

What is the Effect of Educational Decentralization on Student Outcomes in Egypt?

An Analysis of Egypt's Education Reform Program

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Abstract

This paper provides estimates of the effect of educational decentralization on student outcomes in Egypt. With the support of the United States, two types of decentralization programs have been implemented in Egypt since 2000: Parent-Teacher Councils and Boards of Trustees of Parents and Teachers. While Parent-Teacher Councils have not decentralized their local governorates' education systems to the same degree as the Boards of Trustees, both programs are founded on the hypothesis that heightened parental and community participation will enhance educational outcomes.

Three governorates adopted the Parent-Teacher Council program and one governorate introduced the Boards of Trustees, creating a quasi-natural experiment for the effects of decentralization to be analyzed. Explicitly designed as experiments to test the impact of decentralization, the two programs paved the way for the implementation of the Education Reform Program, a national project for all twenty-seven governorates designed to decentralize education, beginning in September 2005.

Student outcomes are measured here by gross attendance rates, net attendance rates, and repetition rates. Multiple proxies for student outcomes are used to explore a range of possible effects. The analysis controls for traditional education production inputs: student, household, community, and school characteristics.

I find that educational decentralization has had an ambiguous and statistically insignificant effect on student outcomes. Although consistent with the literature on El Salvador's decentralization program, my findings differ from the results on the other three major programs in Argentina, Nicaragua, and the Philippines that suggest decentralization has had a positive effect on student outcomes. The results of the Egyptian case are rather surprising, given the intense international support for the program. My study raises doubt that the national Education Reform Program will be successful.

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Chapter 1: Background on Egypt's Education System

Improvements in a Context of Centralism

Education expenditures in the Arab states, averaging 5% of GDP, are some of the highest in the world. When compared to its neighbors, the Republic of Egypt stands apart as one of the biggest education spenders in the region (Shafik 1996). Public education is the most popular source of education in Egypt; 84.7% of students attend public schools, as opposed to the 7.1% and 8.4% of students who attend private and religious Al-Azhar schools. According to the World Bank, the Egyptian government has spent between 3.9% and 5.7% of its GDP on public education over the past twenty years. These figures do not include the large influx of funding to improve education outcomes within the country from multilateral and unilateral donors. When compared to its fellow Lower Middle Income countries, Egypt overshadows their average annual expenditure on education: 3.5% of GDP (EdStats 2006).

When expenditures are more closely analyzed, however, it becomes apparent that Egypt spends significantly less per student than its Middle East and North African (MENA) neighbors. According to a research organization affiliated with the American University in Cairo, the average MENA per student education expenditure (including tertiary education) is 59% of GDP per capita, whereas Egypt spends 39.4% of GDP per capita (Skills Development 2006). While the numbers seem high relative to the World Bank estimates, they are the only available statistics on Egypt's education expenditures. The Egyptian government does not release statistics on its financial decisions, leaving research organizations with the only option of estimating annual expenditures. Members of the Human Development Team cite financial over-emphasis on administration as the culprit behind high overall expenditures but low student investment (Egypt Human Development Report 2004).

As a consequence of Egypt's financial decisions, education in Egypt has not yielded high returns on the investments. Under-achievement is endemic among low-income and rural students during their primary education years, leading to high drop-out rates. Particularly for poor girls, who suffer from both socio-economic disadvantages and gender discrimination, there is much room for improvement (Filmer 2000). Girls consistently attend and complete school at a lower rate than boys. Most discouraging, perhaps, is the fact that high school graduates and university graduates face a 19.8% and 14% unemployment rate. Interestingly, the unemployment rate among workers with less than a secondary education was 0.9% in 2005 (Egypt Human Development Report 2005). Perhaps Egyptians with higher levels of education are unwilling to accept low wages of unskilled labor positions available to the uneducated or under-educated population. Alternatively, educated Egyptians may report themselves as unemployed because they are working at low-skill jobs but think of themselves as out of "real" work. Given the high opportunity cost for many poor children to attend school and the corresponding unemployment rates for each education level, the low returns to education often make the investment unattractive.

Egypt has recently made some significant improvements in education, particularly in the wake of the Millennium Development Goals. The Egyptian government committed itself to improving access to basic education for all children in the 1990s, and has worked hard to achieve its goals. Research on Egypt's education system consistently demonstrates that the higher levels of funding have increased access, although it has not contributed to a parallel improvement in quality (Galal 2002). Static quality may not be surprising, however, given that more disadvantaged students are attending schools. Gross enrollment rates – measured by dividing the number of students in primary school by the total number of primary school-aged individuals in the population – have been steadily rising, female attendance has increased, and the number of schools built in the 1990s doubled what had been built in the last century (Human Development Report 2004). Importantly, the average school life expectancy – the number of years a student who starts school is expected to remain in the education system – has increased by nearly 1 ½ years in the past 10 years (EdStats 2006).

With the recent improvements, however, have come more problems for the Egyptian government. The increases in enrollment and completion rates coupled with teacher shortages have resulted in greater classroom density and more school shifts to accommodate the increasing flow of students. According to the Ministry of Education, 44% of Egyptian schools had 2 shifts a day, 34% offered only an afternoon shift, 9% offered only a morning shift, and only 13% had a full day of school available for students during the 9 month 2004-2005 school year (Education Development 2004). The increase in enrollment is happening rapidly such that the teacher labor supply market has been unable to respond adequately. Additionally, the Ministry of Education has struggled to encourage teachers to move to rural and poorer governorates. While wages rise for those teachers willing to work outside of their governorate of origin, the increase has not been enough to create the necessary incentives for teachers to move out of the more popular governorates, such as Cairo and Port Said (Kamel 2006). Perhaps ultimately caused by a weak management structure, poor financial decisions for the hundreds of programs launched across Egypt have caused shortages, delays, and inefficient distribution of resources.

Most of the major complications that plague the system are rooted in the bureaucratic tradition of the Egyptian government. Inefficiencies caused by a strong centralized government were cited by the authors of the 2004 Human Development Report in Egypt as the main contributors to the consistent problems in Egyptian public education (Egypt Human Development Report 2004). The Egyptian education system is coordinated by the Ministry of Education, an organization that is responsible for creating the curriculum for the nation's 15.5 million students. They are also responsible for selecting textbooks, calculating teacher salaries, and organizing all national education research. Its power is secured by the 1971 Egyptian Constitution, which requires one central organization to manage the national education program. Because school fees paid by students are sent directly to the Ministry, the organization has a great deal of financial power to support its political legitimacy (Institute for International Planning 2004).

The bureaucratic challenges that have hindered Egypt's progress in education have resulted, however, in increased efforts to restructure the system. More specifically, members of the Millennium Development Team, World Bank, and USAID have been eager to break down Egypt's highly centralized education framework. Efforts to decentralize Egypt's education system have been particularly challenging because government officials have been reluctant to relinquish control over the spread of national traditions and culture to local community leaders. The idea of education as a means of promoting national unity was well-articulated in a document published in 2001 by the Egyptian government. The authors argued for centralized education, stating, "Education is supervised by the state to provide the minimum common limit of socialization and acculturation to guarantee national unity and achieve an acceptable degree of holding the social textile together" (Egypt Education 2001). Given the unique position centralized education plays in the values of the nation, central authorities in the Ministry of Education have been trying to preserve as much control as is politically acceptable. Despite their attempts, a strong movement has begun to sweep across the country to reduce central control. This trend coincides with a corresponding global reform movement with similar prescriptions, partly attributable to World Bank policies.

Decentralization Movements within Egypt's Education System

The tone of prescriptive literature on improving education outcomes in developing countries has been clear and focused since the late 1990s. Rather than simply recommend that more resources be made available to school districts, authors are now advising policymakers to revise incentives within education management structures (Hanushek 2003). Galal (2002) explains in his article on the failures of Egyptian education policy that current Egyptian policymakers understand "education as an input/output table or a production function, rather than a process of maximization of private and social returns across the entire population. In short, incentives, broadly defined, are lacking" (pp. 9-10). To improve incentive structures, authors have been focused primarily on encouraging educational decentralization.

