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ABSTRACT

The purpose of this study was to determine whether collective bargaining significantly affects teacher time, particularly time spent in instruction and preparation. The study was based on recent research indicating that student achievement is affected by the time teachers spend in these areas. Researchers divided the activities performed by elementary teachers into five categories: (1) instruction; (2) preparation; (3) administrative and clerical duties, including meetings; (4) parent conferences; and (5) other noninstructional duties, primarily after-school activities. The central finding of the study, based on a national survey of over 3,000 elementary teachers in nearly 250 districts, was that teachers covered by collective bargaining spend approximately 3 percent less time in instruction per day (or 1 week less per year) than teachers not covered by collective bargaining. Whether or not this reduction in instruction leads to a decline in the quality of schools cannot be answered on the basis of this study. What can be said based on this study is that collective bargaining may have a tendency to reduce student achievement by reducing time spent in instruction. (Author/LL)

Time in the Classroom:
The Effect of Collective Bargaining on the Allocation of Teacher Time

by

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I. Introduction

Collective bargaining is restructuring the way public schools operate in America. Past research leaves little doubt that teachers covered by collective bargaining enjoy higher wages and fringe benefits.[1] Furthermore, in the current period of financial retrenchment and declining enrollments, unions actively seek to implement job security provisions. These effects of collective bargaining have received widespread attention and are considered by many observers of the evolution of teacher collective bargaining to have the greatest consequence on the operation of public schools.

However, while negotiators concentrate on wages and reduction-in-force provisions, less visible, but no less consequential, effects of collective bargaining are also occurring. In their study of districts in Illinois and California, Mitchell and Kerchner found that as bargainers on both sides of the table respond to immediate problems facing the district and teachers, they fail to gain a perspective on the effect of their decisions on the overall pattern of public education. Their research uncovered the fact that collective bargaining has substantially altered the definitions of teachers' work responsibilities, changed the mechanisms that control how teachers perform their duties, and modified the authority of principals and other administrators.

The purpose of this study is to bring to the attention of interested parties another indirect consequence of collective bargaining--its effect on the way in which teachers spend their time during a typical school day.

To investigate this issue, five categories of activities performed by elementary teachers are considered: (1) time spent in instruction, (2) time spent in preparation, (3) time spent performing administrative and clerical duties, including committee and staff meetings, (4) time devoted to parent conferences, and (5) time spent in other noninstructional activities, primarily after-school activities.

Recent research on the determinants of teacher effectiveness has amassed convincing evidence that the time teachers spend in instruction and preparation are among the most important factors contributing to student achievement. Therefore, it is the premise of this study that if collective bargaining significantly affects teacher time, particularly time spent in instruction and preparation, then it has the potential to influence the effectiveness of teachers and the quality of education.[2]

The central finding of this study, based upon a national survey of over 3,000 elementary teachers in nearly 250 districts, is that the net effect of collective bargaining on teacher time is to reduce time spent in instruction by 3 percent during a typical school day. Of the time released from instruction, roughly half is spent in increased administrative activities and the other half is devoted to slightly longer preparation periods and more contact with parents.

The difference in teacher time attributable to collective bargaining can be placed in better perspective by converting the daily values to the number of equivalent school days. Assuming a 180-day school year and using the average hours spent per day in instruction, calculations indicate that collective bargaining reduces instruction an equivalent of approximately 5 school days a year. This means that districts with collective bargaining would have to increase their school year by a week in order to equal the

amount of instruction offered in districts not covered by collective bargaining. Similar calculations can be made for other activities. These differences in time attributable to collective bargaining may seem small to some readers. But to the administrator who is considering reducing the length of the school year instead of conceding to a salary increase or to the teacher negotiator who may want to assess the increased administrative burden placed on teachers (probably the result of greater participation in decision-making), these differences may become significant issues during negotiations.

The question that is not addressed in this paper is the effect on student achievement of the various activities performed by teachers and the influence of collective bargaining on the effectiveness of teacher time. We rely on recent research by Hedrick and Eberts (1981), Kiesling and others (1979) and Thomas (1979) for evidence of the significant relationship between instruction and student achievement. We reserve for future research the exploration of the relationship between collective bargaining and the effectiveness of teacher time. Here we are concerned about a single, but often overlooked, aspect of teacher effectiveness, the amount of time devoted to certain activities. We feel that only by breaking the educational process into its basic components can the influence of collective bargaining on teacher effectiveness be properly assessed.

