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A DISCRIMINANT FUNCTION ANALYSIS OF THE 1983-84 CAPITAL LEVY
TRANSFER FUNDS IN SELECT PUBLIC SCHOOL DISTRICT BUDGETING
PRACTICES

The University of Arizona

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A DISCRIMINANT FUNCTION ANALYSIS OF THE
1983-84 CAPITAL LEVY TRANSFER FUNDS IN
SELECT PUBLIC SCHOOL DISTRICT
BUDGETING PRACTICES

by
Harold George Begay

A Dissertation Submitted to the Faculty of the
DIVISION OF EDUCATIONAL FOUNDATIONS AND ADMINISTRATION
In Partial Fulfillment of the Requirements
For the Degree of
DOCTOR OF PHILOSOPHY
WITH A MAJOR IN EDUCATIONAL ADMINISTRATION
In the Graduate College
THE UNIVERSITY OF ARIZONA

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THE UNIVERSITY OF ARIZONA
GRADUATE COLLEGE

As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Harold George Begay entitled A Discriminant Function Analysis of the 1983-84 Capital Levy Transfer Funds in Select Public School District Budgeting Practices

and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

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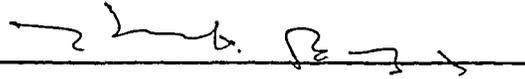
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A handwritten signature in dark ink, appearing to be "L. B. ...", is written over a horizontal line that serves as a signature line.

DEDICATION

This exploratory research in school finance equity, the quantitative analysis of equal educational opportunity, is dedicated to the following:

- the countless promising ethnic-minority youngsters who continue to persevere against all odds,
- the Navajo Nation Council Education Committee and the Navajo Nation Higher Education Scholarship Office,
- and above all else, to my most supportive and beautiful family, whom without their continuing faith, patience, loyalty, and love, this undertaking would not have been realized.

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My humblest gratitude, and thank you, is extended to Dr. Shitala Mishra and Ms. Mo Hannah, the scholar-statisticians; additionally, to my very good friends and scholars, with their incessant incisive critique and encouragement, this study has come to fruition. To Dr. Chilcott - Minor Advisor, Dr. DroegemueLLer - Dissertation Director, Dr. Fuentevilla - Minor Advisor, Dr. Medina - Major Committee Advisor, Dr. Sacken - Committee Advisor, I am deeply grateful for your assistance and support.

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ABSTRACT

The purpose of this exploratory study in school finance was to examine the relationship between transferred capital funds and budgeting practices for select public school districts in Arizona. Three major research questions were derived to examine public school fiscal management relative to budgeting efficiency, lapsing and depletion funds. The three research questions are as follows:

1. What variables can identify and are likely to maximally contribute to school districts' budget expenditures falling within a plus/minus 2% range of the adopted budget?
2. What factors would be maximally associated with school districts having either a credit or deficit ending fund balance in the general operations budget?
3. What variables are likely to maximally contribute to school districts budgeting practices leading to increased or decreased capital levy fund balance?

A systematic stratified sample of 31 school districts constituted the study group. Discriminant Function Analysis was used in the statistical treatment of

11 discriminant variables for six budget classifications. Each hypothesis was rejected at the .01 level of significance.

Capital Transfer Funds indicated maximum contribution in differentiating school budget groups which were within the plus/minus 2% range of the adopted budget. For the second research question and hypothesis, Revenue, in linear-combination with Beginning Fund Balance and expenditure, evidenced maximum ability to differentiate the credit fund balance. Capital Transfer Funds added minimal ability to discriminate budget groups.

For the third hypothesis, Revenues, Expenditures, and Capital Transfer Monies indicated high ability to discriminate budget groups. Capital Transfer Monies, however, was statistically spurious.

CHAPTER 1

INTRODUCTION

The decades of the 1960s and the 1970s have been described as the maturation of the public school finance reform occurring since Cubberly (1906) first proposed more equalized access to educational opportunity for youngsters (Odden, Augenblick, Adams, Cohen, & McGuire, 1981). Odden, McGuire and Belsches-Simmons (1983b) caption significant school finance improvement within the last two decades. The improvements, as documented in five major areas, are as follows:

1. the provision of greater state aid to school districts,
2. substantial reduction in interdistrict per pupil wealth and expenditure disparity,
3. extending revenue sources beyond the local property taxes,
4. greater state support for higher cost pupils and district needs, and
5. ceiling limits on local tax-cuts and district spending.

In 1984, the Education Commission of the States reported a new school finance shift toward cost-factoring raised by the education excellence movement (Odden & Dougherty, 1984). This school reform movement is projected to force major financial commitment toward new teacher compensation programs, longer contracts and school sessions, smaller student-teacher ratio, increased academic requirements, and computer-technology investments (Clark & Hertz (Eds.), 1984; King, 1984; Odden, 1983a; Odden & Dougherty, 1984). School finance reform in the 1980s is expected to concentrate and focus on refining efficiency, equity, and liberty, or ". . . any combination of the three" at the intradistrict, micro-school unit level (Guthrie, 1980, p. 3).

The Arizona Legislature has mandated quality education as defined within the new equity reform agenda. This legislative agenda is largely documented in education related session laws enacted in 1980 and subsequent amendments in 1982, 1983, and 1985.

Four critical concepts in the 1980 Laws address fiscal equity, local control, and mastery of basic skills (Laws of 1980). Additionally, the Legislature has mandated the monitoring and evaluation of efficient district fiscal resource management within the framework

of quality education. An amendment to the Laws of 1983, chapter 9, 11, reads in part:

C. The legislative council shall contract with a competent private individual or organization for a detailed study analyzing whether the block grant system of providing revenues to the school districts embodies a more effective and efficient means of providing quality education to the students of the public schools of the state. . . . The study shall examine the impact of the block grant system of funding for fiscal years 1983-84 and 1984-85 and shall be submitted to the Legislature on or before January 1, 1986.

With the Arizona legislative agenda and mandate toward increased school fiscal equalization, quality education improvement, and local control, the 1983 Legislative Session allowed additional funds to school district Revenue Control Limit. The Revenue Control Limit is a formula designed to ". . . ensure that each district has an equitable budget compared to others in the state" (Arizona Association of School Business Officials, 1983, p. 5).

House Bill 2022, 1983, Section Ten, "Alternative growth rate for fiscal year 1983-84; revenues to be used" (Laws of 1983), allowed local districts to augment their Maintenance and Operation budget year growth rate from four percent to six percent. According to the Legislative Staff Report (Legislative Staff, 1985) and the Arizona

Association of School Business (1983), the capital fund transfers were necessary to cover additional operational costs and needs school districts.

Twenty-eight percent of the state's school districts made fund transfers from Capital Levy Funds to their Maintenance and Operation Budget for fiscal year 1983-84. Sixty-two school districts made capital levy fund transfers for fiscal year 1983-84, amounting to \$12,263,984 in transfers (Arizona State Department of Education, 1984).

The Legislative provision allowing the fund transfers did not impose categorical limitations. Districts could budget and expend these capital fund transfers as determined by local needs, but they were restricted to the Maintenance and Operation Budget Functions (Laws of 1983, Chapter 9, Section 10). While fiscal accountability is clearly promulgated amid the school equalization agenda, the results of the transfer of monies from the Capital Levy to the Maintenance and Operation Budget has yet to be examined. Specifically, within the framework of the new equity agenda, there is a need to examine the significance of the additional monies to budgeting efficiency in the Maintenance and Operation

funds. Secondly, the impact of the additional monies to the Maintenance and Operation Fund Balance needs to be examined. Unexpended Maintenance and Operation Funds "lapse," amounting to subsequent year primary tax rate relief. Thirdly, there is the need to determine the effects of the capital levy transfer monies on the depletion of Capital Levy funds.

Statement of the Problem

The purpose of this study was to examine the relationship between the 1983-84 capital levy transfer monies and public school budgeting practices. More specifically, the study attempted to determine if the amounts of the 1983-84 capital levy transfer monies, revenues, beginning fund balance, and expenditures discriminated certain budgeting practices of school districts in the state of Arizona.

The three primary budget groups, as dependent criteria, were designated as follows:

1. Group One - school districts with a budget expenditure level to a plus/minus 2% variation range of the adopted general operations budget,
2. Group Two - school districts with an operational budget credit fund balance,

3. Group Three - school districts with a capital levy fund decreased fund balance.

Expenditure level for Group-set 1 constituted partially the group discriminate criterion and was treated as a dependent criterion variable. The study made a determination as to: 1) the linear-combination of variables which maximally differentiated school district budgeting practices, and 2) the accuracy of the hypothesized discriminating variables in their ability to differentiate school district budgeting practices.

Significance of the Study

The new school finance equity agenda mandates the monitoring of pupil-related expenditures in order to manage fiscal resources more effectively. To accomplish this objective, special emphasis is placed on:

1. intensified efficiency measures in budgeting,
2. funding education excellence initiatives, and
3. seeking additional revenue sources and monitoring capital projects fiscal allocation.

In light of these demands, this study should contribute to the mid-1980s school finance equity issues. The analysis of variables related to school budgeting efficiency measures and capital funds depletion in this study should allow for a more objective understanding of school budgeting improvements and administration.

Research Questions

Three major research questions were posed in the examination of the relationship among the 1983-84 capital levy transfer monies, revenues, beginning fund balance, expenditure levels, and school districts' budgeting practices. These questions were outlined as follows:

1. What variables can identify and are likely to maximally contribute to school districts' budget expenditure falling within a plus/minus 2% range of the adopted budget?

To examine this question, a discriminant function analysis was performed to determine which of the three variables, capital levy transfer monies, revenues, and beginning fund balance, would best differentiate two category of school budgeting practices. The next two questions were:

2. What factors would be maximally associated with school districts having either a credit fund balance or a deficit fund balance in the general operations budget?
3. What variables are likely to maximally contribute to school districts' budgetary practices leading to increased or decreased capital levy fund balance.

Hypotheses to be Tested

Based on the above stated questions, three primary hypotheses were derived and tested. All of these hypotheses were examined by the use of discriminant function analysis paradigm. In this analysis, the four discriminant variables were the capital levy transfer monies, revenues, beginning fund balances, and expenditure amounts. The dependent measures or criteria variable, however, were two different types of budget categories within each of the primary budget groups.

The hypotheses, stated in null form, were as follows:

H₁ : The amounts of capital levy transfer monies, revenues, and beginning fund balance will not discriminate school districts falling within the plus/minus 2% range of the adopted operational budget.

H₂ : The amounts of capital levy transfer monies, revenues, beginning fund balance, and expenditures will not discriminate school districts having credit ending fund balance.

H₃ : The amounts of capital levy transfer monies, revenues, beginning fund balance, and expenditures will not discriminate school districts' budgetary practices leading to decreased capital levy ending fund balance.

Basic Assumptions of the Study

The following assumptions are made for this study:

1. The 1983-84 Annual Financial Report is an accurate account of school district financial transactions.
2. The Arizona Legislative Staff Reports are accurate accounts of school financial reports.
3. School district financial reporting reflects accurately school district financial transactions and accounting.

Limitations of the Study

The limitations of the study are as follows:

1. The results of the study are generalized only to those school districts who transferred capital levy monies to their Maintenance and Operation budget during School Fiscal Year 1983-84.
2. The results and findings of the study are limited to the time-period indicated.
3. The study is exploratory in design and purpose; a cause-effect phenomenon for the variables examined cannot be established.

Definition of Terms

The following terms are as defined for the purposes of this study (Arizona State Department of Education, 1984):

Annual Financial Report. State Department of Education mandated financial report required of school districts annually disclosing cash balance, estimated and actual revenues, budgeted and actual expenditures, and ending cash balance for each fund account in school districts.

