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May 24, 2023

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Highlights

- Survey data from parents in Haiti on school preferences reveal significant information asymmetries
- RCT evidence indicates information provision can improve student outcomes in poor education markets

Abstract

This paper studies school choice and information in the context of education markets in rural Haiti. Using a market level randomized control trial, we evaluate the aggregate effect of providing test score information on subsequent test scores, prices, and enrollment. After the intervention, we find that private schools have higher test scores, with an average increase of 0.3 standard deviations in treated markets. However, we are unable to detect significant changes to prices and market shares. These findings suggest that providing information in poor education markets can improve market efficiency and benefit children's welfare.

Keywords: private schooling, information asymmetries, school choice, economic development, Haiti.

1 Introduction

In this study, we investigate how parents in rural Haiti choose schools and analyze the impact of information provision on market outcomes. The unregulated nature of the education market in Haiti offers a unique opportunity to gain insights into the incentives and information that guide decision-making for both parents and schools.

The aim of this research is to examine various aspects of school choice and the market level effects of information. Firstly, we examine how parents of low-income students gather and filter information regarding school performance to make enrollment decisions that match their preferences and perceptions. Secondly, we investigate the relationship between private school prices and school performance using data from students' test scores and surveys with parents and school principals. Our descriptive analysis reveals significant heterogeneity in characteristics and a notable lack of information among market participants in the Haitian setting.

We then implement a market level randomized controlled trial (RCT) following (Andrabi et al., 2017). We use the change in available information as a means to elucidate how equipping and empowering parents with information and incentives to speak with school officials may change the landscape of the educational market. We find that student learning outcomes increased in treated markets but we could not detect effects on prices or market shares. These market level results are consistent with with a similar intervention implemented in Pakistan by (Andrabi et al., 2017).

By looking at the poorest country in the Western hemisphere, our paper offers several contributions. We collect and analyze novel data on parental preferences for better schools in a place where data were previously nonexistent and where household resources are extremely limited. Leveraging this work, we then test the relationship between prices, school quality, and corresponding market shares in a setting where information on school quality is insufficient or absent. Our randomized controlled trial allows us to track school demand and supply and consequently assess the dynamics of the Haitian educational market. While ambitious in its scope and constrained due to on-the-ground conditions in Haiti, this undertaking offers insights relevant to both the country and the broader literature on school choice in low-income educational markets.

This paper is divided into the following sections. Section 1 reviews the existing literature on parental preferences for school quality and their impact on inefficient ed-

ucational markets, recognizing that few studies have been conducted in low-income developing contexts like Haiti. Section 2 situates the Haitian education setting within broader a political, economic, and social backdrop, noting that to assess the underlying dynamics of the Haitian educational market as this paper requires a grasp of the country's complexity. Section 3 establishes the chronology and designs of the surveys we conducted – the first of their kind – despite the many challenges studying a country like Haiti introduces. Section 4 is dedicated to the conceptual propositions our paper seeks to explore. Section 5 offers descriptive statistics from the baseline and endline assessments that we executed to collect data. Section 6 employs that data to map out parental preferences while Section 7 furnishes an analysis of the estimated impact of our randomized controlled trial in improving the efficiency of school markets.

1.1 On Parental Preferences and School Choice Interventions

Each day, parents decide where to send their children to school. Yet, that choice is rife with information asymmetries, with insufficient communication around school performance and imperfect translations of parental preferences to outcomes. These mismatches create a market drawing from parental demand and school supply, prompting a debate into the mechanisms that ultimately determine the place and quality of instruction students receive. Academics remain torn on which levers in the market can most efficiently improve student outcomes.

One contention has been the role of the private sector, as private schools have emerged to complement, compete against, and possibly supplant public schools (De Talancé, 2020). These schools have become popular in countries across the spectrum of development and inequality, catering to parents of wide-ranging incomes, backgrounds, and social and ethnic groups (Heyneman and Stern, 2014). These schools fill a market gap. Some researchers consider parental demand for private schools to be a result of shortcomings in education markets. Others point to an imbalance between demand and supply, where demand for education exceeds the supply of schools available. Private schools then cater to students who would otherwise be without education.

A few scholars, however, employ an analytical framework that emphasizes divergent parental preferences rather than the number of spots available in the education market. For example, parents may believe that public schools are lower quality. This has been borne out in several studies that pinpointed deficiencies in teaching, facilities,

and other proxies of quality, often due to budgetary constraints, government oversight, or negligence (Nishimura and Yamano, 2013; Beuermann et al., 2019; De Talancé, 2020). Moreover, parents may also value different dimensions of schooling unrelated to quality, such as athletic offerings and non-classroom achievement of peers (Abdulkadiroğlu et al., 2020). Because of perceived or confirmed differences, parents may enroll their children in private schools, despite the greater fees and possibly financial burdens associated with such choices. In other words, private school enrollment has been considered a testament to parental preference for higher quality.

Whether parents actually prefer better schools and, as an extension, whether they can accurately evaluate school quality are central to the dialogue on school choice. For market competition to drive improvements in the education sector, it is necessary that first, parents prefer better schools (Abdulkadiroğlu et al., 2020) and that second, they can ascertain a school's quality (Andrabi et al., 2017). School choice advocates posit that assuming these conditions hold, pressures from declining enrollments should induce schools to improve quality. Better schools can then retain and attract students (Chubb and Moe, 1991). Schools that refuse or fail to adjust may lose students to competitors until they ultimately close. This is one mechanism by which school choice works, although other arguments have outlined how parents, particularly in valuing inaccurate proxies for quality such as extracurricular offerings, affiliation with religious or cultural institutions, or geographic distance, can contribute to counterproductive results. At times, school choice may inadvertently lead to preventable sorting and inefficiencies (Urquiola, 2005).

Historically, most literature on school choice conditions and dynamics of educational market competition has been limited to the United States and Europe. In a paper about North Carolina's public education system, Hastings and Weinstein investigated how receiving information about schools increases the fraction of parents who choose to enroll their children in high-performing schools. Attending these higher-scoring schools also improved student test scores (Hastings and Weinstein, 2008). School choice then reinforces greater academic achievement, although the impact, they noted, was greatest when schools were relatively close to students' homes and when parents were both informed and seeking quality education for their children. A study in England drew similar insights about how increased information influences school choice (Burgess et al., 2015). The authors observed heterogeneity in parental preferences, finding that while families generally care about academic quality, socioeconomic composition, and proximity to home, preferences diverge along socioeconomic lines due to geographic

and financial constraints. A randomized controlled trial in Chile reaffirmed the effects of providing metrics on student performance and school quality, where parents leaned toward elementary schools with higher average test scores, higher value added, and even higher prices (Neilson et al., 2019).

Recently, the conversation has expanded to include less-developed countries, many of which are home to structural poverty and inequality. The bureaucratic and budgetary issues many governments struggle with are conspicuous in the scale and quality of education they provide. In examining the choice between free public education and low-cost private education in rural Ghana, Akaguri leverages household survey data to find that regardless of whether parents enroll their children in public or low-fee private schools, the proportion of household income spent on children's education continues to be high (Akaguri, 2014). In these communities, the difference between private and public schools stems primarily from supplemental expenses, such as for meals, stationery, and additional classes. The preferences parents hold for school quality remain, as Dixon, Humble, and Tooley describe in a survey conducted in poor parts of Nigeria (Dixon et al., 2017). When selecting what informed their preferences, most parents cited a school's proximity to home, followed by academic performance, teaching quality, and affordability (Dixon et al., 2017). Parents who sent their children to public schools cared more about affordability and disciplinary environment, while parents who sent their children to private schools prioritized quality of teaching and academic performance. To determine what can improve school performance and learning outcomes in developing contexts, researchers looked into Tanzania's implementation of a 2013 accountability program where objective metrics were shared with parents (Cilliers et al., 2021). In this instance, the government launched a program that would publish country and district-specific school rankings, finding that accountability improved learning outcomes for the worst performing schools and suggesting that pressures resulting from new information may drive school improvement.

Assuming parents prefer better and higher performing schools, we would expect studying developed contexts would reveal new insight into the choices parents make under their respective constraints. Examining Pakistani primary schools, Andrabi, Das, and Khwaja found that when providing schools and parents with information on student achievement, test scores for low-performing schools improved, private school fees fell, and enrollment in public schools increased (Andrabi et al., 2017). In a similar study, Camargo, Camelo, Firpo, and Ponczek looked at how divulging test score information on Brazil's national secondary educational exam impacted school performance

and composition. They found that test scores improved in private schools, likely because of market pressures (Camargo et al., 2014).

Our paper pursues and extends this line of inquiry by examining the impact of an intervention containing school score cards and workshops in rural Haitian communities.

2 Haiti and its Educational Context

Haiti's position as the poorest country in the Western hemisphere, understood in terms of gross domestic product (GDP) per capita, is reflected in its education sector (World Bank Group, 2019). Roadblocks to learning are prevalent and have persisted across decades. The past years have been equally, if not more, troubling, with government changes and external shocks hampering educational investments and reifying systemic and structural inequalities.

