Nicaragua's School Autonomy Reform: Fact or Fiction?

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Abstract

This study reviews Nicaragua's school autonomy reform -- whether or not the state schools that joined the reform exercise greater autonomy over their own management and operations than state schools that did not participate in the reform, and whether or not the local stakeholders in the so-called autonomous schools perceive an increase in their influence over school decisions. *De jure* autonomy, that is, whether a school has signed the contract related to the reform, does not necessarily translate into greater school level decision-making nor does it affect schools equally. Some non-participating traditional schools are as autonomous *de facto* as *de jure* autonomous schools, and some *de jure* autonomous schools selected for participation in the reform remain as centrally controlled as some traditional schools. Moreover, principals, teachers, and school council members diverge regarding perceptions of their influence over school decisions. Principals in *de facto* autonomous schools enjoy more influence, but teachers report no benefit in decisionmaking authority from participation in the reform.

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1. Introduction

In a growing number of countries, governments are experimenting with devolving greater responsibility and authority not only to lower levels of government, but also directly to schools through decentralization. The transfer often takes the form of establishing school councils where they don't exist and conferring upon them new responsibilities and greater autonomy over school operations and pedagogical matters. This type of reform has been established in very diverse settings, such as Colombia, El Salvador, New Zealand, several U.S. cities, the U. K., and Victoria in Australia. Each of these reforms has been made with the expectation that, by bringing decision-making power and accountability closer to school managers, teachers and parents, schools will become more efficient in allocating and using resources as well as more effective in instructing students and keeping them in school.

To have a chance of advancing education outcomes, however, this reform must first bring about a transformation of relationships among the stakeholders in the system -- school principals, teachers, parents, students, communities, and government officials – and a real change in the school's decision-making process and operations. The change must also gain the support of teachers if the link between the policy reform and the classroom is to be established. Indeed, there are several reasons why fact may differ from policy. Schools may choose not to exercise their newly found authority, or they may lack the will or appropriate resources to do so. Local stakeholders may diverge in their interpretation of how the reform applies to the school, perhaps a result of imperfect communication from the central authority as well as poor internal communication within the school. Lastly, while power-sharing among the local stakeholders may be an aspect of the reform, the pre-reform style of governance influences how readily and painlessly greater consultation and participation can be achieved. These were important factors in the education reform of the city of Chicago: an evaluation revealed considerable uncertainty within schools about the division of responsibility between the local council and the central authority and about

the policymaking function of the school councils (Bryk et al., 1992). Schools tended to vary also because a despotic style in some schools paralyzed action and made change difficult.

The gap between policy and fact is often due to a lag in implementation; but it could be signaling also a real impediment to change. Especially when a reform program mainly involves changing processes and transforming institutions, the assumption that program participation is akin to switching on a piece of machinery, that it is either on or off, will yield false conclusions about its impact. Hence, understanding whether a program has been implemented as planned is a necessary step to assessing the impact.

In this paper we study Nicaragua's school autonomy reform that began in the early 1990s with respect to two questions. First, since the reform was phased in and schools were invited to participate voluntarily, which schools were more likely to participate the reform—and how quickly? That participation was truly voluntary at the outset of the program is doubtful because the implementing agency invited only selected schools in the first year of the program, but participation reflected schools' own lobbying for participation in subsequent years. Second, has the reform transformed participating schools? In other words, do the state schools that joined the reform (that is, *de jure* autonomous schools) exercise greater autonomy over their own management and operations than the state schools that did not participate, and do the local stakeholders in those *de jure* autonomous schools exert greater influence over school decisions?

Briefly, for Nicaragua's school autonomy reform we find that whether or not a school has signed the contract related to the reform does not necessarily translate into greater school autonomy, and signing the contract does not affect schools equally. Using the proportion of decisions made within the school as a measure of actual school autonomy, we find that while legally autonomous state schools make more decisions on their own than do traditional state schools, the two types of schools overlap with respect to their level of decision-making. Some traditional schools are as autonomous in practice as *de jure* autonomous schools, and some *de jure* autonomous schools remain as centrally controlled as some traditional schools. Lastly, we find that principals, teachers,

and school council members diverge significantly with respect to the amount of influence they exercise over school decisions. For the most part, principals in *de facto* autonomous schools, be they traditional or *de jure* autonomous schools, enjoy more influence, whereas teachers feel less empowered (and even threatened) under the reform.

The next section discusses the features of the reform. Section 3 describes the data sources and the empirical approach used in this study. Section 4 presents the results regarding school selection into the reform, the degree of *de facto* autonomy actually exercised in schools, and participation in decision-making by school agents. Section 5 presents the conclusions of the paper.

2. An Overview of the Nicaragua School Autonomy Reform

The school autonomy reform in Nicaragua was introduced as a principal element of the education policy of former-President Chamorro's coalition government that replaced the Sandinista regime in 1990. The new education policies were introduced along with several other social sector reforms as part of a broad post-civil war reconstruction effort. The call for greater local participation in education is not new to Nicaragua, however. Nicaragua was already well-known for the "literacy crusade" and accompanying education campaigns carried out in rural areas by the Sandinista government, which left a legacy of popular participation in the education sector (Arnove and Dewees, 1990; La Belle and Ward, 1990)

The school autonomy reform that began in 1991 is based on the establishment of councils in all public schools that would "ensure the participation of the educational community, particularly parents, in making school decisions" in both the "material" and "academic" realms of education (Ministry of Education, 1993).[1] These school councils consist of the school principal, teachers, parents, and students, with the number of members varying according to enrollment size. Parent members are elected by the parents' association whereas teacher members are automatically designated according to tenure and professional performance.[2] Council decisions are made by

voting. Except for student members who cannot vote, each member has one vote and a simple majority is required to reach decisions.[3]

The reform was deepened in 1993 when 20 public secondary schools were invited by the Ministry of Education to transform their school councils (*consejos consultivos*) into school management councils (*consejos directivos*), thus creating "autonomous" public schools. This pilot program transferred key management functions from central authorities to the school councils, widening the mandate of the councils from greater local participation to greater local autonomy. In 1994, 33 more secondary schools signed up for the program, and by the end of 1995, participation had increased to well over 100 secondary schools.

At the beginning of 1995, the reform was extended also to primary schools. It was modified further to take into account the specific conditions of remote rural schools and took on two forms, one for urban schools that is similar to the secondary school model and another for rural schools. For rural schools a new model was introduced: the *Nucleos Educativos Rurales Autonomos* (NERAs) is a group of schools formed around one center school and acting as one autonomous school with a shared council. The council is based in the center school, usually the largest in the group and the only school to have a director. By the end of 1995, there were over 200 single autonomous primary schools and 42 rural autonomous schools (NERAs), each consisting of two to four small schools. By the end of 2001, close to 3,000 schools had joined the reform, representing 61% of primary schools and 53% of secondary schools.

