Bureaucratic Pacting and Public Education in India's Silicon Valley: A Case in

Which Locally Elected Leaders Become Public Brokers for Securing Resources

Do legislative politics influence student performance in public schools? Theory: Informal programmatic linkages between citizens, elected leaders and bureaucrats undermine democratic accountability in formal institutions for resource allocation. Hypothesis: Children attending schools in which there are informal linkages for securing school benefits between locally elected ward representatives and school principals score higher on standardized tests than students in schools without linkages. Results: Students in schools where linkages between locally elected ward representatives and school bureaucrats are present receive more resources resulting in higher levels of student performance relative to students in schools where linkages are not present. This results in representational patterns to student achievement. Student test scores vary systematically by the minority status of their local ward representative and the ward representatives' relationship to their school principal.

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Introduction

Do legislative politics influence student achievement in the classroom? In industrial societies resources are allocated to public education via formal budget-making processes.[1] Elected representatives pass an annual budget and their role in the public education system is mostly complete. Bureaucratic regulations and oversight in more developed countries arguably operate with some degree of success in protecting students and teachers from the spoils of local politics.[2]

In contrast, education systems in many developing countries lack formal budgeting-making institutions and processes for resource allocation (Hicken and Simmons 2008; Rudra 2005; Stasavage 2005). Developing systems often have regulations for public education, but these regulations vary with little or no oversight. In such systems resources are allocated to public schools in many different ways, often through informal politics between school principals, local representatives and bureaucratic elite (World Bank 2005).

This article highlights one case in Bangalore, India in which locally elected ward representatives engage in informally with local school principals to secure public

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[1] It is widely accepted in both developed and developing countries that school budgets and material resources to schools are positively linked to better student performance (World Bank 2005; Llyod et al. 2003; Hedges, Laine, and Greenwald 1994; Hanushek 1995; Kremer 1995; Handa 1999; Glewwe and Jacoby 1994).

[2] There are exceptions this statement. Meier et al. (2000; 2001) finds linkages between poor school performance and bureaucratic politics. Their results suggest school performance is linked to contextual factors of school systems such as the size of the bureaucracy and number of minority teachers. However, they do not assess linkages between school performance and informal legislative politics.

resources for education. [3] Ward representatives in Bangalore engage in activities outside of their formal legislatively-defined roles to secure resources for public schools in their wards. Locally elected leaders in Bangalore maintain programmatic linkages, referred to in this article as bureaucratic pacting, with school principals. Elected leaders pass an annual budget that appropriates large discretionary funds to bureaucratic elite for managing public services in Bangalore. In education these legislators then maintain close relations with school principals and individually lobby bureaucratic elite, manipulating executive processes of bureaucratic implementation to secure resources such as teacher placements, money for repairs and additional school uniforms to schools in their wards.

I argue that these programmatic linkages between school principals and elected leaders, bureaucratic pacting, undermine the legitimacy of pre-existing formal institutions for resource allocation. Students in wards where such programmatic linkages are present receive more resources resulting in higher levels of student performance. Moreover, there are representational patterns to student achievement in math and literacy tests. Students' scores on standardized tests vary systematically depending on the ethnic and social characteristics of their locally elected ward representative and his or her lobbying efforts.

Prior Research

Following the third wave of democratization in the early 1990s we have witnessed comparatively new patterns of democratic linkage between political leaders and their

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[3] Helmke and Levitsky (2006) point to the need for comparative scholars to clearly define formal and informal institutions in their research. Building on a series of essays by O'Donnell in the early 1990s, they assert that there are informal institutions are implicit rules of the game that govern the behaviors of politicians and political parties and their connections to their constituents outside of formally written and agreed upon institutions. This article adopts their definition.

citizens in the developing world (Helmke and Levitsky 2006; Huntington 1991; Kitschelt 2000; Shaffer 2006). Many of these linkages are not new and their theoretical foundations have been observed for decades.[4] However, political scientists have witnessed new arrangements in how elected representatives seek the support of their constituents (Kitschelt 2000; Remmer 2007; Stokes 2004). Leaders use a mix of different strategies to gain political support and in many developing countries actions of political elite vary depending on needs in their wards.

This article adopts the argument that informal institutions as a means of resource allocation are harmful to democratic institutions in developing countries. Debates in political science fixate on the influence of informal institutions on democratic outcomes (Kitschelt and Wilkinson 2007; Remmer 2007). A number of scholars argue that informal institutions seeking to provide material incentives to individuals with the intention gaining political support are harmful to democratic outcomes, whether these outcomes are voting, electoral outcomes, or policy representation (Eisenstadt 2002; Helmke and Levitsky 2006; Remmer 2007, 363; Stokes 2006).