The education system operates within a setting of absolute and relative poverty. According to the World Bank, the 2019 average GDP per capita for the country was approximately USD 754.6 dollars (World Bank Group, 2019). While this is a marked increase from the 1990s and early 2000s, this amount sits significantly below the regional average of approximately USD 8,847.4 dollars for Latin America and the Caribbean (World Bank Group, 2019). Countries with comparable GDPs per capita are Burkina Faso, Chad, and the Gambia. The closest Latin American neighbor is Nicaragua whose GDP per capita is nearly three times greater. In other comprehensive metrics of development, Haiti fares no better.

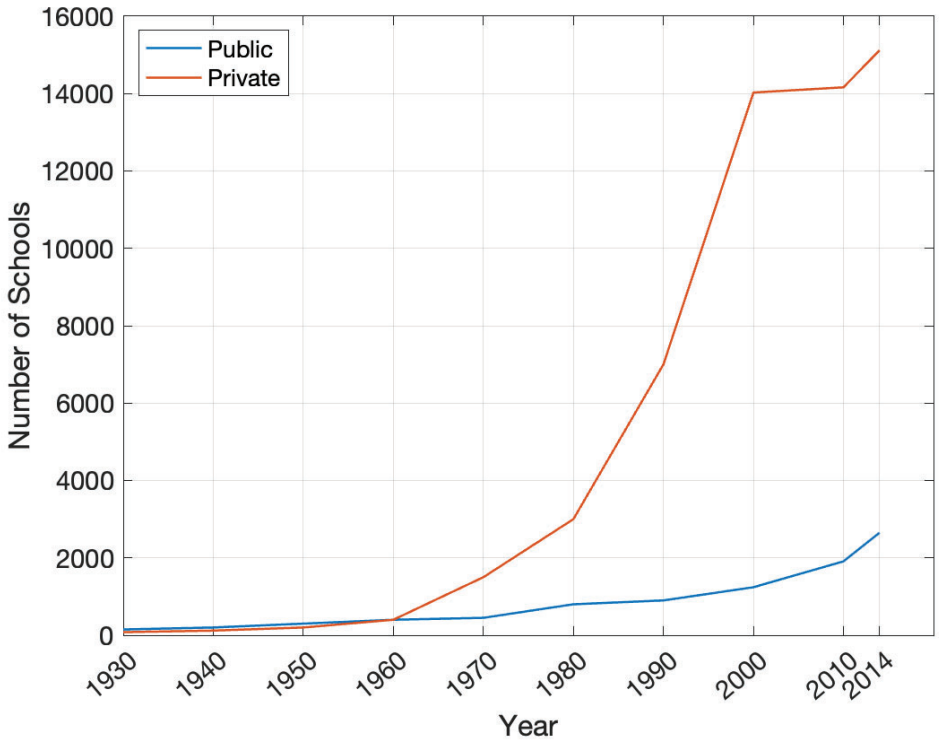
Expected years of schooling remain low. The country's Human Development Index was 0.510, ranking it 170th globally and last in the Western hemisphere (United Nations Development Programme, 2019). Over the past three decades, Haiti's HDI has risen by less than a tenth. That growth is slightly greater when looking at the country's Education Index. The United Nations Development Programme reported that Haiti has gone from 0.189 in 1980 and 0.285 in 1990 to 0.445 (United Nations Development Programme, 2019). In absolute terms, however, that number translates to an expected 9.5 years of schooling, as opposed to an expected 5.1 years in 1980 and 7.0 years in 1990.

To address the slow increase in access, private schools have emerged as an alter-

native. These schools are operated largely by non-government employees and rely primarily on non-government funding to maintain their operations. Whereas a majority of countries in Latin America and the Caribbean see a higher proportion of public schools to private schools, often with double the number of public schools, Haiti is an anomaly. Alongside a few other developing countries, Haiti's school system is largely private (Elacqua et al., 2018).

Undoubtedly Haiti is an extreme and, in many ways, exceptional case, with high growth in the number of private schools (to over 14,000) and limited supply of public schools (fewer than 3,000) especially in rural areas. As shown in Figure 1, since the 1960s, when the private sector took over as the leading provider of education, the number of private schools has skyrocketed (Elacqua et al., 2018). This is acutely felt in rural areas where public schools are outmatched by private schools.

Figure 1: Number of Public and Private Primary Schools in Haiti by Year



Note: This figure shows the number of public and private primary Schools in Haiti by year (Elacqua et al., 2018), captured from IDB and World Bank estimates using 2002-2003, 2010-2011, and 2013-2014 School Censuses.

Over three of every four children attend private schools (USAID, 2018). This trend

has been attributed to the government's inability to meet demand, both due to insufficient supply of classroom slots and perceived shortcomings in quality of instruction provided (The World Bank, 2017). Since the mid-twentieth century, most schools have been and continue to be private(Elacqua et al., 2018). [1] While public schools can accommodate for more children, they also lack necessary infrastructure and availability. Unsurprisingly, 90 percent of Haitian school buildings are not public, and the private sector now accounts for four out of every five primary schools (The World Bank, 2017).

This disparity is exacerbated by how little the school market is regulated, with private schools receiving subsidies from the government and donations from private benefactors, national and international non-profits, multilateral banks (the World Bank and the Inter-American Development Bank) and other entities that cover many costs.[2] The origins and amounts of school funding are often decentralized and inconsistent, and the school market as a whole operates in a policy context that is distinct from many others in Latin America. For instance, Chile similarly relies on private schools, but has a voucher system and supply-side subsidies that correspond with greater government oversight and regulation.

While private school growth predates external shocks, inequities have only worsened with the 2010 earthquake, which killed over 1,000 teachers and staff from the Ministry of Education and Professional Training (The World Bank, 2017). In some areas, most schools faced either closure or destruction, with affected regions, namely in the West and Southeast, losing approximately 85 percent of schools (The World Bank, 2017). Coupled with the catastrophic earthquake, systemic and longstanding issues in the Haitian education market only became deeper and more widespread.[3]

[1] This is despite an estimated 15 percent of the Haitian government's annual budget in 2015 being spent on education (USAID, 2018). According to research conducted by the United States Agency for International Development (USAID), over 435 million dollars (USD) were spent annually on education and training through Haiti's Ministry of National Education and Professional Training, or le Ministere de Education Nationale et de la Formation Professionnelle or MENFP (USAID, 2018); however, the same USAID research notes that education spending has been obscured by accounting ambiguities, changes in sector-wide nomenclature (e.g., the term primary school versus fundamental education), and the presence of external loans and donations to fill deficits.

[2] To fill gaps, many international governmental and non-governmental donors have entered the market. One estimate suggests that over 200 national and international non-governmental organizations, including churches and foundations, have helped establish schools and funded the construction of facilities for teaching (USAID, 2018).

[3] Following the 2010 earthquake, the Haitian government adopted an operational plan that drew from previous attempts, including the National Plan for Education and Training, or le Plan National d'education et de Formation or PNEF, and the National Strategy for Education Action for All, or la Stratégie Nationale d'Action-Education Pour Tous or SNA-EPT; these attempts covered 1997 to 2007 and 2007 to 2015, respectively. By 2013, it became clear that the plan would find little more success than

In spite and in part due to pervasive poverty and inequality, many Haitian families have opted to send their children to schools neither run nor funded by the government. The situation worsens as one looks toward rural areas, which are predominantly poor and under-resourced yet contain the largest share of the population and corresponding primary schools. Although many parents cannot afford to send their children to school, it is simultaneously true that many private schools also lack the necessary space to enroll additional children given overwhelming parental demand. In other words, there are not enough schools, whether public or private.

Despite being the least developed country in the Western hemisphere, Haiti is a setting where school choice is the modus operandi. Parents have significant choice over where to send their children to school, even in disadvantaged and remote settings. The educational market is rife with these seeming contradictions, yet there remains an extraordinary and expected dearth of data on how it works. However, this paper seeks to fill some gaps in the literature, centering Haiti as a setting for inquiry given the conditions of poverty and scarce information under which parents must make important decisions.

3 Intervention

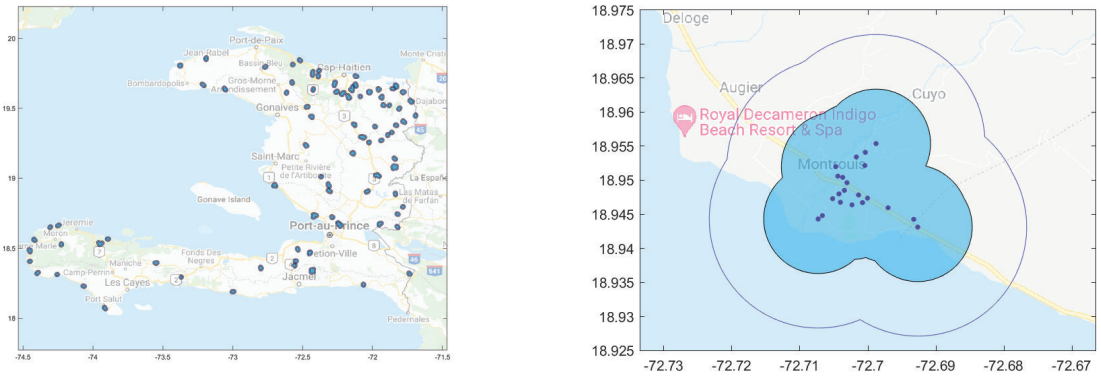
To observe and assess the relationship between information on educational performance and school enrollment, this paper relies on a randomized controlled trial (RCT) designed specifically for Haiti and the country's education market.