The analysis proceeds by first describing the objectives and constraints teachers face when allocating time. From this simple behavioral model, a set of time equations is derived as a function of a dichotomous collective bargaining variable, the length of the school day, the amount of resources available, the degree of teacher participation in school-level

decision-making, and selected exogenous variables. The data used to estimate these equations are described in Section III. Section IV contains estimates of the time allocation equations. In addition, by considering the effect of collective bargaining on staffing practices, teacher participation, wages, and the length of the school day, reduced form estimates which show the net effect of collective bargaining can be obtained. This provides a basis for measuring the relative importance of the direct and indirect effects of collective bargaining on time allocation. Section V discusses other factors which influence the allocation of teacher time, and Section VI contains concluding remarks.

II. Teacher Time Allocation Model and the System of Constraints

Teachers have considerable autonomy over the time spent on various activities during a typical school day. Outside the classroom, teachers choose among activities such as preparing for instruction, meeting with parents, or attending after school functions. Within the classroom, teachers determine the amount of time students devote to various subject matters and skill development. Berliner (1979) finds a sizable variation in the amount of instructional time spent on diverse topics and attributes these differences to differences in student achievement. Although time spent on specific instructional tasks is important to an examination of teacher effectiveness and can conceivably be affected by collective bargaining's influence on teacher attitudes, this paper is less ambitious and focuses rather on broader categories of time. Thus, all of the various

"tasks" performed by teachers and students in the classroom are grouped together under the rubric instructional time and are considered to be positively related to student achievement.

As previously mentioned, teachers allocate time among instruction and four additional categories of activities: preparation, administration, parent conferences, and other noninstructional duties. The amount of time devoted to each activity depends upon both teacher preferences and school policies. Within the constraints of school policies, teachers are assumed to allocate their time according to an individual objective function comprised of student test scores and individual objectives. Student test scores are considered to result partially from the teacher's activities. Under this model of teacher behavior, teachers must know the amount of time required to bring forth a certain level of student achievement in order to allocate time efficiently. Knowledge of the marginal productivities of time spent in each activity with each student is difficult to obtain with certainty since the educational process depends upon a number of factors which are stochastic and beyond the control of teachers. However, even though teachers do not know all of the students' characteristics, through testing and other means of evaluation they can be presumed to have a reasonably good idea of the students' potential at the time.

Recognizing that student i's achievement (S_i) is a function of the amount of time a teacher spends with student i in activity j (a_{ij}) as well as a variety of exogenous factors (Z_i), the teacher's utility function can be written with time spent in each activity as the decision variable:

$$U\,[S_1(a_{11},\ldots,a_{15};Z_1),\ldots,S_N(a_{N1},\ldots,a_{N5};Z_N);a_1,\ldots,a_5]$$

where $a_1,\ldots,a_5$ is the total amount of time the teacher spends in each of the five activities.

By constructing the model in this way, it is assumed that teachers receive sufficient compensation to offset the disutility associated with sacrificing leisure in order to provide the various activities. It is generally the case that if school districts base teacher salaries on the length of time at work, they base it upon the total length of the school day or school year and not upon the amount of time a teacher spends in any one of the first four activities listed above. The only exception may be after-school activities, the fifth category. In many school districts, teachers receive supplemental salary for participating in after-school functions such as musical programs, athletic events, and even in some instances, meetings. Thus, the extent to which teachers engage in these activities may depend upon the amount of extra compensation. With regards to the other four activities performed during regular school hours, it is assumed that teachers choose the optimal mix of these activities by equating the net marginal utility of each activity subject to certain constraints imposed by the school or district. Teacher contract salary, therefore, is not expected to have any effect on the allocation of time.[3]

Teachers face basically three constraints when allocating time among various activities during a typical school day. Two constraints are imposed by the administration and the third constraint is related to the scholastic ability and motivation of students. The administration determines,

subject to negotiation, the minimum amount of time teachers must engage in specific activities during the formal workday. Typically, teachers are required to spend a certain length of time with students in instruction and in many instances are assured a minimum period of class preparation. In addition, the administration determines the length of time teachers must be present on the school grounds. Constraints upon the total length of the workday and upon specific activities affects the amount of time available for other activities.