Fiscal Year. The accounting period indicated from July 1 to June 30 for which the school district is budgeting.

Budgeting Efficiency. School districts' budget expenditure falling within a plus/minus 2% range of the adopted budget (Johns & Morphet, 1968).

Capital Levy Funds. Funds specifically set for the purchase, lease-purchase, lease or long-term lease of sites, improvement to and/or construction of school buildings, furniture, equipment, portable classrooms, specialized electronic equipment, pupil and non-pupil transportation vehicles and equipment.

Capital Levy Transfer Monies. Monies transferred from Capital Levy Funds to the Maintenance and Operation funds.

Credit Fund Balance. Unexpended surplus monies in Maintenance and Operation funds after all monetary obligations are paid in an elapsed fiscal year.

Decreased Capital Levy Fund Balance. A decrease in unexpended surplus monies in capital levy funds after all monetary obligations are paid in an elapsed fiscal year.

Equalization. The method of revenue collection and the process by which the revenues are distributed back to school districts.

Fiscal Capacity. The ability of states and local school districts to raise revenues from their own resources through taxation; also referred to as district wealth.

Maintenance and Operation. Revenues and expenditures in regular education, special education, and transportation relating to the administration, instruction, instruction support, and operations.

Summary

Chapter 1 provides the rationale for undertaking a study of budgeting practices within the framework of the new school finance equity agenda. The background, need, and purpose of the study is established within the Arizona Legislative mandate toward quality education improvement and efficiency.

Three issues pertinent to the Arizona Legislative mandate toward quality school improvement are identified for the study. These are school district budgeting practices toward efficiency measures, budget fund balances, and capital funds depletion. The significance of additional monies to school district's budgeting practices at the expense of capital funds depletion are identified as problematic points for an in-depth exploratory analysis.

Three major research questions are derived to examine the relationship between the additional monies and budgeting practices. Three hypotheses are further explicated. The assumptions and limitations of the study along with definition of terms are also provided.

CHAPTER 2

REVIEW OF THE LITERATURE

Chapter 2 establishes the research and theoretical foundation for the study. The research findings and theoretical base in areas pertinent to the study are reviewed. The Chapter is divided into three major sections as described below:

1. The New School Finance Equity Agenda - this section reviews trends and recent research in school finance equity studies.
2. Fiscal Resource Management - the theoretical development and stage in budgetary-efficiency measures are reviewed.
3. Capital Investment Equity - the third section examines research findings and implications for use of capital funds for day-to-day operational expenditures.

The New School Finance Equity Agenda

Odden and Dougherty (1984) in their comprehensive study describe the transition in school finance agenda for the 1980s. With relative stability having been

attained in actual per pupil dollar equalization, the new agenda is toward the cost-analysis of intradistrict school quality program improvement.

In assessing new finance issues and reform, the Education Commission of the States (Odden & Dougherty, 1984) queried a cross-section of state governors, legislative offices and state education agencies. The respondents listed their respective state education finance issues and reform elements as follows:

1. New programs for teacher compensation,
2. Longer school days and school years for teachers and students,
3. Smaller classes and additions of support staff (guidance counselors, reading aides, reading specialists),
4. Stiffer requirements for high school graduation,
5. More student testing,
6. Prekindergarten programs for disadvantaged children,
7. School improvement initiatives,
8. Merit school plans,
9. School finance reforms (Odden & Dougherty, 1984, p. 12).

The study noted that with these efforts toward reform, there will be major finance equity issues arising from the following:

1. the differential impact of higher standards and tougher requirements,
2. differential access to new curricula and better teaching,
3. differential access to master teachers and master teacher programs,
4. differential access to computers (Odden & Dougherty, 1984, p. 20).

The authors further extrapolated six specific cost computation factors which will arise from these new equity issues. From the standpoint of cost-factoring, the six areas identified are:

1. the short-, medium-, and long-run costs of various reforms,
2. how the costs are to be calculated,
3. whether necessary data and techniques are available,
4. the extent to which state and local districts should fund excellence initiatives,
5. how funds are to be allocated,
6. how state dollars should be channeled into traditional categorical programs and the new excellence initiatives.

This process of cost computation along with fund reallocation are identified as major administrative challenges for school officials.

With developing reform programs, the authors noted that ". . . there does not seem to be a trend toward allocating most new funds to excellence initiatives without increasing aid to other programs" (Odden & Dougherty, 1984, p. 22). Specifically, in funding instructional excellence, the study concluded that:

. . . excellence initiatives in most states are small, categorical programs, receive relatively small allocations, and most state aid increases are allocated to the school finance formula and traditional categorical programs (e.g., state compensatory, bilingual and special education programs). . . . it would seem prudent for states to maintain a record of how funds are allocated among programs, if only to demonstrate that progress is being made toward equity as well as excellence (Odden & Dougherty, 1984, p. 22).

Odden et al. (1983b, 1983c), in two other major studies, also noted the change in emphasis in school finance equalization. These earlier works again identified quality school improvement as the new finance equity issue.

Under this new equity agenda, administrative leadership and classroom instructional process variables were examined to determine their impact on school improvement programs.

The research emphasis and findings from this tangent were that:

1. school resources do substantially contribute to pupil achievement,
2. money and its purchasing power does affect the quality of educational service level.

Clark, Lotta, and Astuto (1984, p. 58) in reviewing school improvement programs found adequate funding to be critical to quality improvement:

The research is clear that external facilitators, internal facilitators, materials, time for teacher planning and interaction, and time for teachers to implement the innovation are all important components of a successful school improvement program. These conditions all require the expenditure of funds. Slack resources are vital to provide the required human and material resources to support change efforts. . . .

In citing Fullan (1982), the authors determined that ". . . the availability of funds external to the district is a powerful stimulant for adoption" of program changes and improvements (Clark et al., 1984, p. 58). The availability of adequate fiscal resources is cited as extremely critical to quality service level for many school districts. The authors noted that for many school districts, ". . . additional resources for educational reform . . . provide the margin for implementation support in many school districts" (Clark et al., 1984, p. 58).

Cuban's (1984) work in a similar domain concluded that ". . . a district-wide school improvement program involves large expenditures." In his cost analysis of comprehensive program changes, the large expenditures ". . . arise from retraining staff, hiring consultants, and reassigning central office supervisors and administrators" (Cuban, 1984, p. 135).

Incremental increases in fund appropriations for quality improvement efforts, however, is not the answer (Garms, Guthrie, & Pierce, 1978; Rossmiller, 1982; Mann & Inman, 1984). Garms et al. (1978) document extensively the significant relationship between educational expenditure and achievement for youngsters of differing socio-economic background; their research findings indicated that:

1. given progressive equal unit increase in expenditure, achievement gains will increase on an accelerating scale for low, middle, and high socio-economic strata youngsters respectively,
2. given unequal allocation for expenditures on a 3:2:1 ratio unit increase for low, middle, and high socio-economic strata youngsters respectively, low and middle socio-economic strata youngsters will equal or surpass high socio-economic strata youngsters in achievement gains,
3. given progressive equal unit increase in expenditures, achievement gains for all socio-economic strata youngsters will level off at a given point where high socio-economic youngsters will reach this point much earlier than low and middle socio-economic strata youngsters,

4. Beyond a given achievement leveling point, additional expenditures serve no further purpose.

Mann and Inman (1984) in their cost analysis of school improvement programs also noted the limits of fiscal resources on achievement. In their work, the authors note:

There is evidence that achievement can be changed by manipulating within school variables within existing resources, through the Instructionally Effective Schools' approach. While more money is desirable, the analysis indicates that there are substantial improvements which can be made within existing resources (Mann & Inman, 1984, p. 256).

The authors identify six within school resources which have been shown to characterize instructional effectiveness. Derived from Delphi Analysis, the six factors established in rank-order are:

1. Teacher characteristics and behavior,
2. Administrator characteristics and behavior,
3. Student body composition,
4. School learning climate,
5. Pupil evaluation procedures,
6. Curriculum materials.

In their summary analysis of effective schools and cost-factoring, the authors noted that the human-quality

factors were more crucial to program improvement. As they note:

Each of these points is feasible without requiring additional funds. Present priorities may need to be reorganized to support each of these areas. Most of the changes will be attitudinal and managerial (Mann & Inman, 1984, p. 269).

Fund appropriations and expenditures thusly have documented limitations on achievement gains and maintenance. The structured interactive process of material, monetary, and human resources are determined to have a greater impact on achievement.

Along with quality improvement, schools are also being challenged toward efficiency measures. While fiscal and curricular expansion characterized the 1970s, the challenge today for schools is ". . . to do more with the same or with less . . ." (Odden et al., 1983b, p. 5). The 1980s state legislative agendas have directed attention toward greater school efficiency measures. Odden et al. (1983b) note:

As policy makers seek more effective ways of allocating scarce resources, more states are interested in developing incentives to make schools more effective--to get more mileage from scarce dollars (p. 22).

The quest for quality improvement in schools amid steady-state fiscal resources is thus established as the

1980s new school finance equity agenda. Schools as a consequence are being forced to scrutinize their district budgetary practices and program prioritization.

Fiscal and program prioritization in the form of capital investment has also been acknowledged as a major evolving issue. The shift toward an information society and technology is expected to demand greater scrutiny in financial stewardship for school officials (Clark & Hertz (Eds.), 1984). Odden (1983a) offers the following general observation on school finance reform:

Three major social trends suggest that new issues will be added to the school finance policy agenda in the near future. First, the shift from an industrial to an information society is substantially changing the composition of the nation's economy and the type of education needed to support its growth. Second, the leveling of public education funds is likely to spin-off new revenue raising schemes by school officials caught between rising demands and falling resources. Third, computers, video disks and related technologies will heavily influence the organization and structure of education practices and finance (pp. 4-5).

A new form of societal economic-education link is also expected to further refine school finance reform issues. Odden (1983a) again provides the following assessment:

. . . today and into the future, the tools of the information society--computers, microchips, information processing, telecommunications, robotics, video disks--will direct our growth. The finance issue for the country is how to alter strategies for economic growth in a new economic environment. . . . To move education finance into our new era, we must choose investments that restructure and reposition education to nurture changed economic directions. The education-economic development link is seen by many as the paramount education finance issue of the next decade (p. 5).

The evolving information-computer technological growth in the new economic environment is thus expected to alter school prioritization toward greater computerization investment.

In summary, the new 1980s equity agenda has shifted toward greater investment in effective instruction, fiscal efficiency measures, and school computerization. The differential impact of, and access to, these new programs and developments at the local micro-school unit level are viewed as equity issues to be addressed.

The challenge remains for school administrators now to meet effectively the demands of these new developments in school finance. The 1960's and 1970's progress in aggregate fiscal per pupil and taxpayer equity, both vertical and horizontal, are viewed as essentially complete.

Fiscal Resource Management

Sound fiscal management of public funds has long remained a topic of public scrutiny. Budgetary efficiency measures have been addressed from varied perspectives since the 1900s.

The National Municipal League in 1899 first proposed a model budget system for municipalities experiencing rapid growth. In 1906, the Bureau of Municipal League initiated publication on municipal budget and financial administration. These efforts provided assistance to municipalities nationwide in adopting effective city financial administration. The 1921 Federal Budget and Accounting Act was the culmination of some of these early major budgetary reform efforts (Johns, Morphet, & Alexander, 1983; Moak & Hillhouse, 1975).