To ensure appropriate specifications for the RCT, we began by geographically dividing a map of rural Haiti into clusters, or what we call, educational markets. These clusters would be closed and unique school markets that would serve as a primary level of analysis. To avoid spillover effects, there were several conditions that an area had to meet to be categorized as a cluster and subsequently fulfill the eligibility criteria for inclusion in the RCT. Each market had to have at least one primary school. All schools had to be within a one kilometer radius, with all being further than two kilometers from the nearest adjacent cluster.

its predecessors. This is despite the adoption of the Universal, Free, and Obligation Education Program, or le Programme de Scolarisation Universelle Gratuite et Obligatoire or PSUGO, a campaign intended to guarantee education for all children and improve attendance. Among other reasons, organizational mismanagement, ineffective tax collection, and lackluster monitoring and follow-up all weakened the efficacy of the program.

Figure 2 provides an example of a cluster or a market.

Figure 2: Informational Intervention



(a) Clusters in rural areas

(b) Example cluster

This mapping exercise produced 84 clusters, of which 42 were randomly assigned to the treatment group and 42 were assigned to the control group. There were 763 schools in total included at the time the intervention was performed, with 378 schools assigned to the treatment group and 385 schools assigned to the control group. Within each cluster, there was an average of approximately 11 schools while the median number of schools was 8. The cluster with the most schools had 28 in total, while the cluster with the smallest number of schools had 5. The mean cluster size was slightly over 0.05 kilometers squared while the median cluster size was slightly under 0.05 kilometers squared, with the largest cluster being over 0.1 kilometers squared and the smallest being under 0.03 kilometers squared.

3.1 Baseline Data

Prior to the intervention, we conducted a baseline assessment that began in 2017 and ended in early 2018. This assessment contained three distinct components: a standardized national examination designed for students in their fourth-year of instruction, a survey for parents of students in the sampled schools, and a survey of principals and directors of the sampled schools.

We received approval to use the standardized national examination created by the Haitian Ministry of National Education and Professional Training (MENFP). It was

created in consultation with the International Association for the Evaluation of Educational Achievement (IEA) and with assistance from the Haitian Institute of Development in Scientific Education (IHFOSED) and funding from the Inter-American Development Bank. The examination was developed with the intent of identifying and measuring competencies of Haitian students as well as factors that may affect learning.

This examination evaluates three subjects considered relevant to the education of students in Haiti: Mathematics, French, and Creole. The performance for a school was consequently considered the average student performance on the assessment, with equal consideration for each student and subject. As logistical circumstances warranted, while the examination was intended and constructed for fourth-year students, it was conducted for our purposes with fifth-year students instead; the same iteration of the examination was used for the endline assessment to mirror the baseline procedure and ensure comparability across the results obtained.

The data collected from the baseline assessment includes the test scores of 13,779 fifth-grade students from across 755 schools. However, it should be noted that information from 8 of the original 763 sampled schools could not be recovered.[4]

Concurrent to the national examination, surveys were conducted with parents as well as directors or other figureheads from sampled schools. The data collected from the baseline surveys was for 722 schools. For each school in the survey sample, we spoke with at least one director or equivalent administrator as well as at least three parents. Questions asked pertained to thoughts and communication around school performance, the quality of instruction and facilities, and factors that may be weighed in enrollment decision-making. The parental survey contained questions about how parents collected information regarding school quality prior to search and enrollment. The director survey contained questions about school-specific characteristics such as address and religious or communal affiliation of the institution. From the directors' responses, we collected information on, among other things, fees parents should anticipate and school infrastructure (e.g., electricity, water access, libraries).

Several variables needed correction due to measurement and documentation errors. Most vitally, we constructed a measurement of total fees charged by the school by summing the following information, as provided by the school directors: general fees and fees for admission and enrollment; tuition; expenses for uniforms, sportswear, and extracurricular or miscellaneous activities; and costs incurred for food and stu-

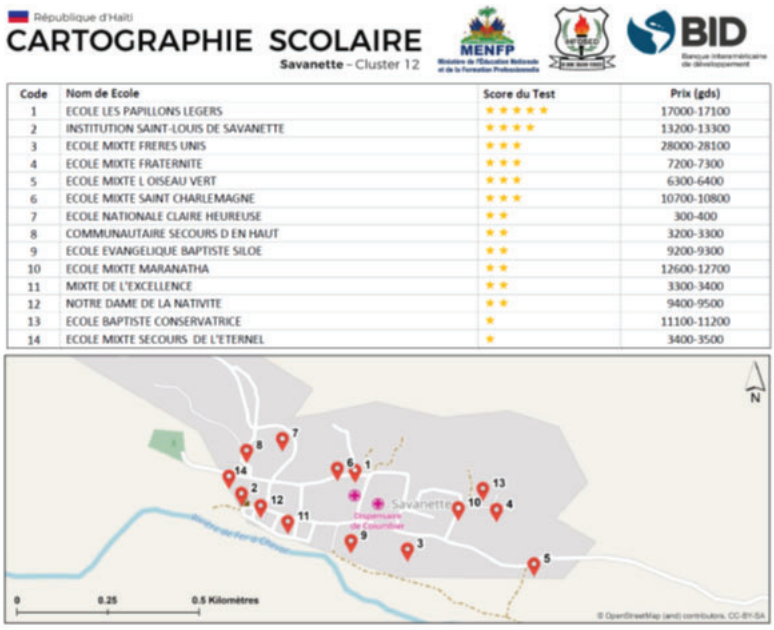
[4]See fieldwork memo for more details.

dent transportation. The resulting sum was multiplied by the appropriate frequency with which these costs were incurred or expected for each school. Fewer than a dozen schools either had their information corrected or omitted altogether for these reasons. For both private and public schools, the distributions of total fees, standardized test scores, and other characteristics from the baseline can be found in Section 5 under Table 1.

3.2 Intervention

Following the end of the baseline surveys, the RCT was launched. The treatment was given in the assigned clusters. It came in the form of three nudges: more objective and traditional metrics of school performance, workshops with parents of first-year students, and conversations with school directors or other administrators. The metrics on school performance were presented in the form of score cards, which were tested in small pilot settings prior to ensure they were comprehensible for parents with low levels of literacy. These score cards named and ranked schools within a given cluster along with a map of the cluster delineating where corresponding schools were located. Based on the average student test performance in the baseline assessment, a school received between one and five stars. Three stars represented the mean, and each star above or below represented one standard deviation. The price of a school was presented alongside the school's name, ranking, and test performance. Figure 3 shows an example scorecard.

Figure 3: Example of a score card



Code	Nom de Ecole	Score du Test	Prix (gds)
1	ECOLE LES PAPILLONS LEGERS	★★★★★	17000-17100
2	INSTITUTION SAINT-LOUIS DE SAVANETTE	★★★★	13200-13300
3	ECOLE MIXTE FRERES UNIS	★★★	28000-28100
4	ECOLE MIXTE FRATERNITE	★★★	7200-7300
5	ECOLE MIXTE L OISEAU VERT	★★★	6300-6400
6	ECOLE MIXTE SAINT CHARLEMAGNE	★★★	10700-10800
7	ECOLE NATIONALE CLAIRE HEUREUSE	★★	300-400
8	COMMUNAUTAIRE SECOURS D EN HAUT	★★	3200-3300
9	ECOLE EVANGELIQUE BAPTISTE SILOE	★★	9200-9300
10	ECOLE MIXTE MARANATHA	★★	12600-12700
11	MIXTE DE L'EXCELLENCE	★★	3300-3400
12	NOTRE DAME DE LA NATIVITE	★★	9400-9500
13	ECOLE BAPTISTE CONSERVATRICE	★	11100-11200
14	ECOLE MIXTE SECOURS DE L'ETERNEL	★	3400-3500

Note: This figure shows an example of the score card presented to sampled first-year parents who were assigned to the treatment group

For the group receiving the treatment, we held scripted workshops in Creole for each school's parents to present information. We focused on parents with children in their first year as these parents had recently enrolled, considered, and/or were in the process of learning about and testing schools. If the school had more than 15 parents in a school's class year, we selected 15 to 20 parents at random. If there were fewer than 15 parents in a class year for a given school, we invited all parents. Although the school principal or administrator introduced and closed the workshop, most of the workshop was held without the presence of school officials to guarantee that parents could speak freely about the schools their children attend or would prospectively attend as well as their perceptions of the quality of the instruction and facilities provided. While a workshop was occurring, the principal or administrator was interviewed regarding the management, operations, and pedagogy of the school.[5]

The workshops with parents proceeded in relatively similar fashions across clusters. They began with a general group discussion on what determines and characterizes good students. Following this discussion, the score cards were presented. Follow-

[5]90 percent of principal interviews were conducted with either the school director or the pedagogical director. Large schools tend to have both. The remaining 10 percent of interviews were conducted with a school founder, owner, or teacher.

ing the presentation of scorecards, we presented rates of teacher absenteeism in the school, explaining the link between test scores and teacher presence. Moreover, scores were also publicly displayed on the main roads within the 42 treated clusters for a more widespread dissemination.

