemented the policies of English medium, adding ties and belts, and adding remedial classes than schools with principals who did not mention private schools as competition. The responses to the subjective measure of competition seems to distinguish between public school principals who believed that they could compete with private schools versus those that did not think that they could institute policies to compete with private schools.

The analysis of subjective experiences also clearly highlights the heterogeneity of the public sector. Because of the loose monitoring of government regulations, there is substantial within-public school heterogeneity in addition to the large differences that may exist between the public and private education sectors. Some of the “best” public schools, identified by other public schools and district officials, exhibit many favorable characteristics: they have entrepreneurial, dynamic principal and management committee leadership, a committed teacher team, support from the bureaucracy, a focus on schooling quality despite the overwhelming national political environment, and a reputation built on higher test score outcomes that attracts higher enrollment. These schools of exceptional quality are “oversubscribed” (Fiske and Ladd, 2001) and are able to take their pick from the students. A more recent government effort (initiated in 2011) which focuses on improving public school perceptions aims to prioritize public school graduates to receive the few scholarships provided by the government for higher education in medicine and engineering. Such reform efforts further help these best schools attract parents and students who would have otherwise attended private schools.

At the other extreme, there are public schools that experience some combination of the more unfavorable characteristics: the principals face heavy political influence in decision-

making, there is a lack of effective teamwork, they get poor student outcomes and they have no option but to enroll everyone who comes to the school. While the public schools are expected to provide access to education to all students, the government financing or technical support mechanism does not account for the difficulties caused by the differential demographic composition of the student body. For instance, some of the schools I encountered faced problems with high enrollment volatility as children of migrant laborers would enroll in the public schools for short periods of time (less than a year) and then leave with their parents. The education of migrant children is essential, but properly educating migrant children becomes an additional burden on public school teachers that is not acknowledged by the government, and is not really recorded in the school-level statistics either.

The in-depth interviews and school visits provided several examples that demonstrated how local conditions play a central role in determining the public school experience of competition. For instance, one of the study schools was a rural school in the remote district of Dadeldhura. The school was located in a hilly region of the district and was effectively closed off to nearby populations (a closed education market). The region had a small population but had two private schools. The public school was near collapse as the private schools prospered. Furthermore, when the public school officials attempted reform efforts, the principal received a variety of threats from the community members, including those who joined the public school's management community. The principal later realized that many of the community members had invested in the private schools and were worried that they would earn lower profits if the public school improved. The decline in status experienced by this regional public school goes against several long-held assumptions about public sector issues and highlights the need for more detailed locality-level analysis. Firstly, it demonstrates that the shift of enrollment from public schools to private schools is not just an urban area phenomenon and that it is important to have information on the percentage of enrollment lost to private schools rather than just aggregate

measures of public and private school market shares in a locality. Secondly, this example provides a cautionary tale against presuming that public schools will likely benefit if the community is given more authority over public schools. In the case of this remote school, the community would likely have been happy to let the public school deteriorate.

Limitations

Despite my best efforts, there are several ways in which the data and analysis could be improved to better analyze the experience of competition. It is important to take note of these limitations before trying to interpret these findings for global theoretical or policy discussions. Several of the data and methodological limitations mentioned below are a result of the lack of extensive, long-term national data systems.

Data Limitations

I begin with a discussion of the limitations in the primary datasets. The key limitation of the quantitative primary dataset was the sample size and the lack of more detailed survey questions. Firstly, I had selected only two districts that represented relatively high privatization districts to get a sense of their public school responses. In hindsight, it would have been even more productive to have administered the principal surveys to more districts where private schooling was a nascent development. Secondly, detailed survey questions would improve the data on policy responses. For instance, when trying to understand if a public school had implemented English medium of instruction, a key policy I highlight throughout the study, it would have been interesting to have a few more survey questions to get at the substantive variations in the adoption of English teaching within public schools. For instance, a question could have asked the principals if the school had reduced the workload of the teachers so that they could be trained in English teaching.

The main limitation of the qualitative dataset was that it was comprised of one-off interviews with a large group of national, district, local, and school officials and parents. If I had

collected at least two rounds of data with a select group of principals, I could have probed further into their competitive experience with particular schools and the results they saw from implementing new policies. For instance, I could have better understood the constraints faced by schools in transitioning to English medium if I could have interviewed the principals in year 1 and then talked to them again in year 2 to gauge how their experiences had evolved in that period.

In the secondary data, the main limitation was related to data quality. For instance, this dissertation was the first project to utilize school-level data from the national EMIS system and the national high-stakes performance indicator databases for school-level analysis. Prior to the study, these education indicators were only available in reports and had only been used for state-level and national-level descriptive statistics. As a result, the datasets had quality issues that were magnified at the school level for the few districts that I was studying. For instance, I could not utilize a number of the variables of interest, such as infrastructure variables, due to the large number of missing cases. The task to merge the performance data with the education indicators data was also riddled with problems. The two datasets were housed and managed by two different units of the Department of Education. For this analysis, the high-stakes examination dataset had to be drawn from hard copy books since the OCE did not provide the electronic datasets. There have been a few assessments to check the reliability and validity of the national indicators database, which has found that there are a few data discrepancies. Importantly, the 2008 accountability mechanism that links financing to enrollment has apparently incentivized inflated reporting of school-level enrollments. Similarly, there are questions of the credibility of the test score performance data, produced by the OCE, since there are reports of systematic cheating practices in many parts of the country. In addition, the data are not provided at the student-level and the reports are not scrutinized or checked extensively afterwards by the schools.

Finally, the country has never had a systematic local taxation system, which limits the information on residential sorting and the socioeconomic status of the parents who send their children to public or private schools in any locality. The only dataset that collects some community level information on socioeconomic status is the national living standards survey, but these are infrequent and are not a census of family incomes in communities. Systematic historical information on parental socioeconomic status, disaggregated by public and private schools, would go a long way towards bolstering the argument that many regions in the country have experienced long-term stratification.

Methodological Limitations

A main set of methodological limitations were related to causal inference. There were three arguments that could have been improved with causal analysis. It would have been useful to be able to argue (1) that competition was causing changes in outcomes; (2) that certain policy changes were caused by private competition; and (3) that certain policy changes were leading to changes in outcomes. In order to improve the causal inference of the link between competition and outcomes, I utilized instrumental variable analysis (the lagged number of private schools from 1982 as the instrument) and fixed effects regression. However, it was not possible to causally attribute policy changes to increase in private competition, or improvements in outcomes to policy changes. There were no locality-based differences in policy adoption that could be exploited to provide the required exogenous variation. Additionally, there were no implementation records of when the existing accountability mechanism went into effect. A strength of this study, borne out of these data limitations, is the utilization of a mixed methods approach. I first utilize historical recall data and interview data to identify the policies that are most likely to be attributable to competition and influence outcomes. I then analyze whether public school policy adoption can be systematically linked to the extent of privatization or

outcomes. By doing so, I hope to have improved the analysis of the association between competition measures, policies and school outcomes.

One of the more significant methodological problems is the use of private market share definition of competition based on a government defined locality in a developing country that does not have zoning policies for education access. For instance, the locality definition may be good enough to define a closed market in hilly or mountainous terrain. However, despite the fact that distance is an important factor in school decision-making (Joshi, 2013b), it is unlikely that students stick to schools within their locality in dense, urban regions with easy transportation access. The use of the private market share definition was important as it was the only time-varying measure of competition available for the study. However, the fact that the definition may not capture contained local markets is a limitation of the study.

Another main issue of the study is generalizability. The principal survey was implemented in two urbanizing districts of Nepal, and the interviews were conducted in five other districts throughout the country. I argue that the study context is not as unique as it may seem at first glance. For instance, in terms of global relevance, while Nepal is often thought of as a “small” country because of the neighboring populous giants (India, China, Pakistan and Bangladesh), the country’s population of 26 million, based on 2011 census estimates, rivals that of Texas, the second most populous state of the United States. Kathmandu district, one of the sites of the study, has nearly two million inhabitants. Globally, the Nepal experience is likely to be particularly relevant for Asian, African and Latin American countries that have experienced rapid recent private sector growth, and that are land-locked or are emerging from conflict situations. While the main study is focused on urban regions of the country, the national analysis and interviews done in remote districts provide evidence that is generalizable to the rural populations of the country and other South Asian countries.

Given the limitations, I utilized different types of data, measures, and methods to argue that the combined analysis enhances the robustness of the findings. I believe that such an approach is necessary to provide an in-depth analysis in developing countries.

Policy Implications

Building Better Data Systems

A key policy recommendation is to improve the existing data systems in Nepal with the express intention of facilitating constructive research and policymaking. The specifics of the data based recommendation are likely to be relevant for other less researched, low-income developing countries that are developing EMIS data systems with support from UNESCO and other multilateral agencies.

In the Nepal case, the first priority should be to integrate and increase the accessibility of the data that is already being collected. The Nepal EMIS system is already a massive institutionalized data system that collects information from over 30,000 schools. It is critical to now take more steps to make the database more accessible for local school-level consumption and for the research community. As mentioned earlier, various education related data (the data on education performance, private school records, community indicators, and education indicators) are scattered in a variety of the education statistics departments. An integrated data system that focuses on ensuring the quality and availability of the data, after removing identifiable information, would go a long way in ensuring that experiences of countries like Nepal are analyzed by the research community. It will also greatly reduce the logistic burdens on researchers who can then focus on conducting deeper investigations of their questions.

Secondly, there needs to be more data collection efforts using the EMIS system since it is the only disaggregated national data mechanism that efficiently collects data on a twice yearly basis in Nepal. The EMIS system should also include sections on instructional and noninstructional policies, school financing, parental SES, and have a more streamlined and

different data system for private schools. Improving databases on policies adopted by schools will help the policymakers and the schools learn about policies being attempted nationally. The policy information can then be used to steer schools in the right directions and support schools at the local level as required. The education databases need to include information on parental SES, school and village level income to initiate the discussion of poverty based targeting of school resources. Information on parental SES will also help the government understand the variations in community level capacity to contribute to the public or private education system. Given the growing realization of the importance of private schools, there needs to be better data collection of data on all private schools, including unregistered schools, to understand the real extent and impact of privatization in developing countries. Since the data system in Nepal was tailored for data collection on public schools, private school principals report that they feel that the EMIS system is more of a burden for the private school system than a resource. In order to make the data system more useful for private schools, there needs to be better targeting of the data collected from private schools.

Fighting the Perception Battle

A barrier to public school reform that is rarely recognized by the media and policymakers in Nepal is the fact that public schools have lost the perception battle to private schools. Given the long-term gradual increase in sorting that lead to the stigmatization of public schooling, improving public school perception is likely to take a long time. The policy recommendations focused on improving public school perceptions are likely to be especially relevant for developing countries which have unregulated choice environments, lack taxation based zoning, and have seen gradual private sector growth.

One approach to improving public school reputations is to mandate that people who live in some locality send their children to that school (e.g. through residential zoning) or to require that teachers send their children to the public schools that employ them. It would be difficult to

implement these types of strategies as teachers and other parents may argue that they have the right to choose, based on their ability to pay. Furthermore, it may be a logistic challenge given the lack of residential taxation systems that fund education. However, some of the schools in this study have achieved success using this approach, and some district officials mentioned this type of strategy as a promising solution for amenable schools in Nepal.

Secondly, given the overwhelming negative perception of public schools, policymakers should introduce media campaigns to highlight the positive contributions of public schooling. An important aspect of this campaign would require not just highlighting the top performing public schools or their historical contributions to nation-building but also shedding light on the contributions made by public schools to modern society, especially by educating and empowering the most disadvantaged populations in the nation. Another key policy need to reduce the negative perceptions of public schools is to ensure that the public schools that are experiencing the most difficulty receive targeted attention and are either shut down or merged with another school if the schools are not salvageable. For instance, it is important for policymakers to be especially aware of the schools that have disharmonious relationships with the community. The local education officials then can play a role in diffusing these tensions or to gauge if it would be best to shut down the school.

Other strategies could focus on enhancing the profile of all public schools while emphasizing a meritocratic environment. For instance, the Nepal government could ensure that the top 1 to 2% of students of all public secondary schools receive merit-based higher education opportunities. Many of the interviewed public school principals cited the difficulty faced by poor but highly capable public school students who were unable to get access to expensive higher education. While there is room for cream skimming and potential for elite students to rig the system, at the very least such a policy would not just favor the elite public schools. One way to lessen the potential for corruption by the elite population would be to mandate that the student

have studied at the school for at least two years (secondary level) to be eligible for any incentives.

Principal's Role in Improving Quality

Perhaps the most important way to gain parental trust is for the public schools to demonstrate that they have improved in quality. As demonstrated in the analytical chapters, and consistent with evidence from the school leadership literature, the principal's managerial abilities play a significant role in determining school quality in Nepal. In the context of developing countries that face strong political interference in education systems, the principals need to be politically savvy as they have to handle multiple stakeholders and ensure that the school does not become a job creation agency. These principals also need to ensure that the school team is motivated to focus on school quality even in an environment that lacks performance-based accountability.

In Nepal, some of the policymakers I met mentioned that they had discussed partnering public and private schools to foster an exchange of ideas between these types of schools. It may be more worthwhile if the district officials attempt to partner the best functioning public schools with public schools that require special assistance. The worst performing public schools are more likely to believe that they can benefit from the managerial and professional expertise of well-known public school principals who function under the same overarching bureaucratic structure.

Bureaucratic Improvements

Public school officials in Nepal mentioned a whole host of bureaucratic rigidities, such as poorly formulated policies, the lack of implementation of policies, and the lack of adequate financial supports, as barriers to reform. These types of bureaucratic rigidities are known to be a significant problem in other developing countries as well as in disadvantaged communities in developed countries. Among the most policy amenable of the bureaucratic problems in Nepal is the issue of lack of classroom monitoring by local level officials. District officials can ensure that

there is a better alignment of the goals of local officials with the needs of principals and schools by streamlining local officials' job requirements so that they can focus more on technical support to the schools and less on other administrative activities. In developing countries that are mired in a variety of bureaucratic and political inefficiencies, it is important to try and distinguish between policy amenable and systemic problems so that incremental gains can be made in improving bureaucratic functioning.

Financing related Recommendations

Most of the focus in developing country finance efforts has been on increasing financing for basic education from bilateral and multilateral foreign assistance. In the Nepal context, I realized that there are two other substantive problems that would improve the efficiency of existing resources. These recommendations are also likely to be relevant for other low-income developing countries.

Firstly, the financing mechanism in Nepal's schools is primarily based on teacher salary needs and student enrollment, and does not take into account the variations in living standards, public school resource availability and needs. As a result, the fact that schools have their own funding sources, such as rental income from buildings and land, does not factor substantially into public school funding distributions. Also, schools that educate more disadvantaged populations do not receive different amounts of funds that take into account the severe educational disadvantages that these populations face. Similarly, the only equity related mechanism, the scholarship quotas for dalit or janjati and girl students, does not utilize any poverty targeting and hence these funds are likely to be appropriated by the wealthier populations among these disadvantaged groups. An overarching remedy for all of these problems is to begin the transition to a more sophisticated financing formula using some locality-level mapping strategies to target funds better to the least resourced schools. The financing formulae could begin to factor in

concentrations of disadvantaged populations, negative peer effects, and migrant populations to come up with a more equitable mechanism to distribute existing government resources.

A second problem that is at least partially related to financing is the fact that public schools are free schools. While free public schooling provides equal opportunity access to all students, many urban district schools are relegated as “schooling for the poor” and face a lack of community support precisely because education is provided for free in public schools. As a result, middle class parents mentioned that they would be embarrassed to send their child to free public schools when there were fee-paying private schools around. They wanted to show that they could also afford to pay, and that they cared for their child’s education. While controversial, a solution to this problem is to revisit the free schooling resolution and to improve targeting so that public schools are accessible to the poor but are not stigmatized as schooling that is only fit for the poor.

Implications for the Choice Debate

There is an almost unfathomable volume of research and advocacy that has focused on the pros and cons of allowing alternatives (private schools, charter schools, voucher programs, magnet schools, home schooling and so on) to the public school system. While most of the research attention used to focus on the pioneering voucher program in Chile and state specific experiences in developed countries such as the United States (and to a lesser extent, England, Australia and New Zealand), the growing awareness of low-fee private schools has brought developing countries squarely into this debate.

My detailed exploration of the Nepal case has implications for both sides of the global choice debate. Firstly, the Nepal case’s historical experience suggests that unregulated growth in privatization is unlikely to automatically incentivize public school improvements. However, unregulated choice is much more likely to gradually increase the stratification of the education sector. These findings are consistent with other analyses of systems that have gone through

major long-term reforms, such as Chile (Gauri, 1998) and New Zealand (Fiske and Ladd, 2001). Stratification is also one of the consequences borne out in economic theory (Nechyba, 2009).

At the same time, competitive pressures do seem to incentivize some changes in school policies, which are a competitive effect as suggested by pro-choice advocates. The Friedman (1962) argument that public schools will automatically improve as a result of competition has been eschewed by many researchers and policymakers in the last decade. As a result, governments have tried to institute reforms to improve school autonomy (governance reforms) and have incorporated accountability mechanisms alongside school choice. In Nepal, the analysis of intermediate outcomes (policy adoptions) suggests that competition and accountability pressures have incentivized some policy changes. In particular, the fact that principals who perceive private schools as competition are more likely to adopt many private-mirroring policies compared to public school principals who do not perceive private schools to be competition does suggest that competitive pressures can incite a response from public schools. The finding that changes in public school policies do not seem to have led to changes in public school outcomes may be because the policies have not been instituted for a long enough period. Alternatively, it could suggest that parents are going to wait until a significant number of public schools can demonstrate policy successes and stage a perception turnaround.

However, the variations in public school experiences in Nepal suggests that one has to be cognizant of the fact that accountability mechanisms are not always enough to incentivize policy changes. In particular, public schools that have experienced stigmatization, face strong negative community distrust, have poor outcomes, have problems enrolling students, and lack effective teaching teams and financial supports are likely to not be able to improve their educational outcomes with accountability pressures alone.

As a result, enduring productive effects of competition will require well-timed accountability mechanisms based on the understanding that both “too little” and “too much”

competition may not be productive for public schools. There are probably two tipping points in the process. Firstly, there needs to be some private schools for public schools to feel as though they are competing with a different type of school. If accountability mechanisms are introduced in the early stages of privatization, as was done for many rural areas and smaller district public schools, then they may be incentivized to respond with productive changes. However, if the accountability mechanism is only introduced after decades of stigmatization, or after significant erosion of public school enrollment, then it may be too late for the public schools to regain parental trust without major systemic government intervention.

Implications for Developing Countries

The school choice debate in developing countries skews more towards pro-private research and advocacy because of the well-documented problems with inefficiencies in developing country bureaucracies, and the growing evidence of poor quality of learning in public schools. While competitive effects have remained largely uninvestigated in developing countries and there remain many data problems, most of the large-scale studies in developing countries have found that private school students have better outcomes than public school students, even after controlling for a variety of background factors. For instance, in Nepal, Thapa (2012) and Sharma (2012) have used propensity score matching and careful sample selection procedures respectively to conclude that private school students have better test score performance compared to public schools. An important study for the Nepal case is the Thapa (2011) competitive effects analysis. Thapa (2011) analyzed public school performance by the extent of competition to conclude that the benefits of competition probably outweigh the negative stratification effects of competition in Nepal.

My in-depth analysis of the Nepal context suggests that a lot more analysis is needed before one can make the bold assertion that more private schooling is primarily beneficial for the education system and student learning in developing countries. While my analysis in Nepal does

not suggest that there are no productivity effects of private school growth, there is more consistent evidence that unregulated private sector growth has caused stratification of the education system. In developing country contexts, a better understanding of public-private differences on a fuller set of cognitive and noncognitive outcomes are required before one can assert that private schools are indeed providing better quality, and that private sector competition does incentivize better public school outcomes.

Future Research

The dissertation analysis provides several avenues for future research. One promising area for analysis includes further investigation of how the best public schools are affected by privatization. An initial exploration of the best public schools, identified by the public schools in the sample, suggests that the best schools in the district have higher enrollment, better test score outcomes, and are more optimistic about their ability to stay competitive. An analysis of how the best schools interact with other public schools and private schools can help further explain the mechanisms of competitive effects since public schools may be looking to the best public schools for informal policy guidance, and the best public schools in turn may be motivated by their competitor private schools.

The investigation of the Nepal context suggests that there needs to be further investigation of learning differences between public and private schools that are not based on the high-stakes examination performance. There needs to be more definitive assessments of the claims by public school principals and bureaucratic officials that public schools provide better noncognitive outcomes and more long-lasting learning skills compared to private schools. In addition, there needs to be an investigation of how private schools view the quality differences between public and private schools. Do private schools also attribute the differences primarily to their managerial control and the demographic composition of the students? Or, do they believe that private schools are truly able to provide a better learning environment?

Finally, it is also important to analyze how extensive privatization affects the more disadvantaged populations since stratification is a likely consequence of privatization. Gender and caste discrimination are highly persistent inequalities in South Asian countries. While girls and students from disadvantaged castes used to be unable to go to school ten years ago, their parents' inability to afford private schools for their education disadvantages them in today's society. One of the issues that requires further investigation is to see if the scholarship quota system, which provides quotas to girls and dalit or janjati (disadvantaged group) students to attend public schools, is a good solution for improving equity or whether these populations would be better served with vouchers for private schooling. These areas of investigation represent just some of the questions that would further illuminate how private school growth has impacted the education sector's equity and quality.

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Chapter 2 Appendices

Appendix 2.1 Empirical research on differences in outcomes by types of schools

The research on academic achievement differences between types of schools essentially tries to compute the following reduced form equation, with a focus on the coefficient on school type (Glewwe and Kremer, 2006).

$$A_{ij} = \beta_0 + H_i \beta_1 + S_{ij} \beta_2 + C_{ij} \beta_3 + P_{ij} \beta_3 + \varepsilon_{ij}$$

where

A = student achievement (test scores)

H = household characteristics

S = school and teacher characteristics, including school type

C = child characteristics

P = pricing such as school fees

i = student ID

j = school ID

ε (error term) would include unobservables such as child ability, household motivation, child motivation and other unmeasured data.

The two most researched contexts on education choice are the United States and Chile. I now briefly characterize the outcomes and sorting evidence from both contexts.

United States: Outcomes and Sorting

The initial research evidence comes from the analysis of academic outcomes in private schooling in the United States. The earliest analysis came from Coleman and others who argued that Catholic high schools had significantly higher effects on test scores and high school graduation rates than traditional public schools (Coleman, Hoffer, & Kilgore, 1982). Their research was considered problematic because they did not control for the selection of differential populations into Catholic schools. That is, since Catholic schools served different populations compared to other schools, it is difficult to disentangle the impact of selection from schooling quality. Studies since then have focused on methodological improvements to statistically control for the selection bias in order to improve the estimation of the impact of attending Catholic schools on outcomes, primarily using instrumental variables (IV). The difficulty in being able to conclusively identify the effect of attending private schools has led to a focus on studying specific interventions that could provide the needed exogenous variation such as vouchers, those with and

without experimental design, and also a focus on using more detailed student-level and longitudinal datasets.

The early voucher programs evidence is based on research from the publicly funded Milwaukee and Cleveland programs (Witte, 2000; Greene, Peterson & Du, 1998; Zimmer & Bettinger, 2010). The vast literature on private, voucher and charter literature have concluded that there are mixed to slightly positive outcomes of education choice in the United States (McEwan, 2000; Miron, Evergreen and Urschel, 2008). Most of the interventions in the United States have been capped by income eligibility requirements by design. However, it was demonstrated in Milwaukee's voucher program that students were still being selected by ability characteristics, that is, highly motivated or disappointed parents were the ones who were self-selecting to participate in the program (Chakrabarti, 2008). There has been some recent evidence that may indicate that charter schools may be attracting middle income families who would otherwise have gone to private schools (Michigan), and may also be increasing African-American isolation (Texas) (Zimmer and Buddin, 2010).