Alternative arguments suggest that such informal institutions can coexist, and in some cases, even strengthen democratic outcomes (Tsai 2007; Remmer 2007). For instance, Tsai (2007) finds that informal institutions engaging local temples in service delivery in China promote democratic forms of participation in civic groups. Tsai's

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[4] Kitschelt (2000) defines multiple types of approaches and various types of vote-buying linkages found in comparative politics, including: modernization linkages dating back to Huntington (1968); political ideology and ethnic politics linkages rooted in Horowitz (1985), institutionalist linkages, political economy approaches borrowed from economics, and statist approaches such as that of Shaffer (2006)—each of which defines vote-buying linkages from different perspectives with different units of analysis (micro to macro) and identifies various types of linkages which I highlight below.

argument is relevant in China, an authoritarian regime lacking formal democratic

institutions. Research in developing democracies, however, generally suggests that such

informal institutions only undermine democratic accountability and already weak formal

institutions. Many case countries in Latin America have demonstrated that informal

institutions do coexist alongside basic Schumpeterian definitions of democracy (Helmke

and Levitsky 2006). However, it is widely argued, and this paper adopts the viewpoint,

that informal institutions undermine core institutional guarantees prized in less minimalist

definitions of democracy.[5]

Theoretical Contribution

      This article makes two contributions to the existing debate on informal

institutions as a means of resource allocation. One, I present one case in which

programmatic linkages between elected representatives and school principals constrain

democratic outcomes (Kitschelt 2000; Helmke and Levitsky 2006; Eisenstadt 2006;

Stokes 2004, 2006).[6] In this analysis some public schools receive more benefits relative

to others based the background of their elected ward representative and his lobbying

efforts as opposed to a legitimate system based on need or formal budgeting procedures.

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[5] As Stokes (2006) points out, it is not the case that informal institutions are
incompatible with democracy or that it even obstruct minimalist conceptions of
democracy. Bureaucratic pacting is common and present even in the most advanced
democracies. However, it is widely assumed that these activities conflict with more
substantive definitions of democracy, e.g. what O'Donnell (1996) refers to as Dahl's
"polyarchy package." This analysis adopts Robert Dahl's (1965) polyarchy definition in
outlining the basic institutional guarantees of democratic systems.

[6] Helmke and Levitsky (2002) make the assertion that analyses of informal institutions
vary depending on case countries. They are not universal—Informal institutions are case
specific in their definition. While we can compare informal institutions across settings,
informal rules in India are not the same as informal rules in Mexico and there are
systematic differences in how we define patterns of accountability and governance across
societies.

In this instance the policy preferences of some constituents are better represented relative to others as a result of informal connections between elected ward representatives and school principals.

Two, I introduce the concept of bureaucratic pacting as one type of informal linkage in the provision of public resources. Bureaucratic pacting is similar to other kinds of informal institutions. It is a behavior outside of formally specified, written legislative processes used by politicians to provide material incentives in exchange for political support (Helmke and Levitsky 2006; Keefer 2004; Kitschelt 2000; Kitschelt and Wilkinson 2007; Remmer 2007; Shaffer 2006). Similar to pork barreling, clientelism, and vote buying—all recent kinds of informal institutions to be studied in comparative politics—bureaucratic pacting occurs outside formally documented procedures for resource allocation.

Bureaucratic pacting adds a third dimension to studies of informal institutions by considering the role of bureaucratic elite in relation to pre-existing programmatic linkages between citizens and elected leaders. It occurs when elected political leaders manipulate executive processes of the bureaucratic environment for resource allocation as opposed to utilizing their formal legislative roles such as budget making to change procedures for allocating resources. Lobbying bureaucratic elite for additional resources is one mechanism elected politicians can utilize to secure programmatic benefits to constituents in their wards. A mathematical model of bureaucratic pacting is outlined in Appendix A.

Building on the preceding theoretical considerations, five hypotheses are considered in this analysis. The first two hypotheses draw upon the theoretical argument

that informal institutions negatively influence democratic outcomes. These hypotheses

test to see if the presence of bureaucratic pacting between locally elected ward

representatives and school principals has any influence on student achievement scores in

math and literacy tests. If there are systematic results we can infer that bureaucratic

pacting linkages to secure education resources influence the performance of children

across public schools. The remaining hypotheses are designed to explore patterns of

representation in student performance. I test to see if minority ward representatives from

Scheduled Castes/Scheduled Tribes (lower castes), female representatives, and

representatives from different political parties have any systematic influence on child-

level test scores across wards in Bangalore.[7]

> *H1*: A student's achievement score on standardized school tests increases when her school principal reports having a positive relationship with the local legislator elected to represent her school's district.

> *H2*: A student's achievement score on standardized school tests increases as the number of meetings her school principal has with the locally elected legislator increases.

> *H3:* A student's achievement score on standardized school tests increases when her school district's elected legislator demographically represents a scheduled caste or tribe in the local legislature.

> *H4:* A student's achievement score on standardized school tests increases when her school district's elected legislator is a female.