Parents were then encouraged to use the information on both test scores and teacher absenteeism in future conversations, including with school directors and administrators. Specifically, parents were prompted to select three representatives amongst themselves to organize a meeting with the school director and contact all parents to inform them of the location and time of the gathering. These meetings had the intention of empowering parents in their conversations with directors as they seek to improve the quality of instruction provided and, in turn, student outcomes. The combination of new information and the collective nature of this effort would provide parents with greater bargaining power and voice in approaching directors than if they were to speak as individuals without support or a frame of reference.

In most instances, the interviews with school directors or administrators were carried out using scripts that were then tailored to each school and cluster as well as the scorecards and record on teacher absenteeism. Depending on the version of the script used, the script would describe the relative performance, relative price, or both the relative performance and price of the school compared to the average schools within the cluster. A script was employed for all school director or administrator interviews in the treated clusters. The information on performance or price provided to directors or administrators was consistent with the information provided to parents.

3.3 Endline Data

In February 2019, approximately a year after the completion of the baseline surveys and the rollout of the intervention, an endline assessment was conducted. Like with the baseline assessment, the endline assessment sought to capture educational outcomes for sampled students as well as parents and school directors' perceptions regarding school quality. To mirror earlier procedure, the endline assessment equivalently consisted of the national assessment for fifth-year students as well as surveys for parents and school directors.

The endline dataset for test scores contained 12,916 fifth-year students. Of the original 755 sampled schools at the baseline period, we could only recover and analyze

results from 587 schools, with the addition of 7 schools for which we only have endline data for a total of 594 schools. Due to varied considerations, namely school closure or attrition, 168 schools were thus omitted from the endline assessment. There are no significant differences, however, in the variables of interest[6].

The concurrent surveys for school directors were the same as those for the baseline. We asked questions pertinent to the schools' daily management and facilities, financial operations, and pedagogies and affiliations. The answers provided to these questions could then be compared to the responses from the initial rounds of the baseline assessment. Analogous to the attrition documented in the dataset of test scores, there was a conspicuous dip in the number of schools contained in this dataset. While the attrition itself was expected due to school closures, non-communication from certain schools, and the broader volatility of the educational market, which schools in question would not be included in the endline assessment could not be predicted with the same assurance. To that end, of the original 722 schools sampled, only 516 schools remained and contributed endline information to the school director datasets.[7] Balance tables in the Appendix, both for the test scores and the surveys to principals show that there is no significant differences between the schools that stayed in the study and those who did not, and we also provide evidence that there is no significant impact of treatment on attrition.

Upon merging the baseline and endline assessments' data (data used in the subsequent sections), we were also able to correct for outliers, specially on self reported data as fees. This entailed identifying schools where the percentage difference between the total fees calculated from the baseline and endline assessments' data was below the 5th percentile or over the 95th percentile. A summary of the endline data for clusters, schools and test scores can be found in Table 2

It is important to note that we do not have parents' surveys after the intervention. We only have information from parents at the baseline period.

4 Conceptual Framework/Methodology

While this paper cannot alone answer lingering questions around the relationship between price and quality across diverse geographic and sectoral contexts, it does unlock

[6] See balance attrition tables in appendix.
[7] See fieldwork memo for more information.

new insights into the puzzle that is the education sector in Haiti, a country where data were nonexistent and previously considered unattainable. The research undertaken addresses how prices function within an educational market of low information and predominantly poor consumers who disproportionately engage with private and paid alternatives to what is conventionally (and legally) considered a public good. Several hypotheses around the relationship between the price and quality of a school can be tested using data we collected and analyzed from survey instruments, national examinations, and a historic randomized controlled trial (RCT). To the best of our knowledge, this RCT is the first of its kind to be attempted and successfully completed in Haiti.

The crux of this research rests on connecting premises offered in Asher Wolinsky's seminal *Prices as Signals of Product Quality* (1983) and later insights gleaned by Tahir Andrabi, Jishnu Das, and Asim Ijaz Khwaja in *Report Cards: the Impact of Providing School and Child Test Scores on Educational Markets* (2017). However, other important contributions, as noted previously in Section 2, did inform the methodology and execution of this research, and this paper does address questions outside the scope of the pieces written by Wolinsky and Andrabi, Das, and Khwaja.

As rendered applicable to the Haitian educational market, comprehension around quality of available services is imperfect. That is, whereas firms know the exact quality of the goods or services they provide, potential consumers must rely on partial information in order to make a decision. Yet, these consumers also demonstrate a preference for goods and services of higher quality, and pursuant to their preferences, may be willing to pay the difference to attain them. In this case, while the exact (or rather, approximate) quality of the school may be known best to the school directors and administrators, existing and potential consumers, namely the parents deciding where to send their children, rely on some and traditionally insufficient information. What information matters to these parents, as well as the sources they employ to gather it, warrant scrutiny.

To that end, drawing from the contributions made by Andrabi, Das, and Khwaja, we extend the empirical understanding around asymmetrical informational environments and further evaluate the relationship between school price and quality, and how the access to information affects these two variables. According to the previous level of information in the market, we would expect to see a positive relationship between how much parents pay for their children's education and how schools perform. Also, a context with more information should lead the market to decrease its mark-downs on school quality and its mark-ups on prices. Assuming more money spent on a child's

education translates into improved learning outcomes, parents should be willing to pay the higher price tag, within budget constraints. On the other hand, when parents get more reliable information about their school quality, and in a context of small educational markets, they can demand higher investments and improvements from the principals to raise the school quality they're paying for.

Drawing from the baseline data, we delineate parental preferences at the onset, seeking to understand what characteristics parents look for when choosing a school as well as what sources of information they rely on to facilitate their decisions. By dividing parents that ultimately chose private rather than public schools, we can also observe whether the preferences are homogeneous across groups or heterogeneous due to variation for an underlying set of reasons. Following an intervention in which treated schools saw parents receive more objective signals of instructional quality, as represented by the aforementioned scorecards, we can test the relationship between the price parents pay for a school and its quality, and how the access to information impacts school quality and prices, due different incentives. Asymmetries in information are reduced for the treated group, and hypotheses around the price-quality gradient can be tested. We suspect that while prices may currently serve as noise in these markets and represent inaccurate proxies for instructional quality, they may hypothetically have a future role to play. We also suspect that more information on the demand side can lead to calls and pressures for higher quality supply.

After this pre-intervention analysis, we evaluate the effect of the intervention, by using a difference-in-differences model, on quality, prices, and market shares of schools. The specifications and assumptions of the model are explained in more detail in the Difference-in-Differences subsection in Section 7.

5 Descriptive Statistics

5.1 Baseline Assessment

The baseline assessments provided important information from which descriptive observations can be drawn. These were divided between public and private schools, recognizing that approximately half of each group of schools would eventually receive the information provision.

Intuitively, public schools appear cheaper than their private alternatives. For pub-

Table 1: Baseline Summary Statistics

	Mean	Median	SD	Obs	Min	Max
Panel A. Cluster level						
Area (km2, within 1km buffer)	0.054	0.049	0.018	84	0.027	0.12
Avg Total Fees	6799.6	3694.8	9919.0	84	795.8	54860
Avg Total Fees (no outliers)	5701.8	3612.6	8226.3	84	705	51112.5
Avg Total Fees (USD)	111.3	60.5	162.3	84	13.0	897.9
Avg Total Fees (no outliers, USD)	93.3	59.1	134.6	84	11.5	836.5
Avg Test Score 5th grade (std)	0.023	-0.039	0.52	84	-1.10	1.52
Number of Schools	10.9	8	6.44	84	5	28
Number of Students with tests	164.0	121	119.2	84	37	620
Panel B. School level						
Public schools						
Treatment	0.52	1	0.50	145	0	1
Total Fees	4635.9	550	14350.9	129	25	136825
Total Fees (no outliers)	3876.1	525	13900.2	119	25	136825
Total Fees (USD)	75.9	9.00	234.9	129	0.41	2239.4
Total Fees (no outliers, USD)	63.4	8.59	227.5	119	0.41	2239.4
Avg Test Score 5th grade (std)	-0.16	-0.32	0.73	144	-1.53	1.99
Market Size	14.3	12	7.67	129	5	28
School Market Share	14.8	12.9	10.4	128	0.90	54.5
Teacher Experience	9.57	9.57	3.62	120	1.50	20
Walls	53.1	100	50.1	128	0	100
Water Access	76.0	100	42.9	129	0	100
Electricity	25.6	0	43.8	129	0	100
Admission Test (%)	46.1	0	50.0	128	0	100
Parent Interview (%)	90.6	100	29.3	128	0	100
Private schools						
Treatment	0.49	0	0.50	618	0	1
Total Fees	8446.9	3100	25987.1	589	1	409150
Total Fees (no outliers)	7311.9	3200	19093.8	551	1	337600
Total Fees (USD)	138.2	50.7	425.3	589	0.016	6696.4
Total Fees (no outliers, USD)	119.7	52.4	312.5	551	0.016	5525.4
Avg Test Score 5th grade (std)	0.045	-0.14	0.89	611	-2.07	2.81
Market Size	14.8	13	7.67	593	5	28
School Market Share	11.1	8.04	9.86	584	0	70.3
Teacher Experience	8.30	7.86	3.82	548	1.50	20.5
Walls	60.9	100	48.8	585	0	100
Water Access	81.7	100	38.7	590	0	100
Electricity	28.7	0	45.3	585	0	100
Admission Test (%)	47.0	0	50.0	585	0	100
Parent Interview (%)	88.4	100	32.1	585	0	100