The rationale behind decentralizing education is based on the problems of information asymmetry caused by the political, geographic, and often cultural distance between centralized governments and communities. Local governments, it is argued, are better prepared than a distant central government to respond to local education issues, such as curriculum development, teacher training, and school management (Ornelas 2004). Additionally, teachers and school administrators may be more responsive to problems if they are accountable to parents within the community, which may reduce agency conflicts (Galiani and Schardgrotsky 2002). Decentralization is seen as a means of matching incentives for different levels of management, introducing peer-review, encouraging teamwork, and establishing extrinsic incentives such as promotions and community respect (Winkler and Gershberg 2000, Ul Haque 2003).

Encouragement for decentralization has come with a great deal of uneasiness. If there are positive spillovers of education, for example, they may not be considered by each community. The consequence of such a free rider dynamic is the underprovision of

education. Two other common concerns are the possibility of manipulation of local authorities by local elites and the problems associated with weak technical capacity of local governments. The former concern is based on the potential perversion of the relationship between local authorities and local elites. If the elites have specific agendas in the field of education, they may have the proper financial or political influence to control local authorities on those matters. If such a situation occurred, it would undermine the arguments for introducing decentralization in the first place. The latter concern acknowledges that local communities may lack the resources available to a central authority, which can result in poor infrastructure development (Galiani and Schargrotsky 2002). Clearly decentralization of decision-making authority is unlikely to be effective unless accompanied by resources.

Among international organizations and developed countries, decentralization has become a popular recommendation often proposed when inefficiencies and poor outcomes have been noted in the education systems of developing countries (The World Bank 2000). Consequently, educational decentralization has been initiated in many developing countries including Nicaragua, Mongolia, Argentina, Mexico, and the Philippines. Egypt has been no exception to the decentralization movement. Working with the United States Agency for International Development (USAID), the World Bank (formally, the International Bank for Reconstruction and Development), and more than 100 Non-Governmental Organizations (NGOs), the Egyptian government has mobilized to decentralize its education system on a number of fronts.

There are three goals of the Egyptian decentralization effort outlined by the United States and Egyptian governments: (1) increase access for female education, (2) improve education quality, and (3) open public participation to education issues (USAID/Egypt 2004). The United States has funded numerous education programs in Egypt ranging from school construction and maintenance to all-girl school development in an attempt to facilitate decentralization. As Egypt's largest unilateral donor, the United States committed 2.6% of its funding in Egypt to education in 2005. By the end of 2005, the United States announced its plan to spend 21.6% of Egyptian aid on education until 2009 (USAID/Egypt 2004). The increased financial attention to Egyptian education by the United States is illustrative of the high status educational decentralization has taken among USAID's many priorities.

Egyptian legislators have carefully followed suggestions by the United States to decentralize their education system. With the encouragement of the United States and the Millennium Development team, the Ministry of Education passed a decree in 1997 announcing the establishment of Parent-Teacher Councils, organizations that facilitate the collaboration of school administrators and parents. Though it took until 2000 for the programs to commence, Parent-Teacher Councils now officially have the responsibility to work with school administrators to address local concerns, improve communication between parents and teachers, and evaluate schools on their cleanliness, equipment, and teaching quality (Coster 2005).

Parent-Teacher Councils were active in three governorates of Upper Egypt as of 2005: Menya, Beni Suef and Fayoum. CARE, one of several NGOs involved in Egypt's decentralization efforts, announced that as of September 2004, 63 Parent-Teacher Councils had been established and 1,347 individuals were registered board members of the organizations. During the four year period that Parent-Teacher Councils have been active, the three governorates have collected £E 11,186,580 (\$ 1,951,431) in community contributions to education (NSP Progress). It is important to note that the governorates involved in the Parent-Teacher Council project are three of the poorest in Egypt based on per capita income (Egypt Human Development Report 2005).

In the same year that Parent-Teacher Councils became active, the Ministry of Education authorized the initiation of the Education Reform Program, a project dedicated to aggressively decentralizing Egypt's education system. As a first step, the Ministry of Education approved the Alexandria pilot, an initiative to decentralize educational decision-making to local governments within a single governorate. Structured on a three-tiered system, the Alexandria pilot established a consulting committee, an education district committee, and a board of trustees committee. The aim of the committees was to help Alexandria establish strategic education plans, take risks by creating development initiatives, and, most importantly, be held accountable for education outcomes (USAID/Egypt 2004).

The Alexandria pilot has been a phenomenal success according to all recent reports (Egypt Human Development Report 2004). No empirical analysis of it has yet been published. What little is known is that the governor of Alexandria has established strong ties with businesses for greater integration of the education system with the labor market. In response to the enthusiasm surrounding the program, the Minister of Education agreed in 2003 to launch six more pilots built on the same structure before the official completion of Alexandria's pilot in 2005. According to the Egypt Human Development Report, it seemed there was "a readiness to duplicate the Alexandrian experience, even though it is not yet finalized" (Egypt Human Development Report 2004 pp. 70). The program was extended to the governorates of Cairo, Beni Suef, Fayoum, Menya, Qena, and Aswan. In total, about 230 schools are currently targeted by the program.

USAID cites two main accomplishments of the seven pilot projects: (1) decentralization continues to garner political support as positive results are quickly achieved in teacher quality and school management and (2) the governors of the seven governorates encourage community participation and established education reform funds (Data Sheet 2004). The achievements of the program are all anecdotal, however, leaving little opportunity for analysis or criticism.

While the six new pilots were underway in September 2005, the Ministry of Education passed Ministerial Decree Number 258, Pertinent to Boards of Trustees, Parents, and Teachers. The decree mandates at each school the establishment of Boards of Trustees, Parents, and Teachers (BoTPT) across the country, regardless of education level, as an effort to nationally decentralize education nationally. Each BoTPT must have

five parents, five community members, two teachers, and one social worker, all of whom will serve two year terms. BoTPTs were assigned the following six responsibilities: (1) to pursue a decentralized education facility, (2) to encourage private sector voluntary participation in education initiatives, (3) to effectively manage the school, (4) evaluate the school principal, (5) to seek out funds locally for the education of disabled and gifted students, and (6) to approve budgetary decisions (El-Dein Moussa 2005). Special emphasis is placed in the language of the decree on the importance of encouraging local contributions to schools. For example, the decree specifies, “The BoTPT shall reserve the right to collect optional cash or in-kind contributions and donations from citizens, businesspersons, or other institutions” (El-Dein Moussa 2005 pp. 5). It is unclear what effect encouraging financial contributions will have on student outcomes in Egypt.

The BoTPTs were created in the context of a larger hierarchical system. Next in the chain of command are coordination committees, established to oversee the BoTPTs. Each committee will have 13 members: eight members will be elected from among the BoTPT presidents, four members will be appointed by the governorate, and one director general will be nominated. One level higher, coordination committees were established to oversee the previously described committees. This hierarchy continues up through the *idarra* and *mudirriya* up to the Ministry of Education’s coordination committee. All positions on BoTPTs and coordination committees are voluntary.

As educational decentralization sweeps across Egypt, it is rather disconcerting that more empirical analyses have not been conducted. Outside of anecdotal evidence and minimal descriptive statistics, little is known about the effect of educational decentralization on student outcomes in the governorates that have been targeted: Alexandria, Menya, Beni Suef, Cairo, Fayoum, Qena, and Aswan. Now that the Ministry of Education has approved BoTPTs in all governorates of Egypt, the effects of decentralization will resonate across the country. If analysis can be done on those governorates already decentralized, it is likely that a prediction of the nationwide decentralization project can be made. With such a prediction, policy recommendations can be offered to ensure the most positive effect possible for Egyptian students in the upcoming years.