Not until the mid-1950s did the application of scientific principles in budgetary management surface again. The infusion of programmatic planning and analysis, such as the Planning-Programming-Budgeting-Evaluation system, into public sector budgetary format guided this renewed interest (Aronson & Schartz, 1975).

Moak and Hillhouse's (1975) extensive literature review on criterion-of-efficiency in public sector budgeting is addressed from this systematic management-

planning premises. In their three-stage evaluative model, the authors note that unquantifiable factors in program operations need not detract from quantifying program operations altogether:

. . . governmental operations provide services--some tangible and others intangible. Services are often difficult to measure in meaningful ways. But this is a challenging area and both direct and indirect quantitative measures have been devised. If program goals are identified by stages--immediate, intermediate, and ultimate--measurement is more feasible. . . . Attainment of the ultimate goal . . . may, however, defy (or seem to defy) estimates and actual measurement. Despite this, discouragement with measuring this final end-product should not provoke condemnation of the criterion-of-efficiency and its role in budget making (Moak & Hillhouse, 1975, pp. 383-384).

Efficiency measures during the initial, process, and outcome stages, as opposed to long-range performance measures in program operations, are summarized by the authors:

Operationally, the results of efficiency measurements are often reported monthly . . . , they serve as operational control and a current function. By contrast, measurements beyond efficiency are usually so remote in time that they are of little or no use for operational control purpose. . . . They are . . . less useful for predictive purposes than are efficiency measurements because they are less precise. . . . Efficiency measures which are done again and again often permit predictions close to the bull's eye (Moak & Hillhouse, 1975, p. 389).

The authors view efficiency measures in this three-stage budgeting model as a ". . . financial accounting and managerial accounting welded into a single system" (Moak & Hillhouse, 1975, p. 331). In this system of fiscal accounting, ". . . managerial controls are added...and center upon standards and the preparation of reports which highlight significant variances from such standards" (Moak & Hillhouse, 1975, p. 334). Managerial performance standards based upon initial and process measurements, along with variation from projected outcome measures, are viewed as one major objective for public sector budgeting:

. . . a budget is a forecast---a prediction which has certain statistical chances of achieving absolute accuracy. From this viewpoint, the "better" budget is one in which the variation of actual experience from the original forecast is at a minimum. Achieving accuracy in the total budget boils down to achieving accuracy in the detail. The tendency to aggregate the overall budget from a mass of subordinate cost centers is an important step toward an accurate total because the inevitable plus-and-minus errors of a mass of estimates tend to cancel one another out. . . . The whole mass of estimates thus tends toward zero variation (p. 51).

The quality of management performance in budgeting thus can be measured by the extent to which the projected program-cost varies from the actual cost, suggesting thorough program planning danalysis. In appraising fiscal

management performance then, Lehan's work suggests the greater the tendency toward zero variation at the outcome stage, the better the management performance rating.

Thorough cost-center planning and preparation during budget formulation is identified to quality fiscal resource management standards. To minimize significant variation in this pyramid budget model of projected and actual program cost, establishing ". . . a large number of subsidiary estimates, each based on the best information or sources available," is determined as most essential (Lehan, 1981, p. 52).

For school finance specifically, the issue of efficiency in a similar vein is by no means a recent development. Rossmiller (1982) in reviewing school productivity and cost effectiveness as financing criteria observes:

Efficiency has been recognized as a valuable aspect of school finance for nearly as long as equity. Callahan (1962) discussed in some detail attempts by administrators in the early 1900s to make schools more efficient by applying business techniques to the problem of school management. The late 1960s witnessed a renewed interest in efficiency in schools, with the impetus coming primarily from public policymakers in response to rising school costs and growing competition for public sector resources (Rossmiller, 1982, p. 92).

In achieving greater equity and learning opportunities for school-age youngsters, Schultz (1983) contends that more efficient schools are imperative:

Public funds are not free; they are not unencumbered; they are not an unmixed blessing. The allocation of public funds to support education obviously is not a minor problem. The public control of how these funds are used is clearly a critical issue (p. 38).

The Association of School Business Officials identify as a major issue for the mid-1980s the need for school officials to improve their financial stewardship. Lewandowski's (1984) overview on school district financial administration posits school administrators as being in the forefront to upgrade fiscal resource management skills:

Accounting and the financial reporting of school districts' funds appropriated by the taxpayers and elected officials for the education of children are being questioned and scrutinized with greater intensity than ever before. Education is in the forefront of the news. Administrators are being challenged on their financial spending as well as the administration of the same (p. 23).

Lewandowski's work cites some significant factors inherent in governmental operations which invite critical public scrutiny. These factors, as determined in the 1980 edition of the governmental finance Blue Book report are as follows:

1. lack of significant performance assessment capacity,
2. lack of harmony on purpose control factor,
3. monopolistic services funded by involuntary funding sources,
4. extreme political sensitivity,
5. lack of leadership continuity,
6. the annual operating budget,
7. budgetary cycle incentives to inefficiency,
8. insider and outsider role of governing boards,
9. dominance of finance-related legal and contractual provisions (Lewandowski, 1984).

Given identifiable impediments to public funds administration, criteria to evaluate public school budgeting process as a science in resource management have been a subject of critical analysis for some time. Scholars addressed this very issue since the turn of the century (Callahan, 1962). John W. Twente in 1921 made the first major effort to examine comprehensively city school budget management (Johns & Morphet, 1969). Twente found an extensive array of budgetary management in the 363 city school systems studied.

In 1927, some elements of systematic planning and programming inherent in the mid-century trajectory toward planning-programming--budgeting-systems were noted in

developmental stages (Englehart & Englehart, 1927; DeYoung, 1936; Johns & Morphet, 1969).

By 1957, Vosecky had provided a longitudinal perspective to school budgetary procedures, summarizing local school district practices during the last thirty-five years (Johns & Morphet, 1969). Johns & Morphet (1969) characterize these proposed principles as more relative criteria for assessing sound budgeting practices than guidelines. From the standpoint of Johns et al. (1983), the formulation of a definite and clear educational plan along with translating the plan into estimate costs, similar to Lehan's proposal, are viewed as two essential criteria in appraising sound budgetary practices.

The preeminence of planning and programming management skills to efficient school budgeting is likewise accentuated by Garms et al. (1978):

The budgeting process consists of two sets of activities:

(1) budget formation and (2) budget administration. Budget formation includes all the activities that determine how a district spends its revenues; budget administration includes those activities needed to ensure that budgetary decisions are actually implemented. Budget administration affects the efficient use of resources only indirectly, by ensuring that monies are spent as planned. Consequently, hopes for improving resource utilization must rest largely on efforts to improve the methods of formulating school budgets.

School budget formation means developing a plan for acquiring and allocating a district's financial resources.

Practitioners in the field have reinforced the significance of planning and programming skills as essential to effective and efficient budgetary practices. In a 1980 study of school business management skills, the planning skills perspective was ranked as the most important by practicing school business managers (Candoli, Hack, Ray, & Stollar, 1984).

Recent research development in school business management has begun to emphasize more the establishment of educational plans which will yield relatively accurate estimates of program costs. Johns et al. (1983) describe the budgetary process in transition from cost-listing to ". . . viewing it as a system that relates cost to programs":

The American people have long regarded themselves as prudent, at least when engaged in the process of allocating and managing resources needed to support public services. During recent decades, there has been an increasing concern about ways in which these resources might be allocated more equitably and utilized more wisely, especially those provided for such public services as education. Concerned citizens, legislators, governmental leaders, and educators, in increasing numbers, have turned to concepts such as PPBS or PPBES (planning-programming-budgeting-evaluating system), ERMS (educational resource management system, cost-benefit ratios, and systems analysis in their continuing efforts to meet the general concerns about how--and how effectively--the educational dollar is utilized (p. 352).

Program budgeting to Johns et al. (1983) is ". . . an attempt to relate estimated costs to the purpose the various programs are designed to serve" (p. 358). In this budgetary process, along the Lehan (1981) proposal, an essential criteria in appraising budgeting is making ". . . relatively accurate estimates of resources and expenditures" (Johns et al., 1983, p. 358). A prerequisite to establishing relatively accurate cost estimates, however, is again thorough educational planning and preparation:

. . . any plan for allocating and utilizing resources should be based on an educational plan developed to attain the broad purposes and goals agreed upon. The educational plan, therefore, should be comprehensive--both short and long range--in nature and should present and justify the quantity and quality of the educational services provided.

If the educational plan is to be useful in preparing the budget, it must be specific enough in essential details that budget estimates can be prepared that reflect the educational plan adopted (Johns et al., 1983, p. 356).

Moak and Hillhouse (1975) similarly view relatively accurate budget predictions as contingent upon management planning-preparation skills:

Measurement at the budget formulation stage is predictive, a process of estimating what input (or combination of inputs) is required to obtain a certain result of results. . . . With a level of goal attainment...tentatively set for each program, and with a tentative budget figure allocated for the purpose, the program supervisor should estimate the results which could be obtained by different ways using the tentative resources. If program objectives can be more sharply delineated than formerly, the program supervisor should have a better chance of improving his predictive (estimating) ability (p. 383).

Thus, recently, educational institutions have been forced to employ systematic financial resource management based on scientific principles. While strategic financial planning, control, and predictive process have dominated recent school budgeting literature, lack of ". . . time, resources, manpower and commitment" have impeded large scale implementation (Snyder & Hogan, 1975, p. 21).

Snyder and Hogan (1975, p. 21) cite the consensus view that the range of ". . . technical language and confusing accounting patterns inherent with detailed financial analysis" have largely discouraged commitment to systematic school business management. The authors nevertheless take the position that logical, systematic school business management need not become an arduous, detailed, financial accounting chore. As a business, accounting, and education team, Snyder and Hogan (1975)

contend that school districts can establish relatively accurate cost projections for their annual and/or multiple-year educational programs.

In their cost Accountability System, the following base rationale is provided:

. . . it is a very uncomplex procedure to develop programs in terms of teacher units and to interpret those costs in terms of percentages. However, it is necessary to keep in mind that all of these calculations are subject to a certain margin of error. Normally, if the average teacher unit is calculated accurately, in terms of total spending, then the margin of error will not exceed 5 percent. In extreme cases, where a program actually exceeds the cost of an average teacher unit, it might be necessary to weigh that program in order to determine an exact cost (Snyder & Hogan, 1975, pp. 35-36).

The five percent variation range in program cost projection in the CAS model is an ". . . error which results from not weighing the programs representing experience and preparation within the school district" (Snyder & Hogan, 1975, p. 36). Johns and Morphet (1969) proposed a more stringent margin of error, contending that with diligent planning, contingency fund in program cost projections need not exceed two percent:

The budget should provide for a small contingent fund to provide for emergencies and for inaccuracies in estimates. Most authorities suggest that the contingent fund need not exceed 2 percent of the budget if estimates are made carefully (p. 455).

For planning program cost at the local building level, or Site-Based Budgeting, Candoli et al. (1984) note that principals have often, through practice, merely projected a 10-15 percent provision for contingency funds:

Most building principals have learned to prepare for a slight gain or loss in monies by placing from 10 to 15 percent of their projected budget in a contingency account. The impact of gains or losses is felt in the contingency account and not necessarily in accounts affecting building operations (p. 139).

Other research in the field suggests that an ex post facto analysis, in the form of interim and year-end financial analyses, provides more meaningful data for decision making. Program cost estimate and actual expenditure variances still form the core data source. Wagner and Sniderman (1984) in their study of school fiscal management for the National School Boards Association report on expenditure analysis in Budget Evaluation:

Monitoring expenditure through periodic, interim financial reports will indicate whether expenditures are being made as anticipated. Whether they are or not, an annual end-of-year analysis is important for determining "why" as well as predicting "what" can be anticipated for the next budget and "how" cost may be reduced (p. 246).