Administrators also determine the amount of resources in the district. Since the educational process is labor intensive, three classifications of personnel (administrators, clerical staff and teacher aides, and teachers) are particularly important to the teacher's decision. Different levels of staffing per student have a number of possible effects on the allocation of time. For example, teacher aides assist teachers in basically two ways. They can assume certain instructional responsibilities, such as tutorial sessions, or they can perform clerical and other noninstructional duties. Thus, teachers in districts with a larger-than-average number of teacher aides per student may be observed to spend less time in one of the two activities and more time in other activities depending upon the type of function performed by the aides. Differences in the number of administrators and teachers may have similar effects. Teachers in districts with a greater-than-average number of administrators may be released from supervisory and administrative duties. An increase in teachers per pupil may give teachers more preparation time by reducing their class loads. The actual tradeoffs are, of course, determined by teacher preferences and

school policies and the resolution of these tradeoffs remains an empirical issue.

Collective bargaining can affect both types of administrative decisions. Contracts commonly contain provisions that designate a certain amount of time for class preparation, guarantee a duty-free lunch, or discourage after-school staff meetings. This direct effect is captured in the analysis by a dummy variable, which equals one if the teacher is covered by collective bargaining and zero if not. The indirect effect of collective bargaining comes through its effect on staff size, which can occur either by restricting class size and providing reduction-in-force procedures or by negotiating higher teacher salaries. Collective bargaining can also limit the discretion of the administration in making these decisions by granting teachers the right to participate in administrative decisions such as budgeting, teacher assignment, and curriculum planning.

The third constraint facing teachers is the scholastic ability and motivation of students. One assumption of the time allocation model is that the utility of the teacher depends upon the performance of his or her students. Students bring to the classroom different levels of ability and motivation. Therefore, the amount of time a teacher must devote to students in order to bring them to an expected level of performance depends upon the individual characteristics of the student. In the analysis, various school characteristics are entered to reflect the aggregate characteristics of students.

Maximizing the utility function subject to the constraints yields allocation of time equations, which specify actual time spent per day in each of five activities as functions of the total length of the school day, the number of administrators per pupil, the number of clerical staff and teacher's aides per pupil, the number of teachers per pupil, actual participation of teachers in setting school policy, the presence or absence (1-0) of collective bargaining, and selected exogenous variables. Each of these factors may in turn be a function of collective bargaining and other exogenous variables. Possible correlation between the collective bargaining variable and these factors are explored in a subsequent section.

III. Description of the Data

The study utilizes data from the Sustaining Effects Study which was funded by the Department of Education to provide detailed analysis of the determinants of student achievement. Conducted over a three-year period during the mid-1970s, the study posed questions to over 6,000 teachers and principals, selected randomly from elementary schools across the country. These questions related to respondents' attitudes towards working conditions, their educational philosophy, personal attributes, and methods of instruction. In addition, collective bargaining characteristics, student characteristics, and other district characteristics were recorded.

Teachers were asked to provide detailed accounts of the time spent in various activities by keeping diaries throughout the school year. Time spent in a typical day was calculated by dividing the total number of hours

by the number of school days. This approach in some ways misrepresents the manner in which teachers allocate time. It is typically the case that teachers do not engage in each activity every day but may, for example, meet with parents or attend school functions only periodically. However, by collapsing these activities into a "typical" day, the average effect of various factors on the allocation of time can be measured.

After eliminating part-time teachers and incomplete records from the data set, a sample of 3,251 teachers from 242 districts was constructed to estimate the time equations. The means and standard deviations of the variables are displayed in Table 1.

IV. Estimated Effect of Collective Bargaining on Teacher Time

The central issue addressed in this paper is the effect of collective bargaining on the allocation of teacher time. Estimates based on a linear specification of the five activity equations reveal that collective bargaining significantly affects four of the five categories of activities. Only time spent in other noninstructional activities, which consists mostly of after-school functions, is not significantly related to collective bargaining at the 5 percent confidence level. Estimates reveal that collective bargaining decreases the amount of time spent in instruction by 3 percent or 9.4 minutes per day. The time released from instruction is diverted to preparation time (an increase of 4 percent or 3.0 minutes per day), performance of administrative and clerical duties (an increase of 13 percent or 5.1 minutes per day), and meeting with parents (an increase of 8 percent or 1.4 minutes per day).