Chile: Outcomes and Sorting

In the Chilean case, the main limitation for the empirical work is that the voucher program was universalized when it was initiated, and therefore it is a nonexperimental intervention. The initial analysis of private schools in Chile was focused on comparing private and public schools. These studies were considered limited as they used school-level data, cross-sectional analysis and often could not adequately correct for selection biases. McEwan (2001) was a significant leap in the literature since it provided a nuanced utilization of newly available student-level data and data from parental questionnaires that had been administered for the first time in 1997. Primarily, he attempted to disaggregate the private school sample, which helped conceptualize the schooling options into more realistic multiple categories. The empirical strategy was to first estimate a basic regression model without controlling for selectivity, and then empirically create a selectivity correction based on a multinomial logit model. The analysis pointedly concluded that conventional public schools were only conclusively less effective than non-voucher, elite private schools, where the achievement was higher by around 0.5 SD on the mathematics and Spanish

tests. Other research (Elacqua, 2010) has built on the methodology to study the effectiveness of different types of voucher schools.

As a result of the largely unregulated systematic voucher program, research in Chile has also focused substantially on questions of sorting. Of the studies on systemic effects, Hsieh and Urquiola (2003, 2006) was an influential study that found that communities that had higher increases in private school enrollment growth also had lower public school test scores, higher gaps in test scores between elite private and public schools, and higher SES gaps (income, education) between public and private school parents. In the study, the authors use municipal level outcomes data for 150 communities from 1982 to 1996. They also utilize interesting variable constructions for studying sorting - they look at relative outcomes (public school outcomes / all district outcomes) and find that 1 SD private enrollment growth is associated with decline in relative test scores (0.5 to 0.67 SD) and an increase in relative repetition rates (0.3 to 0.4 SD). The authors use difference-in-difference approaches, and a range of IVs (urbanization rate, 1982, population, 1982, and years of schooling among adults, 1982). Thus, their research appears to suggest an overwhelmingly negative effect of competition on public schools through systematic sorting - public schools lose out due to middle class shift which widens the gap between public and private school test scores and family characteristics.

While Chile is an important case, it is important to note the limitations of the analysis for Chile's voucher program due to the nonexperimental nature of the data. The empirical results from Chile's analysis can be highly sensitive to methodology. Bellei (2009) demonstrated these sensitivities by using different definitions of SES and education and different ways of aggregating these variables in different models. For instance, for different family education controls, Bellei's model results ranged from favoring private schools (0.27 SD) to favoring public schools (0.03 SD).

Developing Countries

Much of the outcomes based research on developing countries has studied outcomes using similar empirical strategies, particularly in comparing public and private schools. For instance, Kingdon (1996, p.59) notes that many such studies conducted in countries such as India, Tanzania, and Colombia have consistently shown that private school students scored higher on tests than public school students.

Empirical studies that try to address the sample selection bias and the possibility of ability differences between students in public and private schools such as Jimenez and others (1988, 1991, 1995) on Thailand, Colombia, Tanzania, the Philippines and the Dominican Republic also arrive at the same conclusions: private schools are more effective at increasing test scores even after controlling for student, family and community characteristics (Sharma, 2012).

One of the more significant and positive voucher experiments is the Colombia voucher experiment, which was evaluated for short and long-term effects (Angrist, Bettinger, Bloom, King & Kremer, 2002; Angrist, Bettinger & Kremer, 2006). They find that the winners of the voucher lottery were about 15% more likely to have attended private school, five percentage points less likely to have repeated a grade, 10 percentage points more likely to have finished 8th grade, and also scored 0.2 SD higher on achievement tests. These results have been used to highlight that voucher impacts may be higher in less developed countries. However, further inspection of the implementation process indicates some implementation flaws that make these results suspect – for instance, response rates were quite low, and only about 55% of the voucher winners and 53% of the voucher losers responded; randomness could have been contaminated as the “win” rates of some schools were much higher, such as some schools where 100% of the applicants had won the voucher, which the authors attribute to political influence. Among the programs’ other noted issues were that the voucher did not keep pace with tuition, although its potential consequences for differential attrition were not discussed.

A few of the most recent quantitative studies (Bhatta, 2005; Sharma, 2012; Thapa, 2011) on Nepal utilize a comprehensive school survey with student-level data conducted in 2004 (Ministry of Education and Sports (MoES), 2005). All three studies investigate the public-private outcomes gap. These studies find that even after controlling for school, family, student and community characteristics the private-public gap remains. These findings hold for a variety of models, including various OLS and propensity score matched specifications that attempt to control for selection biases.

A few recent studies from South Asia utilized nonexperimental methods, primarily propensity score matching, to minimize the selection problem and compare similar groups of private and public school students using large, representative cross-sectional data. Chudgar and Quin (2012) study rural and

urban India and find that low-fee private schools are not performing better than public schools. The authors highlight the heterogeneity of the private sector with this study, and their argument is reminiscent of McEwan (2001) and Elacqua(2010)'s attempts to disaggregate the private school sample in the Chilean context. In contrast, Thapa (2012) finds that even after propensity score matching techniques, there is a positive private school effect in the Nepal context.

Chapter 5 Appendices

Appendix 5.1 The characteristics of public schools that were identified as competition or as the best schools in the district

In this appendix, I analyze the characteristics of public schools that were identified by other public schools as being competitor schools or amongst the best in the district. I model public schools that have been identified as “competing” or “best” schools as a function of geographic proximity and other explanatory variables.

$$C_{pubsubj} = \alpha + C_{thir2} + C_{thir3} + \gamma P + \delta Z + \varepsilon \quad (\text{Model A1})$$

where $C_{pubsubj}$ equals 1 if the public school was selected as a “competing” school or “best” school, C_{thir2} and C_{thir3} represents the medium and high competition as measured in terms of geographic proximity (low competition is the omitted category), P represents a vector of the explanatory variables, and Z represents a vector of school characteristic controls. The descriptive data are shown in Table A1, and the logistic regression analysis results presented in Table A2.

The public schools that are mentioned as “competing” schools have similar examination performance (English and Math test scores, percentage of students meeting high and low cut-offs) compared to public schools in the overall sample. The competing public schools appear to have higher student enrollment on average. The public schools that were mentioned as “competing” schools were logically likely to be located in high privatization environments and were likely to have much higher female enrollments (a reason for their higher enrollments). While these schools were not likely to have higher examination performance, these “competing” public schools were more than twice as likely to agree that parents were highly involved in their school activities. The schools mentioned as being among the “best” in the district have much higher enrollment, are significantly more likely to be selective, and have substantially higher mathematics test scores and a higher percentage of students meeting the high proficiency cut off.

Table A5.1 A comparison of education characteristics between public schools in the sample and the schools they identify as competitors or the best schools in the district, 2011-12

	Competing schools		Best schools	
	Public school identified as competing school by at least 1 other public school	Public school not chosen as a competing school	Public school chosen as one of the best schools in the district by at least 1 other public school	Public school not chosen as among the best schools
N	401	42	479	156
High-stakes outcomes				
• School-average English test scores	34.8	32.7	47.7	31.8
• School-average Math test scores	54.5	54.1	78.5	50.2
• Percentage of students who secured passing grades (over 32%)	83.3	81.5	97.7	76.1
• Percentage of students who secured first division grades (over 60%)	40.4	35.0	89.1	30.6
Other characteristics				
• Total fees in grade 1 (Nepali Rupees)	300	75	800	95
• Total student enrollment	606	363	1179	441
• Enrollment in grade 1	39	29	116	30

Source: Authors' calculations based on the Combined Quantitative Dataset.

Notes: There were a total of 212 public schools in the sample. Since each school was asked to list up to three competing schools and three best schools, the same public schools could be mentioned more than once. Thus, the 401 competing school list is comprised of 170 separate schools; and the 479 best schools list is comprised of 56 separate schools.

Table A5.2 Logistic regression models of competing and best public schools on school and community characteristics
(Estimated odds ratios)

Dependent variable	Public school is mentioned as a competing school by at least one other public school	Public school is chosen as one of the best schools in the district by at least one other public school
Variable name	<i>competing</i>	<i>best</i>
School examination performance		
• Percentage of students who passed the high-stakes examination with a score over 60%, 2010-11	0.997	1.06***
Objective Competition		
• Medium number of private secondary schools nearby	0.81	0.97
• High number of private secondary schools nearby	3.25**	0.98
Community level characteristics		
• Female literacy rate, 6 years and older, 2001	1.16	1.33
• District dummy (proportion Kathmandu)	0.81	0.44
• Urban dummy (proportion urban)	0.58	1.49
Sorting characteristics		
• Whether the school requires an entrance examination for grade 6 admission, 2011-12	0.69	3**
Principal perceptions (1 = agree or strongly agree to the following statements)		
• Private schools are better than public schools in overall quality	0.49	.426*
• There is no need to compete with private schools since the competition is really with other public schools	0.44	0.28
• Our teachers who have more than 15 years of experience are excellent	1.26	1.68
• Parents are highly involved in school activities in our school	2.39**	0.90
Other school characteristics		
• Total grade 1 to 10 enrollment, 2011-12	1.23**	1.85***
• Percentage female in grade 1 to 10 enrollment, 2011-12	1.59*	2***
• Class size in 6th grade, 2011-12	0.93	.739*
• Whether school has inadequate desks, 2009-10	.395**	0.62
• Whether the school has a computer room, 2011-12	2.17*	3.42***
N	443	635
R-squared	0.20	0.66

Source: Authors' calculations based on the Combined Quantitative Dataset.

Notes: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively. Includes other school characteristics as controls.

Appendix 5.2 Some key regulations governing private schooling: requirements and provisions for private school establishment and functioning

Process for Opening a Private School

To open a private school one has to apply the procedures and pre-requisites which are legally based on The Education Act of the Government of Nepal. They have to apply at the related District education officer (DEO) for approval. In case of pre-primary schools, the application must be produced at the related DEO at least two months before the start of the education semester. In the case of primary, lower secondary or high schools, schools that function from Grade 1 through Grade 10, the process has to be initiated at least three months before the start of the education semester.

Once the application is received, the DEO will verify if the pre-requisites have been fulfilled. Then, the DEO must approve it and provide the operating certificate 30 days ahead of the starting of the education semester. The DEO has the authority to approve primary and lower secondary schools (schools that function from Grade 1 through Grade 8). In case of high schools (those that function from Grade 9 onwards), the request will be forwarded by the District education committee, along with its recommendation, to the Director of Education at the national level. Then, the Director of Education must similarly provide the certificate 30 days before the start of the education semester. While providing this approval, the DEO and the Director of Education will follow the instructions of the Ministry of education regarding requisite school mapping and the allocable number of the schools.

Who can open a school

A single person can register a company. In the case of an educational *guthi* (private or public trust), there must be at least five *guthiyars* (trustees) running the school.

They need to demonstrate that they have met the following criteria with official documentation.

(1) Demonstrate approval from their community and officials:

- No objection letters from two neighboring schools.
- Endorsement letter from the region's village development committee or municipality.
- Recommendation from the school supervisor of the relevant region.

(2) Demonstrate adequate financing:

- They need to demonstrate that they have a permanent income source to manage the school.
- The schools must have security deposits of the following amounts - Rs.50,000 at the primary level, Rs.150,000 for a lower secondary level school, and Rs.200,000 for a high school level school. They must provide a copy of the deposit certificate from the commercial banks (Nepal Bank, Rastria Banijya Bank or the Agricultural Development Bank) to the District Education Office.
- If the school is to be operated in a rented house, they need to show that they have a 5-year house lease contract.

(3) Provide other official documents relevant to school registration:

- The applicant will submit the necessary registration papers (*Prabhanda patra and Niyamabali*) if it is registered as a company or as a guthi (trust) school.
- Citizen certificate and education certificates of the school owners.

(4) Other school specific documents:

- The details of their curriculum, text books and teacher teaching manuals
- The details of their fee structures
- Teacher related documents: teacher appointment letters, qualifications, certificates, citizenship certificates, and teacher licenses

They need to follow these guidelines while operating the school.

On school infrastructure:

- The school must provide adequate furniture per class room.
- The class room size and rooms must be appropriately ventilated and protected from rain and provide enough lighting
- The size of the school compound should allow all the students to be present at the same time.
- There must be a compound wall surrounding the school
- There should be provision of adequate drinking water supply, and provision of separate toilets for girls and boys

- There should be provision of sports equipment's, and at the very least the provision of volley ball facilities
- There should be provision of first aid medical facilities
- In case it is a residential school with resident students, there must be the provision of a residential building

On classroom teaching:

- They need to provide adequate teaching materials such as black boards, globes/maps, mathematical equipment and other educational materials
- They need to provide adequate science lab equipment as per the curriculum
- A single class should have a minimum 22 and maximum 44 students and an average of 33 students

On school fees:

- Schools can take the amount of fees based on their economic classification (A, B, C or D) – for instance, A graded schools can charge higher fees than B or C graded schools.
- Private schools can only take fees under the following headings: monthly tuition fees, additional fees (extracurricular fees, library fees, maintenance fees), admission fees, miscellaneous fees (examination fees, computer fees, special activities fees, clothing and food fees), and a deposit fee.
- They can only take fees for the extracurricular benefits that they provide.
- The total additional fees cannot equal more than two months of the monthly tuition fees. The admission fees cannot be more than 1 month of the monthly tuition fees. The deposit fee cannot be more than 1 month of the monthly tuition fees, and should be returned afterwards.
- Of the total monthly tuition revenue, 60% has to be utilized for teacher salaries, benefits and improvements. The other 40% may be used for rent, scholarship and administrative costs.

On scholarships:

- At least 10% of the students must be provided with free scholarships.

- Based on the government's guidelines, at least 2% have to be students who were victims of the Nepalese people's revolution. These include children of martyrs and other victims of the insurgency. The remaining 8% scholarships have to be provided to disadvantaged groups such as backward dalit and janjati (indigenous) groups, and poor and academically motivated children.
- In order to provide these scholarships, the school must develop a scholarship selection committee consisting of the school supervisor, representative of the District Education Office, and parents and the principal.
- These scholarships must include monthly tuition fees and additional costs such as school uniforms.
- The school must provide the resource center and the district documentation and descriptions of the fact that these scholarships have been provided.

Source: Qualitative Dataset. Key sections translated from Nepali from the Kathmandu Education Manjari, 2066 (2008-09) publication. The same rules apply throughout the country.

Chapter 6 Appendices

Appendix 6.1 Causal Inference Limitations of the study

The study suffers from causal inference limitations since one cannot conclusively argue that policy actions are caused by increases in private competition without accurate longitudinal data to trace the evolution of competition and public school policy adoptions. The only government policy that could conceivably have incentivized widespread public school responses was the per-child funding (PCF) accountability mechanism, introduced in 2008, which now ties funding to enrollment. However, detailed information on the implementation of the PCF mechanism was not available from district education offices. Given that there were no clear policies that could be used to provide the exogenous variation required to improve the causal inference of policy adoptions, the paper adopted a mixed methods strategy to identify the policies that are more likely to be induced by competitive effects.

Appendix 6.2 Analysis of the other school policies

The appendix describes the school policies that are less likely to be viewed as responses to private competition as these are school responses that are not regularly employed by private schools. Nevertheless, one could argue that these policies could be effects of competition as they could be remedies that were necessitated in some regions due to the enduring negative effects of long-term privatization. At any rates, these efforts suggest that public schools are trying to improve from their disadvantaged starting point.

Community expertise and financing

Public schools appear to regularly utilize community experts to help guide their schools, demonstrating that they have stronger roots in the community than the private schools. The growing adoption of community financing in recent years, may signal an attempt to make up the shortfall from government funds or an attempt to improve the schools from within. About 20% of the public schools regularly conduct events to request community financing support.

Recruiting better teachers

Since teachers are highly important inputs in educational performance, principals were asked if they had engaged in recruitment strategies to enhance their teacher pools. Interestingly, almost 30% of Chitwan public schools appear to have recruited teachers, based on reputation, from other schools while none of the sampled private schools attempted to do so. These findings may be attributed to the fact that even temporary work as a teacher in public schools may be perceived a means to get into the public system that may later provide pensions and benefits.

Take attendance twice a day to limit student absenteeism

Public schools may have high student absenteeism due to an inability to maintain a strict disciplinary environment at the school. A more specific school strategy that is implemented in Nepal's schools to curb absenteeism is taking attendance twice a day so that students will not sneak out in the afternoon. The double attendance strategy is rarely used in private schools, presumably because student absenteeism is not a common private school problem. The strategy is much more prevalent in Chitwan district than in Kathmandu district.

Parents monitoring student absenteeism

Engaging parents in monitoring student absenteeism is often considered a good non-instructional activity that would help better engage the parents in schooling. The data indicate that about two-thirds of public and private schools involve parents in monitoring student absenteeism.

Table A6.2.1. Descriptive statistics of other quality enhancing policies
(By district and type of school)

	All schools		Chitwan schools		Kathmandu schools	
	private	public	private	public	private	public
Sample 1/	625 1/	212	87 1/	67	538 1/	145
Other quality enhancing policies						
Regularly request community expertise	0.43	0.71	0.26	0.73	0.45	0.70
Regularly request community financing support	0.00	0.21	0.00	0.27	0.00	0.18
Recruited teachers from other schools	0.13	0.20	0.09	0.28	0.14	0.16
Take attendance twice a day to limit student absenteeism	0.05	0.51	0.00	0.79	0.06	0.38
Parents involved in monitoring student absenteeism	0.65	0.67	0.66	0.69	0.65	0.66

Source: Authors' calculations based on the Principal Survey.

Table A6.2.2. Logistic regression models of other quality enhancing policies adopted by public schools
(Estimated odds ratios)

<i>Binary Dependent Variables</i>	Engaging Community expertise	Requesting Community financing	Taking Double attendance	Recruiting teachers	Parents monitor student absenteeism
<i>Competition Measures</i>					
Subjective Competition					
• Principal lists at least one private school when asked to list three competing schools	1.17	1.05	0.91	1.18	0.74
Objective Competition					
• Medium number of private secondary schools nearby	0.76	0.78	.451**	0.74	0.69
• High number of private secondary schools nearby	1.90	0.95	0.65	0.92	1.24
Community level characteristics					
• Female literacy rate, 2001	0.95	0.91	1.6*	.565**	1.28
• District dummy (1 = Kathmandu)	0.82	.209**	.194***	.256**	0.75
• Urban dummy (1 = urban)	.416**	.216**	0.85	1.02	.355*
Sorting characteristics					
• Whether the school requires an entrance examination for grade 6 admission, 2011-12	0.908	4.49***	0.7	1.39	1.6
• Total fees, grade 9, 2010-11 (in Nepali Rupees)	1.02	1.02	.971*	1.02	1.01
Principal perceptions (1 = agree or strongly agree to the following statements)					
• There is no need to compete with private schools since the competition is really with other public schools	0.94	1.25	2.42***	0.90	1.26
• The school is unable to make changes because of a lack of resources	1.02	2.84**	0.94	0.98	0.77
• Private schools are better than public schools in overall quality	0.83	0.82	1.33	0.92	1.15

Source: Authors' estimations based on the Combined Quantitative dataset.

Notes: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Low number of schools within one kilometer of the public school as omitted category.

Other control variables used in the analysis were: community characteristics (female literacy rates, population growth) and school characteristics (9th grade school fees, school enrollment, percentage female in enrollment, percentage of teachers with permanent contracts, the school's age, whether the school had hired private schools due to a lack of teachers, 6th grade class size, whether the school reported having inadequate desks, and whether the school had a classroom).

Appendix 6.3 The competitive response mechanism: follow the lead of the best public schools?

In this appendix, I shed light on policy actions of the best public schools. The argument for analyzing the what the best public schools are doing is that the majority of normal public schools may be looking to the best public schools for informal policy guidance. This mechanism is plausible since public school principals are more likely to interact with each other in meetings regularly held by the district education offices at the district headquarters or in their local resource centers. Also, it is more likely that the best public schools in turn may be more aware of the best practices in private schools. The line of argument would suggest that private schools may potentially have an indirect effect through the best public schools on the majority of public schools.

I find that the best public schools are much more likely to be actively recruiting students by advertising on television, developing promotional banners, and going door to door to recruit students than other public schools. The best public schools were also much more likely to have adopted English medium of education, require entrance examinations for admission, and regularly get community financing support. These findings seem logical as the best public schools should be able to selectively take in students as they may have more applicants than available seats. Similarly, public schools that are doing well are more likely to have good community support. In addition, even the best public schools have felt the pressures of private competition and are mirroring private schools by adopting English medium of instruction and actively recruiting students.

Table A6.3.1. Descriptive statistics of policy adoptions of the best schools

	Public school was mentioned as one of the best schools in the district by at least one other public school	All other public schools
Sample	479	156
1. Private-Mirroring (visible) strategies		
English medium		
• Adopted English medium of instruction	0.92	0.72
• <i>Teach in English medium, at least three grades</i>	0.60	0.25
• Recruited teachers for English medium	0.61	0.29
Computer education		
• Provided computer education as a subject	0.45	0.41
• <i>Teach computer classes for at least three grades</i>	0.41	0.22
Students keep homework diary	0.49	0.23
Require ties and belts in school uniforms	0.77	0.67
2. Quasi-private instructional strategies		
<i>Control over teacher performance</i>		
• Provide monetary incentives to teachers	0.71	0.46
• Take disciplinary action for teacher absenteeism	0.17	0.21
SLC coaching classes for weaker students	0.55	0.44
<i>Instructional time</i>		
• Add school time missed during strikes	0.55	0.36
• <i>Add school time during strikes, three grades</i>	0.53	0.22
• School partly operational during vacations	0.85	0.48
• <i>Add school time during vacations, three grades</i>	0.42	0.18
• Longer school days	0.72	0.52
• <i>Longer school days, three grades</i>	0.44	0.25
• Extra classes for weaker students	0.58	0.31
• <i>Extra classes for weaker students, three grades</i>	0.16	0.13
3. Quasi-private non-instructional strategies		
<i>Admission selectivity</i>		
• Take entrance examinations	0.95	0.63
• Require parent interview	0.55	0.42
• Require a special admission fee	0.66	0.38
<i>Promotional efforts</i>		
• Advertisements on TV and in newspapers	0.31	0.19
• Developing banners or pamphlets	0.53	0.54
• Go door-to-door to recruit	0.52	0.72
4. Other quality enhancing policies		
Regularly request community financing support	0.32	0.19
Take attendance twice a day to limit student absenteeism	0.34	0.52

Source: Authors' calculations based on the Principal Survey.

Table A6.3.2. Logistic regression models of the policy adoption of the best schools
(estimated odds ratios)

<i>Binary Dependent Variables</i>	Adopt English medium	Take entrance exams	Advertise on TV or in newspapers	Develop promotional banners or pamphlets	Go door to door to recruit	Regularly request community financing
Best School						
• School was mentioned as one of the best schools in the district	2.84**	3.44**	6.15***	3.82*	5.54**	5.25**
Objective Competition						
• Medium number of private secondary schools nearby	0.93	0.69	0.96	1.36	2.55	0.44
• High number of private secondary schools nearby	.307**	1.37	1.81	2.60	1.20	1.04
Community level characteristics						
• Female literacy rate, 2001	1.13	1.72**	1.07	.536*	.45*	0.75
• District dummy (1 = Kathmandu)	.112***	5.18***	.0192***	0.41	.0454**	.00378***
• Urban dummy (1 = urban)	0.65	0.70	3.26	2.53	1.13	.0528***
• Population growth (decadal), 2001 to 2011	1.03	1.10	0.94	1.15*	0.99	1.14***
Sorting characteristics						
• Whether the school requires an entrance examination for grade 6 admission, 2011-12	3.5***	...	0.49	0.95	0.54	22.8***
• Total fees, grade 9, 2010-11 (in Nepali Rupees)	1.04*	1.02	1.01	1.00	.962*	1.03
• Percentage dalit (disadvantaged population) in enrollment, 2010-11	.931*	0.97	.921**	1.03	1.13**	0.97
Principal perceptions (1 = agree or strongly agree to the following statements)						
• There is no need to compete with private schools since the competition is really with other public schools	.109***	1.41	3.35	0.47	0.83	1.38
• The school is unable to make changes because of a lack of resources	2.46*	1.14	2.28	1.46	0.78	15.3***
• Private schools are better than public schools in overall quality	0.93	1.73	1.07	0.64	0.53	1.37
N	635	635	635	635	635	635
R-squared	0.41	0.41	0.59	0.43	0.75	0.64
Chi-squared	196	145	708	223	2029	292

Source: Authors' estimations based on the Combined Quantitative dataset.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Chapter 7 Appendices

Appendix A7.1 The perceptions of principals of selective schools, by extent of private competition

In the appendix, I try to disaggregate the perceptions of principals by school selectivity and the extent of private competition they face. I conduct analyses of the perceptions questions with interaction effects between the geographic proximity competition measure and school selectivity, and are of the following form:

$$P_i = \alpha + \beta_1 \text{select} + \beta_2 C_{\text{thirs}2} + \beta_3 C_{\text{thirs}3} + \beta_4 \text{select} * C_{\text{thirs}2} + \beta_5 \text{select} * C_{\text{thirs}3} + \gamma P + \delta Z + \varepsilon \quad (\text{Model 3})$$

As shown in Table A1, the principals of public schools located in high competition regions but are not selective are over three times as likely to agree that public schools have problems with politically appointed teachers, government monitoring, and parents who do not understand the value of education, compared to non-selective public schools that are located in low competition regions. Principals from nonselective schools in high competition regions are also substantially more likely to agree that the government does not do an adequate job monitoring their school's activities, compared to principals of nonselective schools in low competition regions. Selective schools in high competition regions are much more likely than schools in low competition regions to highlight the lack of adequate or appropriate teachers, compared to selective schools in low competition regions. Thus, while selective school principals appear to be relatively satisfied with the existent teachers and parents, they recognize the lack of adequate teachers as a barrier to reform.