The authors' budget evaluation guidelines suggest four areas of program cost estimates and expenditure analysis. One, in the comparison of program appropriations and actual expenditures should less expenditure occur than appropriated, then an ". . . analysis should reveal why the differences exist and should include review of any policies governing reallocation of unexpected funds" (Wagner & Sniderman, 1984, p. 246). Two, there should be trend analysis of appropriations and expenditures from the preceding years to the current year for each program areas; three, analyses of the instructional program areas should determine the amount and percentage of aggregate expenditures. Four, analyses in the non-instructional program categories should determine the same.

Wagner and Sniderman's (1984) work thus recommends a strategic budget planning approach in the form of a five stage Program Development Design. The stage pertinent to program cost estimate and expenditure analysis is the Cost Assessment Phase, where an analysis is made ". . . to determine whether program cost were congruent with estimated costs" (Wagner & Sniderman, 1984, p. 240).

These guidelines, along the Lehan (1981) proposal, recommend that an actual and projected cost comparative

analysis be made to provide data source for a more detailed cost/benefit or a cost/effectiveness study. Wagner and Sniderman's (1984) work does not specify any cost projection-expenditure ratio in appraising the budgeting process.

The need to establish a standard ratio to appraise fiscal management is nonetheless viewed as critical to budget evaluation and management performance. Moak and Hillhouse (1975) advocate establishing a standard ratio in the analysis of public fiscal management:

Measurement is more than counting. The count itself is likely to provide little assistance until matched against a standard. Some financial measures are first expressed as a ratio and then compared with a standard ratio (p. 371).

Uerling (1984) likewise suggests the need for an intra-analysis of school district budget document if the data derived are to have practical application for management and the public. While a standard ratio is not specified, Uerling's (1984) analysis of school business management suggests the need for quantifiable data within a given framework:

School business officials sometimes need to ascertain how much money is being spent for some specific school purpose. To answer the question may require more than simply identifying a dollar amount. Expenditure data is more meaningful when expressed in relative terms and may be useful to measure the disbursement for a certain function as percentages or as unit cost (p. 51).

These recent developments in appraising budgeting have been addressed from the standpoint of budgetary percentage allocation and projection of an error percentage factor during budget formulation or as an interim and year end budget evaluation. Specifically, the actual cost percentage variation from projected program cost as a measure of sound budgetary appraisal and evaluation has been viewed within the framework of management planning skills.

The variation factor in public school budgetary process is couched in contingency fund percentage terms or as a percentage error factor. For the contingency fund percentage allocation, Johns and Morphet (1969) cite the 2 percent variation from the projected program cost as acceptable, while Snyder and Hogan (1975) with their CAS establish the 5 percent margin of error from the projected program cost. Candoli et al. (1984) cite a 10 to 15 percent variation for school Site-Based Budgeting.

The current era of fiscal austerity mandates a conservative programmatic fiscal management in all facets of school district operations. While the 2 percent variation may seem unduly stringent, the new fiscal equity agenda demands efficiency in fiscal management as clearly a critical issue and goal to be attained. Along the Lehan

(1981) theoretical perspective, the 2 percent actual cost variation from the projected program cost will be employed in this study to determine the quality of school district fiscal resource management.

In using this rationale, the question to be addressed is whether the amounts of revenues, beginning fund balances, and capital levy transfer monies will differentiate those school districts whose budget expenditures fell within a plus/minus 2 percent variation of their adopted budget cost in Maintenance and Operation. As proposed by Candoli et al. (1984), Garms et al. (1978), Johns et al. (1983), Moak and Hillhouse (1975), and Snyder and Hogan (1975), program planning and evaluation can be optimized in predicting the impact of factors which affect expenditure; then, the actual operational cost should not exceed the plus/minus 2 percent variation of the projected cost. According to the Association of School Business Officials of California (1983), five factors which impact school expenditures need to be taken into account when projecting program cost. The factors are:

1. student population,
2. facilities numbers, capacity, and location,
3. facilities repair, preventive maintenance, and remodeling,

4. economic conditions,
5. personnel policies.

Lehan's (1981) budgeting evaluative criteria were employed in this study to appraise management skills in school district fiscal stewardship. Lehan's criteria states that achieving minimal projected-actual cost variance is indicative of high fiscal management skills.

Capital Investment Equity

The third issue in this study addresses the extent to which capital levy transfer monies reduced funds for actual capital investments. To offset projected additional operational cost in Maintenance and Operation, monies were transferred from Capital Levy Funds to Maintenance and Operation Budget. The question arises whether these transfers adversely impacted funds for capital projects.

A review of literature in school capital operations indicates that capital projects, maintenance, and management have become a major liability requiring the utmost attention of school officials. Golz (1984) poses a question focusing on the magnitude of this matter:

What is the largest investment in your school district?

The answer is your fixed assets--land, buildings, machinery, and equipment. Managing this investment presents many problems including maintenance, repairs, replacement, utilization, and security (p. 32).

The need for sound assets management today is emphasized considering the recent ceiling limits placed on school district fiscal resources:

With today's do more with less funding pressures on school districts, sound asset management is imperative. Considering the long term nature of fixed assets and the substantial investment involved, a fixed asset system must be developed as a management tool allowing facilities managers and financial managers to meet the challenges of long term fiscal responsibility. In the context of fixed asset management, today's surplus may be tomorrow's deficit (Golz, 1984, p. 45).

Eubanks (1985) addressing capital projects expansion and renovation cites the need for more and better public relations programs for today's economy conscious public. Eubanks endorses the current general consensus that school management faces major obstacles in convincing the public of the need for additional capital expansion and renovation funds.

While extensive studies document a great need to invest funds in capital maintenance, renovation, and replacement than ever before, the public remains embedded in the fiscally conservative atmosphere (American Association of School Administrators, Council of Great City Schools, and the National School Boards Association,

1983; Hough & Peterson, 1983; Johns et al., 1983). In the process, objective developmental studies of the capital investment problems faced by school officials has remained largely an academic inquiry.

The capital facilities study of Garms et al. (1978) lend the developmental demographic perspective to the problem:

During the period from World War II to the end of the 1960s an unprecedented number of new schools were built. The rapid increase in student population, combined with migration from farm to city and suburb, made necessary the construction of thousands of new schools. The decreasing birth rate in the 1970s caused a relaxation in the pressure for new construction, but migration continued, and many school districts are still building new schools and additions to old ones; others are making major repairs or are replacing schools that are outmoded or in poor condition (p. 363).

From the economic perspective of Johns et al. (1983) in their study of capital management enrollment trends and capital expenditures correlate significantly. Based on a projected enrollment increase, the authors predict major cost increase in capital investment for the mid-1980s:

The proportion of total expenditures allocated to capital outlay . . . in the public schools . . . has varied greatly in different decades . . . expenditures for capital outlay plus interest have constituted the highest percentages of total expenditures in years when the school enrollment was increasing and declined when the enrollment

became static or decreasing. Enrollment increased rapidly in the 1950s and 1960s, became static in 1970, and started declining in 1975. It is anticipated that enrollment . . . will not start increasing again until about 1985 (Johns et al., 1983, p.274).

Enrollment trend impact on capital management is provided in some detail by the Policy Analysis and Research Center, Education Commission of the States (Odden et al., 1983b). School enrollment is predicted to increase beginning in 1985 in the elementary grades, while the secondary level will experience decline through 1990. The study contends that managing growth and plans for the elementary grades will constitute a particularly pressing capital investment problem.

In addressing the major topics for the mid-1980s for school business management, the Research Corporation of the Association of School Business Officials also identified capital management and computerization as only two areas which will require major fiscal investments (Clark & Hertz (Eds.), 1984). Richard King (1984) noted the much needed planning and investment in computer technology, requiring planning investment in personnel as well as equipment:

As society and schools have changed throughout the history of American education, roles and responsibilities of education officials have also shifted. New responsibilities are evident as schools enter the information age; teachers and administrators are quickly moving instruction and office management into a new era dependent on computerization (King, 1984, p. 16).

C. William Day's (1984) analysis of renovation and planning of educational facilities emphasized much needed investment in facilities modernization. According to Day (1984):

By the year 1985, fifty percent of all construction dollars will be spent on additions and modernization of existing educational facilities. School boards and administrators will face the additional burden of finding money for preventive maintenance. With colossal expenditures for previous construction, administrators will be faced with the challenge of protecting their investment in existing buildings.

Perhaps most costly, Candoli et al. (1984) offer their analysis of current facilities problems from a deferred maintenance standpoint. In their overview, deferred maintenance of school facilities can easily translate into major and costly long-term maintenance projects. As such, within the context of budgetary constraints, they caution against any unreasonable capital budget reduction. Succinctly, in their observation:

Decisions to delay capital improvements such as new roof, new boilers, and to reduce general maintenance by painting less often, making fewer service calls for typewriters, are initial results of reduced budgets. Since most educational institutions are as much as 85 percent salary intensive, the tendency to apply the budget ax to maintenance and operation is quickly seen. While a "fair share" cut is reasonable, short-term savings can be easily transferred to long-term major costs for replacement of poorly maintained facilities and/or equipment (Candoli et al., 1984, p. 230).

Candoli et al. (1984) noted in particular the effects of reducing capital expenditure plans in the interest of economizing as essentially inviting long-term costly maintenance projects. This approach to budgeting amid fiscal austerity is termed "false economy" (Candoli et al., 1984, p. 233). Potentially costly capital deterioration due to expenditure reduction amid budgetary constraints is viewed as a critical issue of economy for school management.

The 1983-84 transfer of capital levy monies to districts Maintenance and Operation Budget would appear then to constitute a particularly pressing fiscal concern for legislatures, taxpayers, and school officials. School-age youngsters should be materially affected insofar as health and safety standards due to deferred capital maintenance. The issue of increasing computerization in school management, instruction, and support services can

only impose additional commitment of the reduced capital funds (Clark & Hertz (Eds.), 1984; King, 1984).

The equalization of capital levy monies for Arizona school districts, within the context of increasing obligation for capital investment, additionally places school district budget processes in a position requiring much greater scrutiny. With the 1985 revised school finance legislation, the option to budget capital outlay monies to Maintenance and Operations Budget could appear a potentially costly false economy for school districts. The significance of budgeting capital monies toward operational expenditures needs to be examined.

CHAPTER 3

RESEARCH METHODOLOGY

Chapter 3 details the methodology employed in conducting the study. The following areas in research methods and procedures are described:

1. Research Design,
2. Sample Selection,
3. Data Source and Acquisition Techniques,
4. Statistical treatment and Test of the Hypotheses.

Research Design

The study is in the form of an ex post facto research design. The study made a determination as to the relationship among weighted variables in public school budgeting and budgeting practices. Three separate groups of budgetary practices, each with a linear-combination of weighted variables, were examined. The linear-combination of variables were the independent variables while the groups of budgeting practices constituted the dependent criterions.

The interrelationship and overlap of the linear-combination of independent variables which are hypothesized to differentiate the dependent criterion are taken into account. The three primary budget groups, as dependent criteria, were designated as follows:

1. Group One - 17 school districts with a budget expenditure level to a plus/minus 2% variation range of the adopted general operations budget,
2. Group Two - 21 school districts with an operational budget credit fund balance,
3. Group Three - 15 school districts with a capital levy fund decreased fund balance.