Chapter 2: Educational Decentralization Literature Review

Introduction

The effectiveness of educational decentralization is largely unresolved in the literature. It is difficult to find a consistent position on decentralization among empirical analyses, primarily because the programs are highly varied and the contexts in which they are introduced are unique to each country. Additionally, effects of decentralization often take a long time to manifest in student outcomes, as central governments may become bogged down in delays before initiating the programs. Some developing countries have posed as attempting educational decentralization programs while, in actuality, not significantly changing their systems (Gauri and Vawda 2004). Many developing countries do not have reliable data readily available. Finally, it is difficult to control for

external shocks, such as teacher strikes, financial crises, natural disasters, or transitions in administrations (Winkler and Gershberg 2000).

Empirical Studies of Decentralization

Despite the obstacles to empirical analysis, some impressive work has been done in the area of educational decentralization. Notably, works by Jimenez (Jimenez and Sawada 1998, Jimenez and Paqueo 1996), Winkler (Winkler and Rounds 1996, Winkler and Gershberg 2000), and Hanushek (Hanushek and Luque 2000, Hanushek 2003) have contributed greatly to the body of literature on education production functions and the effect of education policy on student outcomes. While research has ranged from case studies of specific countries to worldwide analyses, there are traditional ways of measuring student outcomes that allow for cross-country comparisons.

Student outcome measurements generally fall into two categories: quantity and quality. Quantity is measured in terms of student enrollment, either gross attendance rates or net attendance rates. The primary school gross attendance rate (GAR) is measured as the ratio of the number of students attending primary school to the number of children of primary school age in the population. The primary school net attendance rate (NAR) is measured as the ratio of the number of students *of primary school age* attending primary school to the number of children of primary school age in the population. The official primary school age in Egypt is between 6 and 10 years old. Quality is measured by student test scores on scholastic achievement exams, repetition rates, or dropout rates. The primary school repetition rate (RepRate) is the quotient of the number of students in primary school who are currently repeating their grade level divided by the number of students who are currently attending primary school.

While controversy surrounds the legitimacy of these measurements to function as proxies for quantity and quality of education, data on exam scores, repetition rates, and dropout rates make analysis possible. Quality measurements, in particular, draw a great deal of skepticism. Some scholars argue that the most popular measurement of school quality, namely test scores, is a poor measurement because the distinction between ability and education quality reflected on scores is unclear. Others counter that focusing on dropout and repetition rates enforces a low expectation for what constitutes quality education. While no ideal measurement is available, scholars work with the available estimates to analyze the effects of educational policies on student outcomes

The decentralization movement has been notably widespread in Latin America, and great interest has been taken in the programs in the region. Using classic education production functions, King and Özler (1998) analyze the effect of the Nicaraguan Autonomous School Program on school-level decision-making and on student outcomes. The authors recognize that decentralization is a term that reflects a wide range of autonomy, and accordingly develop a measure of decentralization by using the extent of decision-making done by schools. A matched comparison design is employed that compares student outcomes between decentralized and centralized schools. Because the schools chosen for the program were selected, the authors are unable to treat it as a

natural experiment. In response to the problem, they estimate a structural model that incorporates the deliberate selection of schools for the program. More specifically, King and Özler assume that there are community, household, and school characteristics that drive both student outcomes and decentralization participation decisions. By isolating the endogenous variables in their education production function, the authors arrive at an accurate estimation of the isolated effects of decentralization on student outcomes.

King and Özler's 1998 research illustrates the distinction between legislative landmarks and policy implementation. From the point of view of *de facto* policy change, they find that school autonomy is significantly and positively correlated with student outcomes, measured by student test scores. They break down school autonomy into a series of categories to determine which aspects have the greatest effect. Their results indicate that school autonomy is most effective in improving student outcomes when teacher evaluation, staffing decisions, and school monitoring are employed by school administrators.

Using methods similar to King and Özler, Galiani and Schargrodsky (2002) treat decentralization in Argentina as a policy instrument to determine the effect on student test scores. They have the advantage, however, of the Argentine program functioning as a natural experiment. The decentralization program in Argentina was a national program that was gradually implemented in provinces across the country over a two year period. To control for provincial effects, the dependent variable is defined as the difference in test scores between private school students and public school students within the same province. Although the econometric techniques and populations differ, these authors reach the same conclusion as King and Özler that decentralization can improve student outcomes, as measured by test scores.

Analysis of El Salvador's community-Managed Schools Program, which decentralized educational responsibility to local governments, did not reach the same conclusions as the two previous studies. Rather, Jimenez and Sawada found no statistically significant effect of decentralization on student attendance rates or standardized test scores. Unlike the Nicaraguan or Argentine studies, their analysis uses a dummy variable for decentralization, without considering the varying degrees of school autonomy or intensity of student treatment to a decentralized environment.

Since the introduction of school-based management in Nicaragua, parents have been invited to contribute funds to schools. Consequently, parental contributions now constitute a large percentage of school resources. Gershberg and Meade (2005) build on the work by King and Özler to analyze the effects of parental contributions on school funding. They conclude that the degree of parental participation is significantly correlated with parental income. Gershberg and Meade argue that there are major equity concerns with such a program, as wealthier districts will have the capacity to offer better education opportunities for students. Additionally, there is the possibility that children of families who are unable to contribute financially will be pressured against enrolling. The underlying point of Gershberg and Meade's inequity argument is that greater access to resources in wealthier districts will unfairly improve student outcomes. They imply that

an education system that equally allocates resources across districts is a preferable structure.

While inequity may be a concern for countries attempting educational decentralization, Emmanuel Jimenez and Vincente Pacqueo (1996) provide evidence on the program in the Philippines that local financial contributions to education can improve the efficiency of schools. There appears, therefore, to be an emerging trend in the decentralization literature that suggests there is a tradeoff between equitable resource allocation and school efficiency. Efficiency was measured as a lowering in the cost of running the school, holding enrollment and quality constant. Their results are that a 1% increase in the percentage of funding originating from local sources results in an overall decline in school costs by 0.135%. Evidence from the study suggests that increasing local contributions to education can lead to an increase in the efficiency of schools, even if cross-community inequity persists.

Educational efficiency concerns are addressed more broadly by Hanushek and Luque (2003) in their analysis of human capital policies around the world. Using Third International Mathematics and Science Study data, Hanushek and Luque explore which variables have a statistically significant impact on student outcomes. Their work overturns much of the research on education production functions. They conclude that teacher education and smaller class sizes have no statistically significant effect on test scores. More significant, in fact, are the effects of family wealth and stability in the home. Given the high emphasis on school resources as a means of improving student outcomes in past literature, it is surprising that Hanushek and Luque's ultimate conclusion is that organizational structure and incentive frameworks play a more significant role in student outcomes than was traditionally believed (Hanushek and Luque 2000).

Theoretical Models of Educational Decentralization

Valuable theoretical insights have been contributed by a number of economists, including Costrell (1997), Fernandez and Rogerson (2001), and Behram and King (2001). While the authors seek to answer different questions, ranging from the benefits of centralization to the effect of parental contributions on school outcomes, they are very helpful in providing frameworks for understanding educational decentralization policy.

A notable theoretical model on how to analyze decentralization was constructed by Costrell in 1997. The question he poses is, simply: At which level – local, regional, or national – should education standards be set? Costrell's model, the policy choice of decentralization over centralization, depends primarily on the externalities associated with cross-district wage pooling and on how high the standards are set. Costrell argues that employers may not be able to distinguish between the values of diplomas from different quality schools if standards are centralized. Alternatively, if decentralized standards are established, there may be pressure on school administrators to set them low enough to ensure high graduation rates. He concludes the theoretical exercise by suggesting that centralized standards can raise social welfare when employers heavily

engage in high cross-district pooling of graduates because all students will face the same graduation standards and will be offered nearly the same wages. If there is little cross-district pooling of wages, however, there is minimal value of introducing centralized standards because diplomas will be meaningless to employers as a means of determining candidates' abilities.