The interaction effects analysis suggests that nonselective schools in high competition regions are relatively much more dissatisfied with the external policy, bureaucratic and political environment, and their ability to reform given these systemic problems.

Table A7.1. Odds Ratios: Logistic estimation results of key perception questions that reflect lack of motivation to reform
(including interaction effects between objective measures of competition and school selectivity)

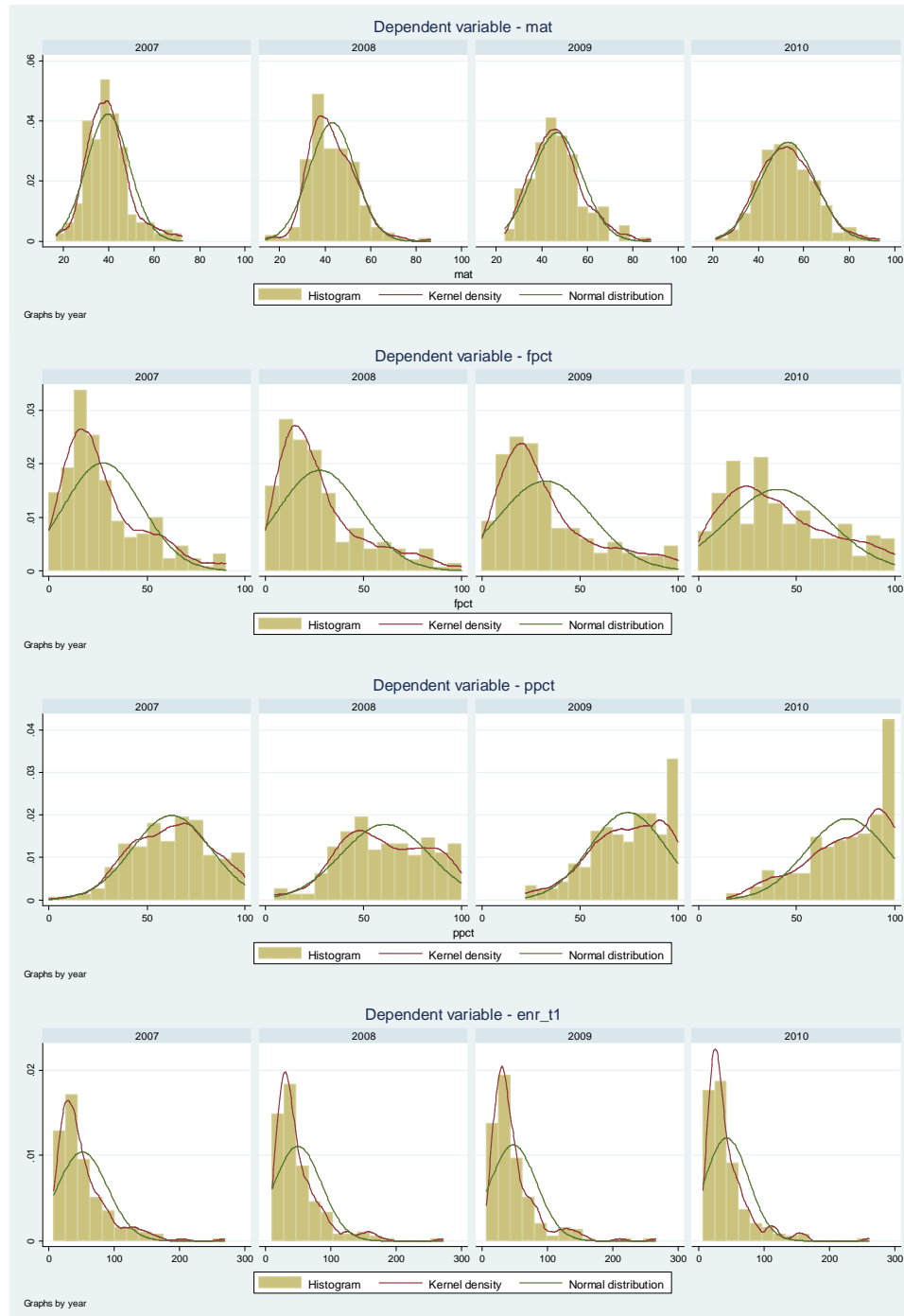
<i>Perception questions (agree/strongly agree)</i>	Publicly appointed teachers	Public school parents do not understand the importance of education	Poor monitoring & accountability	Lack adequate or appropriate teachers	Government does adequate job monitoring school
<i>Variable, year</i>					
Geographic proximity measure of competition, 2011-12					
medium competition	1.63	3.42**	6.05***	1.51	.366**
high competition	3.71**	6.54***	4.69*	0.37	.385*
Selective school, 2011- 12	1.08	0.68	0.74	1.77	0.88
Interaction effects					
• Medium competition *					
Selective school	0.70	0.80	0.46	0.50	1.54
• High competition *					
Selective school	1.08	0.47	0.71	5.14**	1.46
Subjective competition	0.77	0.95	1.14	0.81	0.96
Female literacy rate, 2001	0.81	1.03	.717*	2.16***	1.13
District dummy (1 = Kathmandu)	2.99*	.127***	1.39	1.29	1.45
Urban dummy (1 = urban)	0.65	1.24	1.10	.281**	0.60
Population growth, 2001 to 2011	1.02	0.98	1.00	1.02	0.98
Total grade 9 school fees, 2010-11	1.04**	1.00	1.02**	1.02*	1.00
Fraction dalit in total enrollment, 2010-11	0.98	0.98	0.99	1.04	0.98
N	212	212	212	212	212
pseudo R-squared	0.16	0.16	0.12	0.20	0.09
chi-sq.	113.00	86.60	54.20	164.00	64.50

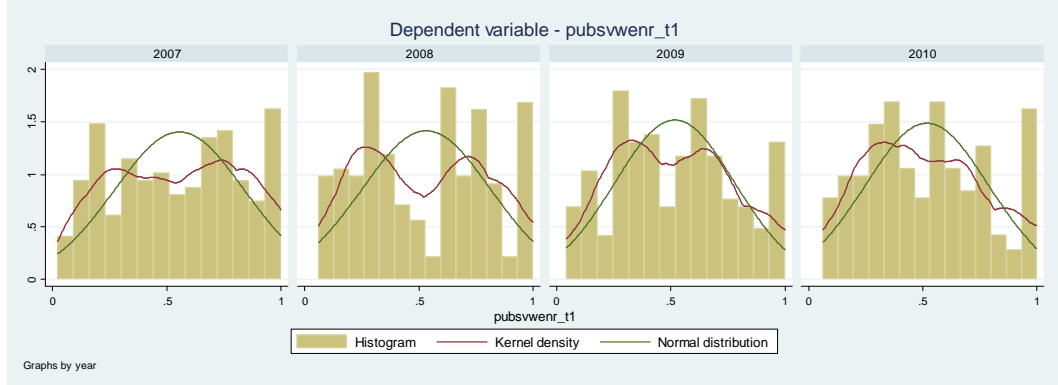
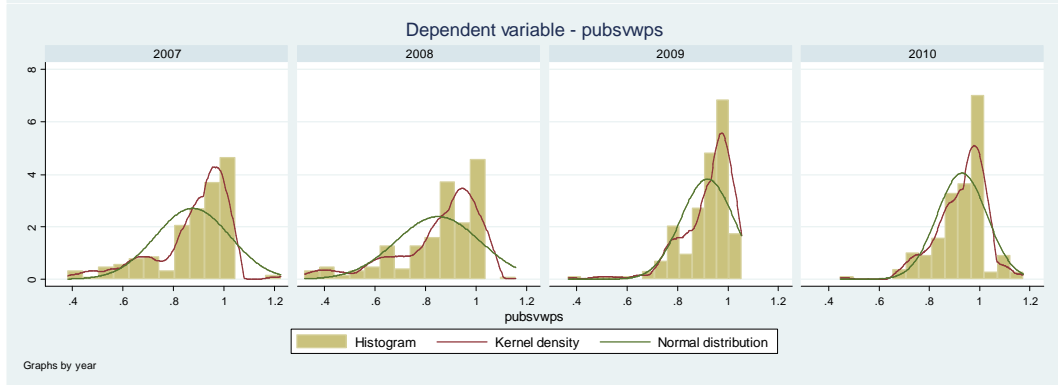
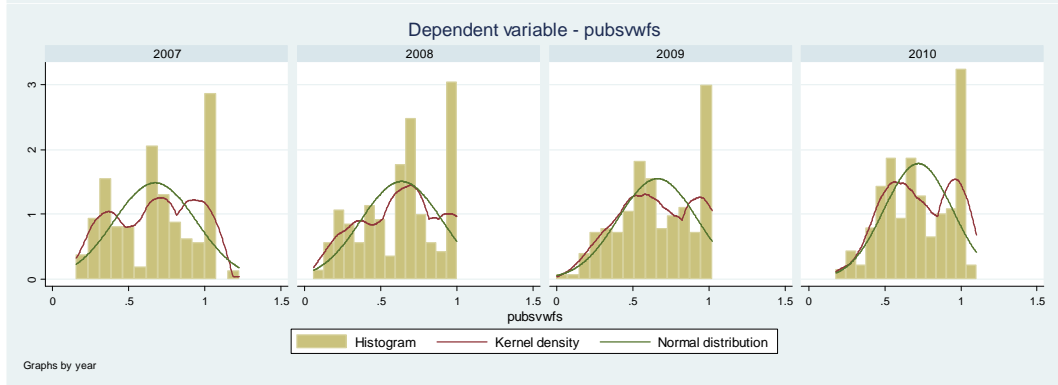
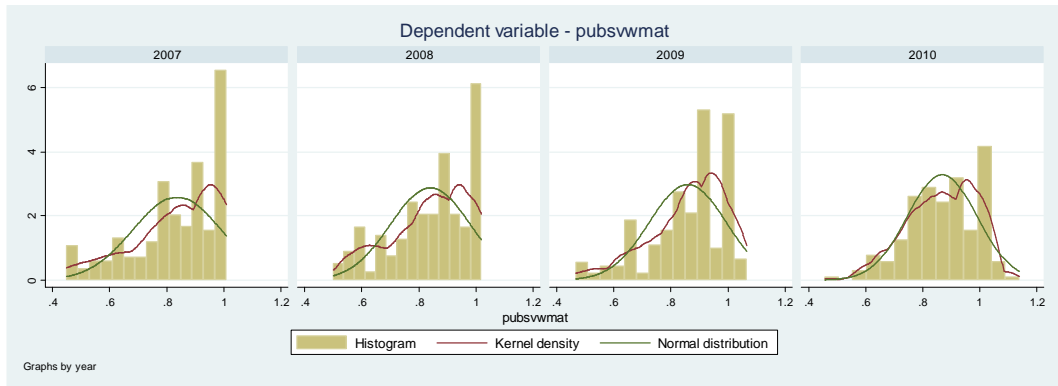
Source: Authors' estimations based on the Combined Quantitative dataset.

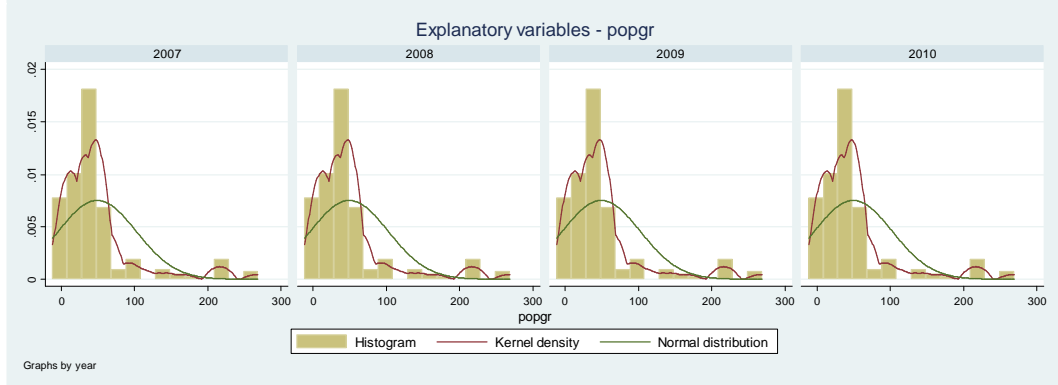
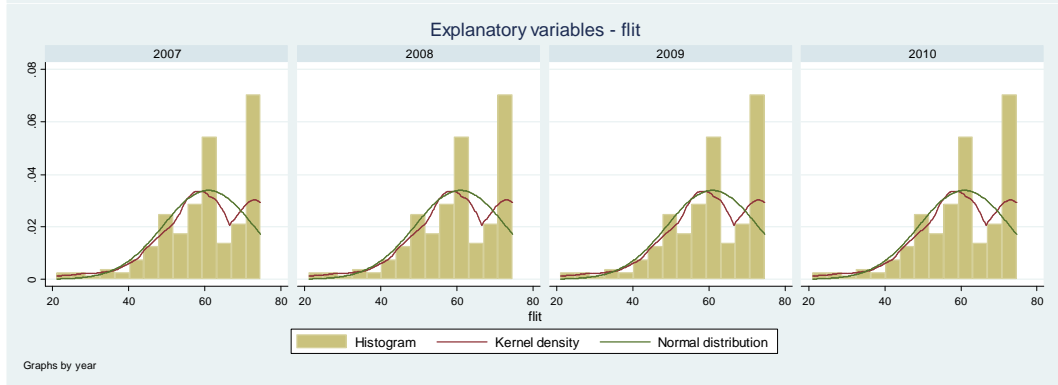
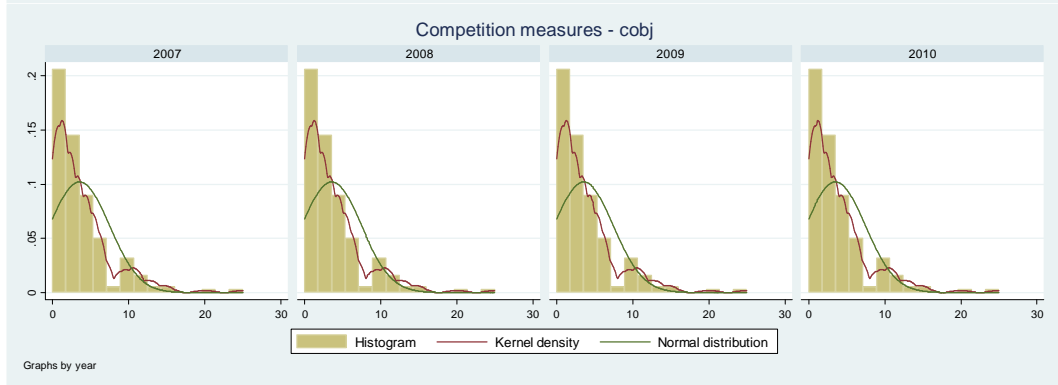
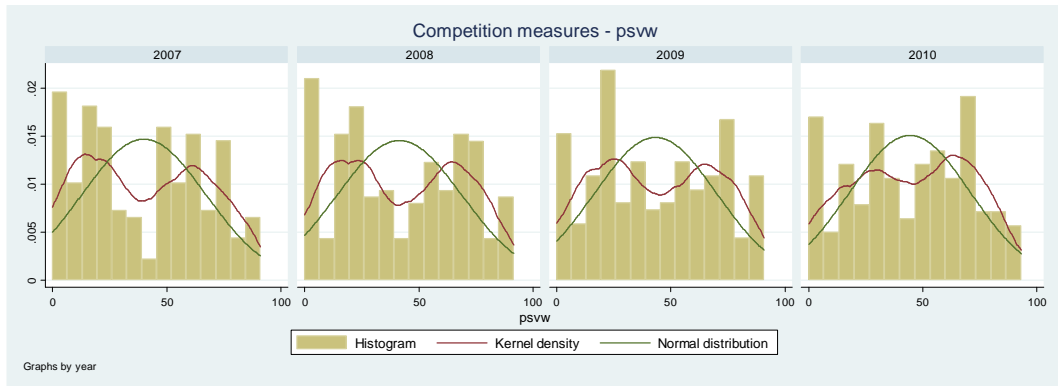
Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

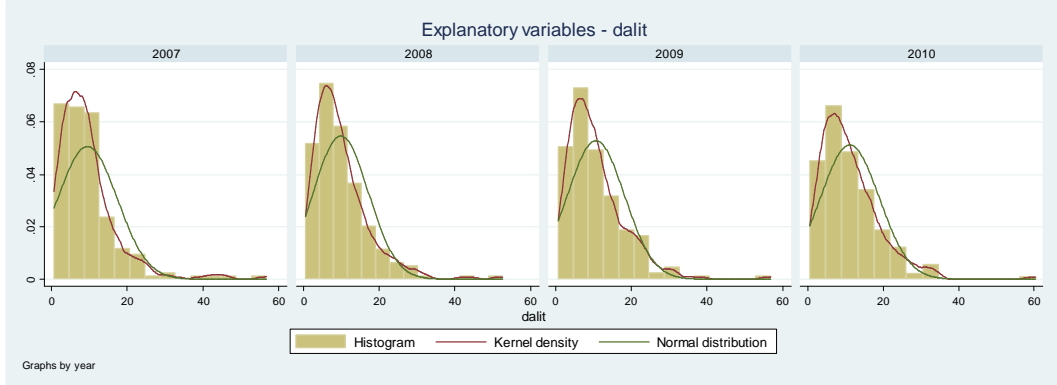
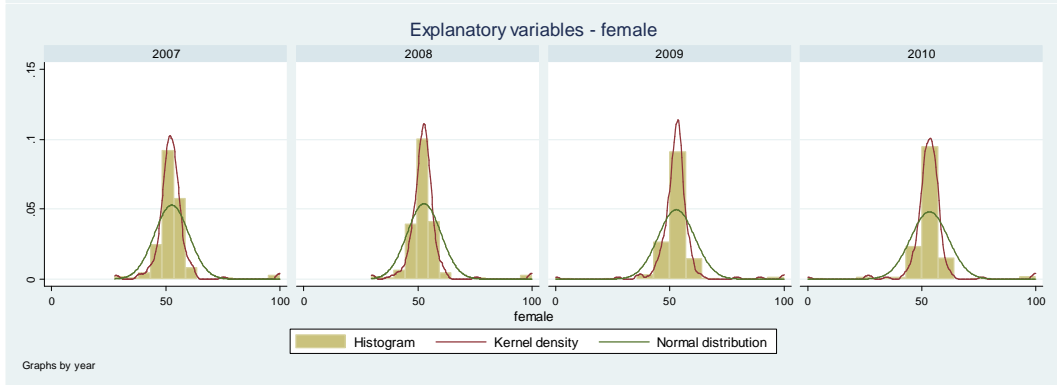
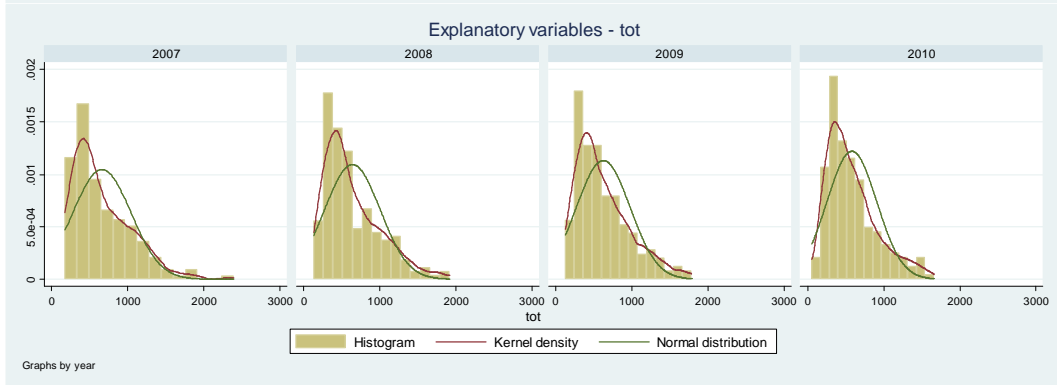
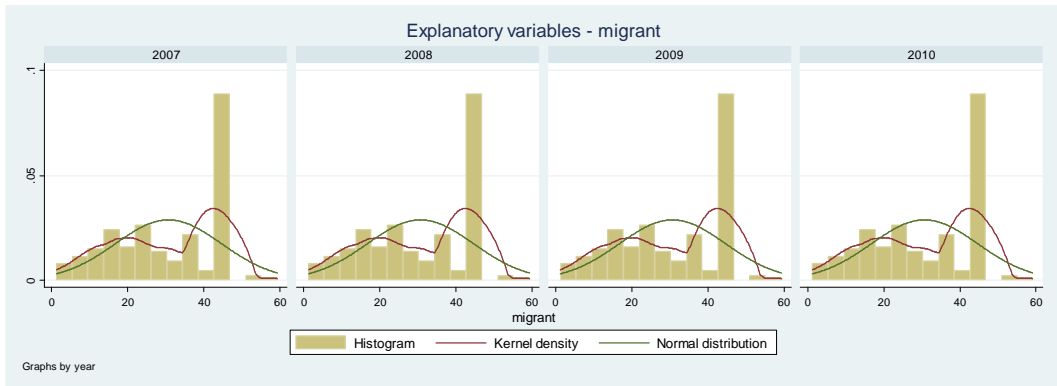
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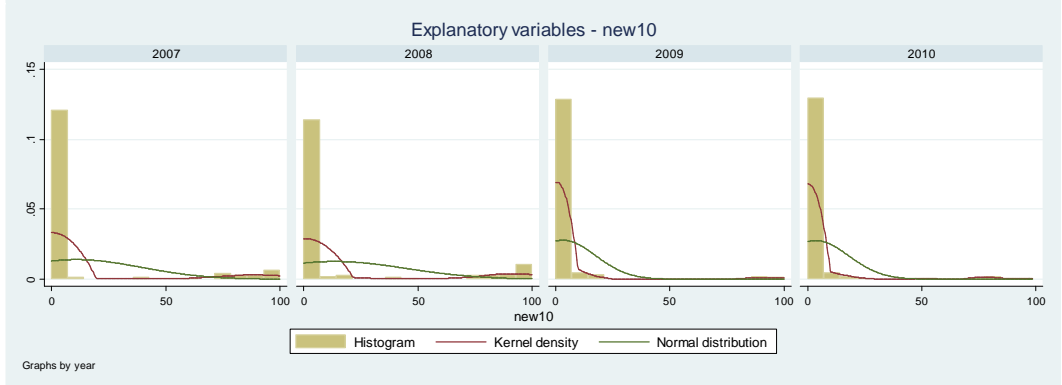
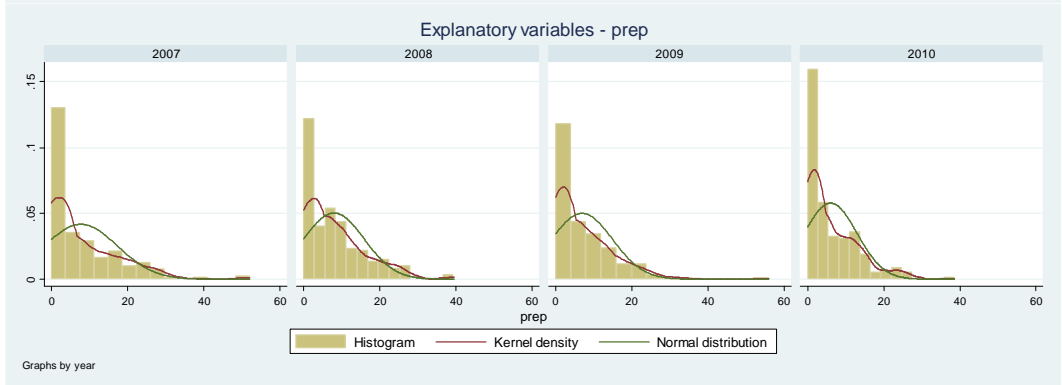
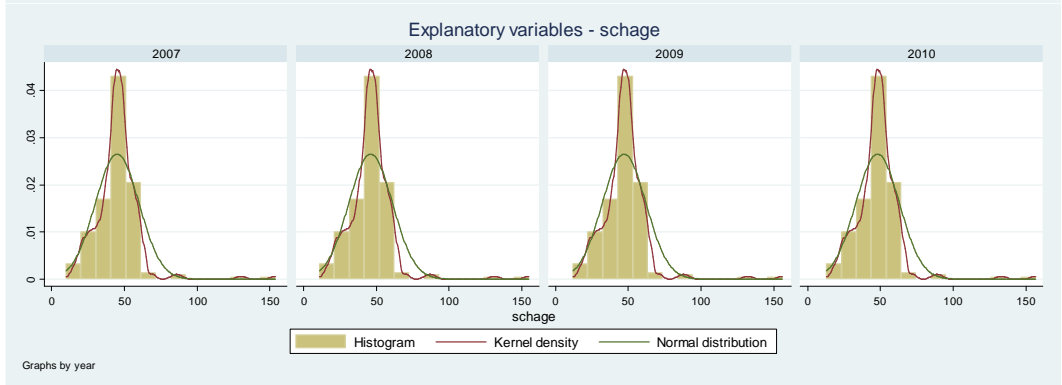
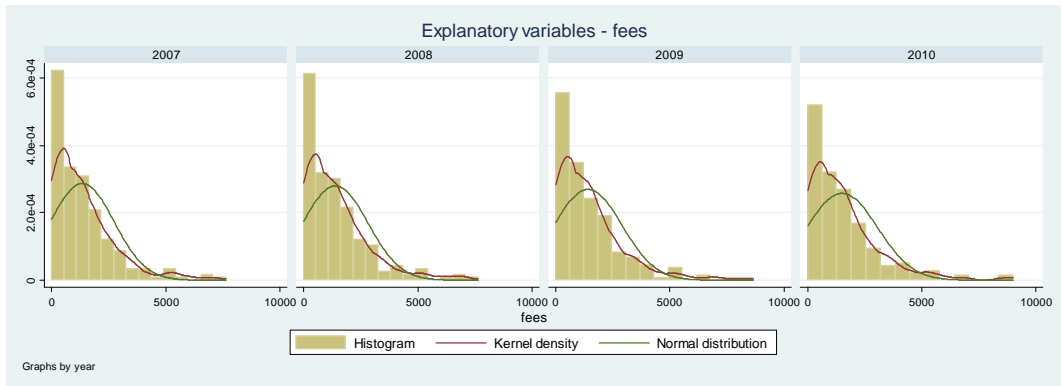
Appendix 8.1 Descriptive graphs of dependent variables, competition measures, and explanatory continuous variables