The linear-combination of independent variables, which were hypothesized to differentiate Group One, are defined as follows:

1. Revenues - the aggregate of actual cash receipts restrictive to the specified fund account,
2. Beginning Fund Balance (BFB)- the aggregate excess of the assets of a fund over its liabilities and equities restrictive to the specified fund account,
3. Capital Levy Transfer Monies (CLTM; CLT)- the aggregate monies transferred from the capital levy funds to the Maintenance and Operations fund.

For Groups Two and Three, the hypothesized independent variables were the same variables listed above, plus an additional variable:

4. Expenditures - the actual aggregate cash disbursements for costs of goods delivered or services rendered, whether paid or unpaid, restrictive to the specified fund account.

The research design in this format thus attempted to answer the following three primary research questions:

1. What variables can identify and are likely to maximally contribute to school districts' budget expenditure falling within a plus/minus 2% range of the adopted budget?
2. What factors would be associated maximally with school districts as having a credit fund balance?
3. What variables are likely to maximally contribute to school districts' budgeting practices leading to decreased capital levy decreased fund balance?

The study, in addition, attempted to determine the accuracy of the hypothesized variables in their abilities to differentiate school budgeting practices.

Sample Selection

A total of sixty-two (62) operational school districts transferred capital levy monies to their

maintenance and operation budget for Fiscal Year 1983-84. A systematic, stratified sample of thirty-one (31) school districts rank-ordered on district wealth per average-daily-attendance constituted the study group. All the school districts were in Arizona.

Data Source and Acquisition Techniques

The raw data were derived from the 1983-84 State Department of Education annual financial report (Arizona State Department of Education, November 1984). The raw data in dollar figures for revenue, actual expenditures, beginning fund balance, and capital levy transfer monies for each school district were converted to dollar amount per average-daily-attendance for the study.

Each district was then rank-ordered on dollar amount per average-daily-attendance per district fiscal capacity from highest to lowest. The high to low district wealth per average-daily-attendance were verified with the Legislative Staff summary of school finance in Arizona (Legislative Staff, January 1985). Additional sources of data included the following:

1. the Arizona State Legislative Senate and House Subcommittee on Education - Legislative Staff,

2. the Legislative Hearings on School Finance, 1985, Regular Session.
3. the School Finance Division, Arizona State Department of Education,
4. select County School Superintendent Offices and school district Business Office/Finance Division personnel.

Statistical Treatment and the
Test of the Hypotheses

Discriminant Function Analysis was used to examine the three primary research questions. According to Kerlinger and Pedhazur (1973), discriminant function statistical techniques can be used in two main ways: ". . . for classification and diagnosis, and to study the relations among variables in different populations and groups" (p. 340). Sanathanan (1975) writes that the discriminant analysis, ". . . enables us to determine those variables that are important in discriminating among various groups. It . . . gives us some idea about the influence of different variables in deciding how individuals are classified" (p. 236).

Klecka (1980) also notes that this statistical technique helps, ". . . us analyze the differences

between the groups and/or provides us with a means to assign (classify) any case into the group which it most closely resembles" (p. 8). With the discriminant function analysis, Klecka (1980) writes:

A researcher is engaged in interpretation when studying the ways in which groups differ - that is, is one able to "discriminate" between the groups on the basis of some set of characteristics, how well do they discriminate, and which characteristics are the most powerful discriminators? The other application is to derive one or more mathematical equations for the purpose of classification. These equations, called "discriminant functions," combine the group characteristics in a way that will allow one to identify the group which a case most closely resembles.

In this study, based on the three major research questions posed, the Discriminant Function Analysis paradigm as defined above made a determination as to:

1. which variables identify school districts' budget practices falling within a 2% range of the adopted budget;
2. which of the identified variables are likely to maximally contribute to school districts' budget practices falling within the 2% range of the adopted budget;
3. what factors would be maximally associated with school districts as having a credit fund balance;

4. what variables are likely to maximally contribute to school districts' budgeting practices leading to decreased fund balance;
5. the accuracy of the hypothesized variables in their abilities to differentiate school budgeting practices.

Three primary hypotheses were explicated and tested by use of the discriminant analysis paradigm. The three derived hypotheses, stated in the null form, are as follows:

1. The amounts of capital levy transfer monies, beginning fund balance, and revenues will not discriminate school districts falling within the plus/minus 2% range of the adopted budget.
2. The amounts of capital levy transfer monies, beginning fund balance, revenues, and expenditures will not discriminate school districts having credit fund balance.
3. The amounts of capital levy transfer monies, beginning fund balance, revenues, and expenditures will not discriminate school districts' budgeting practices leading to decreased capital levy fund balance.

The following statistical concepts, as defined, were derived and used in the analysis of the above three hypotheses:

1. Discriminant Function - the weighted independent variables which maximally differentiate members of the group; also referred to as the new synthetic or composite variables (Barker & Barker, 1984).
2. Discriminant Score - the value for the weighted combination of measures of several variables for a case or subject (Sanathanan, 1975).
3. Matrix of Correlation - indicative of the degree of covariance of variables.
4. Stepwise Discriminate Procedure - the process of sequentially selecting out variables which maximally differentiate group members from most to least; this is essentially the maximizing of between-groups mean sum of squares to within-groups mean sum of squares (Sanathanan, 1975).
5. Wilkes' Lambda - an "inverse" statistic which measures both the between-groups differences and the within-groups homogeneity; the smaller the value, the greater the ability of the variable

to differentiate. When the Lambda equals 1.00, the group centroids are equal, thus, no group differences exist (Klecka, 1980).

6. Known Classification Matrix - used as criteria for accuracy of classification; the proportion correctly classified in percentage indicates indirect confirmation of procedural accuracy in group differentiation and classification (Klecka, 1980).
7. F-to-Enter - a partial multivariate F statistic to test additional discrimination by a variable after the discrimination achieved by other variables; the smaller the F- to- enter value of a variable, the less its ability to further differentiate (Klecka, 1980).
8. F-to-Remove - a partial multivariate F statistic used to test the ability of a discriminating variable to differentiate; ". . . the variable with the largest F-to-Remove makes the greatest contribution to overall discrimination above and beyond the contribution already made by the other variables" (Klecka, 1980, p. 57).

9. Standardized Canonical Discriminant Function Coefficients - reflects the influence of different variables in its ability to differentiate; "the higher the magnitude of the coefficients (regardless of the sign), the more important the corresponding variable is in discriminating between that and the rest of the groups" (Sanathanan, 1975, p. 246).
10. Linear-Combination of Variables - the sum of variables which have been weighted by constant terms (Klecka, 1980).

CHAPTER 4

RESULTS OF THE DATA ANALYSIS

Chapter 4 provides the findings and results of the data analysis for the study. The study had attempted to determine the relationship between discriminating variables in budgeting and budgeting practices in select Arizona public school districts. A secondary objective was to determine the accuracy of the hypothesized discriminating variables in their abilities to differentiate budgeting practices.

Three primary research questions were posed for analysis; these questions are as follows:

1. What variables can identify and are likely to maximally contribute to school districts' budget expenditure falling within a plus/minus 2% range of the adopted budget?
2. What factors would be maximally associated with school districts as having a credit or a deficit fund balance?
3. What variables are likely to maximally contribute to school districts' budgeting practices leading to decreased or increased capital levy fund balance?

The Discriminant Function Analysis statistical technique was used to examine the above three research questions. The Discriminant Function Analysis allows one to differentiate groups based on some set of characteristics (discriminating variables) as well as to determine the accuracy of the hypothesized discriminating variables in its ability to maximally differentiate groups.

Three research hypotheses, stated in the null form, explicated from the three research questions are as follows:

1. The amounts of capital levy transfer monies, beginning fund balance and revenues will not discriminate school districts falling within the plus/minus 2% range of the adopted budget.
2. The amounts of capital levy transfer monies, beginning fund balance, revenues, and expenditures will not discriminate school districts as having a credit fund balance.
3. The amounts of capital levy transfer monies, beginning fund balance, revenues, and expenditures will not discriminate school districts' budgeting practices leading to decreased capital levy fund balance.

Results of the First Hypothesis

The purpose for the first hypothesis was to determine:

1. if the amounts of capital levy transfer monies, revenues and beginning fund balance will discriminate budget expenditure falling within a plus/minus 2% range of the adopted operational budget.
2. the accuracy rate of the hypothesized variables in its ability to differentiate school budgeting practices.

The Stepwise Discriminate procedure was first used to sequentially select the ability of the hypothesized variables to differentiate budget group membership. As indicated by Wilkes' Lambda values in Table 1, capital levy transfer monies (CLTM) indicated relatively high ability in differentiating budget group membership, then revenue and lastly beginning fund balance (BFB).

Table 1. Stepwise Variable Selection: Wilkes' Lambda and F-to-Enter values for the hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter |
|------------------------|---------|-------------|----------------|------------|
| CLTM | | X | .73555 | 10.4265 |
| Revenue | | X | .87967 | 3.9669 |
| Beginning fund balance | | X | .90101 | 3.1859 |

At Step 1, based upon Wilkes' Lambda and the F-to-Enter values, CLTM was entered in the analysis.

Significance was attained in the ability of CLTM to discriminate budget group membership ($\alpha = .0031 < .01$; $df = 1, 29$). The F-to-Enter value for CLTM also indicated high discriminating ability (F-to-Remove = 10.4265).

With the two remaining variables not in the analysis, the Wilkes' Lambda and the F-to-Enter values indicated beginning fund balance to characterize but minimal additional ability to differentiate the budget groups (Table 2).

Table 2. Stepwise Variable Selection: Wilkes' Lambda and F-to-Enter values for the hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter |
|------------------------|---------|-------------|----------------|------------|
| CLTM | X | | | |
| Revenue | | X | .73425 | .0493 |
| Beginning fund balance | | X | .68672 | 1.9908 |

Based upon the Wilkes' Lambda and the F-to-Enter values, beginning fund balance was then entered in the analysis at Step 2. Significance was again attained for beginning fund balance to discriminate budgeting group practices ($\alpha = .0052 < .01$; $df = 2, 28$). With CLTM and beginning fund balance in the analysis, CLTM indicated a far greater contribution to overall discrimination (F-to-Remove = 8.7375). Beginning fund balance had an F-to-Remove value of 1.9908.

Revenue as the remaining variable did not enter the analysis. The F-to-Enter value indicated .6565, a value insufficient to meet the minimum level for entry ($F = 1.00$). In the summary analysis table (Table 3), the

beginning fund balance variable contributed minimal additional ability to differentiate the budget groups. Table 3 depicts the changes in the ability of the hypothesized variables to significantly discriminate the budget groups.

Table 3. Discriminant function summary analysis.

| Step | Entered | Wilkes' Lambda | F-to Remove | Significance |
|------|---------|----------------|-------------|--------------|
| 1 | CLTM | .735547 | 8.7375 | .0031* |
| 2 | BFB | .686721 | 1.9908 | .0052* |

*Significant < .01.

The relatively high ability of CLTM to discriminate the budget groups was also reinforced by the standardized canonical discriminate function coefficient values for the respective variables. CLTM indicated a value of .87183 while BFB had a value of .46059.

Table 4 shows the derived canonical discriminate function, comprised of CLTM and BFB, as significantly differentiating school districts into the within plus/minus 2% budget group.

Table 4. Canonical Discriminant Function of two variables in the ability to discriminate the budget groups.

| Wilkes' Lambda | Chi Square | DF | Significance |
|----------------|------------|----|--------------|
| 6867210 | 10.523 | 2 | .0052* |

*Significant at $< .01$.