Rather than consider the effects of standards on student outcomes, Behram and King explore the role of households in improving education. They put emphasis on asymmetric information, arguing that households make education decisions based on expected costs and benefits. By reducing problems of information asymmetry through decentralization, households may more accurately calculate the expected outcome and make better decisions.

Stepping back further, Fernandez and Rogerson develop a model to analyze the behavior of communities as single units. More specifically, they try to model the relationship between communities with high and low income levels in a context of education quality. They find that if schools are funded locally, wealthier communities will inevitably produce better schools. The two economists argue that if school quality is to be equal, governments should make sure to redistribute funds in favor of poorer communities. As a longer lasting solution, they recommend increasing the percentage of wealthy constituents in poor communities to improve school quality and attract more wealthy individuals (Fernandez and Rogerson). In the context of decentralization, these recommendations may be difficult to apply, leaving open the possibility of severe education inequities.

Summary

While a great deal of work has been accomplished both theoretically and empirically in the area of educational decentralization, there are many noticeable gaps. The majority of the empirical literature is focused on Latin American decentralization projects, leaving little opportunity for broad international comparisons. It will be valuable to diversify the nations included in the literature by including a study on Egypt, as it will help improve our understanding of which decentralization results are region-specific and which are universal.

Most empirical analyses rely primarily on student test scores as a proxy for educational quality. It is unclear that test scores are a reliable proxy for the quality of school output; rather, they may represent student ability or other factors largely outside of a school's control. Especially in a country like Egypt, where only 13% of primary school students attending public school have a full day of class, it is not immediately obvious that such minimal instruction time will significantly improve test scores. It may be valuable, therefore, to focus on repetition and attendance rates, which arguably are most appropriate for a developing country like Egypt.

Given the strong competition that schools in developing countries face against students (or their families) choosing working or helping in the home over attending class,

it is an achievement to have high attendance rates and low repetition rates. As I discussed in Chapter 1, individuals who complete secondary or tertiary education face higher unemployment rates than dropouts. Assuming parents can measure the quality of schools, they will enroll their children if they believe the education will improve their future wage-earning potential, taking into account the high unemployment rates of graduates at least in suitable jobs. It can be expected, therefore, that higher quality schools will have higher attendance rates because graduates can expect better wages in the future. Additionally, assuming that teachers adhere to graduation standards, schools that have relatively few students repeating a year despite minimal class time are likely to deliver quality education. Perhaps as Egypt improves its education system over time, it will become more appropriate to transition the focus of empirical studies toward student test scores. For now, however, it is valuable to consider attendance and repetition rates as significant proxies of school quality in the context of Egypt's labor market.

Chapter 3: Empirical Analysis

Data Sources

Data for the analysis are from the 2000 and 2003 Egyptian Demographic and Health Survey, part of the international Demographic and Health Survey project. Initially launched by the USAID (United States Agency for International Development) in 1984, the Demographic and Health Survey (DHS) is implemented in about 70 different countries. The survey is not aimed specifically at education issues and is conducted by an independent agency, OCR Macro, contracted by USAID and unaffiliated with local government agencies (Rutstein and Rojas 2003). The aim of the survey is to produce a stratified random sample of households comparable over time, within and across countries to allow researchers, policymakers, and donors to follow trends in health, marriage, family planning, education, and demographics.

There are problems with DHS data that are caused largely by the scope of the project. First, the surveys have been carried out every few years since 1988, which makes it challenging for interviewers to consistently return to the same households each year. Therefore, while the questions are identical each year, the respondents may change. Second, DHS data is somewhat controversial given the possibility of selection bias. The OCR Macro team attempted to prevent bias by pursuing household interviews at times most convenient for the family, rather than setting a rigid schedule and missing full-time working family members.

Respondents are asked about a range of issues in the surveys relevant to this study, including their education background, current education status, and general demographic information. The number of Egyptian households interviewed for the survey was 16,957 in 2000 and 10,089 in 2003, with the number of households per governorate generally reflecting relative population weight. Respondent data from Egypt's DHS include governorate residency, which is equivalent to provincial residency in other countries. Governorate data is essential for the analysis on educational decentralization given that the programs have been instituted by governorate. The

Egyptian DHS data allow for primary school gross attendance rates, primary school net attendance rates, and primary school repetition rates to be calculated and compared by governorate.

DHS data was linked by governorate to school input statistics provided by the Human Development Reports for 2000/2001 and 2003/2004. The Human Development Report team produces statistics on GDP per capita (PPP\$), unemployment, and inequality measurements by governorate. The Human Development statistics were used as estimations for school inputs, which were not directly available by the Egyptian government.

Methodology

Given the speed with which the Egyptian government is implementing educational decentralization projects across the country, it is important to review the effect on student outcomes. Thus, the purpose of this analysis is to determine the effect, if any, of educational decentralization on student outcomes in Alexandria, Beni Seuf, Menya, and Fayoum (governorates where decentralization programs occurred) by estimating an education production function that incorporates decentralization effects. The null hypothesis is that decentralization of educational administration does not improve the efficiency with which a given vector of inputs produces positive educational outputs (“outcomes”).

Jimenez and Sawada (1998) propose a useful empirical technique to measure the effect of decentralization on student outcomes in El Salvador. I borrow from their methodology, adding some elements to fit the particular characteristics of the Egyptian program. In its simplest form, the education production function relied upon by Jimenez and Sawada can be written as:

$$Y_j = f(X_j, C_j, D_j), \quad (1)$$

where Y is the average student outcome in governorate j , measured as a function of X , C , and D . X is defined as the vector of student/household characteristics. C is the vector of community variables in governorate j . The type of school management, D , signifies the extent to which governorate j 's school system has been decentralized. Following the example of Jimenez and Sawada, I adopt the assumption that the effects on outcomes of a school's observed school characteristics (such as class size or teacher characteristics) are entirely determined by the characteristics of students and parents and its type of school management. Given Hanushek's conclusion (1995) that the effect of traditionally valued school resources, such as teacher educational background or class size, on student outcomes is inconsistent, the assumption is supported.

If a linear functional form is assumed (Jimenez and Sawada 1998, King and Özler 1998, Galiani and Schargrodsky 2002), the following regression results:

$$Y_j = \bullet_0 + \bullet_1 X_j + \bullet_2 C_j + \bullet_3 D_j + u_1, \quad (2)$$

where X and C represent vectors of student/household characteristics and community characteristics. The specific variables used are gender, household income, and the percent of rural inhabitants to account for student, household, and community characteristics. The Egyptian educational decentralization movement is different from other countries because two distinct types of programs have been pursued: Parent-Teacher Councils and Boards of Trustees of Parents and Teachers. As discussed above, Parent-Teacher Councils are comprised of volunteers interested in participating in school evaluations and willing to work with administrators to improve their school districts. Boards of Trustees, alternatively, are boards of elected volunteers from the community and schools who have a greater degree of authority to make financial and staffing decisions.

Winkler and Gershberg (2000) propose a checklist of fundamental educational responsibilities which I use to determine the degree of decentralization in a given governorate. There are ten responsibilities: (1) the selection of textbooks, (2) the choice of teaching methods, (3) the decision to hire or fire the director, (4) the decision to recruit or hire teacher, (5) the right to change teacher wages, (6) the ability to make performance exam decisions, (7) the responsibility to implement a school improvement plan, (8) the right to make expenditure decisions, (9) the responsibility to allocate the personnel budget, and (10) the responsibility to allocate the non-personnel budget. The Parent-Teacher Councils have been granted three of the ten categories, whereas the Boards of Trustees have been entrusted with five of the ten. To incorporate this distinction in the empirical model, D will be treated as a continuous variable to signify the extent of decentralization in a given governorate in accordance with Winkler and Gershberg's checklist.