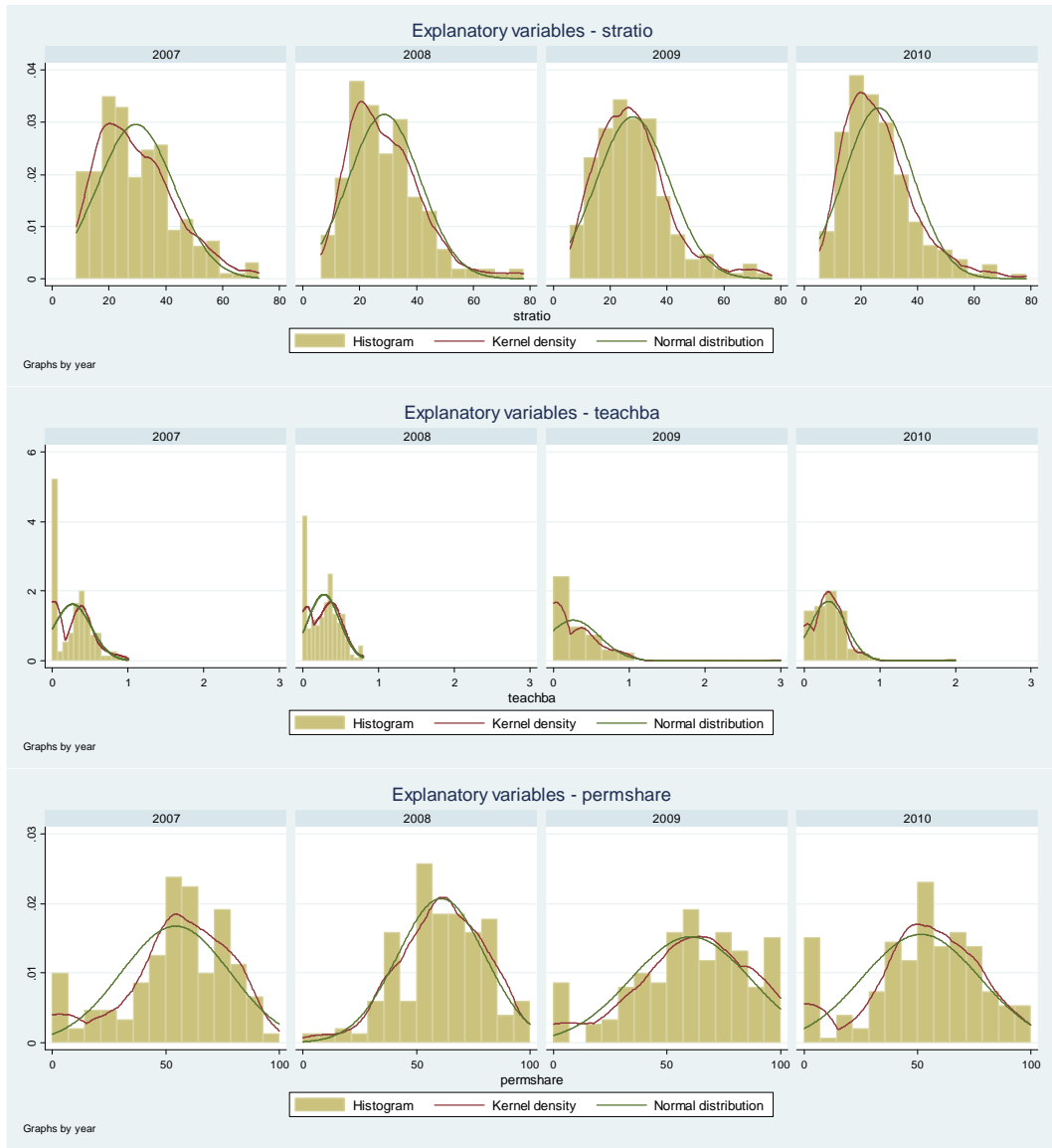












Source: Authors' estimations based on the Combined Quantitative dataset.

Appendix 8.2 Potential mechanisms via which policies could affect outcomes

The majority of the 30 interviewed public school principals, and many of the interviewed district and national level officials, mentioned that they were concerned about poor high-school leaving test score outcomes and declining enrollments in public schools. Many public school officials were concerned about enrollment declines which have even led to the merger or collapse of several schools. The principals suggested that in their schools they mainly faced a problem in primary level enrollment (Grade 1 through 5) and not secondary level enrollment (grade 6 through 10). These public secondary schools had experienced dramatic declines in enrollment because of the large number of primary private schools. However, they typically experienced an increase in enrollment going into the secondary level because of the higher private school fee structure in secondary schooling and the existence of many schools that existed through primary grades and fed into their secondary school.

There was almost unanimous agreement that they needed to implement certain policies, the foremost being English medium of instruction, in order to survive in the present climate. Some of the public school principals suggested that adding English medium of instruction, a key parental demand, had already affected their enrollment while others mentioned that they were optimistic that these changes will have an effect soon. Other public school principals suggested that it would be difficult to regain parental trust without systemic interventions to support their school-level policy improvement efforts. Many officials, especially in Chitwan, talked about the physical appearance differences between public and private schools, and how public schools also needed to require students to wear these accessories. Thus, English medium of instruction and adding ties and belts to school uniforms were considered quick “private mirroring” interventions that would demonstrate school reform efforts and have quicker effects on enrollment.

Public school officials also conceded that the school’s test score outcomes have a direct impact on enrollment. However, they argue that improving test score outcomes is a long-term process, and requires consistency in school efforts. Despite their acknowledgement that high-school examination outcomes is a product of the cumulative efforts over the entire school cycle, the public school principals also argued that private schools had better test scores because of results-oriented teaching. Many public schools talked

about how they had implemented coaching classes for the high-stakes examinations or had additional classes for the key subjects (English, Mathematics and Science). Some of the principals also argued that providing extra classes throughout the academic cycle and not just before the SLC examinations was a must for overall improvements in quality.

Appendix 8.3 Instrument Variable Validity Check - First Stage Equation Results

The appendix details the specification related tests conducted to check for the instrument's validity and whether fixed or random effects are more appropriate for the models. I first assess whether OLS or 2SLS modeling should be used. As shown in Tabel A8.3.1., The Wu-Hausman F test and the Durbin-Wu-Hausman chi-sq test have p-values ranging from 0.0 to 0.08 for all competition measures (psvw, cobj), indicating rejection of the consistency of the OLS and thus providing support for using the 2SLS over the OLS method. The ivendog option computes a test for endogeneity in a regression estimated via instrumental variables (IV), the null hypothesis for which states that an ordinary least squares (OLS) estimator of the same equation would yield consistent estimates: that is, any endogeneity among the regressors would not have deleterious effects on OLS estimates. A rejection of the null indicates that endogenous regressors' effects on the estimates are meaningful, and instrumental variables techniques are required. The main problem here is that the "endog" option utilized for the same model with robust and clustered standard errors leads statistically insignificant tests. This exercise suggests that the OLS model is consistent over the 2SLS model for the analysis with clustered errors.

The first test of whether the instrument is a valid instrument is the coefficient and statistical significance of the instrumental variable in the first-stage regression of the competition measures on the instrumental variable and other explanatory and control variables. As shown in the tables below, the first stage results of 2SLS equations of the various competition measures show that the coefficient on the instrumental variable, the number of private schools in 1982, fluctuates from a value of 7.7 to 13.0 for the private market share measure, and between 0.9 to 1.8 for the geographic proximity measure. The coefficient is positive and significant at the 1% level for all of the competition measures used in the analysis, and for all specifications (pooled OLS regressions and random effects regressions, and with or without control variables).

In a situation where one is only trying to instrument for one endogenous variable, the most important statistic is the F-statistic from the first-stage regression. The F stat (excluded instruments) is a test of the excluded instruments in the first-stage regression of the instrumented variable on all the

exogenous variables. The F test is a test of whether the excluded IVs are significant (relevant). In all of the models the calculated value of the F-stat is found to be significant at the 1% level, thus confirming the power of the instrument used and suggesting that the number of private schools in 1982 is significant in predicting the private market share that currently exists.

The weak identification tests that are conducted in this analysis are the Kleibergen-Paap rk Wald F statistic / Cragg-Donald Wald F stat. This test, in combination with the Stock-Yogo critical values of maximal IV size, can be used to further analyze whether the instrument is weak or not. Some authors (Baum, Schaffer and Stillman, 2007) have suggested using these statistics in combination with critical values by Stock and Yogo (2005) or the older rule of thumb, which indicates that the F-stat needs to be at least 10 for weak identification not to be considered a problem. The pooled OLS and random effects models' first-stage regressions produce F-statistics that are much larger than 10. Thus, these tests further confirm that the instrument is not a weak predictor of the competition measure.

The Kleibergen-Paap underidentification LM and Wald tests – weakly rejects the null hypotheses that the instruments are inadequate to identify the equation. The weak-instrument-robust inference test aims to note the effect of the variable in the main two-stage equation. The Anderson and Rubin (1949) tests the significance of the endogenous regressors in the structural equation being estimated. This is accomplished by simply substituting the reduced-form equation for the endogenous regressors in the main model. The null hypothesis tested is that the coefficients β_1 of the endogenous regressors X_1 in the structural equation are jointly equal to zero. In these results, the Anderson-Rubin Wald test and Stock-Wright LM test do not reject their null hypothesis and indicate that the endogenous regressors are not relevant in the main regression.

The endogeneity test results - for private market share and the objective competition measure, the test cannot reject the hypothesis that the variable is exogenous. I use the Sargan-Hansen Chi-sq statistic to assess whether fixed or random effects are preferable for the analysis. I find that the null hypothesis is rejected, and thus the fixed effects are considered preferable to random effects.

While analyzing the different outcome measures, the equation with enrollment in first grade as an outcome measure does not seem to support the idea that the competition measure is endogenous in the

equation, and thus in need of 2SLS method over OLS. This finding may seem logical because enrollment may be determined by a lot of other factors including competition, while test scores may have a stronger relationship with sorting effects of competition. As a result, I do not instrument for the enrollment measures.

Table A8.3.1. First-Stage Equation Results (IV Validity Check) for school-level sample
– OLS estimates

competition measure with controls?	Private market share			Geographic proximity		
	N	Y	Y	N	Y	Y
robust and clustering?	Y	Y	N	Y	Y	N
OLS versus 2SLS?						
Endogeneity test of endogenous regressors (endog) Chi-sq(1)		0.24	3.52		0.26	3.12
P-val		0.63	0.06		0.61	0.08
Test of endogeneity (ivendog)						
Wu-Hausman F test			3.42			3.04
p-val			0.06			0.08
Durbin-Wu-Hausman chi-sq test			3.52			3.12
p-val			0.06			0.08
Test of excluded instruments						
F-stat (Angrist-Pischke)	99.31	72.65	85.00	273.77	52.30	52.96
Prob > F	0.00	0.00	0.00	0.00	0.00	0.00
Instrument Validity - First-stage regression results						
F-stat	99.45	63.73	51.17	273.77	141.35	37.76
instrument variable coefficient	12.95	7.12	7.12	1.84	0.89	0.89
t-stat	9.97	8.52	9.22	16.55	7.23	7.28
P>|t|	0.00	0.00	0.00	0.00	0.00	0.00
Underidentification test						
Kleibergen-Paap rk LM statistic:						
Chi-sq(1)	2.15	2.32		1.89	2.48	62.27
P-val	0.14	0.13		0.17	0.12	0.00
Anderson canon. LM statistic						
p-val			79.32			0.00
Weak identification test ⁶⁰						
Cragg-Donald Wald F stat	363.85	85.00	85.00	343.83	52.96	52.96
Kleibergen-Paap rk Wald F statistic	99.45	72.65		273.77	52.30	
Weak-instrument-robust inference (Mathematics score)						
Anderson-Rubin Wald test F stat	9.26	0.38	2.42	9.26	0.38	2.42
p-val	0.00	0.54	0.12	0.00	0.54	0.12
Anderson-Rubin Wald test chi-sq	9.38	0.40	2.49	9.38	0.40	2.49
p-val	0.00	0.53	0.11	0.00	0.53	0.11
Stock-Wright LM S statistic	0.94	0.20	2.49	0.94	0.20	2.49
p-val	0.33	0.65	0.11	0.33	0.65	0.11

Source: Authors' estimations based on the Combined Quantitative dataset.

⁶⁰ Stock-Yogo ID test for weak identification: 10% maximal IV size = 16.38; 15% maximal IV size = 8.96; 20% maximal IV size = 6.66; 25% maximal IV size = 5.53.

Table A8.3.2. First-Stage Equation Results (IV Validity Check) for school-level sample
– Random Effects estimates

competition measure with controls? robust and clustering?	Private market share			Geographic proximity		
	N	Y	Y	N	Y	Y
robust and clustering?	Y	Y	N	Y	Y	N
Test of excluded instruments						
F-stat (Angrist-Pischke)		70.08	83.04		50.41	55.81
Prob > F		0.00	0.00		0.00	0.00
Instrument Validity - First-stage regression results						
F-stat		229.6	269.2		1046.9	100.4
wald chi-sq	307	1193		343	836	
instrument variable coefficient	13.0	7.17	7.17	1.8	0.90	0.90
z / t	17.5	8.37	9.11	18.5	7.10	7.47
P>|z| / P>|t|	0.00	0.00	0.00	0.00	0.00	0.00
Underidentification test						
Kleibergen-Paap rk LM stat: Chi-sq(1)		2.39			2.48	
P-val		0.12			0.12	
Anderson canon. corr. N*CCEV LM stat			77.40			53.64
p-val			0.00			0.00
Weak identification test						
Cragg-Donald Wald F stat		83.04	83.04		55.81	55.81
Kleibergen-Paap rk Wald F statistic		70.08			50.41	
Weak-instrument-robust inference (for mathematics test score as dependent variable)						
Anderson-Rubin Wald test F stat		0.75	2.40		1.51	2.54
p-val		0.39	0.12		0.22	0.11
Anderson-Rubin Wald test chi-sq		0.78	2.47		1.56	2.61
p-val		0.38	0.12		0.21	0.11
Stock-Wright LM S statistic		0.31	2.46		0.46	2.60
p-val		0.58	0.12		0.50	0.11
Fixed versus random effects?						
Test of overidentifying restrictions: fixed versus random effects						
Sargan-Hansen Chi-sq statistic		1247.8			1074.8	
P-val		0.00			0.00	
Breusch-Pagan Lagrangian multiplier test for random effects						
chibar2		152.20			149.84	
prob> chibar2		0.00			0.00	

Source: Authors' estimations based on the Combined Quantitative dataset.

Appendix 8.4 Detailed estimation tables of models of school-level outcome measures, competition measures, and other variables

This Appendix presents the detailed estimation results for all the models that were run to produce the summary table 8.6. The estimations in this appendix are based on the Combined Quantitative Dataset – School-level sample.

Table A8.4.1. Pooled OLS Models of Mathematics test scores on competition measures and other variables
Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
	.06072**					
Competition Measure	*	-0.01	0.002	.3928***	-0.06	0.04
Subjective Measure of Competition	...	0.83	0.29	...	0.79	0.28
Literacy rate	...	0.79	0.14	...	0.77	0.12
District dummy (Kathmandu district == 1)	...	4.844*	2.368*	...	4.74	2.32
Urban dummy (urban == 1)	...	-1.14	0.20	...	-1.20	0.19
Population growth (decadal)	...	0.10	0.04	...	0.09	0.04
Selective school	...	3.527***	1.778***	...	3.557***	1.771***
9th grade total school fees	...	0	0	...	-0.04	-0.01
Availability of a computer room	...	2.049**	0.98	...	2.107**	0.97
Total Grade 1 to 10 enrollment3914**	0.04	...	.3936**	0.03
Fraction female in enrollment	...	-.6358**	0.05	...	-.5887**	0.04
Fraction dalit in enrollment	...	-0.06	-0.01	...	-0.06	-0.01
School age in years	...	-.4345***	-.2306***	...	-.4347***	-.2321***
Repetition rates, primary grades	...	0.03	-0.01	...	0.03	-0.01
Fraction of newly admitted students in grade 10	...	-.02336**	-.01667**	...	-.02359**	-.01659**
Student to teacher ratio	...	-0.08	-0.03	...	-0.08	-0.03
Inadequate desks	...	0.36	0.41	...	0.39	0.39
Teacher restroom dummy	...	1.32	1.035*	...	1.31	1.057**
Have to hire teachers privately dummy	...	-1.09	-0.33	...	-1.18	-0.33
Share of teachers with permanent contracts	...	0.15	0.12	...	0.15	0.12
Percentage of teachers with less than a bachelor's degrees	...	0.03	0.91	...	-0.01	0.92
Lagged mathematics test score5887***	...	...	.5891***
N	838	838	817	838	838	817
R-squared	0.20	0.30	0.52	0.19	0.30	0.52
adj R-squared	0.19	0.28	0.51	0.19	0.28	0.51

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.2. Pooled OLS IV Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without controls	with controls	with controls and lagged dependent variable	without controls	with controls	with controls and lagged dependent variable
Competition Measure	.1187***	0.09	0.031	.8197***	0.75	0.25
Subjective Measure of Competition	...	0.17	0.112	...	0.30	0.15
Literacy rate	...	0.18	-0.026	...	-0.03	-0.10
District dummy (Kathmandu district == 1)	...	2.77	1.786	...	2.65	1.73
Urban dummy (urban == 1)	...	-2.00	-0.021	...	-1.90	0.00
Population growth (decadal)	...	-0.05	0.002	...	0.03	0.03
Selective school	...	3.704***	1.824***	...	3.456**	1.744***
9th grade total school fees	...	-0.05	-0.008	...	-0.05	-0.01
Availability of a computer room	...	2.59	1.124	...	2.221**	1.01
Total Grade 1 to 10 enrollment	...	0	0	...	0.05	-0.07
Fraction female in enrollment	...	-0.36	0.130	...	-.759*	-0.01
Fraction dalit in enrollment	...	-0.08	-0.016	...	-0.06	-0.01
School age in years	...	-.4758***	-.2406***	...	-.5003***	-.246***
Repetition rates, primary grades	...	0.02	-0.008	...	0.02	-0.01
Fraction of newly admitted students in grade 10	...	-.02494**	-.01721**	...	-.02306**	-.01639**
Student to teacher ratio	...	-0.08	-0.028	...	-0.08	-0.03
Inadequate desks	...	0.30	0.396	...	-0.15	0.24
Teacher restroom dummy	...	1.64	1.12**	...	1.96	1.227*
Have to hire teachers privately dummy	...	-2.00	-0.573	...	-1.51	-0.42
Share of teachers with permanent contracts	...	0.11	0.107	...	0.16	0.12
Percentage of teachers with less than a bachelor's degrees	...	-0.18	0.842	...	0.14	0.97
Lagged mathematics test score591***	...	...	.592***
N	838	838	817	838	838	817
R-squared	0.18	0.27	0.52	0.17	0.26	0.52
adj R-squared	0.17	0.25	0.51	0.17	0.24	0.51

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.3. Random Effects Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without controls	with controls	with controls & lagged dependent variable	without controls	with controls	with controls & lagged dependent variable
Competition Measure	.05273**	-0.02	0.00	.3851***	-0.03	0.04
Subjective Measure of Competition	...	0.99	0.29	...	0.87	0.28
Literacy rate	...	0.66	0.14	...	0.56	0.12
District dummy (Kathmandu district == 1)	...	4.72*	2.368*	...	4.43	2.317*
Urban dummy (urban == 1)	...	-1.25	0.20	...	-1.41	0.19
Population growth (decadal)	...	0.11	0.04	...	0.09	0.04
Selective school	...	3.422***	1.778***	...	3.446***	1.771***
9th grade total school fees	...	0	0	...	0.03	-0.01
Availability of a computer room	...	0.60	0.98	...	0.64	0.97
Total Grade 1 to 10 enrollment	...	0.20	0.04	...	0.18	0.03
Fraction female in enrollment	...	-0.60	0.05	...	-0.56	0.04
Fraction ` in enrollment	...	-0.06	-0.01	...	-0.06	-0.01
School age in years	...	-3.834***	-2.306***	...	-3.899***	-2.321***
Repetition rates, primary grades	...	0.02	-0.01	...	0.02	-0.01
Fraction of newly admitted students in grade 10	...	-0.01	-0.01667**	...	-0.01	-0.01659**
Student to teacher ratio	...	-0.02	-0.03	...	-0.02	-0.03
Inadequate desks	...	0.16	0.41	...	0.16	0.39
Teacher restroom dummy	...	1.57	1.035*	...	1.61	1.057**
Teacher privately hired dummy	...	-1.29	-0.33	...	-1.48	-0.33
Share of teachers with permanent contracts224**	0.12	...	.219**	0.12
Percentage of teachers with less than a bachelor's degrees	...	0.21	0.91	...	0.20	0.92
Lagged mathematics test score5887***	...	...	.5891***
N	838	838	817	838	838	817
R-squared (within)	0.41	0.42	0.22	0.41	0.42	0.22
R-squared (overall)	0.20	0.29	0.52	0.19	0.29	0.52
R-squared (between)	0.03	0.18	0.87	0.03	0.18	0.87