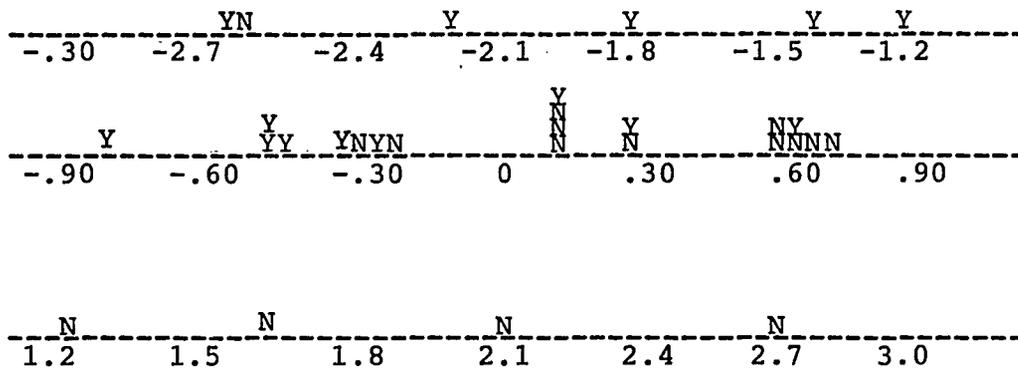
To additionally examine the degree to which the new discriminant function might have common explanatory information held by the discriminating variables, a within-groups correlation was derived. As indicated in Table 5, CLTM had the largest correlation with the new composite variable composed of CLTM and BFB.

Table 5. Within-groups correlation for the Canonical discriminant function and the discriminating variables.

| Variables | Discriminant Function of CLTM and BFB |
|-----------|---------------------------------------|
| CLTM | .88776 |
| BFB | .49073 |
| Revenues | .33389 |

A stacked histogram was then constructed to illustrate the degree of dispersion for the two budget groups (Table 6). Table 6 displays the group centroids (means) and the discriminant scores for each of the two budget groups. The relationship depicted illustrates the within plus/minus 2% budget group as receiving positive scores while the null plus/minus 2% budget group showed negative placement along the function.

Table 6. Discriminant function scores for within plus/minus 2% budget group (N) and the null plus/minus 2% budget group (Y).



The means and standard deviations for each of the hypothesized discriminating variables for the two budget groups were also calculated. As shown in Table 7, the within plus/minus 2% budget group had lower mean per pupil dollar amounts on all three variables.

Table 7. Means and standard deviation for each of the hypothesized variables for the within and null-within 2% range budget groups.

| Groups | | Revenues | BFB | CLTM |
|-------------|----|----------|--------|-------|
| Within 2% | x | 2202.47 | 65.92 | 33.96 |
| | SD | 250.62 | 115.50 | 12.89 |
| Null-within | x | 2552.22 | 227.89 | 47.37 |
| | SD | 673.66 | 353.00 | 9.51 |

As indicated by Table 1, 2, 3, and 4, the F-to-Enter, F-to-Remove and the Lambda values for CLTM evidenced high ability of this particular variable to significantly differentiate the budget group practices. BFB added minimal additional ability to differentiate while revenues, above and beyond CLTM and BFB, did not possess sufficient unique information to enter the analysis.

The matrix classification indicated an 80.65 percentage accuracy rate in the ability of the discriminant function to differentiate the two budget groups. The within plus/minus 2% budget group had a higher accuracy rate in classification (82.4%) while the null-within 2% budget group had the lower accuracy rate in classification (78.6%).

In summary, as evidenced by the data analysis, the null hypothesis that the amounts of CLTM, BFB, and revenue will not discriminate school districts expenditure falling within the plus/minus 2% range of the adopted budget was rejected at the .0052 level of significance. Revenue did not enter the analysis indicating insufficient unique information for additional discriminating ability.

CLTM variable indicated maximum contribution in its ability to discriminate budget groups while BFB added minimal additional ability to differentiate the budget groups.

Results for the Second Hypothesis

The primary purpose of the second hypothesis was to determine if the amounts of CLTM, BFB, revenues and expenditures will discriminate school districts as having either a credit or deficit general operations fund balance. With this hypothesis, the following two questions will be answered:

1. What factors would be maximally associated with school districts as having either a credit or deficit general operations fund balance?

2. How accurate are the hypothesized discriminating variables in its ability to differentiate and classify school districts' budgeting practices?

The Stepwise Discriminant procedure was again employed to initially select in sequence those variables hypothesized as differentiating budget group membership. Based upon minimizing values of Wilkes' Lambda as indicative of increasing ability of variables to discriminate, BFB at Step 0 indicated relatively high discriminatory power, then expenditure, CLTM, and lastly revenues. Table 8 provides the Stepwise variable selection with their appropriate discriminatory-power values.

Table 8. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for the hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|---------------|------------|-------------|
| BFB | | X | .96507 | 1.0498 | |
| Expen | | X | .96793 | .9608 | |
| CLTM | | X | .97079 | .8726 | |
| Revenue | | X | .9994 | .0014 | |

At Step 1, with BFB in the analysis, significance was not indicated as to the ability of this particular variable to differentiate budget group membership ($\alpha = .3140 > .05$; $df = 1,29$).

With the remaining three hypothesized variables at Step 1, revenue, expenditures, and CLTM, the Wilkes' Lambda indicated expenditure as the next most powerful discriminating variable (Table 9, Expenditure = .91633, F-to-Enter = 1.4891).

Table 9. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|----------------|------------|-------------|
| BFB | X | | .96507 | | 1.0498 |
| Expen | | X | .91633 | 1.4891 | |
| CLTM | | X | .91986 | 1.3761 | |
| Revenue | | X | .96466 | .0118 | |

At Step 2, with BFB in linear-combination with expenditure in the analysis, significance again was not attained ($\alpha = .2943 > .05$; $df = 2,28$). With the two remaining variables, Revenue, CLMT and Wilkes' Lambda indicated revenue as the stronger discriminating variable (Table 10).

Table 10. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|----------------|------------|-------------|
| BFB | X | | .96793 | | 1.5767 |
| Expen | X | | .96507 | | 1.4891 |
| CLTM | | X | .90938 | .2065 | |
| Revenue | | X | .60363 | 13.9872 | |

At Step 3, revenue was entered in the analysis. Revenue, in linear-combination with the previously entered BFB and Expenditure, reached a high significance level in its ability to differentiate group members into credit and deficit fund balance budget groups ($\alpha = .0031 < .01$; $df = 3,27$).

CLTM as the remaining variable was then entered at Step 4 with a Wilkes' Lambda value of .57864 (Table 11, F-to-Enter = 1.1227).

Table 11. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|----------------|------------|-------------|
| BFB | X | | .88641 | | 12.6486 |
| Expen | X | | .96466 | | 16.1488 |
| Revenue | X | | .91633 | | 13.9872 |
| CLTM | | X | .57864 | 1.1227 | |

CLTM indicated but a slight increase in its ability to discriminate the budget groups above and beyond the previously entered Revenue (Revenue = .60363, F-to-Enter = 13.9872, Table 10). At Step 4 then, with BFB, Expenditure, Revenue and CLTM as the discriminant function, significance was again indicated ($\alpha = .0053 < .01$; $df = 4,26$).

Table 12 provides a summary analysis of the ability of each variable to discriminate along with their significance level. As evidenced by the changes in Lambda values as each variable were entered, BFB, Expenditure and Revenue were able to maximally discriminate the credit and

deficit budget groups. CLTM added but little discriminating power above and beyond the previously entered three variables.

At Step 4 also, with the four hypothesized discriminating variables in the analysis, the F-to-Remove values for each variable indicated Revenue as making maximal contribution to differentiate the budget groups (F-to-Remove = 14.8609), then BFB (13.5655), then Expenditure (13.1721). CLTM again evidenced but spurious relative contribution in differentiating the budget groups (1.1227, Table 13).

Table 12. Summary analysis: Linear-combination the hypothesized discriminating variables in differentiating credit and deficit budget groups.

| Step | Entered | Not Entered | Wilkes' Lambda | Significance |
|------|---------|-------------|----------------|--------------|
| 1 | BFB | | .965066 | .3140 |
| 2 | Expen | | .916332 | .2943 |
| 3 | Revenue | | .603727 | .0031* |
| 4 | CLTM | | .578641 | .0053* |

*Significant at .01.

Table 13. Entry analysis of the hypothesized variables in the ability to differentiate the budget groups.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|----------------|------------|-------------|
| BFB | X | | .88058 | | 13.5655 |
| Expen | X | | .87179 | | 13.1721 |
| Revenue | X | | .90938 | | 14.8609 |
| CLTM | X | | .60363 | | 1.1227 |

The minimal relative contribution of CLTM to discriminate the budget groups are also indicated by the F-to-Enter values for each variable as shown in Tables 8-11.

Table 14 provides the canonical discriminant function derived for the four hypothesized variables. As indicated, the four variables in linear-combination show high ability in differentiating school districts' budgeting practices as having either credit or deficit fund balance in their general operations.

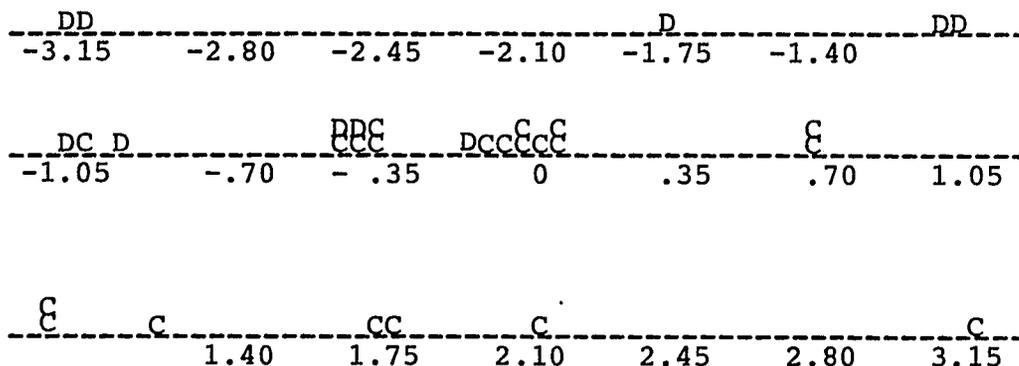
Table 14. Canonical discriminant function for the four hypothesized discriminating variables in the ability to differentiate budget groups.

| Wilkes' Lambda | Chi Square | df | Significance |
|----------------|------------|----|--------------|
| .5786406 | 14.771 | 4 | .0052* |

*Significant at .01.

A stacked histogram (Table 15) was then constructed to examine graphically the ability of the discriminant function to differentiate school district budget practices into credit and deficit fund balance group. Table 15 depicts the credit fund balance districts as having positive discriminant scores while the deficit fund balance group had negative discriminant scores.

Table 15. Discriminant function scores for credit (C) and deficit (D) fund balance school districts.



The group means for each of the hypothesized variables for the two respective groups indicated lower revenues, expenditures and CLT, but high BFB for the credit budget group. The deficit budget group had higher mean revenues, expenditures, and CLT, but a lower mean BFB. The means and standard deviation derived are as illustrated in Table 16.

Table 16. Means and standard deviation for each of the hypothesized variables for the credit and deficit budget group.

| | | Revenues | Expen | BFB | CLT |
|----------------|--------------------|----------|---------|--------|-------|
| Credit Budget | Means | 2357.16 | 2381.48 | 175.20 | 38.49 |
| | Standard Deviation | 560.82 | 475.33 | 293.59 | 14.49 |
| Deficit Budget | Means | 2365.57 | 2572.12 | 73.50 | 43.23 |
| | Standard Deviation | 416.10 | 568.86 | 144.65 | 9.79 |

Table 17 provides a summary analysis of the hypothesized variables in its ability to discriminate the credit-deficit budget groups. As indicated in the summary analysis table, Revenue, in linear-combination with BFB and Expenditure, contributed most in

differentiating the credit and deficit budget groups. CLTM was statistically spurious in its contribution as a discriminating variable.