By law, the autonomous schools (hereon termed as program schools) differ significantly from the traditional state schools administered by the Ministry of Education with respect to decision-making power. At least in principle, they appear about as autonomous as non-government or private schools that operate largely independently of state regulations. How each type of school differs from the other is summarized in Table 1. The Ministry of Education retains responsibility for structuring the education system, establishing norms for staff promotions and teacher certification,

and setting the curriculum in all schools, but the program public schools are vested with considerable autonomy.

[TABLE 1 ABOUT HERE]

Briefly, program and non-program public schools differ in three main areas: (a) Pedagogy -- Program schools can introduce changes to the curriculum, choose their own textbooks, and set their own norms for evaluating students, while non-program schools cannot.[4] (b) Administration -- Program school councils are the school's official employer with authority over the hiring and firing of the principal; they exercise veto power over the principal's sanctions against students, and have the ability to modify the obligations, rights and sanctions established for students and teachers by the Ministry of Education.[5] (c) Finance -- Councils in both types of schools can set and administer their budget, set fees, and inform the community about the state of the school's finances; but only program schools can set the level of monthly fees paid by students and retain the full value of their revenues.[6] If program and non-program schools do differ with respect to these major functions, then the reform would likely have consequences on the quality of instruction. But it is also the case that program implementation is likely to have been imperfect, both in terms of making the expected changes in program schools as well as in excluding non-program schools from all changes associated with the reform. Finally, as the reform expanded, schools eager to participate in greater decisionmaking were often allowed to do so, even though the official switch to becoming legally autonomous was introduced later. For this reason, it cannot be assumed that program schools are going to be significantly different from non-program schools.

3. Data Sources and Methods

To establish that *de jure* autonomous schools indeed are managed differently than traditional state schools, we implemented a matched-comparison approach that is common in the

evaluation literature. This type of evaluation compares a treatment group that is the recipient of the program intervention to a control group that is not, where the control group is constructed based on the similarities between their characteristics and those of the treatment group (Grossman 1994, Rossi, Freeman and Lipsey 1993)**.** However, finding a good match is not a simple matter. Because program participation was at least partially voluntary, factors such as motivation and organization that are likely to affect both program participation and program outcomes must be considered. In other words, self-selection into the program may reflect systematic pre-existing differences between the program schools and non-program schools in attitudes and behaviors towards school management. In addition, these pre-existing differences may be unknown or unobservable factors. Thus, care must be taken to control for sample or self-selection bias.

Our study uses data from linked school and household surveys conducted in 1995 and again in 1997 for the same group of schools.[7] The school survey covered over 200 schools at the primary and secondary levels. Without good baseline data on schools, we matched a sample of program schools with non-program (traditional government and non-government) schools based on their similarities with respect to only two variables-- enrollment size and rural-urban location, two pieces of information that were available prior to the study. We stratified the universe of program schools and non-program schools according to these two variables, then randomly selected a sample of schools from within the "matched" strata.

We were able to test how good a match we chose for the program schools by developing and applying a full questionnaire to determine school characteristics. As is obvious in Table 2, we were not able to find good matches for the program secondary schools based on enrollment size, because nearly all the largest schools were handpicked for the program early in the reform. Table 2 also shows that the program schools and the traditional state schools in our sample are slightly different with respect to the socioeconomic background of students, such as the proportion of the mothers who were literate and the proportion with electricity or sewer systems at home. Non-government secondary schools are more clearly different than state schools in this respect. At the primary level

too, we find significant differences in these variables among the types of schools. These findings strongly argue for using an econometric model of statistical controls when comparing the program and non-program schools in order to explicitly account for differences in their observable characteristics. In section 4 below, we estimate such a model.

[TABLE 2 ABOUT HERE]

Different questionnaires were applied to principals, teachers, council members, students and their parents to collect information on a wide array of variables, including the school's enrollment, personnel characteristics and work conditions, and physical infrastructure; students' socioeconomic status, and parents' background and participation in school affairs. In each school, one section of grade three (at the primary level) or second year (at the secondary level) students was randomly selected, and within each section, a random sample of 10-15 students, depending on enrollment size in the school. The principal, one to two teachers (in the respective grades), and two council members were also interviewed per school.[8]

A special questionnaire was developed to inquire about decision-making in the schools: whether the school, not the central or local government, made each of 25 decisions in areas such as budget allocations, hiring and firing of school personnel, and pedagogical methods (Table 3); and how the respondents feel about their influence in how these decisions were made.

[TABLE 3 ABOUT HERE]

4. Reform, Autonomy, and Stakeholder Participation

De Jure Autonomy: Which Schools Joined the Reform

In this section, we estimate models of program participation, that is, why and when a school joined the reform. As mentioned above, there were two non-random routes into the reform. First,

Nicaragua's Ministry of Education handpicked a group of large, mostly urban secondary schools, possibly with the aim of providing a demonstration of the benefits of the reform to other schools. This process of selection later gave way to one of self-selection, with schools volunteering to join the reform. When, in 1995, the government decided to extend the program to primary schools, program participation was largely achieved through schools volunteering into the program. Since schools joined the reform incrementally, program schools have been in the reform anywhere from 5 to 57 months at the secondary level and from 6 to 32 months at the primary level.

We estimate the following relation separately for primary and secondary schools:

$$y_i = \alpha + X_j \beta + S_i \gamma + \varepsilon \qquad (1)$$

where y_i is program participation for school i and ε is a stochastic error term. We measure program participation in two different ways, as explained later in this section. X_j is a vector of observable characteristics of community j in which school i is located. For these community-level variables we include municipal average per-capita daily expenditure, percentage of school-aged children in the population, average education level of adults, and the average time children travel to school. For schools in rural areas, we also used community data on whether or not the municipality can be reached by a paved road, and if it has a post office, a literacy program, and a family planning program. These last variables, plus the amount of time children travel to school, measure the municipality's level of public services and infrastructure and reflect its "distance" or its "connectedness" to central authorities. To be able to include measures of community characteristics that are as independent as possible of the coverage of our survey sample, we used out-of-sample data obtained from the 1993 Nicaragua Living Standard Measurement Study.

S_i is a vector of observable characteristics of school i. The variables include characteristics of the principal and teachers, such as age, educational attainment, and relevant work experience, as well as the school's enrollment size and an index of the physical condition of the school's infrastructure.