> *H5:* A student's achievement score on standardized school tests increases when her school district's elected legislator is a member of the BJP party.[8]

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[7] Pre-existing theoretical work in South India suggests that minorities and ethnic parties seek to secure more resources for members of their same minority or ethnic group relative to non-members (Chandra 2004; Besley et al. 2004).

[8] Chandra (2004) also finds that ethnic parties represent the interests of minorities of their same ethnic group more relative to non-minorities. While the BJP is classified as a multi-ethnic party, it is known for catering to Hindu interests and it largely excludes Muslims. I test to see if there are party effects in the representation of school interests via bureaucratic pacting—if a children in a district with a representative from a party that

Research Design

Data for this analysis are drawn from an original data set combining two sources: (1) a set of semi-structured field interviews I conducted with school principals across eleven city wards in Bangalore, India in the summer of 2006 and (2) child-level data and test scores for children in grades 2 through 4. Test scores were obtained from math and literacy tests conducted in Bangalore in August 2006.[9] While, the practice of bureaucratic pacting is common throughout urban centers of India, the theoretical and methodological decision to conduct this analysis in Bangalore, India has several advantages.

First, Bangalore's institutions have a structural advantage. Banglaore's municipal government functions as a representative democracy. Bangalore, located in the state of Karnataka, India, is a municipality: "an urban district having corporate status and power of self government" (Janaagraha 2006). Municipalities are also referred to as City Corporations.[10] There are one hundred wards in the Bangalore city corporation, the Bangalore Mahanaagara Palike (BBMP). Each district holds local political elections set

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caters to interests of certain identities have different test scores than children in wards where parties cater less to particular identities.

[9] Test scores were obtained from the Akshara Foundation, an NGO located in Bangalore. The Akshara foundation worked alongside the local city government to administer tests across public primary schools in eleven city wards.

[10] Most city corporations are remnants of British colonial rule within India and reflect legislative and executive structures established by the British, in particular, city councils with majority rule, first-past-the-post systems of election and Weberian-style, top-down bureaucracies. However, local systems of election across municipalities vary as do bureaucracies, mechanisms for revenue generation, expenditure assignment, bureaucratic accountability and evaluation of programs and projects (Janaagraha 2006). There are very few standards or rules at the national level for how policymaking processes or resource allocation occurs within municipal systems (Rao and Singh 1998).

on five-year cycles to elect local representatives who join the city council. These elections are first-past-the-post, winner-take-all elections. The BBMP Commissioner, or Mayor, is then chosen by and among the 100 elected representatives to serve a five-year term.

Bangalore's municipal government and its formal practices have further gained substantial international attention as it has become a hub for information technology in Asia, commonly referred to as south Asia's "Silicon Valley." Increased foreign direct investment and the development of corporate campuses in Electronic City—a community of gated IT and other corporations located approximately 15 kilometers outside of Bangalore City—have brought substantial notice to the formal structures of governance and public service delivery in Bangalore over the past twenty years.

Many multi-national corporations have made great efforts to put international pressure on often criticized "weak and corrupt" Bangalore city government (Nair 2005). It is arguable whether or not these pressures have assisted in the improvement of public services, particularly with respect to the urban poor. However, the economic rise of Bangalore has brought awareness of the formal structure of institutions and rules in Bangalore's city corporation. Given the institutions currently in place, it is possible to assess the degree to which bureaucratic processes are informal relative to our common formal perceptions of the rules of the game in consolidated democracies (Linz and Stepan 1996).

Second, Bangalore's policymakers display behavioral irregularities in budget-making processes for education. Every year elected city council members determine and vote on the city budget. This includes a budget for education.   Locally elected

policymakers are formally responsible for passing the annual budget that determines resource allocation across the city. However, local representatives also have an added informal ability to influence how bureaucratically controlled discretionary funds are allocated to different schools. Local council members can directly engage in resource allocation by making appeals to bureaucratic elite to attain more discretionary resources for schools in their individual wards. This occurs after they pass the annual budget. They engage in bureaucratic pacting.

Third, the education system in Bangalore, India is an ideal location for assessing representational patterns of resource allocation. Previous scholars such as Chandra (2004) and Pande (2003) have found that ethnic minorities in India seek to secure resources for minorities of their same ethnicity and for low-income citizens more relative to non-minorities. Public municipal schools in Bangalore (BBMP schools) are socially considered schools of "last resort." If families can afford it, they send their children to private schools. BBMP schools suffer from high levels of attrition and produce very low student outcomes relative to other, notably private, schools in the city. BBMP schools are free to children and even offer free uniforms, supplies and midday meals. These schools are often located nearby slums and target slum and low-income children. They are comparable to inner city public schools in the United States. The dropout rate at these schools reflects the estimated national average of 52.79 percent by the eighth grade (Ramachandaran 2005). Since Bangalore schools are developed to target minorities and low-income children, they provide a platform for assessing representational patterns of resource allocation—whether representatives from minority backgrounds represent the interests of these schools more than non-minorities.