Table 17. Summary analysis: Linear-combination of the hypothesized discriminating variables to differentiate credit-deficit budget group membership.

| Step | Entered | Removed | Wilkes' Lambda | Significance |
|------|---------|---------|----------------|--------------|
| 1 | BFB | | .965066 | .3140 |
| 2 | Expend | | .916332 | .2943 |
| 3 | Revenue | | .603627 | .0031* |
| 4 | CLT | | .578641 | .0053* |

*Significant at .01.

To determine the accuracy of the hypothesized variables in their ability to differentiate school budgeting practices, a classification-matrix was derived. The percentage of schools correctly classified into their respective budget group indicated an 87.10% accuracy rate. Twelve-point-nine (12.9) percent of the Credit-Deficit schools were incorrectly classified.

The credit budget group had a lower classification accuracy rate (85.7%) while the deficit budget group

indicated a higher classification accuracy rate (90.0%). Based on this classification-matrix analysis, along with the summary analysis, the null hypothesis that the amounts of CLT, BFB, Revenue, and Expenditure will not discriminate school districts as having either a credit or deficit fund balance was rejected at .01 alpha level (Table 16).

Revenue, in linear-combination with BFB and Expenditure, evidenced high ability in differentiating budget group membership ($\Lambda = .603627$; $\alpha = .0031 < .01$; $df = 4,26$).

Results of the Third Hypothesis

The purpose for the third hypothesis was to determine if the amounts of CLT, BFB, Revenue, and Expenditures will discriminate school districts' budgeting practices leading to decreased capital levy ending fund balance. The Stepwise Discriminant procedure again was initially employed to sequentially select those variables indicating relative ability to discriminate the budget groups. As shown in Table 18, Revenue, at STEP 0, indicated relatively high ability to discriminate, then in descending order, BFB, Expenditure and lastly, CLT.

Table 18. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|---------------|------------|-------------|
| Revenue | | X | .87404 | 4.1791 | |
| BFB | | X | .95864 | 1.2518 | |
| Expend | | X | .96638 | .9951 | |
| CLT | | X | .98194 | .5335 | |

Revenue, at Step 1, was then entered into the analysis to determine its ability to differentiate budget group membership into increased and decreased capital levy ending fund balance. Significance was attained only at the .05 alpha level (df = 1,29; Wilkes' Lambda = .8740433). Of the remaining three hypothesized variables, as shown in Table 19, expenditure was indicated as the next most powerful discriminating variable.

Table 19. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for the hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|----------------|------------|-------------|
| Revenue | X | | .8740433 | | 4.1791 |
| Expend | | X | .67251 | 8.3909 | |
| CLT | | X | .76991 | 3.7871 | |
| BFB | | X | .79413 | 2.8174 | |

At Step 2 then, expenditure was included in the analysis. Significance was indicated in the ability of the expenditure variable to differentiate budget group membership ($\alpha = .0039 > .01$; $df = 2,28$; Wilkes' Lambda = .6725094). With the two remaining variables, CLT indicated sufficient ability to further discriminate the budget groups. Table 20 depicts the Wilkes Lambda and the F-to-Enter values for CLT.

Table 20. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for the hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|----------------|------------|-------------|
| Revenue | X | | .96683 | | 12.2539 |
| Expend | X | | .87404 | | 8.3909 |
| CLT | | X | .62325 | 2.1339 | |
| BFB | | X | .66724 | .2131 | |

Based upon the Wilkes' Lambda and the F-to-Enter values, CLT was then entered into the analysis at Step 2. Significance was indicated for CLT in its ability to differentiate the budget groups (alpha = .0047 > .01; df = 3,27; Wilkes' Lambda = .6232526).

With revenue, expenditure and CLT in the analysis, revenue indicated a far greater contribution to overall discrimination, then expenditure, and lastly, CLT. CLT added but minimal ability to further differentiate the budget groups as indicated in Table 21.

Table 21. Stepwise variable selection: Wilkes' Lambda, F-to-Enter and F-to-Remove values for hypothesized discriminating variables.

| Variable | Entered | Not Entered | Wilkes' Lambda | F-to-Enter | F-to-Remove |
|----------|---------|-------------|----------------|------------|-------------|
| Revenue | X | | .96274 | | 14.7069 |
| Expend | X | | .74991 | | 6.3533 |
| CLT | X | | .67251 | | 2.1339 |
| BFB | | X | .62321 | .0018 | |

BFB as the remaining variable did not enter the analysis. This particular variable characterized insufficient F level to further differentiate budget group membership (F-to-Enter = .0018 > 1.00, Table 21). In the summary analysis table (Table 22), revenue, expenditure and CLT, in linear-combination possessed significant discriminatory information to differentiate school district capital levy budget group membership. CLT however, above and beyond revenue expenditure, possessed but minimal additional ability to further differentiate the budget groups.

This outcome is evidenced by the change in both the Wilkes' Lambda and the F-to-Remove values for CLT. Revenue in linear-combination with expenditure contained

the most unique information to discriminate school districts into the two budget groups (Table 22).

Table 22. Summary analysis: Linear-combination of the hypothesized discriminating variables to differentiate capital levy budget group membership.

| Step | Entered | Removed | Wilkes Lambda | Significance |
|------|---------|---------|------------------|--------------|
| 1 | Revenue | | .874043 | .05 * |
| 2 | Expend | | .672509 | .0039** |
| 3 | CLT | | .623253 | .0047** |

*Significant at .05.
**Significant at .01.

As indicated in Table 23, Revenue, Expenditure and CLT then constituted the canonical discriminant function which significantly differentiated capital levy budget group membership.

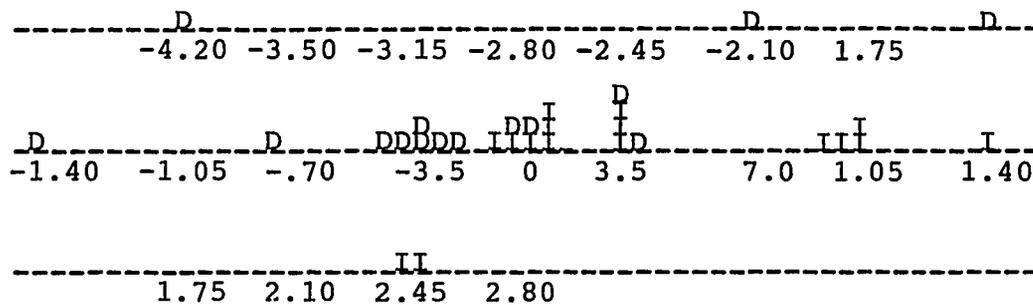
Table 23. Canonical discriminant function for the three variables in the ability to discriminate capital levy budget group membership.

| Wilkes' Lambda | Chi-Square | DF | Significance |
|----------------|------------|----|--------------|
| .6232526 | 13.002 | 3 | .0046* |

*Significant at .01.

A stacked histogram was then constructed to provide a graphic illustration of the ability of the derived canonical discriminate function to separate budget group membership. The increased capital levy fund balance group were placed along the positive function while the decreased group received negative discriminant function scores.

Table 24. Discriminant function scores for the increased (I) and decreased (D) capital levy fund balance budget groups.



The means and standard deviation for each of the hypothesized discriminating variables were also calculated for the respective budget groups. Table 25 depicts the increased fund balance groups as having a higher mean in revenue but lower means for expenditure, BFB and CLT. The decreased fund balance group had lower mean revenues, higher mean expenditures, BFB, and CLT.

Table 25. Means and standard deviation for each of the hypothesized variables for the increased and decreased capital levy fund balance groups.

| | | Revenues | Expenditures | BFB | CLT |
|------------------------|------|-----------|--------------|---------|--------|
| Increased Budget Group | Mean | 226.84750 | 126.043 | 173.003 | 38.327 |
| | SD | 197.268 | 158.828 | 250.795 | 16.535 |
| Decreased Budget Group | Mean | 114.084 | 180.530 | 291.152 | 41.816 |
| | SD | 84.260 | 144.285 | 333.822 | 8.536 |

The matrix classification derived indicated an 87.1 percentage accuracy rate in budget group classification. The increased capital levy budget group had a slightly higher percentage accuracy rate in classification (87.5%). The decreased budget group indicated a lower classification accuracy rate (86.7%).

Based upon this analysis, revenues and expenditures together possessed sufficient information to differentiate the two budget groups. CLT, above and beyond revenue and expenditure, added minimal unique data to further differentiate the budget groups. BFB did not contain additional information to further discriminate the budget groups. As a result, the null hypothesis that the

amounts of revenues, expenditures, CLT, and BFB will not discriminate budget practices leading to increased and decreased capital levy fund balance was rejected. The analysis yielded the new canonical discriminant function as comprising of revenue, expenditure and CLT (Table 23). CLT, however, provided minimal additional data to the revenue and expenditure variables in discriminating budget groups. BFB again failed to enter the analysis due to insufficient F level value.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS AND SUMMARY

Chapter 5 is divided into three major sections. Section 1 gives the conclusions drawn based on the data analysis for each of the three primary research questions. Section 2 provides the implications and recommendations for the results of the basic three research questions examined. Section 3 presents the summary of the research questions investigated.

Conclusions for the Three Research Questions Investigated

The first research question examined was as follows:

What variables can identify and are likely to maximally contribute to school districts' budget expenditure falling within a plus/minus 2% range of the adopted budget?

Five conclusions based on the data analysis for the first research question are derived. The five conclusions are as follows:

1. The amounts of CLT in linear-combination with BFB can identify school districts' budget expenditure falling within the plus/minus 2% range of the adopted budget.
2. CLT and BFB together will significantly differentiate school districts' budget expenditure falling within a plus/minus 2% range of the adopted budget.
3. CLT indicated greater contribution to differentiating the budget groups which were within the plus/minus 2% range of the adopted budget.
4. BFB indicated minimal additional ability to differentiate the two budget groups.
5. Revenue did not enter the analysis as a discriminating factor due to insufficient unique informational data.

The second research question examined was:

What factors would be maximally associated with school districts as having either a credit fund balance or a deficit fund balance in its general operations budget?

Five conclusions based on the data analysis are drawn. The conclusions drawn are as follows:

1. BFB, Expenditure, Revenue, and CLT, in linear-combination, are significantly associated with school districts having either a credit or a deficit in general operations fund balance.
2. BFB, Expenditure, Revenue, and CLT, in linear-combination, will differentiate school districts as having either a credit or a deficit fund balance in their Maintenance and Operations budget.
3. Revenue, BFB and Expenditure, in linear-combination, will significantly differentiate the two budget groups.
4. In rank-order, Revenue, BFB and Expenditure contributed most in differentiating the two budget groups.
5. CLT, above and beyond Revenue, BFB and Expenditure, indicated additional but relatively minimal contribution as a discriminating variable in differentiating the two budget groups.

The third research question examined was established as follows:

What variables are likely to contribute maximally to school districts' budgeting practices leading to decreased capital levy fund balance?

Based on the data analysis, the four conclusions drawn are as follows:

1. Revenue, Expenditure and CLT, in linear-combination, maximally contributed to school districts' budgeting practices leading to either an increased or decreased capital levy fund balance budget group.
2. Revenue, Expenditure and CLT, in linear-combination, will significantly differentiate budget group membership into either the increased or decreased capital levy fund balance group.
3. CLT, however, above and beyond Revenue and Expenditure, added minimal ability to further differentiate the budget groups.
4. BFB characterized insufficient unique information value to further differentiate budget group memberships.