These results reflect only the direct effect of explicit contractual constraints on the allocation of time. As previously mentioned, in addition to explicit contractual language, collective bargaining can influence teacher time through staff size and teacher participation. In order for this to occur, two levels of influence must exist. First, staff size and teacher participation must affect the allocation of time and second, collective bargaining must influence staff size and teacher participation. Estimates in Table 2 show the first effects, and estimates in Table 3 indicate the second.

The task of accounting for the indirect effects is simplified since it is possible to rule out teacher participation as a significant channel through which collective bargaining influences the allocation of time. Even though results in Table 2 indicate that certain forms of teacher participation affect time, results in Table 3 show that collective bargaining has no significant effect on the actual participation level of teachers. This finding is contrary to the argument set forth by Freeman and Medoff (1979) that collective bargaining increases worker participation. However, it may still be the case that certain individual contract provisions affect teacher participation even though the aggregate relationship is insignificant.

Staff size, on the other hand, qualifies as a significant path of influence for collective bargaining. The staff size in districts covered by collective bargaining agreements are significantly different from the staff size in districts not covered. Furthermore, the number of administrators per student and number of secretaries and aides per student are significantly related to the allocation of time.

From Table 2, it is evident that the level of staffing in a district significantly affects teacher time, with strong tradeoffs between instruction and administration time occurring for certain personnel categories. Estimates indicate that teachers in districts with a greater-than-average number of administrators spend significantly less time with administrative duties and more time in the classroom. The opposite behavior is evident for teachers in districts with a greater-than-average ratio of clerical staff and teacher aides to students. Somewhat surprising is the finding that the teacher-student ratio has no significant effect on the allocation of time.

A variety of plausible explanations can be offered for the observed tradeoffs. The interpretation presented here centers on the ability to substitute between the three categories of personnel in performing administrative tasks normally undertaken by teachers. The observed insignificant relationship between the number of teachers and time spent in various activities may be explained by the fact that teachers do not perform administrative tasks for other teachers. This could come about because the tasks are in some way indigenous to the administration of the classroom and are not transferable between teachers. In addition, the slight reduction in class size brought about by an expanded teaching staff may not be sufficient to reduce the work load of each teacher.

Administrators, on the other hand, may be in a position to assume administrative responsibilities common to all teachers. Thus, by being able to centralize certain tasks such as preparing federally mandated student profiles, grading, and processing attendance records, an increase in administrators per student can decrease the amount of time teachers spend

performing administrative duties. If teachers in general prefer instruction over administration, then the released time will be directed to some form of teaching whether it be classroom instruction or individual tutorials.

A change in the ratio of clerical staff and teacher aides to students brings about an effect opposite to that observed for administrators. In this case, the ratio of secretaries and teacher aides to students is positively related to the time spent in instruction. One explanation of this behavior focuses on the role of teacher aides. If aides are considered better able to perform certain instructional activities, such as tutorials, and less able to perform certain administrative functions, such as student evaluations, then an increase in teacher aides may relieve teachers of certain instructional duties so that required administrative tasks can be performed.[4]

Collective bargaining can also affect staff size by influencing teacher and principal salaries, which in turn are influenced by their experience and education levels. Table 3 shows that both salaries and teacher characteristics are significantly related to collective bargaining.

Another way in which collective bargaining may affect the allocation of time is by determining the length of the school day. However, estimates displayed in Table 3 show that the length of the school day for teachers in districts covered by collective bargaining agreements is not significantly different at the 5 percent confidence level from the legnth of time teachers spend in districts not covered.

Both the direct and indirect effects of collective bargaining on teacher time can be measured by considering reduced form estimates of the time equations. The results of the estimation are displayed in Table 4.

Comparison of the estimates in Table 2 with those in Table 4 reveals that the net effect of collective bargaining is slightly smaller than the effect that accounts for the explicit contractual constraints only. Thus, it can be concluded that collective bargaining affects the allocation of teacher time primarily through constraints placed on the work schedule by explicit contractual language.