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.4. Random Effects IV Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without controls	with controls	with controls and lagged dependent variable	without controls	with controls	with controls and lagged dependent variable
Competition Measure Subjective Measure of Competition	.1177***	0.09	0.03	.8121**	0.64	0.25
Literacy rate	...	0.24	0.11	...	0.44	0.12
District dummy (Kathmandu district == 1)	...	0.16	-0.03	...	-0.17	-0.15
Urban dummy (urban == 1)	...	3.08	1.79	...	2.76	1.57
Population growth (decadal)	...	-2.03	-0.02	...	-1.97	-0.03
	...	-0.05	0.00	...	0.04	0.03
Selective school	...	3.624***	1.824***	...	3.376***	1.763**
9th grade total school fees	...	0	0	...	0.04	-0.01
Availability of a computer room	...	1.993**	1.12	...	0.62	1.04
Total Grade 1 to 10 enrollment	...	0.16	-0.02	...	-0.04	-0.05
Fraction female in enrollment	...	-0.37	0.13	...	-0.71	-0.01
Fraction dalit in enrollment	...	-0.07	-0.02	...	-0.06	-0.01
School age in years	...	-4.679***	-2.2406**	...	-4.395*	-2.2484**
Repetition rates, primary grades	...	0.02	-0.01	...	0.00	-0.02
Fraction of newly admitted students in grade 10	...	-0.02	-0.02	...	-0.01	-0.01
Student to teacher ratio	...	-0.05	-0.03	...	-0.02	-0.04
Inadequate desks	...	0.23	0.40	...	0.02	0.41
Teacher restroom dummy	...	1.702*	1.12	...	2.18	1.21
Teacher privately hired dummy	...	-2.061*	-0.57	...	-1.85	-0.42
Share of teachers with permanent contracts	...	0.15	0.11	...	.2607**	0.15
Percentage of teachers with less than a bachelor's degrees	...	-0.06	0.84	...	0.46	1.26
Lagged mathematics test score591***	...	...	.5904***
N	838	838	817	838	838	817
R-squared (within)	0.41	0.40	0.22	0.41	0.42	0.22
R-squared (overall)	0.18	0.27	0.52	0.18	0.26	0.52
R-squared (between)	0.03	0.17	0.86	0.03	0.14	0.86

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.5. Fixed Effects Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share		
	without controls	with controls	with controls and lagged dependent variable
Competition Measure	-0.08	-0.10	-0.07
Selective school	...	4.317**	3.14
9th grade total school fees	...	.4226***	.4141***
Availability of a computer room	...	-0.41	-0.35
Total Grade 1 to 10 enrollment	...	-0.59	-0.43
Fraction female in enrollment	...	-0.79	-1.15
Fraction dalit in enrollment	...	0	0
Repetition rates, primary grades	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	-0.01	0.00
Student to teacher ratio	...	0.01	0.01
Share of teachers with permanent contracts	...	.2819**	.2975**
Percentage of teachers with less than a bachelor's degrees	...	0.34	0.27
Lagged mathematics test score	...	...	-.1684***
N	838	838	817
R-squared	0.75	0.76	0.77
adj R-squared	0.66	0.67	0.68

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.6. Pooled OLS Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls, lagged dependent variable	without controls	with controls	with controls, lagged dependent variable
Competition Measure	.1728***	-0.03	-0.009	.9186***	-0.51	-0.14
Subjective Measure of Competition	...	1.84	1.50	...	1.95	1.53
Literacy rate	...	1.64	-0.18	...	1.96	-0.09
District dummy (Kathmandu district == 1)	...	17.57***	7.046***	...	18.26***	7.259***
Urban dummy (urban == 1)	...	-1.45	1.04	...	-1.27	1.09
Population growth (decadal)	...	0.10	0.08	...	0.09	0.07
Selective school	...	7.692***	3.048***	...	7.809***	3.085***
9th grade total school fees	...	0	0	...	-0.06	-0.01
Availability of a computer room	...	4.829**	1.835*	...	4.92***	1.86*
Total Grade 1 to 10 enrollment8392**	0.15	...	.9959***	0.19
Fraction female in enrollment	...	-1.975**	-0.43	...	-1.784**	-0.37
Fraction dalit in enrollment	...	-0.21	-0.07	...	-0.22	-0.07
School age in years	...	-1.319***	-.5092***	...	-1.29***	-.5045***
Repetition rates, primary grades198*	0.11	...	.2035*	0.11
Fraction of newly admitted students in grade 10	...	-.05737***	-.03931**	...	-.05816***	-.03962**
Student to teacher ratio	...	-.1443*	-0.06	...	-.1459*	-0.06
Inadequate desks	...	3.38	1.87	...	3.70	1.96
Teacher restroom dummy	...	2.97	2.045*	...	2.66	1.966*
Teacher privately hired dummy	...	-2.55	-2.12	...	-2.63	-2.14
Share of teachers with permanent contracts	...	-0.24	-0.03	...	-0.27	-0.04
Percentage of teachers with less than a bachelor's degrees	...	0.56	-0.08	...	0.40	-0.13
Lagged first division pass rates6287***	...	...	.6274***
N	838	838	817	838	838	817
R-squared	0.09	0.30	0.56	0.07	0.30	0.56
adj R-squared	0.09	0.28	0.55	0.07	0.28	0.55

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.7. Pooled OLS IV Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls, lagged dependent variable	without controls	with controls	with controls, lagged dependent variable
Competition Measure	.3197***	0.09	0.050	2.209***	0.77	0.40
Subjective Measure of Competition	...	1.04	1.13	...	1.17	1.19
Literacy rate	...	0.91	-0.52	...	0.70	-0.65
District dummy (Kathmandu district == 1)	...	15.08	5.85	...	14.96	5.72
Urban dummy (urban == 1)	...	-2.48	0.58	...	-2.38	0.64
Population growth (decadal)	...	-0.08	-0.01	...	0.00	0.03
Selective school	...	7.905***	3.144***	...	7.651***	2.996***
9th grade total school fees	...	-0.07	-0.01	...	-0.07	-0.01
Availability of a computer room	...	5.476*	2.133*	...	5.1***	1.939*
Total Grade 1 to 10 enrollment	...	1	0	...	0.46	-0.04
Fraction female in enrollment	...	-1.65	-0.27	...	-2.054***	-0.48
Fraction dalit in enrollment	...	-0.24	-0.08	...	-0.22	-0.07
School age in years	...	-1.368***	-.5296***	...	-1.393***	-.5349***
Repetition rates, primary grades	...	0.19	0.11	...	0.19	0.10
Fraction of newly admitted students in grade 10	...	-.05926***	-.04043**	...	-.05738**	-.03909**
Student to teacher ratio	...	-0.14	-0.06	...	-0.14	-0.06
Inadequate desks	...	3.30	1.83	...	2.85	1.58
Teacher restroom dummy	...	3.35	2.218*	...	3.68	2.38
Teacher privately hired dummy	...	-3.64	-2.62	...	-3.13	-2.36
Share of teachers with permanent contracts	...	-0.30	-0.06	...	-0.24	-0.03
Percentage of teachers with less than a bachelor's degrees	...	0.31	-0.22	...	0.64	-0.03
Lagged first division pass rates6302***	...	...	.6334***
N	838	838	817	838	838	817
R-squared	0.06	0.29	0.56	0.03	0.27	0.55
adj R-squared	0.06	0.26	0.54	0.02	0.25	0.54

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.8. Random Effects Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls, lagged dependent variable	without controls	with controls	with controls, lagged dependent variable
Competition Measure	.1412***	-0.06	-0.009	.8908***	-0.52	-0.14
Subjective Measure of Competition	...	2.10	1.50	...	2.00	1.53
Literacy rate	...	1.57	-0.18	...	1.72	-0.09
District dummy (Kathmandu district == 1)	...	18.61***	7.046***	...	18.78***	7.259***
Urban dummy (urban == 1)	...	-1.72	1.04	...	-1.82	1.09
Population growth (decadal)	...	0.13	0.08	...	0.08	0.07
Selective school	...	7.463***	3.048***	...	7.588***	3.085***
9th grade total school fees	...	0	0	...	0.05	-0.01
Availability of a computer room	...	0.21	1.835*	...	0.33	1.86*
Total Grade 1 to 10 enrollment6696**	0.15	...	.7721**	0.19
Fraction female in enrollment	...	-1.46	-0.43	...	-1.29	-0.37
Fraction dalit in enrollment	...	-0.20	-0.07	...	-0.21	-0.07
School age in years	...	-1.26***	-.5092***	...	-1.242***	-.5045***
Repetition rates, primary grades	...	0.11	0.11	...	0.11	0.11
Fraction of newly admitted students in grade 10	...	-0.02	-0.03931**	...	-0.02	-0.03962**
Student to teacher ratio	...	-0.05	-0.06	...	-0.05	-0.06
Inadequate desks	...	3.16	1.87	...	3.43	1.96
Teacher restroom dummy	...	3.55	2.045**	...	3.32	1.966*
Teacher privately hired dummy	...	-2.55	-2.12	...	-2.89	-2.14
Share of teachers with permanent contracts	...	0.05	-0.03	...	0.03	-0.04
Percentage of teachers with less than a bachelor's degrees	...	1.19	-0.08	...	1.14	-0.13
Lagged first division pass rates6287***	...	...	.6274***
N	838	838	817	838	838	817
R-squared (within)	0.18	0.19	0.02	0.18	0.19	0.02
R-squared (overall)	0.09	0.28	0.56	0.07	0.28	0.56
R-squared (between)	0.06	0.31	0.89	0.03	0.32	0.89

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.9. Random Effects IV Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls and lagged dependent variable	without controls	with controls	with controls and lagged dependent variable
Competition Measure	.3143***	0.08	0.050	2.177***	0.62	0.40
Subjective Measure of Competition	...	1.13	1.13	...	1.29	1.19
Literacy rate	...	0.83	-0.52	...	0.56	-0.65
District dummy (Kathmandu district == 1)	...	16.33***	5.85**	...	16.08***	5.723*
Urban dummy (urban == 1)	...	-2.84	0.58	...	-2.90	0.64
Population growth (decadal)	...	-0.08	-0.01	...	0.00	0.03
Selective school	...	7.603***	3.144**	...	7.425***	2.996**
9th grade total school fees	...	0	0	...	0.05	-0.01
Availability of a computer room	...	1.71	2.13	...	0.27	1.94
Total Grade 1 to 10 enrollment	...	0.52	0.04	...	0.38	-0.04
Fraction female in enrollment	...	-1.41	-0.27	...	-1.42	-0.48
Fraction dalit in enrollment	...	-2.179*	-0.08	...	-0.20	-0.07
School age in years	...	-1.35***	-5.296**	...	-1.338***	-5.349**
Repetition rates, primary grades	...	0.12	0.11	...	0.10	0.10
Fraction of newly admitted students in grade 10	...	-0.03	-0.04	...	-0.02	-0.04
Student to teacher ratio	...	-0.07	-0.06	...	-0.05	-0.06
Inadequate desks	...	3.10	1.83	...	2.71	1.58
Teacher restroom dummy	...	3.77	2.218*	...	4.25	2.38
Teacher privately hired dummy	...	-3.77	-2.62	...	-3.50	-2.36
Share of teachers with permanent contracts	...	-0.04	-0.06	...	0.04	-0.03
Percentage of teachers with less than a bachelor's degrees	...	0.95	-0.22	...	1.17	-0.03
Lagged first division pass rates6302***	...	...	.6334***
N	838	838	817	838	838	817
R-squared (within)	0.17	0.18	0.02	0.18	0.19	0.02
R-squared (overall)	0.08	0.28	0.56	0.06	0.27	0.55
R-squared (between)	0.06	0.31	0.89	0.03	0.29	0.89

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.10. Fixed Effects Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share		
	without controls	with controls	with controls and lagged dependent variable
Competition Measure	-0.26	-0.23	-0.11
Selective school	...	9.291**	7.63
9th grade total school fees	...	.5252***	.5468***
Availability of a computer room	...	-2.43	-2.48
Total Grade 1 to 10 enrollment	...	-0.01	0.15
Fraction female in enrollment	...	-0.69	-0.35
Fraction dalit in enrollment	...	0	0
Repetition rates, primary grades	...	0.07	0.06
Fraction of newly admitted students in grade 10	...	-0.01	-0.01
Student to teacher ratio	...	-0.02	0.00
Share of teachers with permanent contracts	...	0.19	0.11
Percentage of teachers with less than a bachelor's degrees	...	1.39	1.48
Lagged first division pass rates	...	...	-.1878***
N	838	838	817
R-squared	0.78	0.78	0.79
adj R-squared	0.70	0.70	0.71

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.11. Pooled OLS Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls and lagged dependent variable	without controls	with controls	with controls and lagged dependent variable
Competition Measure	.1675***	0.02	0.019	.7261**	-.4862**	-.3056*
Subjective Measure of Competition	...	0.89	0.44	...	1.28	0.75
Literacy rate	...	0.58	-0.05	...	1.14	0.37
District dummy (Kathmandu district == 1)	...	14.23***	9.351***	...	15.79***	10.58***
Urban dummy (urban == 1)	...	-0.93	-0.03	...	-0.39	0.38
Population growth (decadal)	...	0.12	0.08	...	0.17	0.13
Selective school	...	4.939***	2.648**	...	4.974***	2.657**
9th grade total school fees	...	0	0	...	-0.07	-0.01
Availability of a computer room	...	2.884*	1.58	...	2.738*	1.43
Total Grade 1 to 10 enrollment7047**	0.34	...	.9347***	.5016**
Fraction female in enrollment	...	-1.215*	-0.50	...	-1.151*	-0.49
Fraction dalit in enrollment	...	-0.09	-0.07	...	-0.09	-0.06
School age in years	...	-7.338**	-5.309**	...	-6.887**	-5.043***
Repetition rates, primary grades	...	-0.01	0.00	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	-0.04	-0.01	...	-0.04	-0.01
Student to teacher ratio	...	-0.15	-0.10	...	-0.15	-0.10
Inadequate desks	...	0.00	0.22	...	0.34	0.43
Teacher restroom dummy	...	2.39	2.01*	...	1.95	1.72
Teacher privately hired dummy	...	-2.56	-1.81	...	-2.23	-1.53
Share of teachers with permanent contracts	...	-0.08	-0.02	...	-0.08	-0.02
Percentage of teachers with less than a bachelor's degrees	...	-0.27	0.29	...	-0.33	0.26
Lagged pass percentage rates381***	...	0.00	.3779***
N	838	838	817	838	838	817
R-squared	0.14	0.27	0.38	0.11	0.28	0.39
adj R-squared	0.13	0.25	0.36	0.11	0.26	0.37

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.12. Pooled OLS IV Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls & lagged dependent variable	without controls	with controls	with controls & lagged dependent variable
Competition Measure	.2936***	0.23	0.143	2.028***	1.89	1.14
Subjective Measure of Competition	...	-0.47	-0.33	...	-0.16	-0.15
Literacy rate		-0.67	-0.77		-1.19	-1.11
District dummy (Kathmandu district == 1)	...	9.95	6.88	...	9.66	6.55
Urban dummy (urban == 1)	...	-2.70	-1.01	...	-2.44	-0.85
Population growth (decadal)	...	-0.20	-0.10	...	0.01	0.03
Selective school	...	5.304***	2.879**	...	4.681**	2.449*
9th grade total school fees		-0.09	-0.02		-0.08	-0.02
Availability of a computer room	...	3.997*	2.23	...	3.072**	1.68
Total Grade 1 to 10 enrollment	...	0	0	...	-0.06	-0.12
Fraction female in enrollment	...	-0.65	-0.17	...	-1.65	-0.80
Fraction dalit in enrollment	...	-0.13	-0.09	...	-0.08	-0.06
School age in years	...	-8.192**	-5.78**	...	-8.805***	-5.966***
Repetition rates, primary grades	...	-0.02	-0.01	...	-0.03	-0.02
Fraction of newly admitted students in grade 10	...	-0.04	-0.02	...	-0.03	-0.01
Student to teacher ratio	...	-0.14	-0.10	...	-0.14	-0.09
Inadequate desks	...	-0.13	0.15	...	-1.25	-0.55
Teacher restroom dummy	...	3.04	2.382*	...	3.85	2.84
Teacher privately hired dummy	...	-4.42	-2.86	...	-3.18	-2.10
Share of teachers with permanent contracts	...	-0.18	-0.07	...	-0.03	0.01
Percentage of teachers with less than a bachelor's degrees	...	-0.70	0.00	...	0.11	0.58
Lagged pass percentage rates	...	...	.3805***	...	...	.3931***
N	838	838	817	838	838	817
R-squared	0.11	0.24	0.37	0.06	0.19	0.36
adj R-squared	0.11	0.22	0.35	0.05	0.17	0.33

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.13. Random Effects Models of Pass percentage Rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls & lagged dependent variable	without controls	with controls	with controls & lagged dependent variable
Competition Measure	.1527***	0.00	0.019	.7096**	-.4581**	-.3056*
Subjective Measure of Competition	...	1.10	0.44	...	1.39	0.75
Literacy rate		0.75	-0.05		1.21	0.37
District dummy (Kathmandu district == 1)	...	15.03***	9.351***	...	16.19***	10.58***
Urban dummy (urban == 1)	...	-0.90	-0.03	...	-0.49	0.38
Population growth (decadal)	...	0.12	0.08	...	0.16	0.13
Selective school	...	4.785***	2.648**	...	4.849***	2.657**
9th grade total school fees		0	0		-0.05	-0.01
Availability of a computer room	...	1.57	1.58	...	1.55	1.43
Total Grade 1 to 10 enrollment	...	.5059*	0.34	...	.6874**	.5016**
Fraction female in enrollment	...	-0.81	-0.50	...	-0.75	-0.49
Fraction dalit in enrollment	...	-0.14	-0.07	...	-0.14	-0.06
School age in years	...	-.7303***	-.5309**	...	-.6914**	-.5043***
Repetition rates, primary grades	...	0.00	0.00	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	0.00	-0.01	...	0.00	-0.01
Student to teacher ratio	...	-0.09	-0.10	...	-0.09	-0.10
Inadequate desks	...	-0.11	0.22	...	0.19	0.43
Teacher restroom dummy	...	2.66	2.01*	...	2.29	1.72
Teacher privately hired dummy	...	-2.44	-1.81	...	-2.23	-1.53
Share of teachers with permanent contracts	...	0.06	-0.02	...	0.06	-0.02
Percentage of teachers with less than a bachelor's degrees	...	0.42	0.29	...	0.39	0.26
Lagged pass percentage rates	...	...	.381***	...	...	.3779***
N	838	838	817	838	838	817
R-squared (within)	0.20	0.21	0.07	0.20	0.21	0.07
R-squared (overall)	0.14	0.26	0.38	0.11	0.27	0.38
R-squared (between)	0.08	0.31	0.75	0.03	0.32	0.75

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.14. Random Effects IV Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without controls	with controls	with controls & lagged dependent variable	without controls	with controls	with controls & lagged dependent variable
Competition Measure	.2914***	0.24	0.143	2.017***	1.94	1.14
Subjective Measure of Competition	...	-0.43	-0.33	...	-0.06	-0.15
Literacy rate	...	-0.65	-0.77	...	-1.17	-1.11
District dummy (Kathmandu district == 1)	...	10.62***	6.876**	...	10.25**	6.55*
Urban dummy (urban == 1)	...	-2.87	-1.01	...	-2.66	-0.85
Population growth (decadal)	...	-0.21	-0.10	...	-0.01	0.03
Selective school	...	5.147***	2.879**	...	4.501**	2.449*
9th grade total school fees	...	-0.07	-0.02	...	-0.05	-0.02
Availability of a computer room	...	3	2	...	1.38	1.68
Total Grade 1 to 10 enrollment	...	0.20	0.11	...	-0.28	-0.12
Fraction female in enrollment	...	-0.45	-0.17	...	-1.00	-0.80
Fraction dalit in enrollment	...	-0.15	-0.09	...	-0.13	-0.06
School age in years	...	-.8282**	-.578**	...	-.8907**	-.5966**
Repetition rates, primary grades	...	-0.01	-0.01	...	-0.01	-0.02
Fraction of newly admitted students in grade 10	...	-0.01	-0.02	...	0.00	-0.01
Student to teacher ratio	...	-0.10	-0.10	...	-0.07	-0.09
Inadequate desks	...	-0.26	0.15	...	-1.38	-0.55
Teacher restroom dummy	...	3.264*	2.382*	...	4.31	2.835*
Teacher privately hired dummy	...	-4.533*	-2.86	...	-3.35	-2.10
Share of teachers with permanent contracts	...	-0.05	-0.07	...	0.09	0.01
Percentage of teachers with less than a bachelor's degrees	...	-0.05	0.00	...	0.61	0.58
Lagged pass percentage rates3805***	...	...	.3931***
N	838	838	817	838	838	817
R-squared (within)	0.41	0.40	0.22	0.41	0.42	0.22
R-squared (overall)	0.18	0.27	0.52	0.18	0.26	0.52
R-squared (between)	0.03	0.17	0.86	0.03	0.14	0.86

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.15. Fixed Effects Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share		
	without controls	with controls	with controls and lagged dependent variable
Competition Measure	-0.32	-0.35	-0.33
Selective school	...	5.93	2.30
9th grade total school fees	...	0.31	0.32
Availability of a computer room	...	-0.85	-0.85
Total Grade 1 to 10 enrollment	...	-1.08	-0.98
Fraction female in enrollment	...	0.30	0.33
Fraction dalit in enrollment	...	0	0
Repetition rates, primary grades	...	-0.01	-0.01
Fraction of newly admitted students in grade 10	...	0.02	0.01
Student to teacher ratio	...	-0.03	-0.02
Share of teachers with permanent contracts	...	0.22	0.21
Percentage of teachers with less than a bachelor's degrees	...	1.08	0.96
Lagged pass percentage rates	...	...	-.1996***
N	838	838	817
R-squared	0.64	0.64	0.67
adj R-squared	0.51	0.51	0.54

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.16. Pooled OLS Models of Average enrollment on competition measures and other variables

Dependent variable: Grade 1 enrollment

	Private market share			Geographic proximity		
	without controls	with controls	with controls & lagged dependent variable	without controls	with controls	with controls & lagged dependent variable
Competition Measure	.3503***	.1758***	0.032	2.838***	1.441**	.2919**
Subjective Measure of Competition	...	-0.33	-1.03	...	-0.50	-1.09
Lagged first division pass rates3811***	.0763**	...	.3877***	.07825**
Literacy rate	...	-5.398**	-0.84	...	-5.581**	-0.90
District dummy (Kathmandu district == 1)	...	15.03*	5.68***	...	15.16	5.646**
Urban dummy (urban == 1)	...	7.98	2.23	...	7.88	2.20
Migrant population rate	...	5.415**	0.56	...	5.243**	0.53
Selective school	...	11.95***	1.996**	...	11.44***	1.911*
9th grade total school fees	...	-0.10	0.01	...	-0.10	0.01
Availability of a computer room	...	5.98	1.64	...	5.26	1.52
Fraction female in enrollment	...	-0.52	-0.33	...	-1.42	-0.51
Fraction dalit in enrollment	...	0	.1508*	...	0.15	.1611**
School age in years	...	0.07	0.04	...	0.03	0.03
Repetition rates, primary grades7674**	0.12	...	.7379**	0.12
Student to teacher ratio	...	1.084***	.2889***	...	1.052***	.2829***
Teacher privately hired dummy	...	-0.47	-0.62	...	0.32	-0.48
Percentage of teachers with less than a bachelor's degrees	...	0.60	-4.598**	...	1.03	-4.513**
Lagged enrollment7742***	...	...	.7726***
N	...	817	817	...	817	817
R-squared	...	0.37	0.80	...	0.38	0.80
adj R-squared	...	0.36	0.80	...	0.36	0.80