At this time, it is important to define Y_{it} , student outcomes. In the analysis, student outcomes will be measured in three ways: (1) primary school gross attendance rates, (2) primary school net attendance rates, and (3) primary school repetition rates (all defined below). The former two measurements account for quantity effects, while the latter functions as a proxy for school quality. There is precedent in the literature to use these statistics as outcome measurements because they are considered predictors of future wage potential (Jimenez and Sawada 1998).

The primary school gross attendance rate is measured as the ratio of the number of students attending primary school to the number of children of primary school age in the population. The primary school net attendance rate is measured as the ratio of the number of students of primary school age attending primary school to the number of children of primary school age in the population. The primary school repetition rate is the quotient of the number of students in primary school who are currently repeating their grade level divided by the number of students who are currently attending primary school.

The value of considering gross and net attendance rates together is that it allows for a more thorough understanding of which populations – primary school-aged students, or students outside the primary school age range – are impacted by decentralization.

Changes in attendance rates allow for researchers to understand which conditions impact the quantity of students taught (“produced”). Repetition rate analysis is helpful because it answers a basic question: What is the quality of the education production process? It is generally understood that areas with high repetition rates have poor school quality because those schools have many students not performing well enough to move on to the next grade level. In Egypt, students must meet performance standards to be permitted to graduate to the next grade level. Of course, there is the likelihood that some teachers may be more willing to allow poor performing students to advance to the next grade than others. For this analysis, however, I assume that all teachers adhere to the same guidelines. My assumption is supported by the fact that neither of the two decentralization programs allows governorates to change performance exams. Therefore, all Egyptian teachers of each grade level use the same performance exam standards. Low repetition rates signify high average school quality and high repetition rates signify low average school quality.

A valid argument against the use of repetition rates is that the statistics are a reflection of *student* quality, rather than school quality. I attempt to counter the criticism by controlling for traditional student, household, and community characteristics believed to lead to poor student quality (Hanushek and Luque 2003). It is important to test for both quantity and quality effects of educational decentralization to determine the ways in which the decentralization program is affecting student outcomes.

Some problems arise when considering the effects decentralization may have on a given governorate. While it may influence student outcomes, the implementation of decentralization may likewise influence the demand for education. Perhaps some parents do not feel comfortable having their child attend a school that is not controlled by the central government. Alternatively, perhaps some parents are more willing to have their child attend now that their opinions or values will be considered under the new management structure. The effect of decentralization on education demand, therefore, must be considered. Orazem (1987) proposes a helpful education demand function in his seminal paper. The function is:

$$E^d = f(w^p, w^c, Y, S),$$

where w^p is the parents’ wage, w^c is the child’s wage, Y is the family’s non-wage asset, and S is vector of school characteristics which are exogenous to the parents. As Orazem explains, parents understand the education production function. More specifically, he argues that parents understand the process that converts school characteristics endogenous to parents into student education. Parental understanding of the education production function is the reason school characteristics are not included in the above function. For my analysis, I assume that none of the school characteristics are exogenous to parents in a decentralized system. In a traditional education system, however, there are exogenous school characteristics. Therefore, S is not included in my paper. Instead, D , the management structure, is used. Additionally, given lack of income data, I will assume that, on average, $w^p = w^c$. Finally, I will ignore Y because of lack of data. Reducing

Orazem's demand function to accommodate my assumptions, the following function remains:

$$E^d = f(w, D).$$

Additionally, education factor supply may be affected by decentralization. I assume for my analysis that education factor supply is fully determined by the management structure and average wage. While teacher and administrator wages are set by the central government, there are regional variations in living costs which causes the real wages to vary by governorate. Therefore, the education supply function is:

$$E^s = f(w, D),$$

where D is the type of school management. The decentralization and income variables may suffer from a simultaneity bias problem caused by the interaction of the three functions. Instrument variables are introduced to correct for the bias.

The proposed instrument for income is age of first marriage (correlation = 0.76) because it is hypothesized that the age of first marriage affects student outcomes only through income. The hypothesis is founded on the fact that the range of average age of first marriage is between 24 and 31 years old. It is unlikely, therefore, that marriage is the reason an individual will choose not to attend primary school (Human Development Report 2005). The instrument works because marriage puts pressure on an individual to cease his educational pursuits in order to support her family. Because higher levels of completed education is associated with higher levels of income (Birdsall and Londono 1997), earlier age of first marriage should be correlated with lower levels of income.

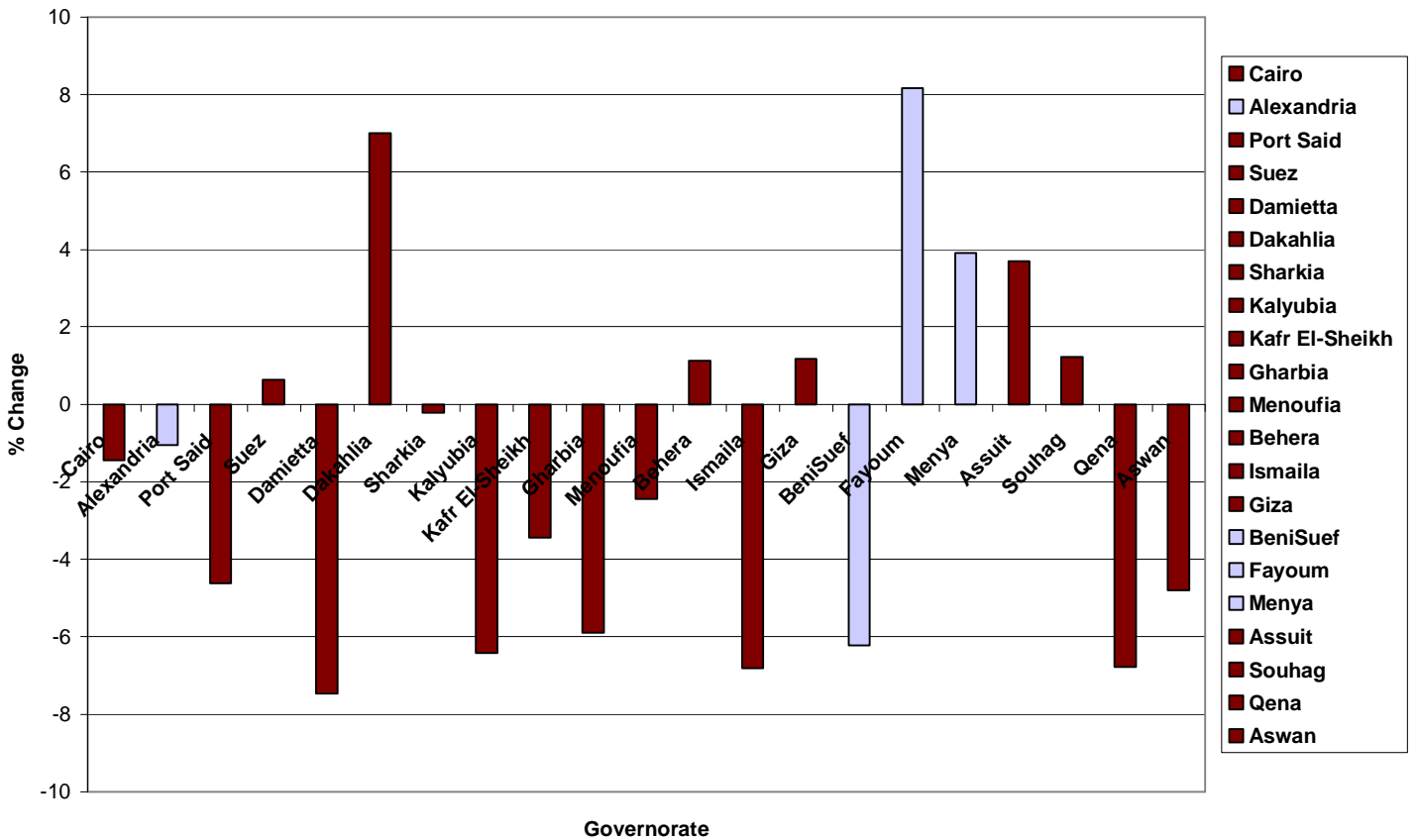
Education policy instruments generally reflect the decision-making process of policymakers or an inadvertent effect of the policy. One of the possible consequences of a system-changing policy like decentralization is a change in stability (McDonnell and Elmore 1987). The rates of crimes like corruption or the rate of political participation may change in the wake of a system-changing policy. The change in unemployment rates by governorate is used in my study as the instrument measurement of stability (correlation = 0.42). I assume that unemployment rates reflect the general state of stability or instability in a given governorate. An increase in unemployment, therefore, corresponds to an increase in instability.