We estimate two specifications of the model of program participation. In one, y_i is defined as a discrete variable that takes a value of one for program schools and zero for non-program schools. In the other, y_i is a continuous variable, with program schools being assigned the number of months since they signed the contract to become autonomous and non-program schools being assigned a value of zero. When y_i is defined as a discrete variable (dichotomous autonomy variable), we apply a probit model with maximum likelihood estimation; when y_i is defined as a duration variable (continuous autonomy variable), we implement an ordinary least squares (OLS) estimation technique and a Weibull (survival time) regression. The probit model characterizes the probability of program participation as nonlinear but in which the error terms follow a normal distribution (Maddala 1983). A Weibull regression model explicitly accounts for the fact that duration is censored (since the reform is still ongoing and the remaining non-program schools could eventually join the program) and has a non-normal statistical distribution. Choosing a Weibull regression model, however, comes with distributional assumptions and implies a specific parameterization. In particular, with this estimation approach, we assume that the decision to join the autonomy reform is (positive) duration-dependent. Furthermore, the Weibull regression allows us to predict the length of time before a school joins the reform, conditional on school and community characteristics, which is used in the *de facto* autonomy regressions discussed in the next section.[9]

We now turn to our results about the propensity of different schools to join the reform. In the duration models for the secondary schools, none of the community-level variables is significant, and only the school-level variables -- the education level of the principal, enrollment size and the school infrastructure index -- have statistically significant results. All exert a positive effect on participation (as indicated by coefficients of less than one). The result on enrollment size is expected given that the central government invited first the largest schools to join the reform. The education level of the principal was not an explicit factor used in that selection process, but the result indicates that there was some intent to select schools in which the principal might be more

able to implement the reform. In the binary model, however, several community-level variables have statistically significant effects, and a few more school-level variables are significant. For example, controlling for the relationship with other variables, program participation is negatively associated with the per-capita expenditure level in the community, and positively associated with the proportion of the population aged 20 and older.

A different picture emerges for primary schools. The community-level variables are more significant, a result that is consistent with the hypothesis that there was less selection by the central government and more involvement from the community in the program participation of primary schools. Schools in municipalities with higher per capita expenditure were more likely to join the program and to join more quickly. This contrasts with secondary schools for which the municipal per-capita income had a negative, rather than positive, effect on participation and duration. Schools in municipalities with more education, more school-age children in the population, and fewer schools (or where average travel time to school is greater) have been less likely to join the program. As in secondary schools, however, schools with better infrastructure have joined the reform faster. Other things being equal, schools with male principals, more male teachers, and more educated teachers have been less likely to participate in the reform, although these results are not all statistically significant in the estimates.

[TABLE 4 ABOUT HERE]

De Facto Autonomy: Are Program Schools Really Autonomous?

Our data demonstrate that program schools are indeed making more decisions on their own. Both at the primary and the secondary levels, in virtually any key school function, the percentage of program schools that are making their own decisions is significantly higher than that of traditional state schools, but lower than that of the private schools (Tables 5 and 6). There is, however, a significant overlap in the distribution of program schools and that of non-program schools in the

level of actual autonomy. There exist program schools that report hardly making many decisions at the school level, and traditional schools that report making quite a few decisions. In addition to delays and problems in implementing real change within the program schools, the fact that traditional state schools can also petition the Ministry of Education to take certain actions legally granted only to program schools may have contributed to the overlap between program and non-program schools.

[TABLES 5 & 6 ABOUT HERE]

One area in which the distinctions between program and traditional state schools are particularly marked pertains to administrative functions. Program schools are making more decisions about the hiring and firing of their staff, setting salaries and incentives, and planning and allocating their own budget. However, in many program schools, the decisions affecting instruction remain the domain of the Ministry of Education and its local representatives, despite the legal and policy attempts to devolve also these functions to schools. Fuller and Rivarola (1998) confirm these findings from responses by teachers in focus-group interviews. They found that teachers in program schools still tend to look to the central authority or its local representative for curricular or pedagogical help, not to the principal or to one another. Despite the commonly shared goal of improving students' academic performance, "many directors and teachers see decentralization as an administrative reform, not one that intends to seriously improve pedagogical skills or innovative classroom practices."

We turn now to the factors that account for the differences in the level of actual decision-making at the school level, i.e. *de facto* autonomy, and in particular, the extent to which program participation has indeed led to greater autonomy for public schools. To highlight the non-random nature of participation in the program, we contrast a simple ordinary least squares (OLS) model with a two-stage model. In the latter model, the first stage yields a predicted value for program

participation from the model of *de jure* autonomy described in the previous section. The second stage includes this predicted value as an explanatory variable, plus all the other variables in the *de jure* autonomy equation, minus the four community variables (paved road, post office, literacy program, and family planning program). In order to fulfill requirements for identification in the model, we assume that these community variables, which measure the community's connectedness to the central government, influence program participation (by selection by the central government or by self-selection) but not *de facto* autonomy. The non-random program participation presents a problem because many of the factors that determine this participation could also influence *de facto* autonomy.

De facto autonomy is measured as the percentage of key decisions made by the school itself (presumably by its council) rather than by the central or local government. This variable is derived from a special questionnaire, given to school principals and a random sample of council members and teachers in each sample school, about the locus of decision-making for 25 school functions (see Table 2 for a list of decision-making areas included in the questionnaire). [9] Hence,

$$z_i = \alpha + X_j \beta + S_i \gamma + \acute{y}_i \delta + \nu \qquad (2)$$

where z_i stands for *de facto* autonomy for school i, $\acute{y}_i$ stands for the measure of predicted *de jure* autonomy, and the other variables are the same as before, except for the four community-level variables that have been omitted from the X vector, and ν represents a stochastic error term. This equation is estimated using ordinary least squares.

We test the hypothesis that how long a school has been legally autonomous matters for the degree of *de facto* autonomy that the school has. Our ordinary least squares results show that both simple participation in the program and duration of participation are associated with higher *de facto* autonomy in the school. By contrast, the two-stage estimates show that there is no correlation between duration of *de jure* autonomy and level of *de facto* autonomy, but that only simple participation matters. This may indicate that schools that joined the reform early have some unobservable characteristics that are positively correlated with *de facto* autonomy. Once the effect

of these unobserved school attributes is purged using the two-stage estimation technique, the association between duration of autonomy and *de facto* autonomy disappears. We find no significant impact of any other controls in either model.

The contrast between these findings for program participation and for duration implies that the effect of the reform on *de facto* autonomy is felt almost immediately, not gradually. Another explanation for this contrast, however, is spillover effects, an explanation borrowed from the technology diffusion literature. This argues that the schools with the shortest duration have spent the longest amount of time observing the autonomy reform take its course in the rest of the education system. These schools then have learned from the early reformers the meaning of the reform, have assessed its costs and benefits, and how best to implement it, thus cutting short their own adoption period. Indeed, the initial years of the reform were meant to serve as a demonstration period, an important stage for the acceptance and diffusion of the reform.