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.17. Random effects Models of Average enrollment on competition measures and other variables

Dependent variable: Grade 1 enrollment

	Private market share			Geographic proximity		
	without controls	with controls	with controls & lagged dependent variable	without controls	with controls	with controls & lagged dependent variable
Competition Measure	0.09	0.03	0.033	2.838***	2.08***	.3005***
Subjective Measure of Competition	...	0.12	-1.03	...	-1.53	-1.08
Lagged first division pass rates	...	0.07	.07715**	...	0.07	.07903**
Literacy rate	...	-6.107*	-0.87	...	-7.529**	-0.94
District dummy (Kathmandu district == 1)	...	14.28**	5.718***	...	9.98	5.678**
Urban dummy (urban == 1)	...	3.02	2.25	...	1.83	2.22
Migrant population rate	...	9.298***	0.59	...	8.315***	0.56
Selective school	...	11.52***	2.091**	...	10.85***	1.994**
9th grade total school fees	...	0.00	0.01	...	-0.01	0.01
Availability of a computer room	...	-0.91	1.63	...	-0.81	1.51
Fraction female in enrollment	...	-3.33	-0.34	...	-3.643*	-0.52
Fraction dalit in enrollment	...	0.06	.1511*	...	0.10	.1617**
School age in years	...	-1.061**	0	...	-1.152**	0.03
Repetition rates, primary grades	...	.2245*	0.13	...	.2167*	0.12
Student to teacher ratio	...	.4124***	.2925***	...	.3855***	.2859***
Teacher privately hired dummy	...	3.58	-0.61	...	2.39	-0.47
Percentage of teachers with less than a bachelor's degrees	...	-5.472**	-4.604**	...	-5.469**	-4.517**
Lagged enrollment	...	...	.7693***	...	...	.7681***
N	848	817	817	848	817	817
R-squared (within)	0.04	0.04	0.02	.	0.04	0.02
R-squared (overall)	0.06	0.27	0.80	0.09	0.28	0.80
R-squared (between)	0.07	0.28	0.96	0.11	0.30	0.96

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.4.18. Fixed effects Models of Average enrollment on competition measures and other variables

Dependent variable: Grade 1 enrollment

	Private market share		
	without controls	with controls	with controls & lagged dependent variable
Competition Measure	-.7513***	-.663***	-.6006***
Lagged first division pass rates	...	0.01	0.02
Selective school	...	8.88	9.209*
9th grade total school fees	...	0.05	0.05
Availability of a computer room	...	-2.58	-2.46
Fraction female in enrollment	...	-6.03	-5.55
Fraction dalit in enrollment	...	0.26	0.27
Repetition rates, primary grades	...	0.09	0.09
Student to teacher ratio	...	0.10	0.10
Percentage of teachers with less than a bachelor's degrees	...	-6.291***	-6.243***
Lagged enrollment	...	...	0.09
N	848	817	817
R-squared	0.90	0.91	0.91
adj R-squared	0.86	0.87	0.87

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Appendix 8.5 Detailed estimation tables of models of school-level outcome measures, policy responses, and other variables

This Appendix presents the detailed estimation results for all the models that were run that linked policy responses to competition measures. A small set of these results were produced in Tables 8.7 and Table 8.8. The estimations in these tables are based on the Combined Qualitative Dataset, school level sample.

Table A8.5.1. Pooled OLS Models of Mathematics test scores on competition measures and other variables
Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.05751***	-0.01	0.004	.3428***	-0.08	0.03
SLC extra coaching	0.79	0.47	0.62	0.43	0.54	0.59
Remedial classes	1.779*	1.315*	.7398*	1.62*	1.339**	.7301*
Longer school days	1.97	0.94	0.24	2.03	0.97	0.23
Subjective Measure of Competition	...	0.55	0.15	...	0.52	0.17
Literacy rate	...	0.65	0.06	...	0.66	0.06
District dummy (Kathmandu district == 1)	...	4.35	2.08	...	4.34	2.09
Urban dummy (urban == 1)	...	-1.40	0.04	...	-1.43	0.05
Population growth (decadal)	...	0.12	0.05	...	0.10	0.06
Selective school	...	3.152***	1.597***	...	3.168***	1.591***
9th grade total school fees	...	-0.03	0.00	...	-0.03	0.00
Availability of a computer room	...	1.656*	0.80	...	1.696*	0.78
Total Grade 1 to 10 enrollment	...	.5055***	0.12	...	.5171***	0.11
Fraction female in enrollment	...	-.6911**	0.01	...	-.6418**	0.00
Fraction dalit in enrollment	...	-0.05	0.00	...	-0.05	0.00
School age in years	...	-4.306***	-.2328***	...	-4.276***	-.2333***
Repetition rates, primary grades	...	0.03	0.00	...	0.03	0.00
Fraction of newly admitted students in grade 10	...	-.02248**	-.01621**	...	-.02274**	-.01612**
Student to teacher ratio	...	-.154***	-.0781**	...	-.1537***	-.07828**
Inadequate desks	...	0.25	0.41	...	0.30	0.39
Teacher restroom dummy	...	1.06	.9039*	...	1.02	.9121*
Teacher privately hired dummy	...	-0.87	-0.20	...	-0.95	-0.17
Share of teachers with permanent contracts	...	0.16	0.11	...	0.16	0.11
Percentage of teachers with less than a bachelor's degrees	...	-0.25	0.64	...	-0.29	0.66
Lagged test score	...	...	.5812***	...	...	.5813***
N	838	838	817	838	838	817
R-squared	0.21	0.31	0.53	0.21	0.31	0.53
adj R-squared	0.20	0.29	0.51	0.20	0.29	0.51

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.2. Pooled OLS IV Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.1096***	0.10	0.035	.7801***	0.80	0.29
SLC extra coaching	0.96	1.04	0.782	0.22	0.44	0.57
Remedial classes	1.901*	1.733*	.8547*	1.589*	1.575**	.7919*
Longer school days	1.56	0.54	0.121	1.52	0.20	-0.01
Subjective Measure of Competition	...	-0.13	-0.040	...	0.02	0.01
Literacy rate	...	0.02	-0.123	...	-0.21	-0.21
District dummy (Kathmandu district == 1)	...	2.38	1.514	...	2.05	1.39
Urban dummy (urban == 1)	...	-2.25	-0.194	...	-2.11	-0.14
Population growth (decadal)	...	-0.04	0.009	...	0.05	0.04
Selective school	...	3.301***	1.635***	...	3.173***	1.591***
9th grade total school fees	...	-0.04	-0.005	...	-0.04	-0.01
Availability of a computer room	...	2.19	0.944	...	1.90	0.85
Total Grade 1 to 10 enrollment	...	0.30	0.056	...	0.15	0.00
Fraction female in enrollment	...	-0.42	0.093	...	-.8555*	-0.07
Fraction dalit in enrollment	...	-0.07	-0.009	...	-0.05	0.00
School age in years	...	-.4778***	-.2448***	...	-.5158***	-.2555***
Repetition rates, primary grades	...	0.03	-0.004	...	0.01	-0.01
Fraction of newly admitted students in grade 10	...	-.02351**	-.01662**	...	-.02141**	-.01573**
Student to teacher ratio	...	-.1504***	-.07673**	...	-.1538***	-.07753**
Inadequate desks	...	0.29	0.418	...	-0.19	0.25
Teacher restroom dummy	...	1.37	.9913*	...	1.73	1.121*
Teacher privately hired dummy	...	-1.73	-0.436	...	-1.12	-0.22
Share of teachers with permanent contracts	...	0.13	0.104	...	0.19	0.12
Percentage of teachers with less than a bachelor's degrees	...	-0.55	0.544	...	-0.13	0.72
Lagged test score	...	...	.5837***	...	...	.5853***
N	838	838	817	838	838	817
R-squared	0.20	0.28	0.52	0.19	0.27	0.52
adj R-squared	0.19	0.26	0.51	0.18	0.24	0.51

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.3. Random Effects Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.04717**	-0.02	0.00	.3212***	-0.09	0.03
SLC extra coaching	0.54	0.15	0.62	0.36	0.23	0.59
Remedial classes	0.97	0.58	.7398*	0.83	0.65	.7301*
Longer school days	2.936*	2.469*	0.24	2.937*	2.475*	0.23
Subjective Measure of Competition	...	0.70	0.15	...	0.60	0.17
Literacy rate	...	0.59	0.06	...	0.53	0.06
District dummy (Kathmandu district == 1)	...	4.34*	2.08	...	4.18	2.09
Urban dummy (urban == 1)	...	-1.58	0.04	...	-1.71	0.05
Population growth (decadal)	...	0.11	0.05	...	0.09	0.06
Selective school	...	2.872***	1.597***	...	2.888***	1.591***
9th grade total school fees	...	.04859*	0.00	...	.04809*	0.00
Availability of a computer room	...	0.49	0.80	...	0.53	0.78
Total Grade 1 to 10 enrollment	...	.3037**	0.12	...	.3024**	0.11
Fraction female in enrollment	...	-0.49	0.01	...	-0.44	0.00
Fraction dalit in enrollment	...	-0.06	0.00	...	-0.06	0.00
School age in years	...	-.3459**	-.2328***	...	-.3471**	-.2333***
Repetition rates, primary grades	...	0.02	0.00	...	0.02	0.00
Fraction of newly admitted students in grade 10	...	-0.01	-.01621**	...	-0.01	-.01612**
Student to teacher ratio	...	-.07701*	-.0781**	...	-.07628*	-.07828**
Inadequate desks	...	-0.18	0.41	...	-0.14	0.39
Teacher restroom dummy	...	1.21	.9039*	...	1.21	.9121*
Teacher privately hired dummy	...	-1.48	-0.20	...	-1.66	-0.17
Share of teachers with permanent contracts	...	.2281**	0.11	...	.2235**	0.11
Percentage of teachers with less than a bachelor's degrees	...	0.16	0.64	...	0.15	0.66
Lagged test score	...	...	.5812***	...	...	.5813***
N	838	838	817	838	838	817
R-squared (within)	0.42	0.43	0.23	0.42	0.43	0.23
R-squared (overall)	0.21	0.30	0.53	0.20	0.30	0.53
R-squared (between)	0.05	0.20	0.87	0.04	0.20	0.87

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.4. Random Effects IV Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.1094***	0.10	0.04	.783**	0.77	0.29
SLC extra coaching	0.96	0.96	0.78	0.25	0.25	0.58
Remedial classes	1.554*	1.505*	0.85	0.75	0.81	0.81
Longer school days	1.907**	1.02	0.12	2.584**	1.979*	-0.07
Subjective Measure of Competition	...	-0.09	-0.04	...	0.15	0.06
Literacy rate	...	-0.01	-0.12	...	-0.43	-0.27
District dummy (Kathmandu district == 1)	...	2.65	1.51	...	1.87	1.28
Urban dummy (urban == 1)	...	-2.35*	-0.19	...	-2.53	-0.19
Population growth (decadal)	...	-0.05	0.01	...	0.01	0.03
Selective school	...	3.16***	1.635**	...	2.844**	1.618**
9th grade total school fees	...	-0.02	-0.01	...	0.06	0.00
Availability of a computer room	...	1.632*	0.94	...	0.47	0.83
Total Grade 1 to 10 enrollment	...	0.25	0.06	...	-0.03	-0.02
Fraction female in enrollment	...	-0.39	0.09	...	-0.72	-0.10
Fraction dalit in enrollment	...	-0.07	-0.01	...	-0.06	0.00
School age in years	...	-4.586***	-2.448**	...	-4.547*	-2.712**
Repetition rates, primary grades	...	0.02	0.00	...	0.02	-0.01
Fraction of newly admitted students in grade 10	...	-0.02	-0.02	...	-0.01	-0.01
Student to teacher ratio	...	-.1209***	-.07673**	...	-.08657**	-.08209**
Inadequate desks	...	0.13	0.42	...	-1.16	-0.05
Teacher restroom dummy	...	1.42	0.99	...	2.20	1.263*
Teacher privately hired dummy	...	-1.99	-0.44	...	-1.98	-0.19
Share of teachers with permanent contracts	...	0.17	0.10	...	.2864**	0.16
Percentage of teachers with less than a bachelor's degrees	...	-0.24	0.54	...	0.48	1.08
Lagged test score	...	...	.5837***	...	...	.5856***
N	838	838	817	838	838	817
R-squared (within)	0.41	0.41	0.23	0.42	0.43	0.23
R-squared (overall)	0.20	0.28	0.52	0.19	0.26	0.52
R-squared (between)	0.05	0.19	0.86	0.04	0.14	0.86

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.5. Fixed Effects Models of Mathematics test scores on competition measures and other variables

Dependent variable: SLC Mathematics Scores

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	-0.07	-0.09	-0.06
SLC extra coaching	-0.59	-0.93	-1.09
Remedial classes	-0.29	-0.47	-0.43
Longer school days	5.1**	5.114**	5.438*
Selective school	...	3.54	1.99
9th grade total school fees	...	.4374***	.429***
Availability of a computer room	...	-0.18	-0.21
Total Grade 1 to 10 enrollment	...	-0.47	-0.29
Fraction female in enrollment	...	-0.31	-0.68
Fraction dalit in enrollment	...	-0.08	-0.09
Repetition rates, primary grades	...	0.01	0.01
Fraction of newly admitted students in grade 10	...	-0.01	0.00
Student to teacher ratio	...	-0.02	-0.02
Share of teachers with permanent contracts	...	.2756**	.2917*
Percentage of teachers with less than a bachelor's degrees	...	0.49	0.51
Lagged test score	...	...	-.193***
N	838	838	817
R-squared	0.75	0.76	0.77
adj R-squared	0.67	0.68	0.68

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.6. Pooled OLS Models of First division pass percentage rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.1655***	-0.03	-0.01	.8244***	-0.55	-0.16
SLC extra coaching	1.02	0.25	0.62	0.07	0.48	0.67
Remedial classes	2.87	2.14	1.40	2.43	2.12	1.39
Longer school days	3.93	1.29	0.99	4.28	1.65	1.11
Subjective Measure of Competition	...	1.44	1.30	...	1.55	1.35
Literacy rate	...	1.45	-0.27	...	1.81	-0.14
District dummy (Kathmandu district == 1)	...	17.11***	7.089***	...	17.95***	7.423***
Urban dummy (urban == 1)	...	-1.83	0.77	...	-1.66	0.84
Population growth (decadal)	...	0.11	0.07	...	0.10	0.07
Selective school	...	7.096***	2.626***	...	7.136***	2.641***
9th grade total school fees	...	-0.04	0.00	...	-0.04	0.00
Availability of a computer room	...	4.233**	1.46	...	4.265**	1.46
Total Grade 1 to 10 enrollment	...	.9822***	0.19	...	1.149***	0.25
Fraction female in enrollment	...	-2.05**	-0.43	...	-1.839**	-0.38
Fraction dalit in enrollment	...	-0.20	-0.05	...	-0.21	-0.05
School age in years	...	-1.305***	-4.827***	...	-1.264***	-4.727***
Repetition rates, primary grades	...	0.18	0.10	...	.1932*	0.11
Fraction of newly admitted students in grade 10	...	-.05344***	-.03411**	...	-.0546***	-.0345**
Student to teacher ratio	...	-.2386***	-0.09	...	-.2378**	-0.09
Inadequate desks	...	2.91	1.64	...	3.23	1.74
Teacher restroom dummy	...	2.52	1.819*	...	2.16	1.71
Teacher privately hired dummy	...	-2.02	-2.01	...	-2.16	-2.03
Share of teachers with permanent contracts	...	-0.18	0.00	...	-0.21	0.00
Percentage of teachers with less than a bachelor's degrees	...	0.36	-0.45	...	0.17	-0.50
Lagged test score	...	...	.6275***	...	...	.6258***
N	838	838	817	838	838	817
R-squared	0.10	0.30	0.56	0.09	0.31	0.56
adj R-squared	0.09	0.28	0.55	0.08	0.28	0.55

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.7. Pooled OLS IV Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.3048***	0.10	0.05395	2.169***	0.83	0.44
SLC extra coaching	1.49	0.95	0.9496	-0.56	0.33	0.62
Remedial classes	3.20	2.65	1.629*	2.33	2.489*	1.53*
Longer school days	2.82	0.80	0.7643	2.72	0.44	0.57
Subjective Measure of Competition	...	0.60	0.9167	...	0.76	0.99
Literacy rate	...	0.68	-0.6214	...	0.44	-0.76
District dummy (Kathmandu district == 1)	...	14.70	5.962	...	14.36	5.73
Urban dummy (urban == 1)	...	-2.87	0.3102	...	-2.72	0.40
Population growth (decadal)	...	-0.08	-0.01464	...	0.02	0.03
Selective school	...	7.278***	2.704***	...	7.144***	2.619**
9th grade total school fees	...	-0.06	-0.005227	...	-0.06	0.00
Availability of a computer room	...	4.884*	1.756	...	4.579**	1.60
Total Grade 1 to 10 enrollment	...	0.73	0.07247	...	0.58	-0.01
Fraction female in enrollment	...	-1.72	-0.278	...	-2.173***	-0.52
Fraction dalit in enrollment	...	-0.22	-0.06328	...	-0.20	-0.05
School age in years	...	-1.362***	-5.06***	...	-1.401***	-5.186***
Repetition rates, primary grades	...	0.18	0.1024	...	0.17	0.10
Fraction of newly admitted students in grade 10	...	-0.05468***	-0.03493**	...	-0.05247**	-0.03348**
Student to teacher ratio	...	-.2342**	-0.0916	...	-.2377**	-0.09
Inadequate desks	...	2.96	1.661	...	2.47	1.40
Teacher restroom dummy	...	2.90	1.992	...	3.27	2.19
Teacher privately hired dummy	...	-3.08	-2.48	...	-2.43	-2.15
Share of teachers with permanent contracts	...	-0.22	-0.01037	...	-0.15	0.02
Percentage of teachers with less than a bachelor's degrees	...	-0.02	-0.642	...	0.42	-0.39
Lagged test score	...	...	.6291***	...	...	.6327***
N	838	838	817	838	838	817
R-squared	0.08	0.29	0.56	0.04	0.28	0.56
adj R-squared	0.07	0.27	0.54	0.03	0.26	0.54

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.8. Random Effects Models of First division pass Rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.1296***	-0.07	-0.01	.7593***	-0.61	-0.16
SLC extra coaching	0.50	-0.16	0.62	0.10	0.06	0.67
Remedial classes	2.709**	2.04	1.40	2.378*	2.16	1.39
Longer school days	6.11	4.42	0.99	6.21	4.63	1.11
Subjective Measure of Competition	...	1.59	1.30	...	1.51	1.35
Literacy rate	...	1.47	-0.27	...	1.69	-0.14
District dummy (Kathmandu district == 1)	...	18.59***	7.089***	...	19***	7.423***
Urban dummy (urban == 1)	...	-2.26	0.77	...	-2.32	0.84
Population growth (decadal)	...	0.12	0.07	...	0.06	0.07
Selective school	...	6.262***	2.626***	...	6.321***	2.641***
9th grade total school fees	...	0.08	0.00	...	0.09	0.00
Availability of a computer room	...	-0.03	1.46	...	0.06	1.46
Total Grade 1 to 10 enrollment	...	.7326**	0.19	...	.8579***	0.25
Fraction female in enrollment	...	-1.27	-0.43	...	-1.08	-0.38
Fraction dalit in enrollment	...	-0.18	-0.05	...	-0.19	-0.05
School age in years	...	-1.168***	-4.827***	...	-1.137***	-4.727***
Repetition rates, primary grades	...	0.11	0.10	...	0.12	0.11
Fraction of newly admitted students in grade 10	...	-0.02	-.03411**	...	-0.02	-.0345**
Student to teacher ratio	...	-0.10	-0.09	...	-0.10	-0.09
Inadequate desks	...	2.35	1.64	...	2.68	1.74
Teacher restroom dummy	...	2.87	1.819*	...	2.56	1.71
Teacher privately hired dummy	...	-2.81	-2.01	...	-3.17	-2.03
Share of teachers with permanent contracts	...	0.11	0.00	...	0.10	0.00
Percentage of teachers with less than a bachelor's degrees	...	1.08	-0.45	...	1.05	-0.50
Lagged test score	...	...	.6275***	...	...	.6258***
N	838	838	817	838	838	817
R-squared (within)	0.19	0.20	0.02	0.19	0.20	0.02
R-squared (overall)	0.10	0.29	0.56	0.08	0.29	0.56
R-squared (between)	0.06	0.32	0.89	0.04	0.32	0.89

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.9. Random Effects IV Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.3004***	0.10	0.05	2.121***	0.84	0.44
SLC extra coaching	0.96	0.55	0.95	-0.14	0.04	0.62
Remedial classes	3.101*	2.68	1.63	2.20	2.34	1.53
Longer school days	4.706**	3.06	0.76	5.329**	3.869*	0.57
Subjective Measure of Competition	...	0.51	0.92	...	0.64	0.99
Literacy rate	...	0.56	-0.62	...	0.23	-0.76
District dummy (Kathmandu district == 1)	...	16.05***	5.962**	...	15.6***	5.725*
Urban dummy (urban == 1)	...	-3.51	0.31	...	-3.61	0.40
Population growth (decadal)	...	-0.11	-0.01	...	-0.03	0.03
Selective school	...	6.545***	2.704**	...	6.237**	2.619**
9th grade total school fees	...	0.03	-0.01	...	0.08	0.00
Availability of a computer room	...	1.21	1.76	...	0.04	1.60
Total Grade 1 to 10 enrollment	...	0.56	0.07	...	0.35	-0.01
Fraction female in enrollment	...	-1.26	-0.28	...	-1.28	-0.52
Fraction dalit in enrollment	...	-0.19	-0.06	...	-0.17	-0.05
School age in years	...	-1.288***	-.506**	...	-1.273***	-.5186**
Repetition rates, primary grades	...	0.12	0.10	...	0.11	0.10
Fraction of newly admitted students in grade 10	...	-0.02	-0.03	...	-0.02	-0.03
Student to teacher ratio	...	-0.13	-0.09	...	-0.10	-0.09
Inadequate desks	...	2.49	1.66	...	1.86	1.40
Teacher restroom dummy	...	3.23	1.99	...	3.74	2.19
Teacher privately hired dummy	...	-3.98	-2.48	...	-3.82	-2.15
Share of teachers with permanent contracts	...	0.04	-0.01	...	0.11	0.02
Percentage of teachers with less than a bachelor's degrees	...	0.83	-0.64	...	1.06	-0.39
Lagged test score	...	...	.6291***	...	...	.6327***
N	838	838	817	838	838	817
R-squared (within)	0.18	0.19	0.02	0.19	0.20	0.02
R-squared (overall)	0.09	0.28	0.56	0.07	0.26	0.56
R-squared (between)	0.07	0.32	0.89	0.04	0.29	0.89

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.10. Fixed Effects Models of First division pass rates on competition measures and other variables

Dependent variable: First division pass rates (% of students scoring over 60% in the SLC examinations)

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	-0.24	-0.22	-0.11
SLC extra coaching	-0.13	-0.57	-1.21
Remedial classes	2.16	1.70	1.06
Longer school days	9.16	9.11	7.24
Selective school	...	6.80	5.44
9th grade total school fees	...	.5452***	.5701***
Availability of a computer room	...	-2.17	-2.39
Total Grade 1 to 10 enrollment	...	-0.07	0.12
Fraction female in enrollment	...	-0.02	0.27
Fraction dalit in enrollment	...	-0.20	-0.21
Repetition rates, primary grades	...	0.08	0.08
Fraction of newly admitted students in grade 10	...	-0.01	-0.01
Student to teacher ratio	...	-0.03	0.01
Share of teachers with permanent contracts	...	.2756**	.2917*
Percentage of teachers with less than a bachelor's degrees	...	2.43	2.50
Lagged test score	...	...	-.2007***
N	838	838	817
R-squared	0.78	0.79	0.79
adj R-squared	0.70	0.71	0.71