Descriptive Statistics

Before discussing the regression analysis, it is important to review the trends in student outcomes over the period of time under consideration. Understanding the changes in Egypt's education rates at the beginning of the millennium will allow for the effects of decentralization to be put in a larger context. Beginning with the most basic data, the change in the rate of individuals attending primary school, it appears that the overall trend was one of dramatic decline, despite a few noticeable improvements. The mean average change in gross attendance rates was -1.46% with a standard deviation of 4.65%,

suggesting that there was, on average, negative results with a fairly wide variance. The variance in gross attendance rates across governorates was 31.56, whereas the variance in gross attendance rates across time was 21.64. Figure 1 is a representation of the percent change in gross attendance rates between the years 2000 and 2003. The four decentralized governorates, marked blue in the graph, experienced mixed results. Alexandria, the wealthiest of the four decentralized governorates, had a negative change in gross attendance rates of about -1%. Beni Suef had much worse results, exhibiting a decrease by over 6%. On the other hand, Fayoum and Menya, the final two decentralized governorates, appear to have enjoyed substantial improvements, about 8% and 4%, in gross attendance rates.

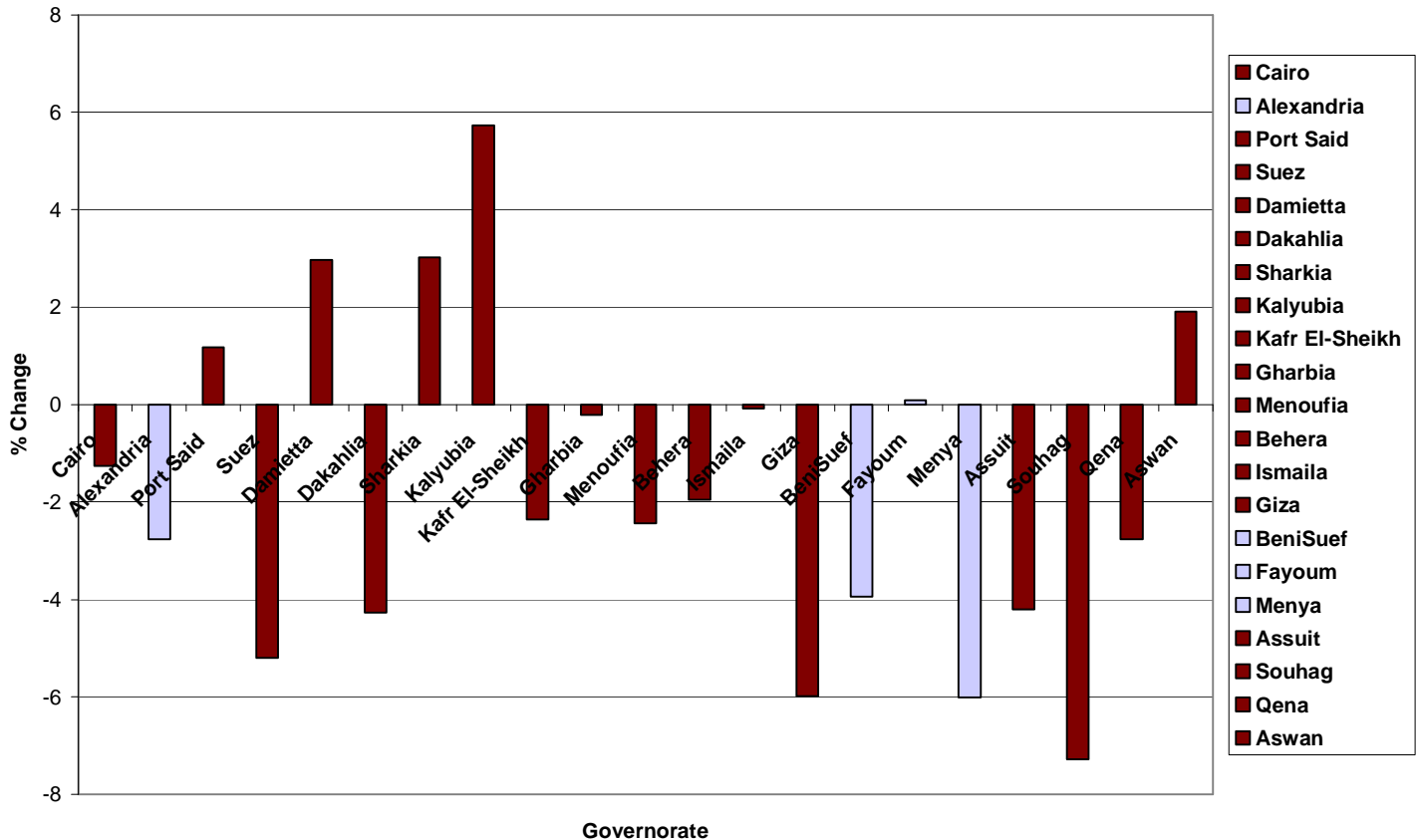
Figure 1: Changes in Gross Attendance Rates, 2000 - 2003



As Figure 1 shows, there was no consistent change in gross attendance rates for the four decentralized governorates. The inconsistency is not necessarily surprising given the weaknesses of the measurement chosen. Gross attendance rates are a broad measure, and may represent changes in a wide range of age groups. Some governorates may have had a change in the population of special education students, which results in older students attending primary school beyond the official age range. If the availability of jobs decreased in a given governorate, older individuals may have been inclined to return to primary school.

To restrict the focus age group to students of primary school age, changes in net attendance rates over the 2000 to 2003 time period are reviewed. Net attendance rates consider only individuals of primary school age who are in primary school, rather than include older or younger enrolled students. It is an important rate to analyze because it illustrates whether the targeted age group is being educated. The net attendance rate trends are similar to the gross attendance rate trends shown above. The mean of the