Fourth, documented information about the formal delivery of public services in Bangalore is not available to the public. The Bangalore city government reportedly spends Rs. 15,000 per child a year, more than the estimated cost of child attendance in most private schools; however, the quality of education within these schools remains far below that of private schools (Kamath 2005). Formal processes for budget allocation are not publicly accessible to citizens and are based on discretionary budgets allocated to schools by need. Bureaucrats are not required to disclose how they spend discretionary funds. The annual budget provides a base amount of money to individual schools that is fixed upon the number of children attending the schools. This is always short of the school need, even with respect to basic needs like school uniforms. For instance, nearly half of the schools located in the twelve surveyed wards report receiving insufficient numbers of school uniforms and two schools I visited were permanently without electricity. When I asked the school principals in these two schools who was responsible for the electric bill, each supplied different answers. Even school principals are unaware of formal processes for delivery of services. Additional funds are delivered to public schools when school principals make appeals to the local government for additional resources.

Local school need and shortage in the budget provide an opening for local politicians to utilize the system, manipulating the relationships between education ministers and local school principles. Local politicians lobby local ministers for discretionary funds to education, a need in their local communities that assists low-income households.

Data and Methodology

The following empirical analysis explores hypotheses outlined above using an original set of data from two sources. One, surveys of Bangalore city school principals were conducted in twelve wards and child-level test scores of children in Bangalore schools.[11] Surveys with school principals were semi-structured surveys designed to assess interactions between schools and principals and to gain a better understanding of the political environment of schools. The dependent variable, test score, is operationalized using child-level scores obtained from tests of math and literacy. Student scores have been standardized as percentages for reasons of comparison. Tests were administered in 2006 by the Akshara Foundation, an NGO located in Bangalore. The organization worked in coordination with the Bangalore city government to administer these tests throughout twelve city wards in 80 classrooms and twelve primary schools. This paper presents child-level test scores of 521 children. I present models for math and language test scores to verify the accuracy of results across school subjects.

Independent variables of theoretical importance are operationalized as follows. First, bureaucratic pacting is measured by assessing the nature of the relationships between school principals and the local city council member in their wards. School principals were asked whether their relationship to their local legislators was: "very

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[11] Tests were constructed based on the national public school curriculum set by the Department of Education in Delhi (http://edudel.nic.in). The tests were administered grade-wise to assess whether students are performing at their grade-level. I control for student's grade, classroom and school in the analysis. The Akshara Foundation further collected child information on students alongside these tests, and this data comprises the child-level demographic controls.

positive, generally positive, neutral, generally negative, or extremely negative."[12]

Nineteen percent of school principals report having a positive relationship with their local

legislator. Eighty-one percent of principals report a less than satisfactory relationship,

and none of the principals surveyed report having neutral relationships with their

legislators (see Table 1 for Descriptive Statistics). Results are analyzed using a dummy

variable for positive relationships. This question was asked alongside open-ended

questions in the analysis to better guage the nature of relationships in depth.

TABLE 1 About Here

Principals frequently reported that their local political leaders were lazy and self-

interested. One principal stated, "We have to beg them for help to get resources from the

BBMP, but they do not care about us. They help us when it is beneficial to them. They

should be helping us more, but they do not care." Another principal was quoted saying,

"That great system you call democracy, it does not exist here. If we ignore politics and

try to get resources from the BBMP by ourselves, we are ignored. If our legislator goes

for an afternoon tea with the BBMP, we sometimes get what we need." The majority of

school principals interviewed expressed frustration over the system of bureaucratic

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[12]The most direct measure of how bureaucratic pacting influences student outcomes is a
measure that assesses the monetary allocation of discretionary funds to schools.
However, there are no public records kept of discretionary spending for education in local
Bangalore, and the local education minister is not required to report how he spends
discretionary funds for education. Many school principals with whom I met report
keeping no records of funds they receive. Even obtaining estimates of discretionary funds
received by schools was not possible. I focus on the nature of relationships—the
networks between school principals and their local politicians—as opposed to the funding
received to schools. I estimate student outcomes with school and classroom fixed effects.
This automatically captures any unobserved heterogeneity that discretionary funding to
schools would have on student performance. The theoretical objective is not negated—
resource allocation is captured and we see how the programmatic linkage under
investigation influences education outcomes.

pacting, treating it as a system of graft with which they must comply. In accordance with hypothesis one, the 19 percent of schools for which principals report positive principal-ward representative relationships are expected to have higher levels of student performance. If relationships with political leaders operate in their favor, they receive more benefits than principals who report negative relationships.

Second, to test hypothesis two, the frequency of meetings between school principals and bureaucrats is included to compliment the bureaucratic pacting measure. On average, principals meet with their local legislators four times every academic year to request school support. These meetings occur separate of other meetings and legislative activities and the frequency varies between no meetings in an academic year and twenty meetings. In one ward, for instance, the school principal reported meeting his local ward representative at least once a month to have afternoon tea and to raise concerns of the neighborhood around his school. Both the mean and the median number of meetings are four. The number of meetings to attain school resources is positively correlated to the nature of positive relations between principals and their ward representatives. Principals who report a positive relationship to their ward representatives also report visiting them more often. Therefore, it is expected that the frequency of these meetings will also have a positive relationship with student performance.