lic schools, we calculated an average annual total fee of 75.9 dollars (USD) as opposed to 138.2 dollars (USD) for private schools. Without the aforementioned outliers, the mean total fees for both drop, but the mean total fees for private schools remains almost double the amount paid for public schools. Moreover, private schools on average operate in larger markets and encounter seemingly more competitive landscapes, with each private school also tending to have a smaller share of its cluster's market. Private schools captured on average 11.1 percent of their respective clusters' markets, while public schools captured on average 14.8 percent. In terms of infrastructure, the survey data indicate that private schools fare better. Whereas 60.9 percent of private schools have walls for security, approximately only half of public schools do, too. Similar pictures emerge with basic utilities. Slightly over three-quarters of public schools have access to water and a fourth have electricity. Conversely, in the private schools sampled, over fourth-fifths have access to water and over a quarter have electricity.

To enroll their children, 90.6 percent of parents in public schools and 88.4 percent in private schools had to go through an interview with a school director or administrator. While 46.1 percent of children eventually enrolled in public schools had to take an entrance exam, 47.0 percent of children who would later attend private schools had to complete an entrance examination. We did not evaluate the difficulty or length of these exams.

Tables 9 and 10 in the Appendix show pre-treatment balance tables, at the school level and at the student level to weigh school descriptive statistics based on enrollment. Schools in the treatment group had a slightly higher level of average fees, at a 90 percent significance level, and weighted by enrollment, they have higher percentage of schools that use parent interviews for admissions. Controlling for other variables of interest, there is no significant difference at the baseline between control and treatment groups.

5.2 Endline Assessment Descriptives

For the endline, we were able to collect similar pieces of information as in the baseline.

The average annual total fees for public schools and private schools were 132.0 dollars (USD) and 159.1 dollars (USD), respectively. Excluding outliers, those amounts change to 65.6 dollars (USD) and 153.3 dollars (USD). These numbers show an important decrease for the public sector, and a slight decrease for the private sector. More-

Table 2: Endline Summary Statistics

	Mean	Median	SD	Obs	Min	Max
Panel A. Cluster level						
Area (km2, within 1km buffer)	0.054	0.049	0.018	84	0.027	0.12
Avg Total Fees	8267.7	5150	11375.5	79	100	91788.5
Avg Total Fees (no outliers)	6798.7	5168.8	5785.3	78	275	30804.2
Avg Total Fees (USD)	143.5	84.4	187.4	79	1.64	1502.3
Avg Total Fees (no outliers, USD)	119.6	84.6	97.3	78	9.00	504.2
Avg Test Score 5th grade (std)	-0.024	-0.075	0.53	84	-1.30	1.59
Number of Schools	10.9	8	6.44	84	5	28
Number of Students with tests	153.8	103.5	154.9	84	15	938
Panel B. School level						
Public schools						
Treatment	0.52	1	0.50	145	0	1
Total Fees	6623.1	350	35696.0	95	0	345680
Total Fees (no outliers)	3204.9	350	6481.4	85	0	41900
Total Fees (USD)	132.0	11.3	643.0	78	0.82	5657.6
Total Fees (no outliers, USD)	65.6	11.3	115.0	68	0.82	685.8
Avg Test Score 5th grade (std)	-0.20	-0.29	0.75	110	-1.71	1.88
Market Size	14.4	13	7.79	95	5	28
School Market Share	18.4	14.4	13.8	93	1.48	70.3
Teacher Experience	10.4	9.70	4.13	72	1.50	22.8
Walls	56.8	100	49.8	95	0	100
Water Access	77.8	100	41.9	72	0	100
Electricity	29.8	0	46.0	94	0	100
Admission Test (%)	50.5	100	50.3	95	0	100
Parent Interview (%)	87.4	100	33.4	95	0	100
Private schools						
Treatment	0.49	0	0.50	618	0	1
Total Fees	9349.3	5625	14765.4	421	0	176800
Total Fees (no outliers)	8974.3	5800	12172.6	383	0	156125
Total Fees (USD)	159.1	98.2	244.4	405	0.41	2893.6
Total Fees (no outliers, USD)	153.3	100.7	201.1	367	0.41	2555.2
Avg Test Score 5th grade (std)	0.013	-0.076	0.84	484	-1.93	2.54
Market Size	14.7	13	7.67	421	5	28
School Market Share	15.0	9.58	15.1	412	0.94	100
Teacher Experience	8.62	7.50	4.11	321	1.50	25
Walls	70.4	100	45.7	419	0	100
Water Access	85.8	100	35.0	345	0	100
Electricity	34.8	0	47.7	420	0	100
Admission Test (%)	62.8	100	48.4	417	0	100
Parent Interview (%)	87.8	100	32.8	418	0	100

over, the infrastructure of public schools did not appear to improve greatly over the years. Both the percentages of public schools with walls and with water access stayed similar, with only 56.8 percent having walls and 77.8 percent having access to water. The percentage of public schools with electricity also remained similar with 29.8 percent. For private schools, the improvements made to facilities were clearer. There was a notable rise in the percentage of schools with walls, moving from 60.9 percent to 70.4 percent. Access to water jumped almost four percentage points while electricity access increased by nearly six percentage points.

To enroll their children in school, approximately between 87 percent and 88 percent of parents had to undergo interviews with school officials, both in public and private schools. Over half of all children had to complete an admissions test for enrollment, with 50.5 percent of children in public schools and 62.8 percent in private schools sitting for an entrance examination. This was a marked increase for public and private schools compared to the baseline.

6 Parental Preferences

When deciding where to send their children to schools, parents usually consider a host of factors, from the backgrounds and qualifications of teachers and staff to the presence of basic infrastructure and utilities. There is a general assumption that parents would prefer to send their children to the best schools possible within the options available to them. However, there are important first-order questions that need to be addressed. Specifically, when determining what constitutes the best school, we must delineate which factors parents are relying on to make these evaluations, and what sources of information, beyond school location, they are using to both determine the options available to them and further evaluate the quality of potential schools.

The baseline assessment conducted in 2017 and 2018 allowed for the construction of a parental preference dataset from which noteworthy descriptive observations can be made. It is clear that parents have preferences and expectations around where to enroll their children. While these preferences are acted upon with varying degrees of commitment, there are trends in how these preferences are formed at the onset and what these parents look for as indicators of school quality.

In this context, we can use the survey data collected from parents to aggregate and understand these preferences. Namely, we can examine what characteristics or

track records parents look for when evaluating schools, which sources of information they deploy and prioritize in their evaluations, and whether these preferences differ a priori by eventual private and public school enrollment. These will in turn enable us to investigate how these preferences can align with, and potentially be shaped by, more objective information on school quality and performance.

As Table 3 displays, when parents were asked to rank what they considered important features of a high-quality school, over 90 percent ranked having good teachers, which is a reasonable proxy for the quality of academic instruction. While having good teachers may not directly correspond with students learning or performing well on standardized examinations, teaching is understandably integral to a school's operations. The most popular answers aside from good teachers were having good students, having consistent and frequent classes, and having decent infrastructure. There are no significant differences in parents' rankings based on their child's enrollment, with some minimal relative variation on the margins. For example, we can note that parents with children in public schools appear to place slightly greater emphasis on school infrastructure and having a full school day, while parents with children in private schools place slightly greater emphasis on having good peers, safety, and religious formation.