When *de facto* autonomy is disaggregated into administrative and pedagogical matters, the effect of program participation is very much larger for actual decision-making in administrative functions than in pedagogical areas in secondary schools. In fact, program participation altogether fails to explain the latter in secondary schools, while the explanatory power of the model increases greatly for the administrative functions. In primary schools, the effect sizes are similar. These findings support both our heuristic assessment of the content of the reform as well as the observations from the qualitative evaluation.

[TABLE 7 ABOUT HERE]

Perceptions of Individual Roles in Decision-Making

Besides increased local autonomy, greater local participation is the second principal element of the Nicaragua education reform. In the survey, we asked school principals, teachers, and parent and teacher council members about the level of influence they feel they have over the decisions

made in their schools. The questions pertained to the same set of decision areas used to assess the level of school autonomy. The responses are on a scale of zero to three -- representing a range of answers from "no influence" to "a great deal of influence" – and we computed a simple average of these responses across the different decision areas.

[FIGURE 1 ABOUT HERE]

The responses indicate that, in program and non-program schools, principals feel the most influential, although more so in program schools than in non-program schools. The school council members who are not the principal are the next most influential group, but at a significantly lower level than principals, and program schools are not significantly different than non-program schools in this regard. Teachers, on the other hand, feel the least amount of influence, with responses averaging somewhere between "none" and "little influence". Since teachers who are not members of the school councils are not expected to make decisions directly on administrative matters such as the allocation of the school budget, we also focused on responses regarding pedagogical matters. However, even with respect to pedagogical matters, teachers in primary and secondary schools feel that they have little influence.

This finding echoes the results of the qualitative study of Nicaragua's reform (Fuller and Rivarola 1998). To cite a couple of responses, one teacher complained about the principal's power and teachers' lack of options, saying "When someone does not agree with the situation, that person is marked, one feels discomfort, under pressure from the director's office". Another lamented the loss of power to parents by stating "We [the teachers] are at a disadvantage on the council with only two teachers and six parents. ... I see that at times the parents are the teachers' enemies". Similar findings emerged from the Chicago school reform where teacher felt little influence in core areas such as budgets and curriculum (Bryk et al. 1992).

As argued in the previous sections, these findings on the level of local participation cannot be attributed automatically to the reform because of non-random participation in the reform. We thus employ a similar model to that used for *de facto* autonomy to explain self-perceived influence. The dependent variable is the mean of the answers about participation in the 25 key decision-making areas and takes a value between 0 to 3, 0 standing for "no influence" felt by the actor and 3 for "a lot of influence". As with any index measure, this variable is subject to the criticism that the possible values are not necessarily equidistant or similar across respondents. We use the same set of explanatory variables as with the *de facto* autonomy model, but in addition to program participation we also include the level of *de facto* autonomy (as determined by equation (2)).[10]

We estimate the following equation separately for principals, council members, and teachers:

$$I_{ik} = \alpha + X_j \beta + S_i \gamma + \acute{y}_i \delta + z_i \phi + \nu_2 \qquad (3)$$

where I_{ik} is the dependent variable representing the level of self-perceived influence in school i for individual k (k=1, 2, or 3); $\acute{y}_i$ stands for the predicted months of *de jure* autonomy for school i, and z_i stands for the level of *de facto* autonomy. All the other right-hand side variables are the same as in equation (2), and ν_2 is a stochastic error term.

Two main results emerge. First, *de jure* autonomy (or whether or not the school has joined the reform) has no significant impact on the perceived influence of principals or council members. It has a negative and significant impact on that of the primary school teachers. On the other hand, *de facto* autonomy (or the level of decision-making at the school) has a significant and positive impact on the level of influence felt by the directors and by the council members, but no significant effect on the influence felt by teachers at either school level. In fact, the sign of the autonomy variable for teachers is negative at both levels.

[TABLE 8 ABOUT HERE]

Disaggregating influence into decisions regarding pedagogy and administration, looking first at pedagogy, we find that *de jure* autonomy has actually a weakly significant and negative effect on the influence felt by primary school teachers and council members on pedagogical matters. It has no impact on the influence of principals at either the primary or secondary level. The effect of *de facto* autonomy is positive and significant for only the principals at the primary level and for the principals and council members at the secondary level; the rest of the estimates are not statistically significant.

Regarding administrative matters, *de facto* autonomy increases principals' and council members' perceived levels of influence at both school levels, as well as the influence felt by teachers at the primary level, although the size of this positive impact for the teachers is relatively small. *De jure* autonomy, on the other hand, appears to reduce significantly the level of influence felt by primary school teachers. Several variables -- teachers' education, whether the school is located in an urban area or not, and the per-capita expenditure and average education levels in the community -- seem to explain some of the variation in the influence felt by the teachers. Highly educated teachers in better-off, urban communities feel more influential, while the effect of the average education level of the community on the self-perceived influence of teachers is negative.

The overall sentiment of teachers that they have lost power under the reform is perhaps a cause for concern. The research on the Chicago reform instructs that "teachers who are more involved in school governance efforts are more likely to report changes in their classroom practices" and that "such accounts of change are more likely in schools where teachers have greater influence over decision making" (Consortium on Chicago School Research, 1991).

5. Conclusions

This paper focused on the extent to which an education reform such as Nicaragua's school autonomy reform is fact or fiction, that is, whether a change in policy brings about real transformation in schools. This question is of primary importance to evaluating the impact of the

reform on student performance. In Nicaragua, program participation was initially by invitation from the central government, but was driven eventually by community demand as well. Large, urban secondary schools supportive of the new coalition government and its education reform were invited to become the school autonomy vanguard, and our results confirm this. Later, especially at the primary level, school size and location were no longer the most important determinants of program participation. Rather, community-level factors such as the average distance to school, and average income (as measured by per-capita expenditures) and education levels determined participation in the reform.

The reform indeed has resulted in greater local autonomy, not only for schools that joined the program, but for traditional state schools as well. This effect is particularly strong among secondary schools and is most evident in the areas of decision-making regarding personnel and other administrative matters. In other areas of decision-making, especially with respect to pedagogy, most of the autonomous schools probably would have been as self-governing as they are today even in the absence of the decentralization reform.

Within schools, principals yield the most influence and teachers the least, regardless of the type of school or decision. There is some evidence suggesting that the reform has accorded parents and teachers in the school council more influence, albeit much less than the principal's.

Finally, while participation in the reform per se has had no significant impact on the perceived influence of any of the school-based actors, the level of *de facto* autonomy, independent of being part of the reform, significantly increases the level of influence felt by principals and, to a lesser extent, by council members. Teachers feel very little influence on school decision-making, including decisions on pedagogical matters, and autonomy, *de jure* or *de facto*, has at best no effect and at worst a negative effect on teachers' perception of their influence. This result is troubling if it implies that teachers feel excluded from the reform process. On the other hand, if it means that this type of reform forces teachers to feel more accountable to the school council, then perhaps it may affect positively what transpires in the classroom. In fact, King and Özler (1998) and Özler (2001)

find that *de facto* autonomy had a positive impact on student achievement, especially in primary schools, measured by standardized tests in mathematics and Spanish. Hannaway (1991) has argued that decentralization can diminish the feeling of autonomy of local agents such as teachers because parents and the local community can yield greater control than the distant central authority, resulting in a more effective school management process.