Third, to assess the influence of minority representation testing hypotheses three and four I include two minority measures, a measure for whether the ward representative elected in a school's ward is from a scheduled caste or tribe and a second measure of whether the representative is a female. These measures are dummy variables coded one if the legislator is from a minority group and zero if the legislator is a non-minority.

Fourth, variables for political parties are included. As noted above, previous studies find that leaders and parties sometimes seek to secure resources for members of their ethnic communities and parties. Do ward representatives of some parties secure resources for low-income and minority groups in Bangalore at rates higher than members of other political parties? Party control variables are included to capture any influence that the dominant political party in each school's legislative ward might have on school performance. Dummy variables are coded one for the political party of the elected legislator and zero if the legislator is from another party. At the time of the data collection, one of the twelve wards was controlled by the Bharatiya Janata Party (BJP), a party recognized for catering to Hindu interests. Two wards are controlled by the Janata Dal Secular (JDS) party, a multiethnic party slightly to the left of center. The other nine wards are represented by Indian National Congress (INC).[13] If the presumption is accurate that ethnically motivated parties secure resources for low-income groups and minorities at rates higher than more secular parties, I expect to confirm hypothesis five that children in the BJP controlled ward will perform at rates higher than children in INC and JDS wards.

Finally, a series of demographic control variables are included in the statistical analysis to capture the influence that demographic and household characteristics of children have on test scores. These variables represent characteristics of individual children and their family backgrounds. Measures include: child's age, gender, mother tongue (language spoken at home), caste, grade in school, and whether the child is a

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[13] This wards under review were slightly more representative of INC wards, but generally representative of city wards at large, in which 16 out of 100 wards were controlled by the BJP, 14 wards by the JDS, 58 wards by the INC, and 12 wards were had ward representatives from other parties.

slum-dweller or not. These characteristics are reflective of the social characteristics of the school wards in which children attend. Sixty-percent of children reside in formal slum neighborhoods of the city, and sixty-six percent are members of a scheduled caste or tribe (among the lowest castes in India). Combined, less than half of children speak Kannada and Urdu at home. These are the languages of instruction across the schools. Kannada is the language of schools in ten wards and Urdu was the language of instruction used in schools in two Muslim minority wards. To further capture language and other unobserved heterogeneity associated with schools, fixed-effects control variables for children's classrooms and schools are included in the statistical analysis.

I estimate the effects of bureaucratic pacting on student performance using the following model:

$$Y_i = \alpha + positive\beta_{1i} + freq\beta_{2i} + represent\beta_{3i} + child\beta_{4i} + \mu_i \qquad (1)$$

The dependent variable *Yi,* is a student's test score in either math or language; *positive* is a dummy variable coded as one if school principals indicate a positive relationship between themselves and their local legislators. *Freq* is a measure of the frequency with which a school principle reports meeting her local representative during an academic year; *represent* is a vector of variables for legislator characteristics in the school ward each child attends (political parties and whether or not they are members of a minority).[14] *Child* is a vector of variables assessing demographic characteristics of individual children taking a test—their gender, age, grade, caste and mother tongue.

An interval regression with heteroskedastic, robust standard errors and classroom and school-level fixed effects is used to estimate hypotheses one through five. Test scores

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[14] This information is public information provided by the local city government, the Bangalore Mahanaagara Palike. It can be obtained at the city council office building.

for both math and language tests are censored at the left hand side of their distributions. Eighty-one students failed to answer a single question correctly, scoring zero points, on the math test, and 70 students received zeros on the language test. To avoid biased coefficients that would arise using an OLS regression, I choose to estimate a model that accounts for censored data. An interval regression is chosen over a standard Tobit model.[15]

Statistical results have been obtained using multiple variations and alternative specifications of the base model (e.g. OLS, FGLS and Tobit models), various types of fixed effects at the child, classroom and school-level, and alternative measures of key theoretical variables. While the relative strength of coefficients varies with the estimation technique, the significance of positive principal-ward representative relations, scheduled caste or schedule tribe ward representative, female legislator, and political party variables withstand various types of estimation across outcomes for both math and language scores.

Statistical Results

Table 2 presents statistical results for the model specified above. Findings are strong and predictor variables are consistent across both math and language test scores for children. Confidence in the robustness of these findings is further enhanced by comparing results of language and math outcomes. The squared correlation between the observed and predicted student test scores indicates that the specified independent

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[15] Point estimates in the specification of the interval regression are exactly the same as estimates of a Tobit Model. For more about this model and technique refer to Long and Freese (2006).

variables account for over 40 percent of the variability in language scores and 60 percent of variability in math scores.[16]

With respect to bureaucratic pacting, positive principal-ward representative relationships are associated with higher student test scores in both language and math, *Ceteris Paribus*. Results confirm hypothesis one—when a school a principal reports having a positive relationship with her local ward representative, a child's test score in her school is reportedly 55 percent higher on math tests and 41 percent higher on language tests ($P < 0.001$). Test scores vary substantially, with an average math score of 30 percent and average language score of 38 percent. Standard deviations are 31and 29 percent respectively. The reported increase in test scores associated with positive principal-ward representative relations, while striking, is a reasonable substantive outcome.