Table 3: Ranking of characteristics of schools' quality

Characteristic	Mentions (% from each group)		Total Mentions
	from Private S.	from Public S.	
Good teachers	92%	91%	2,090
Good students	38%	35%	855
Regularity of classes	32%	31%	719
Infrastructure	28%	30%	639
Safety	23%	20%	508
Full school day	20%	24%	475
What your child learns at school	19%	22%	455
Teachers' attendance	17%	19%	400
Religious formation	9%	6%	187
Number of students per class	8%	7%	177
Socioeconomic level of families	5%	3%	99
English or French classes	2%	3%	51
Total number of students	2%	2%	36
Private school	1%	1%	29
N total	1,840	440	

To understand these parents' preferences, we must also understand their backgrounds. As Table 4 shows, parents across sampled schools possessed low levels of education, with nearly 50 percent having no or incomplete primary education. Only 56 percent of these parents live above the extreme poverty line (USD 1.25 per day). Importantly, we also registered the characteristics of both households that sent children

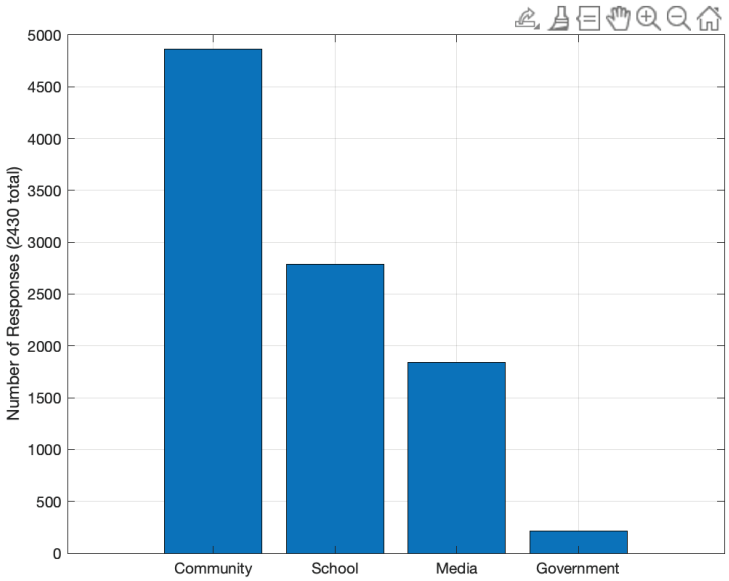
to private schools and to public schools. It is relevant to distinguish between private and public schools as our analysis will consider price as an observable proxy for information on school quality. Cleavages along demographic, socioeconomic, and educational lines were apparent. The average age of sampled parents who sent their children to public schools was 39.75 years-old, which was slightly higher than the average of 38.81 in private schools. Conversely, the average percentage of female guardianship was slightly higher for sampled parents who sent their children to private schools at 74.4 percent as opposed to 73.6 percent in public schools. We also observed that parents with children enrolled in private schools have relatively higher earnings as well as slightly higher education levels compared to parents in public schools.

Table 4: Parents Descriptives

			Private Schools		Public Schools	
Educational Level	N	%	N	%	N	%
None	298	18.52	240	18.32	58	19.40
Incomplete Primary	466	28.96	371	28.32	95	31.77
Complete Primary	228	14.17	189	14.43	39	13.04
Incomplete Secondary	434	26.97	367	28.02	67	22.41
Complete Secondary	87	5.41	66	5.04	21	7.02
Incomplete Professional Training	9	0.56	9	0.69	0	0
Complete Professional Training	16	0.99	14	1.07	2	0.67
Incomplete University	28	1.74	25	1.91	3	1.00
Complete University	43	2.67	29	2.21	14	4.68
Monthly Income	Gourdes	USD	Gourdes	USD	Gourdes	USD
Mean	5120	83.81	5207	85.22	4728	77.39
Min	0	0	0	0	0	0
P10	50	0.82	10	0.16	250	4.09
P25	1000	16.37	1000	16.37	1000	16.37
Median	2500	40.92	2500	40.92	2000	32.73
P75	5000	81.83	5000	81.83	5000	81.83
P90	10000	163.67	10500	171.84	10000	163.67
Max	100000	1636.66	100000	1636.66	100000	1636.66
Age (average)	38.80		38.81		39.75	
Female Guardianship (%)	74.28		74.42		73.63	

Across the board, the information parents used to inform their preferences was dictated by their surroundings. As Figure 4 shows, many parents suggested that they relied on their community to gather insights around schools' quality. While listening to the school was helpful, parents trusted their networks to understand what a school could offer their children, particularly in comparison to its peers. This included relying on religious groups, neighbors, and other civic associations they are affiliated with. Fewer parents used government or media sources to assess the quality of a school, which was unsurprising in the Haitian context.

Figure 4: Ranking of information sources



7 Examining the Relationship between Test Scores and Total Fees

7.1 Pre-Intervention Analysis

Besides descriptively observing that parents prefer higher quality schools within their given budget and informational constraints, our research noted the wide range of information sources parents draw on as well as the characteristics they desire and elevate as important.

To that end, using data from the baseline assessments, we test the initial relationship between the test scores for private schools and the total fees parents pay. To quantify school performance, we took the standardized test score of fifth-year students and averaged them at the school level. We also ran the regression with fixed effects by market to account for intra-market variation and shocks. We also incorporated dummy variables on whether the school in question has walls, a library, access to water, or running electricity.

Table 5 captures our output. A one unit increase in average standardized test scores

in a private school coincided with a 45.843 increase in the average total fees charged (in USD), as calculated during the baseline assessment. When considering the cluster fixed effects and incorporating controls for non-instructional quality, the coefficient on average test score jumped to 70.148. No significant effect is found in these specifications. When evaluating the same regressions over the logarithm of fees (in Haitian gourdes), we see a significant and positive effect of test scores on fees charged. A one unit increase in the average standardized test scores in a private school coincided with a 17.7 percent increase in fees charged at a 90 percent confidence level. For public schools, as shown in Table 14 in the Appendix, there is no significant effect for any specification.

These results show that, although the coefficients on average test scores are positive, there is minimal evidence of a relationship between fees paid and test scores for fifth-graders in these rural Haitian markets. This suggests that the markets had noisy signals of price regarding school quality.

Table 5: Fee-Test Score Relationship at Baseline (Private Schools)

	Fees (USD)		Log(Fees) Gourdes	
	(1)	(2)	(3)	(4)
Avg Test Score 5th grade (SD)	45.843	70.148	0.094	0.177*
	(32.023)	(52.748)	(0.087)	(0.091)
Wall		0.314		0.003*
		(0.238)		(0.002)
Water Access		0.312		0.000
		(0.443)		(0.002)
Electricity		-0.137		0.002
		(0.329)		(0.002)
Library		0.054		0.003
		(0.291)		(0.002)
Constant	118.038***	77.168**	8.036***	7.744***
	(14.852)	(35.483)	(0.093)	(0.155)
Market FE		✓		✓
R2	0.017	0.246	0.004	0.352
Observations	545	530	545	530

Note: Standard errors clustered at the market level in parentheses. These results are obtained using averages of schools variables by market.
Significance levels * $p < .1$, ** $p < .05$, *** $p < .01$

In light of asymmetries and absolute scarcity of information, the value each school brings to the market has yet to be properly understood. To that end, while the baseline data suggest that parents do value school quality, they lack the information to make informed decisions, which manifests in the absence of a correlation between what parents pay and the actual quality of the school.

7.2 Difference-in-Differences

Reducing informational asymmetries and scarcity has the potential to alter this picture. When presented with more and new information, it is conceivable that consumers can better act on their preferences in what they eventually choose and demand. In the Haitian educational context, for parents assigned to the treatment group that would receive report cards and workshops that communicate school performance, the ability to adjudicate the quality of a school may be consequently more consistent with their stated preferences for higher quality education and improved student outcomes. This happens as they can draw from and rely upon what is understood to be more objective and relevant indicators of school quality. Their evaluations are likely better as a result.

Subsequently, these evaluations equip parents to better assess whether and how these prices coincide with the quality of the service they are paying for. Parents can then take action, including speaking with school administrators as we nudged parents to do, call for measurable improvements in school quality, and potentially enrolling their children in different schools. In the treated group, schools will likely respond to these soft and hard pressures with possible actions such as readjusting their total fees, investing further in instructional quality, expanding the number of enrolled students, or closing altogether. Greater quantity and quality of information may equip parents to act more effectively on their preferences, and prices may begin to possess and retain meaning. These markets can become more efficient, and outcomes for students and schools may improve.

To determine whether this happened following the treatment, we run a difference-in-differences model that measures the impact of the intervention on average student test scores, total fees paid, and market share. We do this first for private schools and then for all schools, whether private or public. We evaluate these results with student-level data, to weigh all the regressions for schools and market size, based on enrollment.

For the effect of the treatment on fees, we estimate the following equation, using student-level data:

$$F_{ist} = \alpha + \psi Control_{ist} + \beta Post_{ist} + \gamma(Post_{ist} \times Private_{ist}) + \delta(Treated_{ist} \times Post_{ist}) + \eta(Treated_{ist} \times Post_{ist} \times Private_{ist}) + \omega_s + \epsilon_{ist} \quad (1)$$

The variable F_{ist} corresponds to the value of the fees (logarithmic if it is in Haitian gourdes) payed by the student i from the school s at the time t. $Control_{ist}$ is a dummy variable that is equal to 1 when the student comes from a school of the control group, $Post_{ijt}$ is a dummy variable that is equal to 1 when the student is observed at the endline (post-treatment), $Private_{ist}$ is a dummy variable that is equal to 1 when the student comes from a private school, ω_s is a fixed-effect at the school-level, and ϵ_{ist} is a normally distributed error term. Standard errors are clustered at the market-level. This estimation only considers schools in what we called the "survey sample", or schools with data collected in the principal surveys during the baseline and endline assessments.