Increasing the accountability of school-based actors to the community is important as a means to increase school efficiency, while more decision-making at the local level gives schools the flexibility to take necessary actions expeditiously. The challenge of any such reform is to figure out how to set up a structure in which schools and communities are acting truly in a more autonomous way. Nicaragua's autonomy reform suggests that it is not enough to decree autonomy *de jure*, there also must be incentives for schools to exercise autonomy *de facto*, particularly if reforms are to have a positive effect on student performance.. In addition, these reforms should pay attention to process changes whereby all school-based actors in the community feel included and face the right incentives. In Nicaragua, teachers did not take mass action against the reform, but it would be hard to imagine that a school system in which teachers are dissatisfied in the long-run can function well.

Endnotes

[1] Unfortunately, this study cannot assess the contribution to school-based management made by the establishment of these school councils in 1991. Since all schools were affected at once by this reform and since we have no pre-1991 data, we are able to look only at the school autonomy aspects of the reform introduced beginning in 1993.

[2] The mechanism for selecting teacher council members has recently changed, partially as a result of the findings emerging from this evaluation. Instead of being appointed, teacher representatives on the council are now elected by their peers.

[3] In schools with at least 500 students, the council is supposed to have seven core members, consisting of the school principal; two teachers (the "best teacher" and the teacher with the longest tenure or a substitute elected by the Teacher's Council); four parents (who could be the elected head of the parents' association, the runner-up in the head of the parents' association election, a parent elected from among the parents of the best students, or a parent appointed by the municipal government). In late 1995, the number of parents in the council was raised to six. In schools with less than 500 students, the council has five core members -- one less teacher and parent member, although in late 1995, the number of parent members was raised to five. Two students --the president of the student council and the "best student" who is elected by the parents of the “best student” in each grade -- are also chosen as members of the council, but they do not have a vote.

[4] The Ministry of Education establishes its core curriculum by education cycles. At the primary level, the first cycle corresponds to grades 1-3 and the second cycle to grades 4-5. At the secondary level, the first cycle corresponds to the first three years of secondary school while the last years of secondary school are broken into diverse cycles depending on the area of academic specialization. As long as teachers are consulted and the core curriculum is followed, councils in autonomous and traditional schools can lengthen the minimum subject hours established by the curriculum, add curricular and extracurricular activities, and choose their own pedagogical methods.

[5] In traditional state schools, the Ministry selects the director, and the Ministry also has to approve the principal's selection of teachers and administrative personnel. Consultative councils in traditional schools are vested with none of these rights. Directors in all public schools have discretion over the hiring and firing of teachers and administrative personnel, but these decisions can be over-ruled by the council. Additionally, all schools must abide by the *Ley de Carrera Docente*, the law governing teacher's rights, and are constrained by the Ministry's policy of allocating funding for one teaching position for every 30 students.

[6] In practice, a council's financial authority depends upon the school being able to generate local resources since the base salaries for teaching staff and the regular fee schedule for goods and services provided by the school are set by the Ministry of Education. Funding for autonomous schools is a combination of monthly lump-sum transfers from the central government and locally generated resources collected from student fees, community contributions and school activities. The lump-sum transfers are expected to cover base salaries and expenditures associated with routine maintenance of the school. All secondary schools are also encouraged to collect a fee of ten córdobas per month (equivalent to US$1.22) from each student. Autonomous schools are authorized to retain these fee revenues, while traditional public schools must return one-half to the central government. The constitutional provision guaranteeing free primary education prevents primary schools from charging student fees. However, it is customary for primary schools to collect a "voluntary" fee of five córdobas per month per student. Certain students -- the children of teachers and veterans, poor students and students with outstanding academic records -- can be exempted from the fees. For exempt students, the schools receive a subsidy of five córdobas per month per student. That the subsidy is less than what the school could have charged reduces the incentives of schools to grant exemptions.

[7] The surveys were conducted under the direction of an evaluation committee composed of staff in the Ministry of Education, a consultant for the U.S. Agency for International Development, and local and Washington-based staff of the World Bank.

[8] The 1997 school-household survey covered 100 secondary schools and 126 primary schools. At each level, there were approximately twice as many autonomous schools as traditional state schools. In addition, at both the primary and secondary level several of the public schools that had been traditional in 1995 had become autonomous by 1997, reducing the number of traditional primary schools to 35 and the number of traditional secondary schools to 16. In 1995 and again in 1997, the survey interviewed about 420 teachers, 182 council members, and 3,500 students and their parents. To the extent possible, the respondents from the council were selected such that they were not the same teachers or parents who answered the teacher or parent questionnaire. In very small schools, especially at the primary level, this was not always possible. See Appendix Tables 1-2 for more details on the sampling design.

[9] We also estimated a Cox regression model and found the results to differ only slightly from the Weibull results.

[10] The disturbance term in the principal's equation is significantly, and negatively, correlated with the disturbance terms in the two other equations at the secondary level: The unobservables that affect the principal's perceived influence positively affect the council members' and teachers' influences negatively. No significant correlation of this sort exists at the primary level. We have considered employing a "seemingly unrelated regression", but this additional information would change neither the parameter estimates nor the standard errors because the set of right hand side variables in each equation is the same.

References

Arnove, R. E., & Dewees, A. (1991). Education and Revolutionary Transformation in Nicaragua, 1979-1990. Comparative Education Review 39 (1): 92-109.

Bray, M. (1985). Education and Decentralization in Less Developed Countries: A Comment on General Trends, Issues and Problems with Particular Reference to Papua New Guinea. Comparative Education.

Bryk, Anthony, John Q. Easton and others (1993). A View from the Elementary Schools: The State of Reform in Chicago. A Technical Report sponsored by the Consortium on Chicago School Research.

Fiske, Edward B. (1996) "Decentralization of Education: Politics and Consensus" World Bank

Fuller, Bruce and Magdalena Rivarola (1998). Nicaragua's Experiment to Decentralize Schools: Views of Parents, Teachers and Directors. World Bank Working Paper Series on Impact Evaluation of Education Reforms. Paper #5. Development Economics Research Group.

Grossman, J. B. (1994) Evaluating Social Policies: Principles and U.S. Experience. World Bank Research Observer. Volume 9 (2), 159-80.

Hannaway, J. (1991). The Organization and Management of Public and Catholic Schools: Looking inside the 'Black Box'. International Journal of Educational Research 15(5): 463-481.