The frequency in meetings between principals and legislators has little association with student test scores. There is a marginal influence between the frequency of these meetings and how well students perform on language tests. For every additional meeting between a school principal and her legislator in an academic year, student language scores increase by two percentage points holding other variables constant ($p < 0.1$). This outcome is consistent with the expectation in hypothesis 2, but it is not strong or consistent across alternative specifications of the model. Given statistical results I fail to reject the null hypothesis for *H2*.

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[16] I calculate the R squared between the predicted and observed variables, which provides an estimate much closer to what we expect of find in an OLS regression. STATA automatically generates a McFadden's pseudo-R-squared which may not be the best measure of fit (Long and Freese 2006).

Minority variables for women and legislators from scheduled castes and tribes are both significant and positive in accordance with hypotheses three and four. When a minority scheduled caste or scheduled tribe legislator represents child's school ward, her test scores improve by 32 percent in math and 58 percent in language, *ceteris paribus* (p < 0.001). Similarly, a child's test score increases by 22 percent in math and 47 percent in language when the school she attends is in a ward controlled by a female city council member (p < 0.001). Outcomes confirm hypotheses three and four. They further support prior research, namely by Chandra (2004) and Pande (2003), who find ethnic representational linkages between individual legislators and their constituents in other areas of India. Relative to wards controlled by non-minorities, low-income and minority children who reside in wards controlled by minority representatives have higher math and language scores.

In terms of party-effects, children residing in wards dominated by the INC and JDS parties have higher scores on both math and language tests relative to children residing in the BJP-controlled ward. I fail to reject the null hypothesis for *H5*. When the ward representative in a child's school ward represents the INC or JDS parties, a child's performance on math and test scores increases substantially relative to when the ward representative in a child's school ward is a member of the BJP (p < 0.001). Bangalore was dominated by the INC party during the time of the data collection. In this instance it is likely easier for members of INC and JDS parties to secure education resources with local bureaucrats relative to the BJP, because these parties are far more dominant. There are, however, representational patterns to student test scores in public schools. Both party

affiliation and minority status of individual legislators are associated with increased

student performance, *ceteris paribus*.

Other control variables in the model follow general expectations. Child-level

control variables, meant to capture demographic and family characteristics of children,

have little influence on outcomes. Age is positively associated with higher test scores ($p < 0.01$). There is a weak significance when Urdu is the language spoken at home,

language scores of individual children decrease by 10.9 percent holding other variables

constant ($p < 0.1$).

Empirical results comply with theoretical expectations outlined in hypotheses and

in the model found in Appendix A. Bureaucratic pacting linkages are positively

associated with student outcomes. Students performed better in schools where there was

bureaucratic pacting between school principals and ward representatives, and when the

ward representative representing the school in local government was from a minority.

Conclusion

This article has sought to introduce bureaucratic pacting as a new type

configuration in informal institutions. Bureaucratic pacting between school principals

and ward representatives can constrain formal democratic outcomes, particularly

legislative decision-making. Elected ward representatives in Bangalore undermine their

formal legislative roles, such as budgetmaking, by acting informally to secure resources.

They fail to collectively pass a budget in which they might satisfy the needs and demands

of public schools in their wards. Instead, ward representatives act in the reverse by

handing discretionary funds to bureaucratic elite. They then lobby elite for funds to go to

schools in their individual wards. According to school principals interviewed, this practice reportedly happens in other areas of service delivery as well.

I illustrate one example in which linkages between ward representatives and school principals are informal means of resource allocation. There are clear representational patterns between how well students perform in public schools and their principal's relationship to the local ward representative. One could argue that these linkages do not constrain democratic outcomes, but rather solve a collective action problem associated with resource delivery (Tsai 2007). According to this argument, bureaucratic pacting helps school principals secure resources for their schools in an environment in which they might otherwise receive nothing.

However, I find in the Bangalore case that bureaucratic pacting undermines democratic accountability and weakens the structure formal democratic institutions. India's Silicon Valley has experienced significant development over the last several years. Economic growth has been above nine percent annually since 1995 (BBMP 2006). There is a formally defined institutional structure and a growing monetary base to support the public delivery of resources through formal bureaucratic institutions.