For the effect of the treatment on test scores, we estimate the following equation, using student-level data:

$$\begin{aligned} T_{ist} = \alpha + \beta Post_{ist} + \gamma(Post_{ist} \times Private_{ist}) + \delta(Treated_{ist} \times Post_{ist}) + \\ \eta(Treated_{ist} \times Post_{ist} \times Private_{ist}) + \omega_s + \epsilon_{ist} \end{aligned} \tag{2}$$

The variable T_{ist} corresponds to the standardized average test score value of student i from the school s at the time t. All other variables are consistent with equation 1. Standard errors are clustered again at the market-level. We run the same regression with all schools and with only schools from the 4th or 5th quintiles of scores in the baseline. This estimation only considers schools in what we called the "test sample", or schools with data on student performance as collected during the baseline and endline assessments.

Finally, for the effect of the treatment on market share, we estimate the following equation, using student-level data:

$$\begin{aligned} M_{ist} = \alpha + \psi Control_{ist} + \beta Post_{ist} + \gamma(Post_{ist} \times Private_{ist}) + \delta(Treated_{ist} \times Post_{ist}) + \\ \eta(Treated_{ist} \times Post_{ist} \times Private_{ist}) + \omega_s + \epsilon_{ist} \end{aligned} \tag{3}$$

The variable M_{ist} corresponds to the market share of the school s student i attends at the time t. We add the term: $\kappa HQ2km_s$, that represents a dummy variable that is equal to 1 when the school s has high quality schools within two kilometers. All other

variables are consistent with equations 1 and 2. As we did in the previous equations, standard errors are clustered at the market-level. For market shares, we also run the same regression considering all schools and only schools from the 4th or 5th quintile of scores in the baseline, leveraging the aforementioned "survey sample".

7.3 Results

Table 6 shows the effect of the intervention on school fees. We can see that, on average, fees were reduced after the intervention for public schools, whether schools were treated or not. This effect was not significant when evaluating only high quality public schools. Additionally, we can observe that in all the model specifications, private schools charged higher prices after the intervention.

Despite these changes, we did not observe a statistically significant effect of the intervention on fees for either public or private schools when comparing the treated group to the control group. This result suggests that there was no immediate and/or significant change in tuition and other expenses charged to parents after they gather more information on school quality and increased their bargaining power.

Table 6: Impact on Schools Outcomes: Fees

	Log(Fees) (1)	Log(Fees) (2)	Fees (3)	Fees (4)
Control	-0.172	-0.233	-29.305	-4.407
	(0.212)	(0.353)	(30.646)	(33.282)
Post	-1.295***	-0.489	-56.190***	-32.293
	(0.231)	(0.347)	(17.143)	(30.396)
Private x Post	2.325***	1.442***	121.986***	109.596***
	(0.209)	(0.302)	(16.228)	(32.997)
Treatment x Post	-0.202	-0.619	-37.352	-28.517
	(0.376)	(0.527)	(33.377)	(37.004)
Treatment x Private x Post	0.213	0.826	50.783	130.756
	(0.398)	(0.604)	(48.096)	(92.886)
Constant	3.831***	3.990***	117.851***	99.413***
	(0.154)	(0.244)	(27.066)	(18.461)
Sample	All	High Quality	All	High Quality
R2	0.283	0.218	0.064	0.137
Observations	17005	6966	17005	6966

Note: Standard errors clustered at the market level in parentheses. Regressions are at the student level to weight by school size.
Schools **from a cluster present in the baseline and the endline**, with self-reported data on fees are considered in this table.
Significance levels * $p < .1$, ** $p < .05$, *** $p < .01$

Unlike with school fees, the treatment had a significant impact on private schools' average test scores, which improved after the intervention, as shown in Table 7. By

the time the endline assessment was conducted, average test scores for students in private schools in the treated group had improved by 0.302 standard deviations, at the 90 percent confidence level. There was no significant effect for treated public schools observed.

When considering only high-performing public schools at the baseline, we see an important drop in test scores during the endline period for the overall sub-sample. This indicates that there was a reduction of the gap between low and high quality public schools, mostly driven by the drop in quality of the top two quintiles. We can conclude that the intervention's effect on test scores was mainly concentrated in private schools that were located in the middle and lower ends of the quality distribution during the baseline assessment. Tables 15 and 16 in the Appendix show the same regressions divided by subject of the national examination: Creole, French and Mathematics. We can see that the main improvements in test scores are happening in French and Creole, while Mathematics showed no significant improvement. Average test scores for Creole and French improved by 0.281 and 0.324 standard deviations, respectively, in private schools from the treated group. In fact, when estimating by subject only for high quality schools, we continue to observe a positive effect with French. For high quality private schools in the treated group, the average score for the French test improved by 0.415 standard deviations, at the 90 percent confidence level.

Table 7: Impact on Schools Outcomes: Test Scores

	SD Test Scores (1)	SD Test Scores (2)
Post	-0.079	-0.492***
	(0.123)	(0.151)
Private x Post	0.017	-0.053
	(0.106)	(0.117)
Treatment x Post	-0.090	-0.111
	(0.177)	(0.232)
Treatment x Private x Post	0.302*	0.394
	(0.175)	(0.268)
Constant	0.016	0.783***
	(0.030)	(0.037)
Sample	All	High Quality
R2	0.498	0.444
Observations	20999	8448

Note: Standard errors clustered at the market level in parentheses. Regressions are at the student level to weight by school size. Significance levels * $p < .1$, ** $p < .05$, *** $p < .01$

Finally, when we evaluate the effect of the treatment on market shares we can see a slightly positive effect on high quality public schools, while high quality private schools show a slightly negative effect (see Table 8). These results imply that, after the

intervention, families could have changed their children's schools or even migrated from one cluster to another after noting discrepancies between scores and fees.

The results in these three different outcomes (fees, test scores, and market shares) paint a mixed picture. They demonstrate how the intervention offered a bump to test scores for some private schools and improved market shares for some public schools. The intervention may have also contributed to greater conversations between school directors and parents as well as spurred migratory movement between clusters in search of better schools or reduced fees. Given the limited space and time these rural markets had to change in their composition of schools, it is likely that parents pressured principals and teachers for improvements in the quality of schools they had already enrolled their children in or went out in search of quick alternatives.

Table 8: Impact on Schools Outcomes: Market Share

	Market Share (1)	Market Share (2)	Market Share (3)	Market Share (4)
Control	-0.012	-0.007	-0.014	-0.010
	(0.020)	(0.028)	(0.018)	(0.025)
Post	0.047*	0.013	0.039*	-0.014
	(0.028)	(0.044)	(0.023)	(0.027)
Private x Post	-0.024	0.012	-0.013	0.045
	(0.028)	(0.047)	(0.022)	(0.030)
Treatment x Post	0.023	0.074	0.029	0.101**
	(0.035)	(0.059)	(0.029)	(0.044)
Treatment x Private x Post	-0.011	-0.061	-0.022	-0.096*
	(0.039)	(0.070)	(0.033)	(0.055)
High Quality Schools 2km			-0.121***	-0.130***
			(0.023)	(0.041)
Constant	0.138***	0.142***	0.245***	0.260***
	(0.013)	(0.019)	(0.022)	(0.038)
Sample	All	High Quality	All	High Quality
R2	0.033	0.030	0.130	0.120
Observations	19450	7735	19365	7679

Note: Standard errors clustered at the market level in parentheses. Regressions are at the student level to weight by school size. Significance levels * $p < .1$, ** $p < .05$, *** $p < .01$. *High Quality* means the school belongs to the 4th or 5th quintile of scores in the baseline period. *High Quality Schools 2km* means that the school has other high quality schools in a 2km radius.

8 Conclusion

Drawing from existing scholarship and our data, we contribute to a general understanding regarding the role of information in schooling markets in a developing country. Our data reveal that the provision of more objective metrics on performance and modest nudges can lead to a reaction from school principals and parents, and lead to an improvement in student achievement.

It is clear that the Haitian parents in our sample did seek out information, and they do prefer higher quality schools. In fact, they are willing to pay significant fees to enroll and send their children to the best schools. However, they possess scarce information to make that decision in a way that reflects the quality of those schools. Similarly, there is little evidence to indicate that school principals were trying to shortchange parents. Rather, it seems that both parents and school principals had limited, if any, prior understanding of their respective schools in both absolute and relative performance. The clusters in which these schools operated were markets riddled with a dearth of information. By conducting an intervention that provided parents with the information on school quality and prices, some students saw their test scores improve, namely in private schools, and some high quality public schools saw their market shares increase.

There were several competing pressures that appear to have contributed to this result. One such mechanism appeared to have been the higher bargaining power that parents gained after the intervention, to deliberately pressure administrators for improvements in the quality of schools, once they had reliable measures for performance. It also became apparent that schools may have adapted to greater monitoring and oversight as a result of both conducting the trial and the eventual data released. While we cannot speak conclusively, notable endogenous mechanisms may have been at play and should be the topic of further research.