Hanson, E. Mark (1996). Comparative Strategies and Educational Decentralization: Key Questions and Core Issues. Processed.

King, Elizabeth and Özler, Berk (1998). What's Decentralization Got To Do With Learning? The Case of Nicaragua's School Autonomy Reform. World Bank Working Paper Series on Impact Evaluation of Education Reforms. Paper #9. Development Economics Research Group.

La Belle, T. J., & Ward, C. (1990). Education Reform when Nations Undergo Radical Political and Social Transformation. Comparative Education 26(1).

Lockheed, M., & Verspoor, A. & Associates (1991). Improving Primary Education in Developing Countries. Oxford University Press.

Lockheed, M. & Jimenez, E.(1994). Public and Private Schooling in Developing Countries. World Bank HRO Working Paper #43, November.

Maddala, G. S. 1983. Limited-Dependent and Qualitative Variables in Econometrics. Cambridge: Cambridge University Press.

Ministry of Education (1996). *Guia para la Estructuración y Funcionamiento de los Consejos Escolares*, Managua, Nicaragua, March 1.

Ministry of Education (1993). Reglamento General de Educación Primaria y Secundaria. Managua, Nicaragua, December.

Özler, Berk (2001). Decentralization and Student Achievement: The Case of Nicaragua's School Autonomy Reform. Dissertation. Cornell University.

Prawda, Juan (1993). Education Decentralization in Latin America: Lessons Learned. International Journal of Educational Development, volume 13, number 3.

Rossi, Peter H., Howard J. Freeman and Mark W. Lipsey (1998). Evaluation: A Systematic Approach.. Sage Publications, Inc, Newbury Park, CA.

Summers, A., & Johnson, A. (1994) A Review of the Evidence of the Effects of School-Based Management Plans. Review of Educational Research.

Winkler, Donald (1995). Decentralization in Education; Participation in the Local Management of Schools. World Bank, processed, for Seminar on Decentralization, Santo Domingo, March 1995.

World Bank (1995). Staff Appraisal Report, Nicaragua Basic Education Project. Washington, D.C.

Table 1: Previous vs. Present Regime: Comparing Autonomous, Traditional and Private Schools

Functions	Previous Regime	Present Regime		Private Schools
	All Public Schools	Traditional Public Schools	Autonomous Public Schools	
Structuring the education system	Ministry	Ministry	Ministry	Ministry
Staff promotions policy	Ministry	Ministry	Ministry	Ministry
Setting the curriculum	Ministry	Ministry	Ministry	Ministry
Certifying teachers	Ministry	Ministry	Ministry	Ministry
Expanding classroom hours by subject	Ministry	School	School	School
Programming additional curricular and extracurricular activities	Ministry	School	School	School
Establishing pedagogical methods	Ministry	School	School	School
Formulating the annual pedagogical plan	Ministry	Ministry	School	School
Selecting textbooks	Ministry	Ministry	School	School
Evaluating students	Ministry	Ministry	School	School
Setting equivalencies*	Ministry	Ministry	School	School
Hiring and firing director	Ministry	Ministry	School	School
Hiring and firing teachers and administrative personnel	Ministry	School	School	School
Setting student and staff obligations, rights and sanctions	Ministry and School	Ministry	School	School
Setting and administering the school budget	Ministry and School	School	School	School
Setting school fees for goods and services	Ministry	Ministry	Ministry	School
Setting voluntary school fees	School	School	School	School
Setting monthly fee paid by students	Ministry	Ministry	School	School

*Academic requirements that must be fulfilled in order to determine the academic level of students who transfer schools.

Table 2: Basic Characteristics of Schools and Students' Households by Type of School, 1997

	Primary Schools			Secondary Schools			
	Autonomous Public	**Rural Autonomous Public (NERA)**	**Traditional Public**	**Autonomous Public**	**Traditional Public**	**Private with Subsidies**	**Private without Subsidies**
Enrollment*	638.5	293.8	300.9	1202.6	287.6	416.7	131.6
% of mothers literate	82.3	72.0	71.7	88.2	80.0	88.2	96.8
% of mothers with primary education	45.0	29.4	31.6	52.5	43.6	62.3	75.8
% of mothers with secondary education	3.8	1.8	1.0	6.3	1.5	15.2	31.6
% households with electricity	87.6	64.0	63.6	92.7	86.8	94.2	100.0
% households with sewer systems	18.8	6.8	8.4	37.4	34.8	65.2	67.0

- Enrollment refers to initial number of students enrolled in 1997.

Joint statistical tests of the differences between means were estimated separately for primary and secondary schools. All of them were significant at 1 percent. Results for pair-wise comparisons are discussed in the text.

Table 3: Key Areas of Decision-making

- **Salaries and Incentives**
  - **Setting salaries**
  - **Establishing incentives for teachers and administrative staff**
- **Personnel**
  - **Hiring and firing teachers**
  - **Hiring and firing the director**
  - **Providing textbooks**
- **Classroom and Pedagogy**
  - **Determining class size**
  - **Designing the curriculum**
  - **Selecting textbooks**
  - **Pedagogical supervision**
  - **Determining schools hours**
  - **Setting the school calendar**
- **Training Teachers**
- **Maintenance and Infrastructure**
  - **Maintaining the schools**
  - **Developing infrastructure projects**
- **Administration**
  - **Planning and preparing school budget**
  - **Setting goals for the school**
  - **Hiring and firing administrative personnel**
  - **Distributing textbooks**
  - **Informing the community about school activities**
  - **Accrediting new schools**
  - **Defining educational plans and programs**
  - **Relations with teachers' union**
- **Teacher Supervision and Evaluation**
  - **Evaluating teachers**
  - **Supervising teachers**

Table 4: The Determinants of De Jure Autonomy: A Summary of Three Different Models