The magnitude of the net effect of collective bargaining on time is placed in better perspective if the values are converted into the number of equivalent school days. Assuming a 180-day school year and using the average hours spent per day in instruction, for example, calculations indicate that collective bargaining reduces instruction an equivalent of five school days a year. This reflects the fact that teachers spend approximately 60 percent of the school day in instruction. If this ratio is maintained, districts with collective bargaining would have to increase their school year by approximately five days on average in order to equal the amount of instruction available in districts not covered by collective bargaining. Similar comparisons can be made for other activities.

V. Other Factors Influencing the Allocation of Time

Examination of the other factors entered into the time allocation regression equations lends additional insight into the allocation of time. Estimates in Table 2 show that the length of the school day is significantly related to all categories of time. An increase of one standard deviation (94 minutes), for example, increases instruction by 26 minutes, preparation by 27 minutes, administrative duties by 19 minutes, meeting with parents

by 8 minutes, and performing other noninstructional activities by 14 minutes. By entering time into the regression as a quadratic, it is possible to explore the reason for the variation in the length of the school day. Two explanations are possible. The first is that the total length of the school day is expanded irrespective of specific categories, and the individual activities are increased in order to fill in the extra time. If this explanation were true, then the marginal increase of time spent in each category would be similar across activities.

The second explanation is that the administration decides that more time is needed for a particular activity, and the school day is lengthened to accommodate these individual activities. The fact that the coefficients of the squared term are significantly different from zero in all categories except one lends support to the second explanation. By comparing marginal differences in time of each category with its average share of total time, it is evident that time spent in administrative and after-school activities are responsibile for a large part of the variation in the length of the school day. Estimates show that the lengthening of the school day is associated with a 20 percent increase in time spent in administrative duties compared with an average share of 9 percent. A longer school day is also associated with a 15 percent increase in time spent in after-school activities compared with an average share of 7 percent. These gains are offset by a loss in the share of instruction time as exhibited by a marginal increase of 27 percent compared with an average share of 62 percent.

The experience and education levels of teachers are entered into the regression equations to reflect how teachers with different characteristics

spend their time. It appears that teachers with greater-than-average experience levels are less encumbered with administrative and other noninstructional duties, which allows them more time to devote to instruction. Teachers with master's degrees and above appear to spend less than the average time in class preparation, presumably due to increased skills and more efficient use of time. However, they do not appear to direct their released time to any one particular category.

Dummy variables that indicate community types were included in the estimation equations in order to minimize the possibility that the collective bargaining variable captures differences in community types rather than differences attributable solely to collective bargaining. In addition, the community type variables capture differences across cities in district policy and parental behavior that are not accounted for by the other explanatory variables.

The expected supplementary salary of teachers is entered to reflect the effect of this pecuniary incentive on teacher activities. Teachers receive extra pay primarily for supervising after-school activities, which are included in the fifth category. It is apparent from the results that supplementary pay and time spent in after-school activities are positively correlated and statistically significant. Furthermore, any additional time spent in after-school functions due to this incentive is done so at the sacrifice of preparation time.

VI. Conclusion

This paper shows that collective bargaining significantly affects an important determinant of student achievement--the amount of time teachers spend in instruction. From a national survey of over 3,000 elementary teachers, estimates indicate that teachers covered by collective bargaining spend approximately 3 percent less time in instruction per day (or one less week a year) than teachers not covered by collective bargaining.

The question of whether or not this reduction in instruction leads to a decline in the quality of schools still remains unanswered. Nonetheless, we have gained additional understanding of the incidental effects of collective bargaining on the operation of schools. The next stage of research needs to address in precise ways the effect of instruction and preparation time on student achievement and the influence of collective bargaining on the effectiveness of this time. If this research were to show that collective bargaining has no significant effect on the productivity of teacher time or that the effect (even if positive) were not large enough to offset the loss in the amount of time devoted to instruction, then it can be inferred that collective bargaining reduces student achievement. Until this research is completed, the best we can say is that collective bargaining has a tendency to reduce student achievement by reducing time spent in instruction. Thus, negotiators on both sides of the bargaining table should keep in mind this less visible effect of collective bargaining during negotiations.