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.11. Pooled OLS Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.161***	0.01	0.02	.6562**	-.5276**	-.3202*
SLC extra coaching	0.40	0.03	0.45	-0.46	0.03	0.37
Remedial classes	1.34	0.91	1.04	0.92	0.72	0.89
Longer school days	3.07	1.54	0.22	3.58	2.04	0.59
Subjective Measure of Competition	...	0.60	0.28	...	0.97	0.59
Literacy rate	...	0.44	-0.17	...	1.02	0.27
District dummy (Kathmandu district == 1)	...	13.54***	9.032***	...	15.1***	10.28***
Urban dummy (urban == 1)	...	-1.26	-0.18	...	-0.77	0.20
Population growth (decadal)	...	0.14	0.10	...	0.19	0.15
Selective school	...	4.549**	2.415**	...	4.531**	2.394**
9th grade total school fees	...	-0.05	0.00	...	-0.04	0.00
Availability of a computer room	...	2.34	1.26	...	2.17	1.08
Total Grade 1 to 10 enrollment	...	.8797***	.4479**	...	1.118***	.6232***
Fraction female in enrollment	...	-1.289**	-0.55	...	-1.187**	-0.53
Fraction dalit in enrollment	...	-0.08	-0.05	...	-0.08	-0.05
School age in years	...	-.7296***	-.5337***	...	-.6723**	-.4986***
Repetition rates, primary grades	...	0.00	0.00	...	0.01	0.00
Fraction of newly admitted students in grade 10	...	-0.03	-0.01	...	-0.03	-0.01
Student to teacher ratio	...	-.2521***	-.1658**	...	-.2527***	-.1678**
Inadequate desks	...	-0.54	0.06	...	-0.25	0.23
Teacher restroom dummy	...	1.99	1.73	...	1.53	1.42
Teacher privately hired dummy	...	-2.23	-1.48	...	-2.04	-1.26
Share of teachers with permanent contracts	...	-0.09	-0.03	...	-0.11	-0.04
Percentage of teachers with less than a bachelor's degrees	...	0.09	0.48	...	0.02	0.47
Lagged test score	...	...	.3781***	...	...	.3741***
N	838	838	817	838	838	817
R-squared	0.14	0.28	0.39	0.12	0.28	0.39
adj R-squared	0.14	0.25	0.36	0.11	0.26	0.37

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.12. Pooled OLS IV Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.2854***	0.24	0.14	2.031***	1.94	1.14
SLC extra coaching	0.82	1.22	1.11	-1.11	-0.24	0.26
Remedial classes	1.63	1.77	1.51	0.82	1.39	1.26
Longer school days	2.08	0.71	-0.23	1.98	-0.13	-0.75
Subjective Measure of Competition	...	-0.81	-0.49	...	-0.45	-0.28
Literacy rate	...	-0.87	-0.88	...	-1.42	-1.22
District dummy (Kathmandu district == 1)	...	9.47	6.81	...	8.67	6.23
Urban dummy (urban == 1)	...	-3.03	-1.12	...	-2.68	-0.87
Population growth (decadal)	...	-0.18	-0.07	...	0.03	0.05
Selective school	...	4.857**	2.591**	...	4.546**	2.36*
9th grade total school fees	...	-0.07	-0.02	...	-0.07	-0.02
Availability of a computer room	...	3.44	1.87	...	2.726*	1.45
Total Grade 1 to 10 enrollment	...	0.46	0.22	...	0.10	0.00
Fraction female in enrollment	...	-0.73	-0.24	...	-1.78	-0.87
Fraction dalit in enrollment	...	-0.12	-0.08	...	-0.06	-0.04
School age in years	...	-0.827**	-0.5839**	...	-0.9193***	-0.6209***
Repetition rates, primary grades	...	-0.01	-0.01	...	-0.04	-0.02
Fraction of newly admitted students in grade 10	...	-0.03	-0.01	...	-0.03	-0.01
Student to teacher ratio	...	-0.2446**	-0.1611**	...	-0.2529**	-0.1627**
Inadequate desks	...	-0.46	0.11	...	-1.62	-0.56
Teacher restroom dummy	...	2.64	2.08	...	3.52	2.57
Teacher privately hired dummy	...	-4.03	-2.43	...	-2.53	-1.54
Share of teachers with permanent contracts	...	-0.16	-0.06	...	-0.01	0.01
Percentage of teachers with less than a bachelor's degrees	...	-0.54	0.09	...	0.48	0.78
Lagged test score	...	...	.3788***	...	...	.3915***
N	838	838	817	838	838	817
R-squared	0.12	0.24	0.38	0.06	0.18	0.35
adj R-squared	0.11	0.22	0.35	0.05	0.15	0.33

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.13. Random Effects Models of Pass percentage Rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.1427***	0.00	0.02	.6074**	-.5358**	-.3202*
SLC extra coaching	0.57	0.13	0.45	0.05	0.16	0.37
Remedial classes	1.17	0.77	1.04	0.76	0.69	0.89
Longer school days	4.65	3.27	0.22	5.05*	3.624*	0.59
Subjective Measure of Competition	...	0.74	0.28	...	1.02	0.59
Literacy rate	...	0.65	-0.17	...	1.16	0.27
District dummy (Kathmandu district == 1)	...	14.56***	9.032***	...	15.81***	10.28***
Urban dummy (urban == 1)	...	-1.38	-0.18	...	-0.98	0.20
Population growth (decadal)	...	0.13	0.10	...	0.16	0.15
Selective school	...	4.111**	2.415**	...	4.132**	2.394**
9th grade total school fees	...	-0.02	0.00	...	-0.02	0.00
Availability of a computer room	...	1.17	1.26	...	1.14	1.08
Total Grade 1 to 10 enrollment	...	.6457**	.4479**	...	.8487***	.6232***
Fraction female in enrollment	...	-0.76	-0.55	...	-0.65	-0.53
Fraction dalit in enrollment	...	-0.13	-0.05	...	-0.13	-0.05
School age in years	...	-.6857**	-.5337***	...	-.635**	-.4986***
Repetition rates, primary grades	...	0.02	0.00	...	0.02	0.00
Fraction of newly admitted students in grade 10	...	0.00	-0.01	...	0.00	-0.01
Student to teacher ratio	...	-.173*	-.1658**	...	-.1739*	-.1678**
Inadequate desks	...	-0.86	0.06	...	-0.55	0.23
Teacher restroom dummy	...	2.16	1.73	...	1.73	1.42
Teacher privately hired dummy	...	-2.60	-1.48	...	-2.47	-1.26
Share of teachers with permanent contracts	...	0.05	-0.03	...	0.04	-0.04
Percentage of teachers with less than a bachelor's degrees	...	0.72	0.48	...	0.69	0.47
Lagged test score	...	...	.3781***	...	...	.3741***
N	838	838	817	838	838	817
R-squared (within)	0.21	0.21	0.07	0.21	0.21	0.07
R-squared (overall)	0.14	0.27	0.39	0.12	0.28	0.39
R-squared (between)	0.09	0.32	0.75	0.04	0.33	0.75

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table 8.5.14 Random Effects IV Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.2825***	.2488*	0.14	1.998***	2.09	1.14
SLC extra coaching	0.93	1.23	1.11	-0.28	0.13	0.26
Remedial classes	1.50	1.73	1.51	0.54	1.12	1.26
Longer school days	3.324*	1.96	-0.23	3.95*	2.26	-0.75
Subjective Measure of Competition	...	-0.87	-0.49	...	-0.49	-0.28
Literacy rate	...	-0.86	-0.88	...	-1.44	-1.22
District dummy (Kathmandu district == 1)	...	10.2***	6.808**	...	9.401*	6.228*
Urban dummy (urban == 1)	...	-3.38	-1.12	...	-3.19	-0.87
Population growth (decadal)	...	-0.22	-0.07	...	-0.02	0.05
Selective school	...	4.49**	2.591*	...	3.966*	2.36
9th grade total school fees	...	-0.05	-0.02	...	-0.03	-0.02
Availability of a computer room	...	2.29	1.87	...	1.11	1.45
Total Grade 1 to 10 enrollment	...	0.29	0.22	...	-0.21	0.00
Fraction female in enrollment	...	-0.40	-0.24	...	-0.99	-0.87
Fraction dalit in enrollment	...	-0.14	-0.08	...	-0.12	-0.04
School age in years	...	-.8074**	-.5839**	...	-.8787**	-.6209**
Repetition rates, primary grades	...	0.01	-0.01	...	0.00	-0.02
Fraction of newly admitted students in grade 10	...	-0.01	-0.01	...	0.01	-0.01
Student to teacher ratio	...	-.1848**	-.1611**	...	-.1567*	-.1627**
Inadequate desks	...	-0.74	0.11	...	-2.10	-0.56
Teacher restroom dummy	...	2.83	2.08	...	3.92	2.57
Teacher privately hired dummy	...	-4.592*	-2.43	...	-3.46	-1.54
Share of teachers with permanent contracts	...	-0.03	-0.06	...	0.09	0.01
Percentage of teachers with less than a bachelor's degrees	...	0.23	0.09	...	0.87	0.78
Lagged test score	...	...	.3788***	...	...	.3915***
N	838	838	817	838	838	817
R-squared (within)	0.41	0.41	0.23	0.42	0.43	0.23
R-squared (overall)	0.20	0.28	0.52	0.19	0.26	0.52
R-squared (between)	0.05	0.19	0.86	0.04	0.14	0.86

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.15. Fixed Effects Models of Pass percentage rates on competition measures and other variables

Dependent variable: Pass percentage rates (% of students scoring over 32% in the SLC examinations)

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	-0.30	-0.32	-0.32
SLC extra coaching	0.49	0.30	-0.66
Remedial classes	0.96	1.01	0.25
Longer school days	10.94**	11.5**	10.6*
Selective school	...	3.60	-0.08
9th grade total school fees	...	0.32	0.33
Availability of a computer room	...	-0.65	-0.80
Total Grade 1 to 10 enrollment	...	-1.02	-0.90
Fraction female in enrollment	...	1.16	1.14
Fraction dalit in enrollment	...	-0.32	-0.32
Repetition rates, primary grades	...	0.02	0.03
Fraction of newly admitted students in grade 10	...	0.03	0.01
Student to teacher ratio	...	-0.06	-0.02
Share of teachers with permanent contracts	...	.2756**	.2917*
Percentage of teachers with less than a bachelor's degrees	...	2.19	2.11
Lagged test score	...	...	-.2139***
N	838	838	817
R-squared	0.64	0.65	0.67
adj R-squared	0.52	0.52	0.55

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.16. Pooled OLS Models of Average enrollment on competition measures and other variables

Dependent variable: Grade 1 enrollment

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	.3861***	.1862***	0.04	2.962***	1.514***	.3244**
English medium	-4.76	-7.797**	-2.485*	-4.37	-7.463**	-2.431*
Adding ties and belts	-4.28	-2.91	0.19	-2.36	-1.81	0.41
lagged test score	...	.3931***	.07017**	...	.3994***	.0723**
Subjective Measure of Competition	...	-0.12	-0.85	...	-0.29	-0.90
Literacy rate	...	-5.951**	-1.12	...	-6.098**	-1.19
District dummy (Kathmandu district == 1)	...	15.47	5.166**	...	15.09	5.041**
Urban dummy (urban == 1)	...	7.10	2.13	...	6.99	2.11
Migrant population rate	...	5.786**	0.76	...	5.595**	0.73
Selective school	...	12.93***	2.347**	...	12.33***	2.243**
9th grade total school fees	...	-0.06	0.02	...	-0.07	0.02
Availability of a computer room	...	6.895*	2.116*	...	6.06	1.969*
Fraction female in enrollment	...	-1.05	-0.33	...	-1.99	-0.53
Fraction dalit in enrollment	...	0.07	0.14	...	0.12	.147*
School age in years	...	0.10	-0.02	...	0.08	-0.02
Repetition rates, primary grades	...	.6889*	0.10	...	.659*	0.10
Student to teacher ratio	...	1.012***	.2562***	...	.989***	.2521***
Teacher privately hired dummy	...	-0.18	-0.37	...	0.69	-0.22
Percentage of teachers with less than a bachelor's degrees	...	0.27	-3.86	...	0.94	-3.72
lagged enrollment	...	...	.7721***	...	...	.7701***
N	848	817	817	848	817	817
R-squared	0.08	0.37	0.80	0.10	0.38	0.80
adj R-squared	0.08	0.36	0.79	0.10	0.36	0.79

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.17. Random effects Models of Average enrollment on competition measures and other variables

Dependent variable: Grade 1 enrollment

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	0.15	0.05	0.04	3.031***	2.104***	.3341**
English medium	-6.722**	-4.828*	-2.538*	-6.357**	-4.706*	-2.478*
Adding ties and belts lagged test score	...	0.07	.07182**	...	0.07	.07389**
Subjective Measure of Competition	...	0.28	-0.84	...	-1.22	-0.90
Literacy rate	...	-6.414*	-1.16	...	-7.731**	-1.23
District dummy (Kathmandu district == 1)	...	16.23***	5.24**	...	12.17**	5.108**
Urban dummy (urban == 1)	...	2.24	2.16	...	1.17	2.13
Migrant population rate	...	9.399***	0.80	...	8.476***	0.77
Selective school	...	12.08***	2.461**	...	11.43***	2.348**
9th grade total school fees	...	0.04	0.02	...	0.02	0.02
Availability of a computer room	...	-0.61	2.105*	...	-0.52	1.958*
Fraction female in enrollment	...	-3.96	-0.34	...	-4.30	-0.54
Fraction dalit in enrollment	...	0.00	0.14	...	0.05	.148*
School age in years	...	-.93**	-0.02	...	-1.006**	-0.02
Repetition rates, primary grades	...	0.20	0.10	...	0.20	0.10
Student to teacher ratio	...	.3582***	.2606***	...	.3336***	.2561***
Teacher privately hired dummy	...	3.68	-0.37	...	2.72	-0.20
Percentage of teachers with less than a bachelor's degrees	...	-5.573**	-3.897*	...	-5.526**	-3.76
Lagged enrollment	...	...	.7659***	...	...	.7643***
N	848	817	817	848	817	817
R-squared (within)	0.01	0.04	0.01	0.02	0.04	0.01
R-squared (overall)	0.05	0.28	0.79	0.10	0.29	0.79
R-squared (between)	0.05	0.29	0.96	0.11	0.31	0.96

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.5.18. Fixed effects Models of Average enrollment on competition measures and other variables

Dependent variable: Grade 1 enrollment

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	-.7112***	-.5991***	-.5463***
English medium	-4.37	-3.18	-3.26
Adding ties and belts	-4.23	-5.31	-5.20
lagged test score	...	0.00	0.00
Selective school	...	6.92	7.05
9th grade total school fees	...	0.09	0.09
Availability of a computer room	...	-2.11	-2.02
Fraction female in enrollment	...	-4.79	-4.41
Fraction dalit in enrollment	...	0.21	0.23
Repetition rates, primary grades	...	0.08	0.08
Student to teacher ratio	...	0.12	0.12
Percentage of teachers with less than a bachelor's degrees	...	-6.295**	-6.208**
lagged enrollment	...	...	0.08
N	848	817	817
R-squared	0.89	0.90	0.90
adj R-squared	0.85	0.86	0.86

Source: Authors' estimations based on Combined Quantitative Dataset – School-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Appendix 8.6 Detailed estimation tables of models of relative locality-level outcome measures on competition measures and other variables

This Appendix presents the detailed estimation results for all the models that were run to produce the summary table 8.9. The estimations are based on the Combined Quantitative Dataset, locality-level sample.

Table A8.6.1. Pooled OLS Models of Relative Locality-level Mathematics test scores on competition measures and other variables

Dependent variable: Locality-level mathematics test score in public schools / Locality-level mathematics test scores in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00399***	-.00417***	-.00404***	-.0239***	-.0137***	-.0119***
Literacy rate	...	0.006	0.002	...	-.0126**	-.0189***
District dummy (Kathmandu district == 1)	...	-0.015	-.0272*	...	-.0957***	-.11***
Urban dummy (urban == 1)	...	-0.005	0.006	...	-0.003	0.009
Population growth (decadal)	...	0.000	0.000	...	-.00507***	-.00513***
Selective school0235**	0.003	...	.0305**	0.008
9th grade total school fees	...	-.00143***	-.00128***	...	-0.001	-0.001
Availability of a computer room	...	0.014	0.008	...	.0593***	.0511***
Total Grade 1 to 10 enrollment	...	0.004	0.003	...	-0.002	-0.003
Fraction female in enrollment	...	0.009	.0178**	...	.0373***	.0462***
Fraction dalit in enrollment	...	-.00122*	-0.001	...	-.00351***	-.00321***
School age in years	...	-0.003	-0.001	...	-.0102***	-.00715***
Repetition rates, primary grades	...	0.000	-.000834*	...	0.000	-0.001
Fraction of newly admitted students in grade 10	...	0.000	0.000	...	0.000	0.000
Student to teacher ratio	...	-.00156**	-.00122**	...	-.00153*	-0.001
Inadequate desks	...	-0.020	-0.013	...	-0.013	-0.006
Teacher restroom dummy	...	-0.003	-0.003	...	0.019	0.018
Teacher privately hired dummy0609***	.0546***	...	0.015	0.008
Share of teachers with permanent contracts	...	-0.004	-.00478**	...	-.00488*	-.0061**
Percentage of teachers with less than a bachelor's degrees	...	0.00	0.013	...	-0.006	0.005
lagged test score004***	...	...	.00443***
N	503	503	500	503	503	500
R-squared	0.59	0.64	0.69	0.26	0.41	0.47
adj R-squared	0.59	0.62	0.67	0.26	0.38	0.44

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.2. Pooled OLS IV Models of Relative Locality-level Mathematics test scores on competition measures and other variables

Dependent variable: Locality-level mathematics test score in public schools / Locality-level mathematics test scores in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00383***	-.0032***	-.0033***	-.0339***	-.0372**	-.0385**
Literacy rate	...	0.00	0.00	...	0.01	0.00
District dummy (Kathmandu district == 1)	...	-0.04	-.0464*	...	-0.06	-0.06
Urban dummy (urban == 1)	...	-0.01	0.00	...	0.01	0.03
Population growth (decadal)	...	0.00	0.00	...	0.00	0.00
Selective school0256**	0.00	...	.0275*	0.01
9th grade total school fees	...	-.00133***	-.0012***	...	0.00	0.00
Availability of a computer room	...	0.02	0.02	...	.0682***	.0617***
Total Grade 1 to 10 enrollment	...	0.00	0.00	...	0.01	0.01
Fraction female in enrollment	...	0.01	.0228**	...	.0414***	.0499***
Fraction dalit in enrollment	...	-.00178**	-.00141*	...	-.00329***	-.00299***
School age in years	...	-0.01	0.00	...	-.00829**	-.00569**
Repetition rates, primary grades	...	0.00	-.000833*	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	0.00	0.00	...	0.00	0.00
Student to teacher ratio	...	-.00137**	-.00107*	...	-.00283**	-.00262**
Inadequate desks	...	-.0215*	-0.01	...	0.01	0.02
Teacher restroom dummy	...	0.00	0.00	...	0.01	0.01
Teacher privately hired dummy0472**	.0437**	...	0.04	0.03
Share of teachers with permanent contracts	...	0.00	-.00495**	...	-.00593*	-.00699**
Percentage of teachers with less than a bachelor's degrees	...	0.00	0.01	...	-0.02	-0.01
lagged test score00412***	...	...	.00383***
N	503	503	500	503	503	500
R-squared	0.59	0.63	0.68	0.22	0.31	0.34
adj R-squared	0.59	0.61	0.66	0.21	0.28	0.31

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.3. Random Effects Models of Relative Locality-level Mathematics test scores on competition measures and other variables

Dependent variable: Locality-level mathematics test score in public schools / Locality-level mathematics test scores in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00382***	-.00375***	-.00385***	-.024***	-.012***	-.012***
Literacy rate	...	0.00	0.00	...	-.0169*	-.0167*
District dummy (Kathmandu district == 1)	...	-0.03	-0.03	...	-.0784***	-.0801***
Urban dummy (urban == 1)	...	-0.01	0.00	...	-0.01	-0.01
Population growth (decadal)	...	0.00	0.00	...	-.00546**	-.00545**
Selective school	...	0.02	0.01	...	0.01	0.01
9th grade total school fees	...	0.00	0.00	...	0.00	0.00
Availability of a computer room	...	-0.01	0.00	...	0.00	0.00
Total Grade 1 to 10 enrollment	...	0.00	0.00	...	0.00	0.00
Fraction female in enrollment	...	0.01	0.01	...	0.02	0.02
Fraction dalit in enrollment	...	0.00	0.00	...	-.00219*	-.00228*
School age in years	...	0.00	0.00	...	-.00942*	-.00931*
Repetition rates, primary grades	...	0.00	0.00	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	0.00	0.00	...	0.00	0.00
Student to teacher ratio	...	0.00	0.00	...	0.00	0.00
Inadequate desks	...	-0.02	-0.02	...	-0.02	-0.02
Teacher restroom dummy	...	0.00	0.00	...	0.03	0.03
Teacher privately hired dummy056**	.057**	...	0.01	0.01
Share of teachers with permanent contracts	...	0.00	0.00	...	0.00	0.00
Percentage of teachers with less than a bachelor's degrees	...	-0.01	0.00	...	-0.01	-0.01
lagged test score00141***	...	...	0.00
N	503	503	500	503	503	500
R-squared (within)	0.04	0.05	0.02	0.05	0.07	0.06
R-squared (overall)	0.59	0.63	0.66	0.26	0.37	0.39
R-squared (between)	0.68	0.71	0.76	0.30	0.42	0.44

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.4. Random Effects IV Models of Relative Locality-level Mathematics test scores on competition measures and other variables

Dependent variable: Locality-level mathematics test score in public schools / Locality-level mathematics test scores in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00383***	-.00328***	-.00328***	-.0339***	-.0418**	-.042**
Literacy rate	...	-0.001	-0.003	...	0.008	0.008
District dummy (Kathmandu district == 1)	...	-0.036	-0.040	...	-0.025	-0.024
Urban dummy (urban == 1)	...	-0.009	-0.004	...	0.014	0.014
Population growth (decadal)	...	-0.001	-0.001	...	-0.001	-0.001
Selective school	...	0.017	0.013	...	0.011	0.012
9th grade total school fees	...	0.000	-0.001	...	0.001	0.001
Availability of a computer room	...	-0.003	0.002	...	-0.001	0.001
Total Grade 1 to 10 enrollment	...	-0.001	-0.001	...	0.003	0.004
Fraction female in enrollment	...	0.010	0.015	...	0.019	0.019
Fraction dalit in enrollment	...	-0.002	-0.001	...	-0.00212*	-0.00217*
School age in years	...	-0.005	-0.004	...	-0.006	-0.006
Repetition rates, primary grades	...	-0.001	-0.001	...	0.000	0.000
Fraction of newly admitted students in grade 10	...	0.000	0.000	...	0.000	0.000
Student to teacher ratio	...	-0.001	-0.001	...	-0.001	-0.001
Inadequate desks	...	-0.025	-0.020	...	0.000	0.000
Teacher restroom dummy	...	0.007	0.005	...	0.021	0.021
Teacher privately hired dummy0485*	.0477**	...	0.041	0.042
Share of teachers with permanent contracts	...	-0.001	-0.002	...	-0.001	-0.001
Percentage of teachers with less than a bachelor's degrees	...	-0.009	-0.002	...	-0.013	-0.014
lagged test score00174***	...	...	0.000
N	503	503	500	503	503	500
R-squared (within)	0.04	0.05	0.02	0.05	0.06	0.06
R-squared (overall)	0.59	0.62	0.66	0.26	0.29	0.29
R-squared (between)	0.68	0.71	0.76	0.30	0.33	0.33

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.5. Fixed Effects Models of Relative Locality-level Mathematics test scores on competition measures and other variables

Dependent variable: Locality-level mathematics test score in public schools / Locality-level mathematics test scores in all public and private schools