Variable	Primary Schools			Secondary Schools		
Model	**Probit**	**OLS**	**Weibull**	**Probit**	**OLS**	**Weibull**
Municipal Level						
Per capita expenditures (daily)	0.129*	1.557**	0.879**	-1.027**	-0.160	1.012
	(0.074)	(0.408)	(0.036)	(0.438)	(0.507)	(0.023)
% Persons over 20 who completed	-0.075*	-0.593**	1.045*	0.515**	0.122	1.008
secondary school	(0.041)	(0.241)	(0.025)	(0.238)	(0.456)	(0.019)
Average minutes of travel to school	-0.180**	-1.476**	1.109**	-0.540*	-0.146	1.013
from home	(0.086)	(0.478)	(0.051)	(0.288)	(0.559)	(0.023)
School Level						
=1 if principal is male	-0.482	-3.156	1.529**	-1.698**	-4.137	1.150
	(0.390)	(2.246)	(0.292)	(0.843)	(3.501)	(0.181)
Principal's years of education	0.056	-0.143	0.989	0.483*	1.698**	0.900**
	(0.083)	(0.460)	(0.039)	(0.276)	(0.787)	(0.040)
Principal's years of tenure at school	0.072	0.126	0.985	-0.256	0.010	0.982
	(0.068)	(0.376)	(0.032)	(0.160)	(0.426)	(0.018)
=1 if teacher is male	-1.113*	-4.531	1.721	1.562*	3.903	0.748
	(0.616)	(3.628)	(0.591)	(0.878)	(4.105)	(0.157)
Teacher's years of education	-0.103	-1.249*	1.161**	0.264	-0.812	1.037
	(0.113)	(0.659)	(0.064)	(0.299)	(0.886)	(0.040)
Teacher's years of experience	-0.031	-0.225	1.015	-0.344**	0.374	0.979
	(0.037)	(0.232)	(0.019)	(0.162)	(0.351)	(0.016)
Size of school enrollment	0.000	0.004	1.000	0.007**	0.005**	1.000**
	(0.001)	(0.004)	(0.000)	(0.003)	(0.002)	(0.000)
Index of school inputs	0.320*	1.168	0.844**	1.245**	4.312**	0.838**
	(0.170)	(0.994)	(0.064)	(0.593)	(1.938)	(0.071)
N	104	104	104	77	77	77
R-squared [prob.>chi2]	.329	.333	[.0000]	.677	.318	[.0007]
Other variables in this regression include various community characteristics (e.g. demographics, urban/rural, existence of paved roads, a post office, a literacy program, a family planning program) and some school characteristics (e.g. teachers' gender, education and experience).						

** denotes statistical significance at the 5% level. * denotes the same at the 10% level. The standard errors are reported in parentheses below the parameter estimates.

Table 5: Primary Schools: Percentage of Respondents who claim that the School is the Decision-maker in Specific Areas, 1995 and 1997

Decision Areas	Traditional Public		Autonomous Public		Rural Autonomous Public NERA		Private
	1995	1997	1995	1997	1995	1997	1997
Classroom & pedagogy	30	41	37	59	48	58	73
Personnel	20	14	54	62	50	65	85
Supervision & evaluation of teachers	57	58	62	79	67	82	85
Setting salaries & incentives	19	12	37	41	43	32	91
School budget & plan	30	33	51	79	65	78	90
Teacher training	15	31	23	62	27	56	82

Table 6: Secondary Schools: Percentage of Respondents who claim that the School is the Decision-maker in Specific Areas, 1995 and 1997

Decision Areas	Traditional Public		Autonomous Public		Private	
	1995	1997	1995	1997	1995	1997
Classroom & pedagogy	35	55	44	64	59	73
Personnel	19	25	66	74	79	84
Supervision & evaluation of teachers	64	81	71	81	78	92
Setting salaries & incentives	34	32	59	59	79	82
School budget & plan	50	67	88	92	88	92
Teacher training	14	45	50	79	50	79

Table 7: The Influence of De Jure Autonomy on De Facto Decision-making in Areas of Administration and Pedagogy

Area of Decision-making	Primary Schools			Secondary Schools		
(1st Stage)	**(Probit)**	**(OLS)**	**(Weibull)**	**(Probit)**	**(OLS)**	**(Weibull)**
Administration	33.78	.004	.025	47.01**	-.033	-.459
	(20.83)	(.011)	(.141)	(8.27)	(.024)	(.309)
	[.201]	[.177]	[.176]	[.496]	[.240]	[.245]
Pedagogy	30.27*	-.0004	-.068	6.21	.014	-.069
	(16.24)	(.008)	(.110)	(9.52)	(.023)	(.292)
	[.102]	[.065]	[.070]	[-.117]	[-.118]	[-.124]

** denotes statistical significance at the 5% level. * denotes the same at the 10% level. The standard errors are reported in parentheses below the parameter estimates. The adjusted R-squared for each equation is reported in brackets below the standard errors.

Note: Administration consists of decisions on personnel, salaries, incentives, and budget. Pedagogy consists of decision-making areas such as classroom and pedagogy, teacher training, and teacher evaluation and supervision. For more detail on these decision-making areas, see Table 3.

Table 8: The Influence of De Jure Autonomy on School-Based Actor's Self-Perceived Level of Influence

Variable	Primary Schools			Secondary Schools		
(1st stage Probit)	Directors	Council Members	Teachers	Directors	Council Members	Teachers
On all areas of decision-making						
De jure autonomy	0.463	-0.732	-0.768*	0.055	-0.464	0.116
	(0.383)	(0.524)	(0.422)	(0.220)	(0.403)	(0.242)
De facto autonomy	1.493**	1.413**	-0.089	1.697**	2.925**	-0.259
	(0.352)	(0.481)	(0.388)	(0.434)	(0.794)	(0.477)
	[.451]	[.312]	[.210]	[.420]	[.315]	[.146]
On administrative areas of decision-making						
De jure autonomy	0.805	0.145	-0.925**	0.597*	0.117	0.268
	(0.501)	(0.601)	(0.385)	(0.323)	(0.481)	(0.265)
De facto autonomy	2.279**	2.265**	0.847**	2.403**	2.190**	-0.059
	(0.461)	(0.553)	(0.354)	(0.630)	(0.939)	(0.519)
	[.569]	[.370]	[.262]	[.411]	[.226]	[.268]
On pedagogical areas of decision-making						
De jure autonomy	0.569	-1.069*	-0.873*	-0.132	-0.393	0.181
	(0.489)	(0.602)	(0.476)	(0.289)	(0.392)	(0.264)
De facto autonomy	1.311**	0.781	-0.383	1.197**	3.177**	-0.802
	(0.449)	(0.553)	(0.438)	(0.570)	(0.772)	(0.520)
	[.318]	[.232]	[.266]	[.238]	[.386]	[.203]
N	77	77	77	65	65	65

** denotes statistical significance at the 5% level. * denotes the same at the 10% level. The standard errors are reported in parentheses below the parameter estimates. The adjusted R-squared for each equation is reported in brackets below the standard errors.