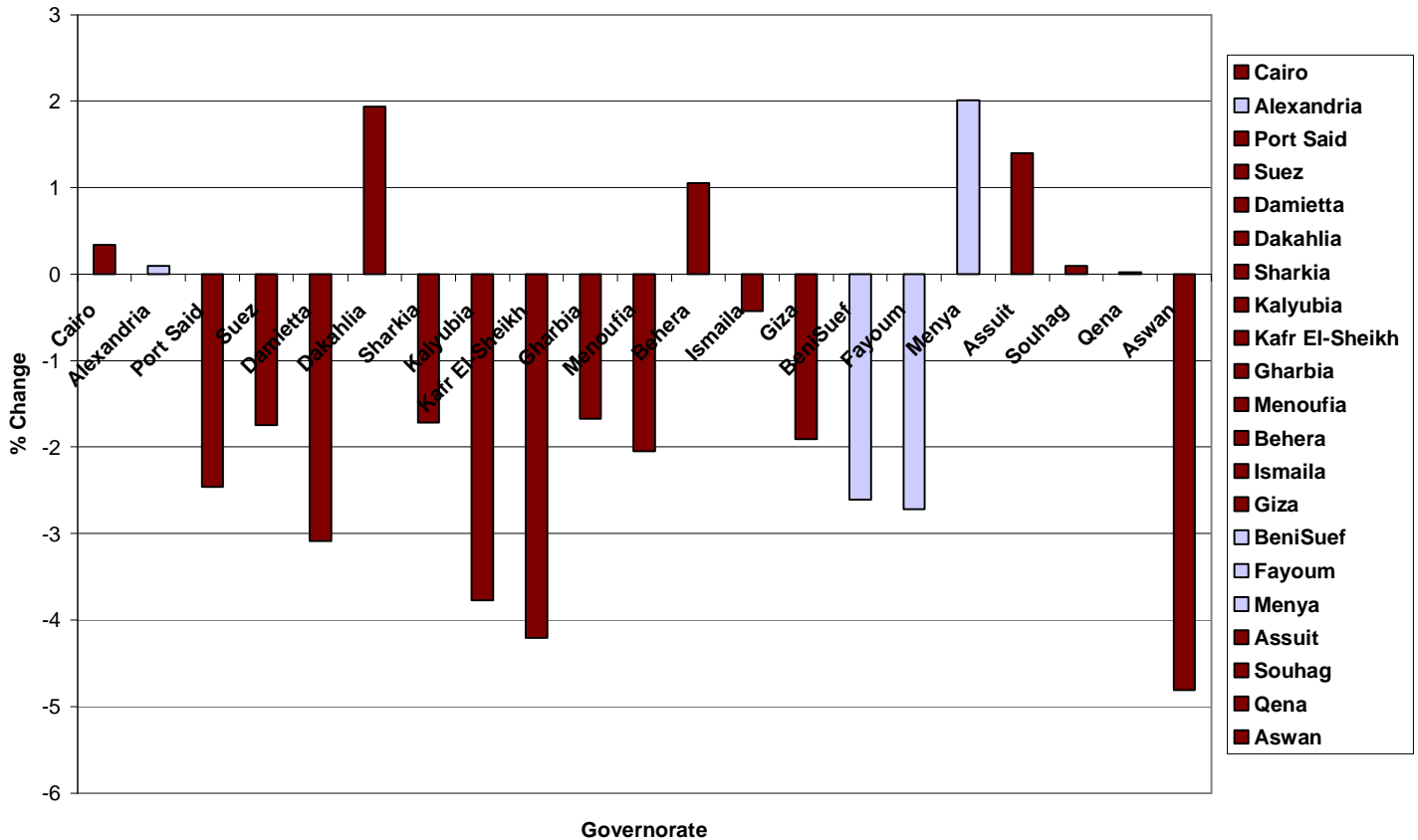
Figure 2: Changes in Net Attendance Rates, 2000 - 2003



average change in net attendance rates was -1.71% with a 3.4% standard deviation. Similar to the gross attendance statistics, the variance in net attendance rates across governorates (27.57) was higher than across time (13.51). Looking at Figure 2, it appears that only five of the governorates improved net attendance rates. Turning to the four governorates under analysis – Alexandria, Beni Suef, Fayoum, and Menya – it is clear that all but one followed the general trend of declining net attendance rates. Fayoum improved slightly, but by an insignificant amount. Menya was the worst performing decentralized governorate, having dropped by 6% in net attendance rates.

Considering Figure 1 and Figure 2 jointly, the data suggest that the improvements in Fayoum and Menya’s gross attendance rates were caused by students outside the range of the official primary school age (6 to 10 years old) attending primary school. Given Beni Suef’s drop by about 6% in gross attendance rates and by about 4%, it appears most

Figure 3: Changes in Repetition Rates, 2000 - 2003



of the decline was caused by individuals of primary school age not attending school. Alexandria experienced about the same decline (1%) in gross and net attendance rates, suggesting that most of the individuals who did not attend primary school were of primary school age.

The analysis reviews both quantity and quality issues, so an estimation for quality, repetition rates, will now be considered. Repetition rates are measured in this analysis as the percent change between 2000 and 2003 of students repeating primary school in either 2000 or 2003. Some studies choose to focus on a specific grade; however, the purpose of this analysis is to understand the average quality of schools.

Turning to Figure 3, it can be seen that there have generally been improvements in repetition rates across Egypt. The mean of the average repetition rate was -1.25% with a 2% standard deviation, which implies that the trend is not particularly strong. It should be noted that the variance in repetition rates across time (3.78) was slightly higher than the variance across governorates (4.0), suggesting that the trends depicted in Figure 3 may be limited in their explanatory power. Beni Suef and Fayoum followed the national trend of decreasing repetition rates, while Alexandria had an increase. Alexandria's increase, however, was close to zero. Menya, by contrast, had a 2% increase in repetition rates. Overall, Figure 3 seems to illustrate an improvement in the quality of Egyptian education between the years 2000 and 2003. It is possible, however, that the decrease in repetition rates may be related to the decrease in attendance rates. It cannot be ruled out that the students who constitute the decline in attendance rates would have needed to repeat school if they had attended. Perhaps those who belong to the population of

individuals who do not attend primary school are “low quality” students, and would have needed additional schooling to keep up with their peers.

In sum, the analysis on trends in attendance and repetition rates between 2000 and 2003 yields the following conclusions: (1) there is high variance over time and across governorates in changes in these rates with the exception of repetition rates, (2) there was general decline in gross and net attendance rates between 2000 and 2003, (3) most of the decline in gross attendance rates can be accounted for by the decline in net attendance rates, and (4) there was a noticeable decrease in repetition rates across the country, which may signify an improvement in school quality. The regression analysis will provide further insight into the role decentralization played in the outcomes experienced in Alexandria, Menya, Beni Suef, and Fayoum.

Regression Results

Four regression analyses are conducted on each of the three measures of student outcomes: gross attendance rates, net attendance rates, and repetition rates. The same control variables are introduced to each regression analysis sequentially to maintain consistency throughout the study. The pattern of progressively adding policy, student, household, and community controls is based on the Argentine study by Galiani and Schargrotsky (2002).

Given the range of student, household, and community characteristics used in education production function analyses, the variables most appropriate for Egypt’s case are selected. The first variable, $DECENT_j$ is a measurement of educational decentralization in a given governorate. It is calculated as a continuous variable to take into account the varying degrees of decentralization for Parent-Teacher Councils and Boards of Trustees. The expected coefficient on $DECENT_j$ for all three outcome measurements – gross attendance rates, net attendance rates, and repetition rates – is, expectedly, zero, given the null hypothesis that the policy has no effect on student outcomes.

The variable, $FEMALE_j$, is included to control for prevalent gender biases in the country (Galal 2002, El-Laithy et al 2003). For the gross attendance rate analysis, $FEMALE_j$ is measured as the female/male ratio for all age groups in a given governorate. The expected sign of the variable on gross attendance rates is negative because girls in Egypt traditionally do not attend school as frequently as boys (EdStats 2006). *Ceteris paribus*, a relative rise in the female population should correspond with an overall decline in gross attendance rates. The net attendance rate analysis includes $FEMALE_j$ as a measurement of the female/male ratio for primary school-aged children in a given governorate. Using the same logic as the gross attendance rate analysis, the expected sign of $FEMALE_j$ is negative. Finally, the variable is calculated as the female/male ratio for primary school students in a given governorate. A positive sign is expected for the coefficient of $FEMALE_j$ in the repetition rate analysis because girls generally perform worse than boys in Egyptian schools (EdStats 2006). It is likely, therefore, that girls will

not meet the requirements necessary to advance to the next year of schooling as often as boys.