The evidence suggests that reducing information gaps can generate greater equity and efficiency of education systems, particularly in low-income settings.

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9 Appendix

Table 9: Baseline Balance Table, School level

	(1) Control		(2) Treatment		T-test Difference
Variable	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	(1)-(2)
Avg Total Fees (USD, no outliers)	339	86.059	331	133.879	-47.820*
	[42]	(12.322)	[42]	(23.457)	
Avg Test Score 5th grade(std)	357	0.020	357	0.009	0.011
	[42]	(0.081)	[42]	(0.053)	
Public	365	0.167	357	0.190	-0.023
	[42]	(0.026)	[42]	(0.025)	
School's Market Share	361	11.634	351	11.966	-0.331
	[42]	(1.136)	[42]	(1.136)	
Wall	361	57.341	352	61.648	-4.307
	[42]	(4.356)	[42]	(5.357)	
Teacher Experience	332	8.281	336	8.769	-0.488
	[42]	(0.240)	[42]	(0.270)	
Parent Interview (percentage)	361	87.812	352	89.773	-1.961
	[42]	(1.804)	[42]	(2.262)	
Admission Test (percentage)	358	46.089	355	47.606	-1.516
	[42]	(3.311)	[42]	(4.476)	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable id_cluster. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table 10: Baseline Balance Table, Schools at students level

Variable	(1) Control N/[Clusters]	Mean/SE	(2) Treatment N/[Clusters]	Mean/SE	T-test Difference (1)-(2)
Avg Total Fees (USD, no outliers)	5965	86.166	6276	132.020	-45.854*
	[42]	(12.549)	[42]	(23.544)	
Avg Test Score 5th grade(std)	6402	0.028	6756	-0.014	0.042
	[42]	(0.083)	[42]	(0.052)	
Public	6410	0.204	6756	0.218	-0.014
	[42]	(0.028)	[42]	(0.028)	
School's Market Share	6410	0.007	6756	0.006	0.000
	[42]	(0.001)	[42]	(0.001)	
Wall	6373	62.294	6655	67.468	-5.174
	[42]	(3.842)	[42]	(5.043)	
Teacher Experience	5921	8.706	6334	9.206	-0.500
	[42]	(0.284)	[42]	(0.287)	
Parent Interview (percentage)	6375	87.765	6682	91.395	-3.630
	[42]	(2.066)	[42]	(1.856)	
Admission Test (percentage)	6280	48.599	6713	49.114	-0.515
	[42]	(3.487)	[42]	(4.952)	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable id_cluster. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table 11: Attrition Balance Table: Surveys

Variable	(1) Non-Attrited N/[Clusters]	(1) Non-Attrited Mean/SE	(2) Attrited N/[Clusters]	(2) Attrited Mean/SE	T-test Difference (1)-(2)
Treatment	516	0.490	206	0.505	-0.015
	[79]	(0.068)	[58]	(0.082)	
Avg Total Fees (no outliers, USD)	465	99.130	205	133.620	-34.490
	[78]	(13.292)	[58]	(31.510)	
Avg Test Score (std)	508	0.013	206	0.019	-0.006
	[79]	(0.058)	[58]	(0.059)	
Treatment x Test Score 1st quartile	516	0.112	206	0.092	0.020
	[79]	(0.020)	[58]	(0.021)	
Market Size	516	14.665	206	14.869	-0.204
	[79]	(1.129)	[58]	(1.327)	
Public	516	0.184	206	0.165	0.019
	[79]	(0.020)	[58]	(0.026)	
School's Market Share	510	11.937	202	11.445	0.492
	[79]	(0.870)	[58]	(1.006)	
Wall	508	59.055	205	60.488	-1.433
	[79]	(3.607)	[58]	(4.886)	
Teacher Experience	481	8.516	187	8.553	-0.037
	[79]	(0.215)	[58]	(0.335)	
Parent Interview (percentage)	511	89.237	202	87.624	1.613
	[79]	(1.632)	[58]	(2.163)	
Admission Test (percentage)	509	45.776	204	49.510	-3.734
	[79]	(2.954)	[58]	(4.509)	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable id_cluster. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table 12: Attrition and Treatment

	Attrition (1)
Treatment	0.012
	(0.034)
Constant	0.279***
	(0.024)
R2	0.000
Observations	722

Notes: Standard errors are clustered at variable id_cluster. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table 13: Attrition Balance Table: Tests

	(1) Non-Attrited		(2) Attrited		T-test Difference
Variable	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	(1)-(2)
Treatment	587	0.503	168	0.494	0.009
	[84]	(0.067)	[68]	(0.075)	
Avg Total Fees (no outliers, USD)	543	116.553	120	82.161	34.392*
	[84]	(15.680)	[59]	(14.659)	
Avg Test Score (std)	587	0.016	168	-0.024	0.040
	[84]	(0.051)	[68]	(0.076)	
Treatment x Test Score 1st quartile	587	0.111	168	0.083	0.027
	[84]	(0.021)	[68]	(0.024)	
Market Size	587	14.867	127	14.205	0.662
	[84]	(1.117)	[61]	(1.401)	
Public	587	0.206	168	0.179	0.028
	[84]	(0.017)	[68]	(0.036)	
School's Market Share	577	12.021	127	10.958	1.064
	[84]	(0.852)	[61]	(1.027)	
Wall	583	61.921	123	47.967	13.954***
	[84]	(3.454)	[61]	(5.465)	
Teacher Experience	541	8.784	120	7.392	1.393***
	[82]	(0.199)	[60]	(0.312)	
Parent Interview (percentage)	578	88.927	127	87.402	1.526
	[84]	(1.558)	[61]	(3.373)	
Admission Test (percentage)	578	47.405	127	46.457	0.948
	[84]	(2.896)	[61]	(4.945)	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable id_cluster. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table 14: Fee-Test Score Relationship at Baseline (Public Schools)

	Fees (USD)		Log(Fees) Gourdes	
	(1)	(2)	(3)	(4)
Avg Test Score 5th grade (SD)	-15.014	-26.674	0.292	0.053
	(14.759)	(26.589)	(0.200)	(0.297)
Wall		-1.698		-0.002
		(2.199)		(0.010)
Water Access		1.026		0.007
		(0.910)		(0.008)
Electricity		1.690		0.011
		(1.488)		(0.011)
Library		-0.593		0.004
		(0.887)		(0.006)
Constant	61.417***	41.744	6.525***	5.786***
	(19.713)	(47.650)	(0.183)	(0.531)
Market FE		✓		✓
R2	0.002	0.378	0.015	0.570
Observations	118	115	118	115

Note: Standard errors clustered at the market level in parentheses. These results are obtained using averages of schools variables by market.

Table 15: Impact on Schools Outcomes: Test Scores by Subject

	SD Scores Creole	SD Scores French	SD Scores Math
	(1)	(2)	(3)
Post	-0.085	-0.043	-0.079
	(0.107)	(0.115)	(0.134)
Private x Post	0.046	-0.052	0.057
	(0.078)	(0.105)	(0.136)
Treatment x Post	-0.111	-0.094	-0.027
	(0.160)	(0.160)	(0.183)
Treatment x Private x Post	0.281*	0.324**	0.172
	(0.149)	(0.162)	(0.200)
Constant	0.016	0.019	0.007
	(0.023)	(0.028)	(0.030)
R2	0.375	0.454	0.439
Observations	20999	20999	20999

Note: Standard errors clustered at the market level in parentheses. Regressions are at the student level to weight by school size. Significance levels * $p < .1$, ** $p < .05$, *** $p < .01$

Table 16: Impact on Schools Outcomes: Test Scores by Subject for High Quality Schools

	SD Scores Creole (1)	SD Scores French (2)	SD Scores Math (3)
Post	-0.462***	-0.414***	-0.384**
	(0.170)	(0.145)	(0.167)
Private x Post	0.081	-0.126	-0.080
	(0.147)	(0.113)	(0.152)
Treatment x Post	-0.138	-0.102	-0.048
	(0.205)	(0.223)	(0.269)
Treatment x Private x Post	0.360	0.415*	0.236
	(0.242)	(0.249)	(0.304)
Constant	0.617***	0.720***	0.669***
	(0.032)	(0.035)	(0.039)
R2	0.319	0.410	0.412
Observations	8448	8448	8448

Note: Standard errors clustered at the market level in parentheses. Regressions are at the student level to weight by school size. Significance levels * $p < .1$, ** $p < .05$, *** $p < .01$

10 Author Contributions - CRediT author statement

Table 17: CRediT author statement

Michael Borger	Writing, Visualization, Project administration, Investigation.
Gregory Elacqua	Conceptualization, Methodology, Validation, Writing, Supervision, Project administration, Funding acquisition, Investigation.
Isabel Jacas	Software, Data Curation, Visualization, Formal analysis.
Christopher Neilson	Conceptualization, Methodology, Validation, Data Curation, Writing, Supervision, Formal analysis.
Anne Sofie Westh Olsen	Conceptualization, Writing, Supervision, Project administration, Funding acquisition, Investigation.