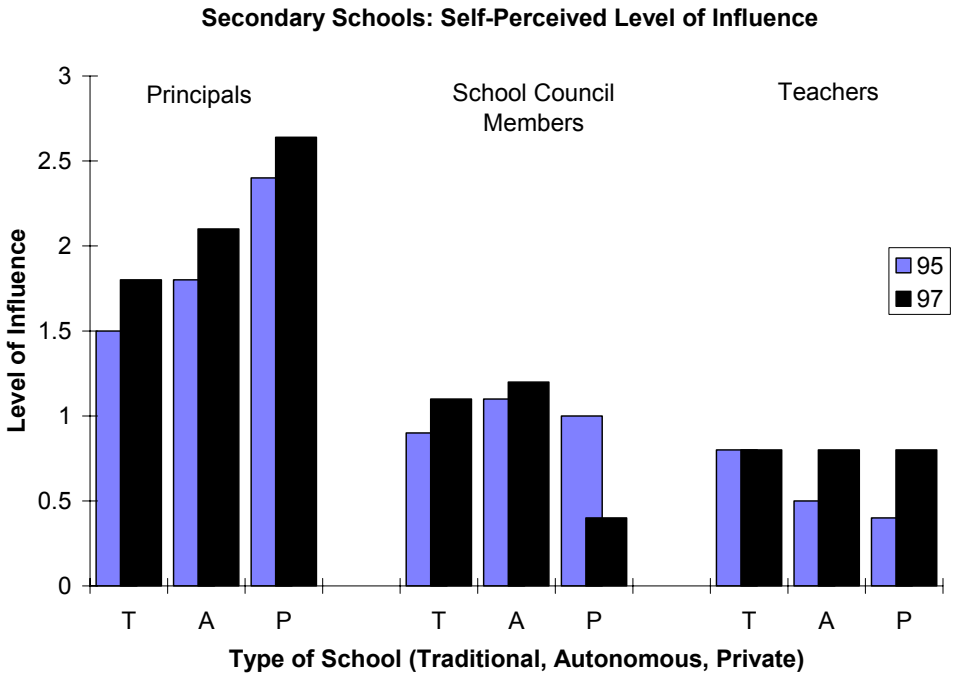
Note: *Administration* consists of decisions on personnel, salaries, incentives, and budget. *Pedagogy* consists of decision-making areas such as classroom and pedagogy, teacher training, and teacher evaluation and supervision. For more detail on these decision-making areas, see Table 3.

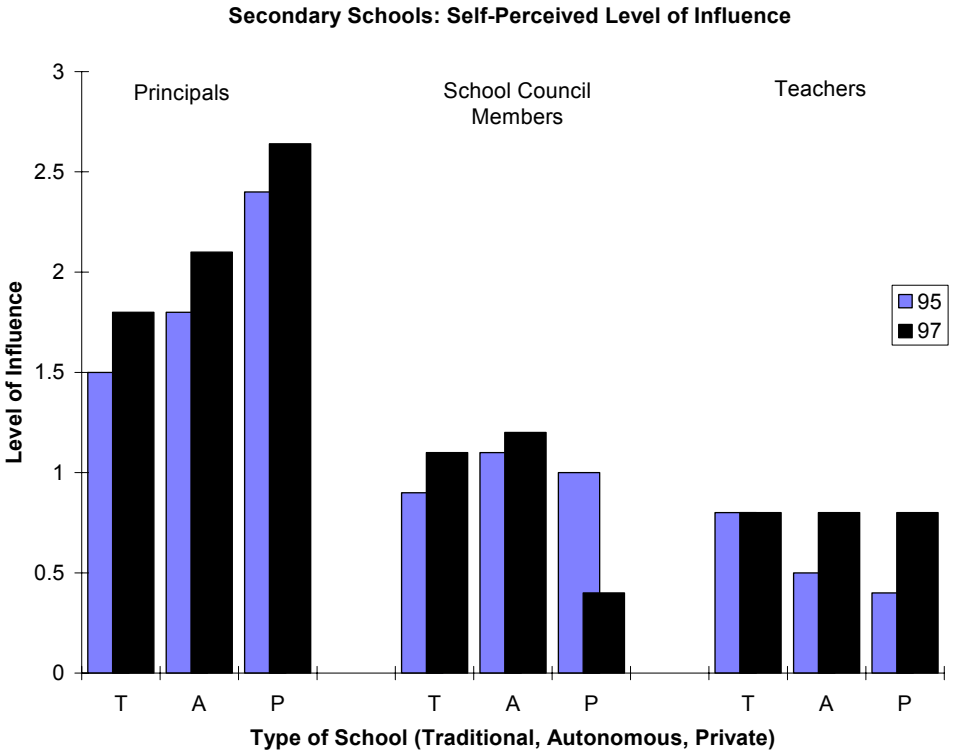
Table 9: Summary Statistics for Dependent and Independent Variables Used in Equations

Variable	Description	Primary Schools	Secondary Schools
Municipal Level			
Pcexp	Per capita expenditures (daily)	13.50	17.03
		(5.52)	(6.07)
Schaged	% Persons aged 6-19	30.26	31.04
		(3.08)	(2.56)
Road	=100 if paved road exists	26.48	17.06
		(26.20)	(15.89)
Postoff	=100 if post office exists	10.91	3.71
		(23.08)	(7.18)
Litprog	=100 if a literacy program exists	8.61	9.24
		(12.85)	(8.48)
Fam_plan	=100 if a family planning	22.62	18.86
	program exists	(24.46)	(16.85)
Seced	% Persons over 20	11.67	17.36
	completed second.	(8.89)	(7.80)
Timereq	Average mins. of	16.26	17.55
	travel to school from home	(3.04)	(3.95)
Urban_ls	Rural or urban	.43	.63
		(.407)	(.35)
School Level			
dscsum	Level of de facto	.59	.72
	autonomy (% of decisions)	(.16)	(.14)
d_male	=1 If director is male	.26	.40
		(.44)	(.49)
d_edyrs	Director's # years	12.44	16.05
	of education	(2.78)	(2.82)
d_ten	Director's years of tenure at school	4.30	4.45
		(2.95)	(3.97)
t_male	=1 If teacher is male	.14	.49
		(.30)	(.45)
t_edyrs	Teacher's # years	10.86	15.0
	of education	(1.60)	(2.52)
t_exp	Teacher's # years of teaching	8.98	11.13
	Experience	(4.77)	(6.66)
enroll	Size of school enrollment	372.46	1219.27
		(402.09)	(1258.57)
sc_input	Index of school inputs	2.52	4.19
	(library, water, etc.); max=5	(1.44)	(1.11)
N		107	78

Standard deviations are in parentheses.

Figure 1: Self-Perceived Level of Influence in School Decisions by Respondents





Appendix Table 1: Evaluation Samples for Primary Schools (1997)

Evaluation Category	Type of School	Sample Size
Treatment	Regular Autonomous	29
	Within a NER	52
	Total Treatment	81
Comparison	Traditional Public	35
	Private with Subvention	3
	Private w/o Subvention	7
	Total Comparison	45
Total Primary		126

Appendix Table 2: Evaluation Samples for Secondary Schools (1997)

Evaluation Category	Type of School	Sample Size
Treatment	Autonomous in 1993	15
	Autonomous in 1994	15
	Autonomous in 1995	30
	Autonomous after 1995	4
	Total Treatment	64
Comparison	Traditional Public	16
	Private with Subvention	10
	Private w/o Subvention	10
	Total Comparison	36
Total Secondary		100