The second control variable, average household income ($INCOME_j$) is used to account for household characteristics because it is one of the most common control variables in decentralization analyses. $INCOME_j$ is estimated by an instrument: average age of first marriage. The income variable functions as the opportunity cost of primary education: when parents have lower levels of income, they depend more heavily on their children to take care of siblings, help with chores, or even work for the family. It is expected that higher levels of income are associated with higher levels of enrollment, as students will be less needed outside of school. Therefore, a positive sign is expected on $INCOME_j$ for the gross and net attendance analyses. Higher levels of family income are also associated with better student performance (Hanushek and Luque 2001), which should be reflected in the repetition rate analysis. Accordingly, the expected sign of $INCOME_j$ should be negative, as rises in income will correspond to decreases in poor school performance.

The community characteristic, $RURAL_j$, the percent of rural inhabitants in a given governorate, is the final control variable introduced in the regressions. Rural inhabitants in Egypt are characterized by significantly worse quality of life, necessitating a control for their prevalence in a given governorate (Human Development Report 2004). The variable is calculated the same way as $FEMALE_j$, by determining rural/urban ratios for the appropriate populations in each governorate. Similar to the gender variable, a relative increase in the rural population should be associated with a decline in attendance rates, gross and net. The expected sign of $RURAL_j$ on the gross attendance rate and net attendance rate analyses, therefore, is negative. Additionally, a relative rise in the rural population should correspond with an increase in repetition rates because lower socioeconomic status is associated with lower school performance (Hanushek and Luque 2001).

Table 1 shows the results for the four regression analyses on gross attendance rates. The decentralization variable initially demonstrates a positive, although insignificant, effect on gross attendance rates. The gender ratio variable is then introduced to the regression, yielding a significant effect. As expected, $FEMALE_j$ has a negative coefficient. Adding the income variable lessens the negative effect of decentralization on student outcomes, although $DECENT_j$ still lacks statistical significance. The income variable has an unimportant and insignificant effect, with a coefficient of -0.0004. The rural variable has a positive and insignificant effect, which contradicts the initial expectation of the coefficient's sign as negative. The significance of the F-statistics across the four regressions is consistently high. Additionally, the R^2 and Adjusted R^2 are consistently low, suggesting that the model has minimal explanatory power.

Table 1: Gross Attendance Rates

<i>Explanatory Variables</i>	(1)	(2)	(3)	(4)
Constant	-1.68 (1.525)	117.526 (65.185)	119.945 (64.064)	110.838 (79.427)
DECENT _j	3.283 (16.994)	-5.440 (18.45)	-4.529 (18.432)	-9.753 (27.468)
FEMALE _j		-123.71* (67.385)	-124.42* (66.256)	-131.66 (85.479)
INCOME _j			-0.0004 (0.0007)	0.002 (0.004)
RURAL _j				2.541 (4.08)
R ²	0.0443	0.172	0.199	0.177
Adjusted R ²	0.002	0.079	0.058	-0.028
Signif F	0.849	0.184	0.274	0.508
No. governorates	21	21	21	21

Variance measures are noted in the parentheses.

The results from the analyses on net attendance rates are similar to the results of the gross attendance rate regressions. Turning to Table 2, we see that decentralization has had a consistently negative but insignificant effect on attendance rates. FEMALE_j has a consistently negative coefficient, as expected. INCOME_j has an expectedly positive, although unimportant and insignificant, effect. Surprisingly, RURAL_j has a positive effect, although it is insignificant. Given the small R² and Adjusted R² values and the highly insignificant F-statistics of the four regressions, the same problem arises as with the previous analysis; namely, that the model lacks rigorous explanatory power.

The final set of regressions is on repetition rates to test for quality effects. As Table 3 shows, decentralization fails to demonstrate statistically significant effects, although it has consistently negative coefficients. As expected, the gender variable has a positive and statistically significant effect. After the other control variables are introduced, however, FEMALE_j loses statistical significance. The income variable has unimportant and insignificant coefficients. Similarly, the rural variable has an insignificant effect that is too close to zero to be important. Consistent with the last three analyses, the repetition rates model has minimal explanatory power.

Table 2: Net Attendance Rates

<i>Explanatory Variables</i>	(1)	(2)	(3)	(4)
Constant	-1.134 (1.13)	15 (50.2)	12.388 (51.837)	17.360 (70.641)
DECENT _j	-8.6 (12.587)	-9.782 (14.246)	-10.765 (14.914)	-18.491 (32.497)
FEMALE _j		-16.744 (51.9)	-15.977 (53.610)	-31.015 (84.22)
INCOME _j			0.0005 (0.0006)	0.002 (0.004)
RURAL _j				1.494 (3.314)
R ²	0.024	0.026	0.05304	0.034
Adjusted R ²	-0.027	-0.08274	-0.11407	-0.0207
Signif F	0.503	0.792	0.8126	0.963
No. governorates	21	21	21	21

Variance measures are noted in the parentheses.

Table 3: Repetition Rates

<i>Explanatory Variables</i>	(1)	(2)	(3)	(4)
Constant	-1.198* (0.674)	-2.069** (0.565)	-3.349* (1.745)	-2.641 (4.462)
DECENT _j	-0.759 (7.512)	-0.672 (6.742)	-1.294 (7.539)	-2.627 (9.041)
FEMALE _j		0.005* (0.003)	0.005 (0.003)	0.0123 (0.0361)
INCOME _j			0.0002 (0.0004)	0 (0.001)
RURAL _j				-0.004 (0.021)
R ²	0.0005	0.214	0.222	0.2482
Adjusted R ²	-0.0521	0.127	0.085	0.060
Signif F	0.921	0.115	0.223	0.305
No. governorates	21	21	21	21

Variance measures are noted in the parentheses.

To review, decentralization has a negative and statistically insignificant effect on gross attendance rates, net attendance rates, and repetition rates. When controls are included, decentralization maintains negative coefficients and statistical insignificance for all three models. In sum, the results of the regression analyses suggest that decentralization has had an ambiguous and statistically insignificant effect on student outcomes in Egypt.

Chapter 4: Conclusions

The empirical analysis on educational decentralization in Egypt demonstrates that the null hypothesis cannot be rejected: the policy has no clear effect on student outcomes. More specifically, decentralization has an ambiguous and insignificant effect. The addition of student, household, and community control variables does not change the result that a relationship is lacking between decentralization and either attendance or repetition rates.

My results suggest that Egypt's national decentralization policy, the Education Reform Program, should be reconsidered. As my study demonstrates, the financial cost of decentralization is not balanced by any clear benefits, given the benefit measurements used. Given investments in the program by the United States government and by several NGOs, it is important that the lack of encouraging statistical results be taken seriously.

The reason my study indicates that there is no effect of decentralization on student outcomes may not be because the program is ineffective. Another possibility is that my analysis only considers the results of the programs after three years. Perhaps it will take more time before the effects of the policy are clearly manifested in student outcomes. Alternatively, decentralization may not have been effectively implemented in the four governorates. There may be distinctions between the planned policy written by USAID and the actual implementation that are not taken into account in my analysis. The problem with these conclusions is that the Millennium Development Team exhibited strong enthusiasm for the results of the program as of 2004 on student outcomes in the 2004 Egypt Human Development Report. One possible explanation for the apparent paradox is that the authors of the report based their results on anecdotal evidence that is not supported by the present data.

As more data becomes available in the upcoming years, a staggered time series analysis of educational decentralization should be conducted. The first time period can include the four governorates analyzed in this paper, while the second and third time periods include the seven pilot governorates and all governorates, respectively. If USAID or the Egyptian Ministry of Education collects data on the same students over the time period, conclusions can be made on the student characteristics that influence their decision to attend primary school. One of the weaknesses of my analysis is that it is conducted on the governorate level. Another study of decentralization in Egypt should be pursued that uses students or schools, rather than governorates, as the basis of analysis.

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