The capacity for implementation and the cultural mindset lag behind this base (Nair 2005). Local legislators find informal institutions such as bureaucratic pacting as a routinized way of conducting business, and this arguably allows them to shirk their legislative duties in collectively making difficult decisions about improving services such as public schools and infrastructure. Informal institutions are an easy out, an afternoon siesta from acting within the formal legislative structure. As Bangalore has developed, the pre-existing informal institutions of governance have been unveiled and lag behind

the growing technology of India's silicon valley. Informal institutions in Bangalore's public school system represents one example of the lag between economic development and the development of formal democratic institutions in a democracy, even a democracy that has supposedly been "consolidated" and "substantive" for more than fifty years.

TABLE 1 Descriptive Statistics

	Mean	Standard Deviation
Language Score % (0 – 1)	0.38	0.31
Math Score % (0 – 1)	0.3	0.29
Positive reported principal-legislator relations (1 = yes, 0 = no)	0.19	0.39
Frequency of principal-legislator meetings (0-20 in academic year)	3.98	3.50
Female ward representative (1 = yes, 0 = no)	0.32	0.47
Female school principal (1 = yes, 0 = no)	0.63	0.48
Child is a slum dweller (1 = yes, 0 = no)	0.60	0.50
Child's Age (Ages 6-13)	8.60	1.14
Female Child (1 = yes, 0 = no)	.50	.50
Kannada language spoken at home (1 = yes, 0 = no)	0.14	0.34
Tamil language spoken at home (1 = yes, 0 = no)	0.38	0.49
Urdu language spoken at home (1 = yes, 0 = no)	0.26	0.44
Child is from scheduled caste/scheduled tribe (1 = yes, 0 = no)	0.66	0.47

N=521

TABLE 2. Determinants of Child Test Scores in Bangalore City Schools Interval Regression with Robust Standard Errors

	Language Score	Math Score
Positive reported principal- legislator relations	0.441**	0.550**
	(0.092)	(0.072)
Frequency of principal-legislator meetings	0.021+	-0.002
	(0.011)	(0.009)
Scheduled caste or tribe legislator	0.582**	0.320**
	(0.134)	(0.102)
Female legislator	0.452**	0.217**
	(0.085)	(0.07)
Female school principal	0.470**	0.224**
	(0.093)	(0.074)
Congress Party legislator	0.833**	0.342*
	(0.193)	(0.154)
JDP Party legislator	0.860**	0.298+
	(0.221)	(0.175)
Child is a slum-dweller	0.025	0.016
	(0.029)	(0.023)
Child's age	0.055**	0.032**
	(0.014)	(-0.011)
Female child	0.049*	0.014
	(0.023)	(-0.018)
School grade	-0.027	-0.142**
	(0.019)	(0.017)
Kannada language spoken at home	-0.005	-0.023
	(0.039)	(0.031)
Tamil language spoken at home	-0.035	-0.002
	(0.037)	(0.028)
Urdu Language Spoken at Home	-0.109+	-0.045
	(0.062)	(0.041)
Member of Scheduled Caste or Tribe	-0.032	-0.041
	(0.04)	(0.027)
School Size	-0.001	0
	(0)	(0)
Constant	-1.362**	-0.116
	(0.291)	(0.237)
Sigma Constant	.252***	.197***
	(.009)	(.007)
Observations	521	521
Number of Left Censored Observations	70	81
Log Likelihood	-89.147443	14.362464
Wald Chi-squared	519.59**	839.83**
Pseudo R-squared	.461	.629

Robust standard errors in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Appendix A

Mathematical Model of Bureaucratic Pacting

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This model is a mathematical representation of informal bureaucratic pacting between school principals, local legislators and elite bureaucrats in public service delivery of education. Consider a city consisting of two wards: $j \in \{1,2\}$. Considering the context of Banaglore, each ward has two groups indexed $k \in \{s,n\}$, in which s denotes a "slum" neighborhood, and n denotes non-slum neighborhood. Sixty percent of the sample of children in this article reportedly reside in slums. The share of group s in Ward j is π^j.

For simplicity, BBMP education is the only good publicly supplied to each ward. Let $g_k^j \in [0,G]$, in which g_k^j denotes the level of education provision for groups k in Ward j. In this case, BBMP education may have positive spillovers to the other group in the Ward, $-k$. Other, "non-slum" residents may attend the BBMP schools since these schools do not *explicitly* target the slum children. Moreover, the general benefits associated with having children in school as opposed to on the streets and loitering throughout the ward can have both monetary and intrinsic benefits to non-slum residents.[17] Hence, individuals care about the level of the education potentially provided to both groups in the ward, such that:

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[17] In six of the sixteen formal interviews I conducted, and in a number of informal conversations, Bangalore citizens repeatedly discuss the implications of not having children in school and the neighborhood effects. Children "get into trouble" loitering and partaking in petty crimes. Moreover, having children in school prevents them from taking jobs early on and never acquiring human capital skills. Two of the interviews directly connected the presence of out-of-school children to a rise in the number of liquor shops in neighborhoods, but this is arguably more to do with the contextual variables,

$$V_k^j(g_k^j, g_{-k}^j) = \log(g_k^j) + \lambda \log(g_{-k}^j) + y_k^j$$

Subject to a fixed level of revenues and resources (collected from taxes and budgeted by policymakers) allocated to schools—this is the fixed part of the budget allocated based on the number of children in the school:[18]

$$g_s + g_s^2 + g_n^1 + g_n^2 = T$$

Here, $\lambda \geq 0$ and measures the effect of spillovers on the provision of public education. In this case private education is captured by y_k^j.