Footnotes

[1]Studies of union wage effects are numerous. Examples include a recent study by Baugh and Stone (1982) and surveys by Parsley (1980) and Freeman and Medoff (1982).

[2]This inference, of course, rests both upon the assumption that the quality of time spent with students is not appreciably different across teachers and upon the definition of productivity. Productivity is defined here as the incremental change in student test scores per (quality adjusted) teachers. In this context, two identical teachers instructing identical groups of students and working the same number of hours may be observed to have different effects on student achievement if they choose to spend different amounts of time on instruction. Thus, according to the evidence on teacher effectiveness, the teacher who devotes less time to instruction is less productive.

[3]Teacher contract salary may have some effect on the allocation of time to certain activities if one or more of these activities are considered on-the-job leisure. If the marginal propensity to engage in leisure activities increases with income, then more time may be devoted to these leisure-type activities as salaries increase. However, since total household income is the appropriate reference and no information of this sort is available, we do not consider this variable. Furthermore, since none of the categories are clearly leisure activities, the effect is likely to be inconsequential.

[4]Conant (1971) finds that teacher aides in one large school district relieved teachers of instructional duties.

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TABLES

TABLE 1: MEAN AND STANDARD DEVIATION OF VARIABLES USED TO ESTIMATE TIME EQUATIONS, BY CONTRACT

	CONTRACT		NO CONTRACT	
	μ	σ	μ	σ
Hours Per Day in:				
Instruction	4.83	.73	5.01	.80
Preparation	1.39	.72	1.36	.72
Administrative and Clerical Duties	.75	.54	.70	.57
Meeting with Parents	.36	.36	.34	.30
After School Activities	.57	.54	.59	.59
Length of School Day	7.90	1.57	7.98	1.50
Importance of Teacher Participation in[1]:				
Student Assignment	3.45	1.18	3.24	1.24
Teacher Assignment	3.42	1.17	3.31	1.20
Planning Course Content	4.32	.67	4.30	.69
Promoting Community Interaction	3.29	1.13	3.31	1.12
Actual Teacher Participation in[2]:				
Student Assignment	2.69	1.23	2.67	1.27
Teacher Assignment	1.99	1.14	1.93	1.11
Planning Course Content	3.54	1.17	3.56	1.19
Promoting Community Interaction	2.88	1.17	2.96	1.12
Expected Teacher Salary[3]	3.60	1.08	2.87	.90
Expected Teacher Supplementary Salary	1.81	1.65	1.93	1.70
Expected Principal Salary	4.75	1.37	3.70	1.44
Years Experience of Teachers	11.98	7.81	10.48	7.80
Highest Degree Earned	2.47	.53	2.37	.50
Administrators[4]	3.99	2.16	3.90	1.56
Clerical Staff and Teacher Aides[4]	17.32	11.72	17.22	11.66
Teachers[4]	57.23	10.92	50.93	11.36
District Enrollment (x1000)	24.85	48.16	30.60	85.29
School Climate[5]	8.42	2.43	8.64	2.24
Extent of Physical Violence	2.96	.63	3.08	.64
Large City (over 200,000)[6]	.18	.38	.15	.36
Middle Size City (50,000 to 200,000)	.16	.37	.13	.34
Small City or Town (under 50,000)	.31	.46	.32	.47
Suburb of Large or Middle Size City	.13	.33	.17	.37
Number of Observations	2071		1180	

[1] 5-Most Important, 1-Least Important

[2] 5-Teacher, no Administrative Input, 1-Administrator, no Teacher Input

[3] Salaries are categorized variables

[4] Per 1000 students

[5] Composite index of teacher responses to certain questions; higher values indicate a more favorable response

[6] Community types are entered as dummy variables with rural communities excluded in the regressions.