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	-0.001	-0.001	-0.001
Selective school	...	-0.009	-0.017
9th grade total school fees	...	0.003	0.003
Availability of a computer room	...	-0.021	-0.022
Total Grade 1 to 10 enrollment	...	-0.007	-0.007
Fraction female in enrollment	...	-0.001	-0.007
Fraction dalit in enrollment	...	-0.001	-0.002
Repetition rates, primary grades	...	-0.001	-0.001
Fraction of newly admitted students in grade 10	...	0.000	0.000
Student to teacher ratio	...	0.000	0.000
Share of teachers with permanent contracts	...	-0.001	-0.001
Percentage of teachers with less than a bachelor's degrees	...	-0.010	-0.015
lagged test score	...	...	-.00133**
N	503	503	500
R-squared	0.88	0.88	0.89
adj R-squared	0.84	0.84	0.84

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.6. Pooled OLS Models of Relative Locality-level First division pass rates on competition measures and other variables

Dependent variable: Locality-level first division pass rates in public schools / Locality-level first division pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00661***	-.00803***	-.00773***	-.0385***	-.0307***	-.0251***
Literacy rate0203*	0.00	...	-0.01	-.0353**
District dummy (Kathmandu district == 1)138***	.061*	...	-0.01	-.0955**
Urban dummy (urban == 1)	...	0.01	0.04	...	0.02	0.04
Population growth (decadal)	...	0.00	0.00	...	-.0101***	-.0107***
Selective school	...	0.03	-0.02	...	0.04	-0.01
9th grade total school fees	...	0.00	0.00	...	0.00	0.00
Availability of a computer room	...	-0.01	-0.03	...	.0785**	.0559*
Total Grade 1 to 10 enrollment	...	0.01	0.00	...	0.00	-0.01
Fraction female in enrollment	...	-0.01	0.01	...	.0492*	.067***
Fraction dalit in enrollment	...	-.00387***	-.00301**	...	-.00828***	-.00728***
School age in years	...	-.0163***	-.00802*	...	-.0291***	-.0202***
Repetition rates, primary grades	...	0.00	0.00	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	0.00	0.00	...	0.00	0.00
Student to teacher ratio	...	0.00	0.00	...	0.00	0.00
Inadequate desks	...	-.0538*	-0.04	...	-0.04	-0.03
Teacher restroom dummy	...	0.03	0.02	...	.0698**	.0647**
Teacher privately hired dummy0824***	.0558*	...	0.00	-0.03
Share of teachers with permanent contracts	...	-.0105**	-.00825*	...	-.0131**	-.0107*
Percentage of teachers with less than a bachelor's degrees	...	0.00	-0.01	...	-0.02	-0.03
lagged test score488***	...	...	.51***
N	498	498	496	498	498	496
R-squared	0.46	0.54	0.62	0.20	0.31	0.40
adj R-squared	0.46	0.52	0.61	0.19	0.28	0.37

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.7. Pooled OLS IV Models of Relative Locality-level First division pass rates on competition measures and other variables

Dependent variable: Locality-level first division pass rates in public schools / Locality-level first division pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00561***	-.00782***	-.00751***	-.0494***	-.0945**	-.0915**
Literacy rate	...	0.019	0.000	...	0.043	0.028
District dummy (Kathmandu district == 1)133**	0.055	...	0.117	0.054
Urban dummy (urban == 1)	...	0.009	0.036	...	0.056	.0768**
Population growth (decadal)	...	-0.001	-0.001	...	-0.002	-0.002
Selective school	...	0.026	-0.017	...	0.030	-0.007
9th grade total school fees	...	-0.001	-0.001	...	0.000	0.000
Availability of a computer room	...	-0.009	-0.026	...	.101***	.0825**
Total Grade 1 to 10 enrollment	...	0.005	0.002	...	0.026	0.024
Fraction female in enrollment	...	-0.006	0.015	...	.0661**	.0809***
Fraction dalit in enrollment	...	-.004**	-.00314*	...	-.00745***	-.00668***
School age in years	...	-.0166***	-0.008	...	-.0254***	-.0185***
Repetition rates, primary grades	...	0.001	-0.001	...	0.003	0.001
Fraction of newly admitted students in grade 10	...	0.000	0.000	...	-0.001	-0.001
Student to teacher ratio	...	-0.001	0.000	...	-0.004	-0.004
Inadequate desks	...	-.054*	-0.040	...	0.020	0.030
Teacher restroom dummy	...	0.031	0.026	...	0.051	0.045
Teacher privately hired dummy0792*	0.053	...	0.070	0.048
Share of teachers with permanent contracts	...	-.0105**	-.0083*	...	-.0144**	-.0124*
Percentage of teachers with less than a bachelor's degrees	...	-0.002	-0.008	...	-0.061	-0.066
lagged test score49***	...	...	.409***
N	498	498	496	498	498	496
R-squared	0.45	0.54	0.62	0.19	0.11	0.18
adj R-squared	0.45	0.52	0.61	0.18	0.07	0.14

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.
 Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.8. Random Effects Models of Relative Locality-level First division rates on competition measures and other variables

Dependent variable: Locality-level first division pass rates in public schools / Locality-level first division pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00638***	-.00723***	-.00744***	-.0387***	-.0278***	-.0274***
Literacy rate	...	0.010	0.006	...	-0.021	-0.023
District dummy (Kathmandu district == 1)102**	.0858*	...	0.014	0.005
Urban dummy (urban == 1)	...	0.005	0.017	...	0.002	0.007
Population growth (decadal)	...	-0.002	-0.001	...	-.0109**	-.0108**
Selective school	...	0.026	0.015	...	0.028	0.027
9th grade total school fees	...	0.000	0.000	...	0.001	0.001
Availability of a computer room	...	-0.042	-0.035	...	-0.030	-0.022
Total Grade 1 to 10 enrollment	...	-0.002	-0.001	...	-0.006	-0.006
Fraction female in enrollment	...	-0.015	-0.006	...	0.004	0.013
Fraction dalit in enrollment	...	-.00433**	-.00368*	...	-.00611**	-.00566**
School age in years	...	-.0171**	-.0135**	...	-.0279***	-.0266***
Repetition rates, primary grades	...	0.000	0.000	...	0.000	0.000
Fraction of newly admitted students in grade 10	...	0.000	0.000	...	0.000	0.000
Student to teacher ratio	...	0.000	0.000	...	0.001	0.001
Inadequate desks	...	-0.061	-0.050	...	-0.052	-0.045
Teacher restroom dummy	...	0.040	0.032	...	0.078	0.074
Teacher privately hired dummy0756*	0.067	...	-0.017	-0.022
Share of teachers with permanent contracts	...	-.00709*	-0.006	...	-.00819**	-.00756*
Percentage of teachers with less than a bachelor's degrees	...	-0.013	-0.008	...	-0.016	-0.012
lagged test score188***	...	...	0.064
N	498	498	496	498	498	496
R-squared (within)	0.08	0.10	0.06	0.08	0.11	0.09
R-squared (overall)	0.46	0.53	0.59	0.20	0.29	0.31
R-squared (between)	0.53	0.61	0.69	0.23	0.32	0.36

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.9. Random Effects IV Models of Relative Locality-level First division pass rates on competition measures and other variables

Dependent variable: Locality-level first division pass rates in public schools / Locality-level first division pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00563***	-.00768***	-.0076***	-.0496***	-.0983**	-.0975**
Literacy rate	...	0.014	0.007	...	0.046	0.045
District dummy (Kathmandu district == 1)	...	0.115	0.087	...	0.153	0.160
Urban dummy (urban == 1)	...	0.006	0.020	...	0.053	0.054
Population growth (decadal)	...	-0.001	-0.001	...	-0.002	-0.002
Selective school	...	0.026	0.012	...	0.028	0.028
9th grade total school fees	...	0.000	-0.001	...	0.001	0.001
Availability of a computer room	...	-0.041	-0.033	...	-0.027	-0.022
Total Grade 1 to 10 enrollment	...	-0.001	0.000	...	0.010	0.011
Fraction female in enrollment	...	-0.015	-0.005	...	0.008	0.015
Fraction dalit in enrollment	...	-.00416*	-.00359*	...	-.00581**	-.00519**
School age in years	...	-.0164*	-.0128*	...	-0.021	-.0212*
Repetition rates, primary grades	...	0.000	0.000	...	0.000	0.000
Fraction of newly admitted students in grade 10	...	0.000	0.000	...	0.000	0.000
Student to teacher ratio	...	0.000	0.000	...	0.000	0.000
Inadequate desks	...	-0.060	-0.049	...	-0.012	-0.006
Teacher restroom dummy	...	0.037	0.030	...	0.069	0.066
Teacher privately hired dummy	...	0.083	0.068	...	0.084	0.078
Share of teachers with permanent contracts	...	-.00708*	-0.006	...	-.00749*	-.00712*
Percentage of teachers with less than a bachelor's degrees	...	-0.012	-0.007	...	-0.017	-0.015
lagged test score218***	...	...	-0.007
N	498	498	496	498	498	496
R-squared (within)	0.08	0.10	0.06	0.08	0.10	0.10
R-squared (overall)	0.46	0.53	0.60	0.20	0.21	0.21
R-squared (between)	0.53	0.62	0.70	0.22	0.23	0.24

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.10. Fixed Effects Models of Relative Locality-level First division pass rates on competition measures and other variables

Dependent variable: Locality-level first division pass rates in public schools / Locality-level first division pass rates in all public and private schools

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	0.00	-0.003	-0.003
Selective school	...	0.026	0.017
9th grade total school fees	...	0.004	0.004
Availability of a computer room	...	-.063*	-.0657**
Total Grade 1 to 10 enrollment	...	-0.013	-0.013
Fraction female in enrollment	...	-0.031	-0.025
Fraction dalit in enrollment	...	-0.005	-0.003
Repetition rates, primary grades	...	0.000	0.000
Fraction of newly admitted students in grade 10	...	0.000	0.000
Student to teacher ratio	...	0.001	0.002
Share of teachers with permanent contracts	...	-.00775*	-.00809*
Percentage of teachers with less than a bachelor's degrees	...	-0.012	-0.011
lagged test score	...	...	-.137*
N	498	498	496
R-squared	0.86	0.86	0.87
adj R-squared	0.81	0.81	0.82

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.11. Pooled OLS Models of Relative Locality-level Percentage pass rates on competition measures and other variables

Dependent variable: Locality-level pass rates in public schools / Locality-level pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00264***	-.00308***	-.00308***	-.0144***	-.00969***	-.00849***
Literacy rate	...	0.01	0.01	...	0.00	-0.01
District dummy (Kathmandu district == 1)0442**	0.02	...	-0.02	-.0419*
Urban dummy (urban == 1)	...	0.00	0.00	...	0.00	0.00
Population growth (decadal)	...	0.00	0.00	...	-.00538***	-.00553***
Selective school0313*	0.01	...	.0366**	0.02
9th grade total school fees	...	-.00136**	-.00104**	...	0.00	0.00
Availability of a computer room	...	0.01	0.01	...	.0447**	.0408**
Total Grade 1 to 10 enrollment	...	0.00	0.00	...	0.00	0.00
Fraction female in enrollment	...	0.00	0.01	...	.0237**	.031***
Fraction dalit in enrollment	...	-.00191**	-.00184**	...	-.00361***	-.00357***
School age in years	...	-.00735**	-.00573**	...	-.0125***	-.011***
Repetition rates, primary grades	...	0.00	0.00	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	0.00	0.00	...	0.00	0.00
Student to teacher ratio	...	0.00	0.00	...	0.00	0.00
Inadequate desks	...	-.0408**	-.0376**	...	-.0364*	-.0344*
Teacher restroom dummy	...	0.00	0.00	...	0.02	0.02
Teacher privately hired dummy	...	0.02	0.02	...	-0.01	-0.01
Share of teachers with permanent contracts	...	-0.01	-.00512*	...	-.00597*	-.00601*
Percentage of teachers with less than a bachelor's degrees	...	0.00	0.00	...	-0.01	-0.01
lagged test score206***	...	...	.198***
N	503	503	500	503	503	500
R-squared	0.31	0.37	0.43	0.14	0.24	0.29
adj R-squared	0.30	0.34	0.40	0.13	0.20	0.26

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.12. Pooled OLS IV Models of Relative Locality-level pass percentage rates on competition measures and other variables

Dependent variable: Locality-level pass rates in public schools / Locality-level pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00178***	-0.002	-.00175*	-.0158***	-0.018	-0.020
Literacy rate	...	-0.001	-0.003	...	0.002	0.001
District dummy (Kathmandu district == 1)	...	0.006	-0.013	...	-0.002	-0.020
Urban dummy (urban == 1)	...	-0.004	0.001	...	0.006	0.012
Population growth (decadal)	...	-0.004	-0.004	...	-0.004	-0.004
Selective school0346**	0.014	...	.0355**	0.017
9th grade total school fees	...	-.0012**	-0.001	...	-0.001	-0.001
Availability of a computer room	...	0.026	0.021	...	.0478**	.0453**
Total Grade 1 to 10 enrollment	...	0.000	0.001	...	0.004	0.005
Fraction female in enrollment	...	0.012	.0187*	...	.0251**	.0328***
Fraction dalit in enrollment	...	-.00281***	-.00262***	...	-.00353***	-.00345***
School age in years	...	-.0103***	-.00822**	...	-.0118***	-.0102***
Repetition rates, primary grades	...	0.000	0.000	...	0.001	0.000
Fraction of newly admitted students in grade 10	...	0.000	0.000	...	0.000	0.000
Student to teacher ratio	...	0.000	0.000	...	-0.001	-0.001
Inadequate desks	...	-.0436**	-.0398**	...	-0.028	-0.023
Teacher restroom dummy	...	0.014	0.010	...	0.017	0.015
Teacher privately hired dummy	...	0.000	0.002	...	-0.005	-0.003
Share of teachers with permanent contracts	...	-.00532*	-.00536*	...	-.00633*	-.00648*
Percentage of teachers with less than a bachelor's degrees	...	-0.002	0.001	...	-0.013	-0.013
lagged test score206***	...	...	.188***
N	503	503	500	503	503	500
R-squared	0.28	0.33	0.40	0.14	0.23	0.27
adj R-squared	0.28	0.30	0.37	0.13	0.19	0.23

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.13. Random Effects Models of Relative Locality-level Pass rates on competition measures and other variables

Dependent variable: Locality-level pass rates in public schools / Locality-level pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00264***	-.00299***	-.00304***	-.0145***	-0.01	-.00748*
Literacy rate	...	0.01	0.01	...	0.00	0.00
District dummy (Kathmandu district == 1)055*	0.04	...	0.01	0.00
Urban dummy (urban == 1)	...	0.00	0.00	...	-0.01	0.00
Population growth (decadal)	...	0.00	0.00	...	-.00628**	-.00609**
Selective school	...	0.03	0.02	...	0.03	0.03
9th grade total school fees	...	0.00	-.00121*	...	0.00	0.00
Availability of a computer room	...	-0.01	0.00	...	0.00	0.01
Total Grade 1 to 10 enrollment	...	0.00	0.00	...	0.00	0.00
Fraction female in enrollment	...	0.00	0.01	...	0.01	0.02
Fraction dalit in enrollment	...	-.00218*	-.00201**	...	-.00338**	-.00347***
School age in years	...	-0.01	-0.01	...	-.0121**	-.0119**
Repetition rates, primary grades	...	0.00	0.00	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	0.00	0.00	...	0.00	0.00
Student to teacher ratio	...	0.00	0.00	...	0.00	0.00
Inadequate desks	...	-.0468*	-.0435*	...	-0.05	-0.05
Teacher restroom dummy	...	0.01	0.01	...	0.03	0.03
Teacher privately hired dummy	...	0.02	0.02	...	-0.01	-0.01
Share of teachers with permanent contracts	...	0.00	0.00	...	0.00	0.00
Percentage of teachers with less than a bachelor's degrees	...	0.01	0.00	...	0.00	0.00
lagged test score106***	...	...	0.04
N	503	503	500	503	503	500
R-squared (within)	0.13	0.15	0.10	0.12	0.15	0.13
R-squared (overall)	0.31	0.36	0.41	0.14	0.22	0.25
R-squared (between)	0.41	0.48	0.59	0.15	0.26	0.31

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.14. Random Effects IV Models of Relative Locality-level Pass percentage rates on competition measures and other variables

Dependent variable: Locality-level pass rates in public schools / Locality-level pass rates in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00179***	-0.002	-0.002	-.0158**	-0.018	-0.019
Literacy rate	...	0.001	-0.002	...	0.005	0.005
District dummy (Kathmandu district == 1)	...	0.019	-0.005	...	0.026	0.020
Urban dummy (urban == 1)	...	-0.006	-0.001	...	0.003	0.004
Population growth (decadal)	...	-0.004	-0.004	...	-0.005	-0.005
Selective school0325*	0.020	...	0.032	0.032
9th grade total school fees	...	-0.001	-0.001	...	-0.001	-0.001
Availability of a computer room	...	0.004	0.016	...	0.002	0.009
Total Grade 1 to 10 enrollment	...	-0.002	0.000	...	-0.001	0.001
Fraction female in enrollment	...	0.009	0.016	...	0.015	0.017
Fraction dalit in enrollment	...	-.0028**	-.00268**	...	-.00333**	-.0034**
School age in years	...	-.0101**	-.00871**	...	-.0111**	-.0109**
Repetition rates, primary grades	...	0.000	0.000	...	0.000	0.000
Fraction of newly admitted students in grade 10	...	0.000	0.000	...	0.000	0.000
Student to teacher ratio	...	0.001	0.000	...	0.001	0.001
Inadequate desks	...	-.0483**	-.0431**	...	-0.038	-0.038
Teacher restroom dummy	...	0.017	0.012	...	0.024	0.024
Teacher privately hired dummy	...	0.001	0.003	...	-0.003	-0.001
Share of teachers with permanent contracts	...	-0.004	-0.005	...	-0.003	-0.004
Percentage of teachers with less than a bachelor's degrees	...	0.004	0.002	...	0.003	0.000
lagged test score152***	...	...	0.026
N	503	503	500	503	503	500
R-squared (within)	0.13	0.14	0.07	0.12	0.14	0.13
R-squared (overall)	0.30	0.33	0.40	0.14	0.21	0.22
R-squared (between)	0.41	0.43	0.61	0.15	0.25	0.28

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.15. Fixed Effects Models of Relative Locality-level First division pass rates on competition measures and other variables

Dependent variable: Locality-level pass rates in public schools / Locality-level pass rates in all public and private schools

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	-.0028*	-.00341**	-.00385**
Selective school	...	0.02	0.00
9th grade total school fees	...	0.00	0.00
Availability of a computer room	...	-.0464**	-.0497**
Total Grade 1 to 10 enrollment	...	-.0212***	-.0221***
Fraction female in enrollment	...	-0.01	-0.02
Fraction dalit in enrollment	...	0.00	0.00
Repetition rates, primary grades	...	0.00	0.00
Fraction of newly admitted students in grade 10	...	.000366*	0.00
Student to teacher ratio	...	.00254*	.00269**
Share of teachers with permanent contracts	...	0.00	0.00
Percentage of teachers with less than a bachelor's degrees	...	0.01	0.01
lagged test score	...	...	-.116***
N	503	503	500
R-squared	0.70	0.71	0.72
adj R-squared	0.59	0.60	0.61

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.16. Pooled OLS Models of Relative Locality-level Average enrollment on competition measures and other variables

Dependent variable: Locality-level average grade 1 enrollment in public schools / Locality-level average grade 1 enrollment in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00953***	-.00969***	-.00865***	-.062***	-.0453***	-.0304***
lagged test score0691***	0.03	...	0.06	-0.05
Literacy rate	...	-0.01	0.00	...	-.0668***	0.00
District dummy (Kathmandu district == 1)0787***	.074***	...	-.118***	-.0626**
Urban dummy (urban == 1)	...	0.01	0.00	...	0.01	-0.01
Migrant population rate	...	0.00	-0.01	...	0.02	-.0195*
Selective school	...	-.0233**	-.0206*	...	-0.03	-0.03
9th grade total school fees	...	0.00	0.00	...	0.00	.00159*
Availability of a computer room	...	-0.02	-.0326**	...	.0948***	0.02
Fraction female in enrollment0122*	.0108*	...	.076***	.0503***
Fraction dalit in enrollment	...	0.00	0.00	...	-.00395**	0.00
School age in years	...	0.00	0.00	...	-.0138***	0.00
Repetition rates, primary grades	...	0.00	0.00	...	.0019*	-.00221**
Student to teacher ratio	...	0.00	0.00	...	-.00269***	-.00328***
Teacher privately hired dummy	...	-.0483***	-.0361**	...	-.145***	-.0677***
Percentage of teachers with less than a bachelor's degrees	...	-0.03	-0.02	...	-.0701*	-0.03
lagged enrollment0035***	...	...	.0112***
N	504	500	498	504	500	498
R-squared	0.88	0.90	0.91	0.45	0.55	0.70
adj R-squared	0.88	0.89	0.91	0.45	0.53	0.69

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.17. Random Effects Models of Relative Locality-level Average enrollment on competition measures and other variables

Dependent variable: Locality-level average grade 1 enrollment in public schools / Locality-level average grade 1 enrollment in all public and private schools

	Private market share			Geographic proximity		
	without covariates	with covariates	with covariates and lags	without covariates	with covariates	with covariates and lags
Competition Measure	-.00956***	-.00963***	-.00902***	-.062***	-.0456***	-.0404***
lagged test score	...	0.012	0.011	...	-0.027	-0.019
Literacy rate	...	-0.011	-0.003	...	-.0513**	-0.028
District dummy (Kathmandu district == 1)	...	.0652***	.063***	...	-0.024	-0.023
Urban dummy (urban == 1)	...	0.003	0.002	...	0.019	0.011
Migrant population rate	...	0.002	-0.004	...	0.006	-0.008
Selective school	...	-0.007	-0.007	...	-0.009	-0.007
9th grade total school fees	...	0.000	0.000	...	0.001	0.000
Availability of a computer room	...	0.004	0.001	...	0.019	0.019
Fraction female in enrollment	...	-0.003	-0.001	...	0.006	0.011
Fraction dalit in enrollment	...	0.000	0.001	...	-0.002	0.000
School age in years	...	0.001	0.003	...	-.0263***	-.0113*
Repetition rates, primary grades	...	0.000	0.000	...	.000944*	0.000
Student to teacher ratio	...	0.000	0.000	...	.00153**	0.001
Teacher privately hired dummy	...	-.0508*	-.0429*	...	-.192***	-.141***
Percentage of teachers with less than a bachelor's degrees	...	-.0395***	-.0324***	...	-.043***	-.0284*
lagged enrollment	...	...	.00199***	...	...	.00413***
N	504	500	498	504	500	498
R-squared (within)	0.301	0.309	0.314	.	0.104	0.123
R-squared (overall)	0.881	0.894	0.904	0.452	0.498	0.619
R-squared (between)	0.906	0.917	0.927	0.471	0.515	0.639

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

Table A8.6.18. Fixed effects Models of Locality-level Average enrollment on competition measures and other variables

Dependent variable: Locality-level average grade 1 enrollment in public schools / Locality-level average grade 1 enrollment in all public and private schools

	Private market share		
	without covariates	with covariates	with covariates and lags
Competition Measure	-.00981***	-.00962***	-.00931***
lagged test score	...	-0.01	-0.01
Selective school	...	0.0139	0.0170
9th grade total school fees	...	0.0010	0.0006
Availability of a computer room	...	0.0113	0.0098
Fraction female in enrollment	...	-0.0153	-0.0151
Fraction dalit in enrollment	...	0.0004	0.0007
School age in years	...	0.0079	0.0185
Repetition rates, primary grades	...	0.0003	0.0002
Student to teacher ratio	...	0.00	0.00
Percentage of teachers with less than a bachelor's degrees	...	-.0417***	-.037***
lagged enrollment	...	...	.00141***
N	504	500	498
R-squared	0.97	0.97	0.97
adj R-squared	0.96	0.96	0.96

Source: Authors' estimations based on Combined Quantitative Dataset – Locality-level sample.

Note: *, **, and *** indicate significance at 10%, 5% and 1 % level respectively.

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