Further, group-wise allocation is determined by elected ward representatives who are annually responsible for securing resources to schools in their wards via their the budget-making process and informal relations with local school principals. Let $\ell_{(j)} \in \{s, n\}$ in which l is the type of representative elected in each ward. Given existing literature it is viable to assume that certain types of legislators, particularly representatives from scheduled castes and tribes (SC/ST) and women, are potentially more representative of the interests of slum dwellers and those implicitly targeted by BBMP schools (Pande 2003; Besley et al. 2004). Existing analyses of representation across both developed and developing contexts have demonstrated that the demographic identity of elected politicians often influences the way they vote and their policymaking

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demands and preferences of citizens within those neighborhoods. The point—BBMP schools have positive effects on both slum and non-slum neighborhoods within Wards, and more generally for the city as a whole.

[18] Revenues are generated primarily through taxes in Banglore and in this case taxes are normalized to a standard of one large overall tax base that acts as the budget constraint. Moreover, a fixed set of revenues is allocated to individual schools each year based upon the number of children who attend those schools.

preferences.[19] In this case, I argue that locally elected ward-representatives who are from

scheduled castes and scheduled tribes and who are women, are better able to represent the

interests of slums and secure resources for BBMP schools and constituents residing in

slum neighborhoods.[20]

Moreover, data provided from interviews with school principals in July 2006 and

discussions with ward constituents suggest that informal institutions, the level of

bureaucratic pacting among ward legislators and school principles, has a significant

influence on the targeted population—who receives what kind of education within BBMP

schools and the level of resource allocation in both slum and non-slum neighborhoods.

The respondents suggest that this measure is equally influenced by the type of legislator

in office, that minority legislators with similar policy preferences to their constituents

(those who care about low-income education) in this case also have higher levels of

pacting with local bureaucrats within their ward in the delivery of resources to public

education. An additional parameter of ward-level bureaucratic pacting is, then, important

in understanding the representational implications of public service delivery in and

among wards in this case.

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[19] The essence of the argument is that representatives will represent the interests of some in their jurisdictions more than others, and further that they seek "pork" for constituents who share their same identity, (e.g. Pande 2003; Besley et al. 2004; Chandra 2004). A wide literature studying "pork," however, suggests that representatives may be less interested in securing resources for publicly provided goods such as education and more focused on services sufficing elite preferences (Cox and Theis 1998; Calvo and Murillo 2004). What will occur in the BBMP? Do elites seek to secure education resources for constituents who share their same identity?

[20] Besley et al. (2004) account for differences in the type of elected representative, but only to the extent of analyzing how SC/ST impact public service delivery within rural areas; whereas I claim that ethnically representative politicians as well as women may display policy preferences more in favor of in favor of BBMP education which primarily assists minorities and urban poor in Bangalore.

Let $z_{(j)} \in \{s, n\}$ be a measure of internal bureaucratic pacting between elected legislators and school principles in each ward. z in this case is operationalized by positive reported legislator-principal relationships and the frequency with which the school principle meets with local politicians in a given fiscal year.[21] The model is such that:

$$\mu V^1_{lz(1)}(g^1_{lz(1)}, g^1_{-lz(1)}) + (1-\mu)V^2_{lz(2)}(g^2_{lz(2)}, g^2_{-lz(2)}) = T$$

subject to:

$$g_s + g^2_s + g^1_n + g^2_n = T$$

In this case, the solution to the equation works out to be:

$$g^1_{lz(1)} = \frac{\mu}{1-\lambda}T \qquad g^1_{-lz(1)} = \frac{\mu\lambda}{\mu+\lambda}T$$

$$g^2_{lz(2)} = \frac{1-\mu}{1+\lambda}T \qquad g^2_{-lz(2)} = \frac{(1-\mu)\lambda}{1+\lambda}T$$

where μ measures the symbolic representation of locally elected ward members (their demographic composition to their constituents) in relation to their level of bureaucratic pacting with local school principles, and λ captures the effect of spillovers outside of the implicitly targeted slum population.

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[21] $z \geq 0$ as local representatives and bureaucrats cannot meet negative times in a year. They may meet 0 times, but the meeting itself cannot be negative. It should, however, be noted that the quality of their meeting, an unobservable characteristic in this instance, may be negative and this is a fundamental concern of the model itself. Interviews suggest that positive outcomes do not always arise from such meetings; however, the actual outcome of the measure will be reflecting in resource allocation and expenditures for education secured within wards.

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