TABLE 2: ESTIMATES OF STRUCTURAL TIME ALLOCATION EQUATIONS

	EXPLANATORY VARIABLE	INSTRUCTION	PREPARATION	ADMINISTRATIVE, CLERICAL DUTIES	PARENTS	OTHER NON-INSTRUCTIONAL
	Collective Bargaining	-.172	.060	.093	.026	-.007
		(7.02)*	(2.80)	(5.12)	(2.30)	(.35)
ACTUAL TEACHER PARTICIPATION — RESOURCES	Administrators	.015	-.006	-.012	-.003	.005
		(2.39)	(1.03)	(2.55)	(.92)	(1.08)
	Clerical, Teacher Aides	-.005	.001	.004	.002	-.002
		(4.69)	(.71)	(5.07)	(4.79)	(2.45)
	Teachers	.001	.001	-.002	-.001	.001
		(.63)	(1.00)	(1.82)	(1.38)	(.62)
ACTUAL TEACHER PARTICIPATION	Student Assignment	-.022	.024	.017	-.003	-.015
		(2.34)	(2.91)	(2.47)	(.81)	(2.17)
	Teacher Assignment	.015	-.003	-.014	-.000	.003
		(1.39)	(.37)	(1.76)	(.02)	(.33)
	Planning Courses	-.028	.017	-.002	-.003	.015
		(2.85)	(2.01)	(.22)	(.58)	(2.01)
	Community Interaction	.003	.001	-.011	.004	.002
		(.33)	(.15)	(1.49)	(.92)	(.31)
CHARACTERISTICS — TEACHER	Years Experience	.005	-.000	-.002	-.001	-.002
		(3.67)	(.18)	(1.91)	(1.12)	(2.10)
	Degree	.037	-.068	-.013	.016	.028
		(1.66)	(3.49)	(.80)	(1.60)	(1.65)
	Supplemental Salary	-.004	-.019	-.001	-.001	.025
		(.54)	(3.28)	(.18)	(.37)	(4.87)
CHARACTERISTICS — SCHOOL	School Climate	.007	.011	-.012	.001	-.008
		(1.44)	(2.56)	(3.14)	(.40)	(1.99)
	Physical Violence	.012	-.024	-.010	.027	-.006
		(.66)	(1.50)	(.73)	(3.27)	(.39)
	District Enrollment	-.001	.001	-.100	-.000	.000
		(1.84)	(1.16)	(3.21)	(1.46)	(.68)
CHARACTERISTICS — CITY	Large (over 200,000)	-.074	.076	.006	.137	-.041
		(1.78)	(2.12)	(.19)	(7.30)	(1.29)
	Middle (50,000-200,000)	-.048	-.058	.050	.106	-.007
		(1.20)	(1.68)	(2.12)	(5.96)	(.22)
	Small (under 50,000)	-.099	.037	.050	.060	-.050
		(3.16)	(1.40)	(2.12)	(4.32)	(2.09)
	Suburb	-.186	-.026	.118	.076	.017
		(4.68)	(.75)	(4.02)	(4.25)	(.57)
	Length of School Day	.818	.358	-.029	-.070	-.076
		(20.67)	(10.40)	(1.00)	(3.90)	(2.54)
	$(\text{Length})^2$	-.035	-.004	.013	.010	.015
		(15.19)	(1.85)	(7.94)	(9.87)	(8.45)
	Constant	.545	-1.20	.374	.089	.193
		(2.62)	(6.62)	(2.41)	(.94)	(1.21)
	F	72.55	114.55	77.88	63.34	56.68
	R^2	.31	.42	.33	.28	.26

* t-statistics in parentheses.

TABLE 3: RECURSIVE STRUCTURE OF TIME ALLOCATION CONSTRAINTS*

Dependent \ Explanatory	PARTICIPATION: Collective Bargaining	Student Assignment	Teacher Assignment	Planning Course Content	Promoting Community Interaction
RESOURCES (PER STUDENT)					
Administrators	.179	.026	.045	.046	-.040
	(2.30)**	(.91)	(1.41)	(1.56)	(1.32)
Clerical and Aides	-1.21	-.281	.145	-.300	.326
	(2.65)	(1.70)	(.78)	(1.71)	(1.81)
Teachers	5.24	.242	-.546	-.330	-.068
	(12.47)	(1.60)	(3.20)	(2.06)	(.415)
TEACHER PARTICIPATION					
Student Assignment	.050	/			
	(1.13)				
Teacher Assignment	.069		/		
	(1.72)				
Planning Courses	-.017			/	
	(.404)				
Community Interaction	-.062				/
	(1.52)				
SALARIES					
Teacher Contract	.588				
	(20.75)				
Teacher Supplementary	-.117				
	(1.89)				
Principal Contract	1.09				
	(25.30)				
TEACHER CHARACTERISTICS					
Experience	1.64				
	(5.80)				
Education	.098				
	(5.21)				
Length of Day	-.110				
	(1.82)				

* In order to conserve space, certain exogenous variables (District Enrollment, School Climate, Physical Violence, and Community Type) have been omitted from the Table. The estimates of these coefficients are available from the author upon request.

** T-Statistics in parentheses.

*** The specific policy area corresponds to the dependent variable.

SALARIES			TEACHER CHARACTERISTICS				
Teacher Contract	Teacher Supplementary	Principal Contract	Experience	Education	Importance Placed on Participation***	F	R^2
.060		-.174				15.16	.06
(1.52)		(5.38)					
-.097		1.36				22.01	.09
(.42)		(7.21)					
.418		.373				58.54	.20
(1.98)		(2.14)					
					.248	29.72	.08
					(13.98)		
					.176	26.21	.07
					(10.80)		
					.289	21.23	.06
					(9.76)		
					.182	25.61	.07
					(10.46)		
			.060	.565		323.26	.50
			(33.89)	(21.26)			
			-.010	.168		4.04	.01
			(2.68)	(2.91)			
						250.44	.38
						12.22	.03
						14.29	.03
.067	.018					3.20	.21
(2.38)	(1.11)						

TABLE 4: REDUCED FORM ESTIMATES OF TIME ALLOCATION EQUATIONS

	EXPLANATORY VARIABLE	INSTRUCTION	PREPARATION	ADMINISTRATIVE, CLERICAL DUTIES	PARENTS	OTHER NON-INSTRUCTIONAL
TEACHER PARTICIPATION	Collective Bargaining	-.156 (6.63)*	.057 (2.80)	.078 (4.46)	.022 (2.08)	.0009 (.05)
	Student Assignment	-.014 (1.41)	.022 (2.60)	.007 (.96)	-.000 (.00)	-.015 (2.04)
	Teacher Assignment	.033 (3.29)	-.020 (2.22)	.002 (.31)	-.003 (.59)	-.013 (1.76)
	Planning Courses	-.034 (2.05)	.026 (1.80)	.015 (1.18)	-.003 (.34)	-.004 (.31)
	Community Interaction	-.008 (.82)	-.003 (.32)	-.009 (1.18)	.015 (3.26)	.005 (.66)
CHARACTERISTICS SCHOOL	Supplemental Salary	-.004 (.65)	-.019 (3.31)	-.001 (.21)	-.001 (.36)	.026 (5.06)
	School Climate	.011 (2.36)	.013 (3.20)	-.014 (4.05)	-.0007 (.32)	-.010 (2.63)
	Physical Violence	.010 (.55)	-.025 (1.56)	-.008 (.61)	.029 (3.52)	-.006 (.45)
	District Enrollment	-.001 (2.86)	.0002 (1.07)	.0004 (2.65)	-.0001 (.54)	.0000 (.28)
CITY	Large (over 200,000)	-.072 (1.77)	.057 (1.61)	-.081 (2.68)	.149 (8.12)	-.053 (1.70)
	Middle (50,000-200,000)	-.036 (.93)	-.076 (2.26)	.017 (.58)	.113 (6.46)	-.017 (.60)
	Small (under 50,000)	-.085 (2.74)	.025 (.92)	.049 (2.12)	.061 (4.34)	-.050 (2.09)
	Suburb	-.200 (5.21)	-.032 (.96)	.140 (4.88)	.088 (5.06)	.005 (.18)
	Length of School Day	.814 (20.46)	.359 (10.40)	-.023 (.78)	-.070 (3.76)	-.082 (2.73)
	$(\text{Length})^2$	-.034 (14.94)	-.004 (1.91)	.013 (7.66)	.010 (9.71)	.015 (8.61)
	Constant	.688 (3.43)	-.025 (1.56)	.139 (.93)	.062 (.68)	.427 (2.81)
	F	92.69	151.73	99.75	82.79	74.65
	R^2	.30	.41	.32	.28	.26

* t-statistics in parentheses.

Note: Reduced form estimates are obtained by regressing the amount of time spent in each of the five categories on variables which were shown in Table 3 to be unrelated to collective bargaining.