Implications and Recommendations For the Study

The implications and recommendations for the study will be discussed based on the three research questions examined, along with the results derived. The implications

for the results of the questions examined will first be discussed. The recommendations for the questions examined along with their findings will then be elaborated upon.

For the first research question examined, the implications for the findings of the study are as follows:

1. School districts whose expenditure level fell within the plus/minus 2% range, using the CLT as additional revenue source, met the efficient-criteria in budgeting practices (Johns, 1976; Lehan, 1981). That is, CLT was able to significantly differentiate the within plus/minus 2% budget expenditure variation from those districts whose expenditure level were beyond this efficiency-criterion range.
2. The CLT were well planned and budgeted in districts whose budget expenditure level was within the plus/minus 2% range of their adopted Maintenance and Operations budget.
3. School districts whose expenditure level was beyond the plus/minus 2% range could be deemed as having experienced difficulty in establishing fairly accurate program cost-projections and fiscal management (Garms et al., 1978; Lehan, 1981).

For the second research question examined, the implications drawn are as follows:

1. BFB, Expenditure and Revenue, in linear-combination, contributed most toward differentiating credit and deficit fund balance in budgeting practices.
2. CLT provided minimal additional discriminating ability toward differentiating credit and deficit fund balances in budgeting practices.
3. Unexpended Maintenance and Operation funds "lapse,"¹⁾ which amounts to subsequent year primary tax rate relief. CLT, relative to BFB, Expenditure and Revenue, provided only minimal additional contribution toward the credit fund balance budget group.
4. CLT as a factor in deficit-budget relief provided only minimal contribution relative to BFB, Expenditure and Revenue.

For the third research question, the implications derived are as follows:

1. Revenue, Expenditure and CLT, in linear-combination, were able to maximize budget group differentiation.
2. CLT provided minimal additional ability to maximize budget group membership into increased and decreased capital levy fund balance.

3. BFB did not provide additional unique information toward differentiating budget group membership.
4. CLT, as a depletion factor, relative to Revenue and Expenditure, possessed minimal value toward the decrease of capital levy ending fund balance.

Recommendations for Further Study

This particular study was exploratory employing a Discriminant Function Analysis of the variables examined. The basic research concerns were to examine the effects of capital levy transfer monies in public school budgeting practices. In the examination of this primary research question, two major recommendations evolved. The recommendations are in the form of both research design and the independent criteria variables examined.

In research format, a study could be designed to follow the effects of the capital levy and outlay monies in the Maintenance and Operations Budget over a multiple-year basis. Such a study would not only address school budgeting practices but establish reliability as well. A similar study could be designed to examine the effects of capital transfer funds on short- and long-term capital projects. A time-series statistical analysis would

appear to be most applicable for such a study or series of studies.

In determining those factors which might lead to the efficient use of capital monies in budgeting practices, the independent criteria variables might be modified. The independent criteria variables to be examined could be administrative skills, differing categories and duration of administrative experience, professional preparation, academic ability, or any combination of such pertinent factors. A productive function analysis could likewise lead to a more thorough analysis of such research concerns in public schools fiscal management.

For Arizona public schools, recent school finance legislation allowing capital funds for operational expenditures would appear only to require such continuing analyses. Such research can only begin to shed light on school finance accountability, efficiency, and the issue of false-economy for Arizona public schools.

Summary of the Study

The primary objective in this exploratory study was to examine the effects of capital levy transfer monies in public schools district budgeting practices. Specifically, the study attempted to determine if the

amounts of the 19183-84 CLT, Revenue, Expenditures, and Beginning Fund Balance would differentiate school districts into defined budget group classification. The secondary objective was to determine the accuracy of the hypothesized discriminating variables in their abilities to differentiate budget groups.

The budget group classification were defined as follows:

1. Group One - 17 school districts with a budget expenditure level to a plus/minus 2% variation range of the adopted Maintenance and Operations budget.
2. Group Two - 21 school districts with a Maintenance and Operations credit ending fund balance budget.
3. Group Three - 15 school districts with a capital levy funds decreased ending fund balance.

Three research questions were formulated for analysis in examining budgeting practices. The questions are as follows:

1. What variables can identify and are likely to maximally contribute to school districts' budget expenditure which fall within a plus/minus 2% range of the adopted Maintenance and Operations budget?

2. What factors would be maximally associated with school districts as having a credit or a deficit ending fund balance in the Maintenance and Operations budget?
3. What variables are likely to maximally contribute to school districts' budgeting practices leading to decreased or increased capital levy ending fund balance?

Based on the above research questions, three primary hypotheses were explicated. The three hypotheses, stated in the null form, are as follows:

- H₁ : The amounts of capital levy transfer monies, revenues, and beginning fund balance will not discriminate school districts falling within the plus/minus 2% range of the adopted operational budget.
- H₂ : The amounts of capital levy transfer monies, revenues, beginning fund balance and expenditures will not discriminate school districts having credit ending fund balance.
- H₃ : The amounts of capital levy transfer monies, revenues and beginning fund balance, and expenditures will not discriminate school districts' budgetary practices leading to decreased capital levy ending fund balance.

Employing the Discriminant Function Analysis paradigm, the three hypotheses were each rejected at the .01 level of significance. The data analysis indicated the following results for each of the hypothesized discriminating variables examined.

For the first research question, CLT indicated maximum contribution in its ability to differentiate those school districts whose budget expenditure fell within the Group One budget group from those who did not. BFB added minimal additional ability to differentiate the budget groups. Revenue as a discriminating variable did not enter the analysis due to insufficient unique discriminating data.

For the second research question and hypothesis, Revenue, in linear-combination with BFB and Expenditure, evidenced high ability in differentiating budget group membership. CLTM as a discriminating variable added minimal ability to further differentiate budget group membership.

For the third research question, the analysis yielded the canonical discriminant function as comprising of Revenue, Expenditure and CLTM. CLTM however, above and beyond Revenue and Expenditure, added minimal additional data as a discriminating variable. BFB

failed to enter the analysis indicating insufficient value as a discriminating variable in budget group differentiation.

In summary, CLTM, relative to the other defined discriminating variables, indicated differential correlation with school district budget practices. Within the context of the new school finance equity agenda, 55% of the school districts sampled could be deemed as efficient in their use of Capital Levy Transfer funds. Forty-five percent did not plan well for the Capital Levy Transfer funds.

As to whether CLTM were applied to fund balances, CLTM was statistically spurious as a contributing factor. In the depletion of Capital Levy Funds, the transfer of capital levy monies had minimal impact as a depletion factor.

Subsequent studies are needed to monitor, for one, the use of capital funds in operations budgets, and two, for the longitudinal analyses of false economy concerns.

The accuracy of the discriminating variables in differentiating budget groups, in this study, ranged from 78.6% to 90.0% accuracy rate. The accuracy of the hypothesized variables in discriminating budget group membership ranged from 78.6% to 90.0% accuracy rate.

REFERENCES

- American Association of School Administrators, Council of Great City Schools, and the National School Boards Association (1983). The maintenance gap: Deferred repair and renovation in the nation's elementary and secondary schools. Arlington, VA: Author.
- Arizona State Department of Education. (1984, November). Annual report of the superintendent of public instruction - statistical section for fiscal year 1983-84. Phoenix, AZ: Central Distribution Services.
- Arizona Association of School Business Officials. (1983). Explanation of Arizona school finance 1983-84. Mesa, AZ: Research Staff.
- Aronson, J. R., & Schartz, E. (1975). Management policies in local government finance. Washington, DC: International City Management Association.
- Association of School Business Officials of California. (1983). Administration of the school district budget. Sacramento, CA: California State Department of Education, ED 232 272.
- Barker, H. R., & Barker, B. M. (1984). Multivariate analysis of variance (MANOVA). University, AL: University of Alabama Press.
- Callahan, R. E. (1962). Education and the cult of efficiency. Chicago, IL: University of Chicago Press.
- Candoli, I. C., Hack, W. G., Ray, J. R., & Stollar, D. H. School business administration: A planning approach (3rd Ed.). Newton, MA: Allyn and Bacon, Inc.

- Clark, D. L., Lotta, L. S., & Astuto, T. A. (1984). Effective schools and school improvement: A comparative analysis of two lines of inquiry. Educational Administration Quarterly, 20(3), 41-68.
- Clark, J. E., & Hertz, K. V. (Eds.). (1984). Major topics of school business management in the mid-1980s. Park Ridge, IL: Association of School Business Officials.
- Cohen, M. (1983). Instructional, management and social conditions in effective schools. In A. Odden et al., (Eds.) School finance and school improvement linkages or the 1980s (pp. 17-50). Cambridge, MA: Ballinger Publishing Company.
- Cuban, L. (1984, May). Transforming the frog into a prince: Effective schools research, policy and practice at the district level. Harvard Educational Review, 54(2), 129-151.
- Cubberly, E. P. (1906). School funds and their apportionment. New York: Columbia University.
- Day, C. W. (1984). Facilities: Major issues ahead. In J. E. Clark and K. V. Hertz (Eds.) Major topics of school business management in the mid-1980s (pp. 10-17). Park Ridge, IL: Association of School Business Officials.
- DeYoung, C. A. (1936). Budgeting in Public Schools. Garden City, NY: Doubleday and Company, Inc.
- Englehart, N. L., & Englehart, F. (1927). Public school business administration. New York: Teachers College Press.
- Eubanks, E. L. (1985, January). School facility evaluation. Physical plant and instructional programs - do they work together? School Business Affairs, 51(1), 22.
- Fullan, M. (1982). The meaning of educational change. New York: Teachers College Press.

- Garms, W. I., Guthrie, J. W., & Pierce, L. C. (1978). School finance: The economics and politics of public education. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Guthrie, J. W. (1980). School finance policies and practices. Cambridge, MA: Ballinger Publishing Company.
- Golz, W. C., Jr. (1984). Integrated facilities management and fixed asset accounting. School Business Affairs, 50(1), 32-45.
- Hough, W., & Peterson, J. (1983, March). State constraints on local government capital financing. Denver, CO: National Conference of State Legislatures.
- Johns, R. L., & Morphet, E. L. (1969). The economics and financing of education: A systems approach (2nd Ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Kerlinger, F. N., & Pedhazur, E. J. (1984). Multiple regression in behavioral research. New York: Holt, Rinehart & Winston, Inc.
- King, R. (1984, May). The information age: Are we prepared? School Business Affairs, 50(5), 16, 58.
- Klecka, W. R. (1980). Discriminant Analysis. Beverly Hills, CA: Sage Publication Ltd.
- Laws of 1980, 2nd S.S., Chapter 9, s 1.
- Laws of 1982, Chapter 26, s 1.
- Laws of 1983, Chapter 9, s 11.
- Legislative Staff. (1985, January). School finance in Arizona, 1980-81 to 1984-85. Phoenix, AZ: Senate and House Subcommittee on Educational Research Staff.
- Lehan, E. A. (1981). Simplified governmental budgeting. Chicago, IL: Municipal Finance Officers Association.

- Lewandowski, R. J. (1984). Governmental accounting and financial reporting during the 1980s - a period of transition. In J. E. Clark and K. V. Hertz (Eds.) Major topics of school business management in the mid-1980s (pp. 23-26). Park Ridge, IL: Association of School Business Officials.
- McMahon, W. W., & T. G. Geske. (1982). Financing education: Overcoming inefficiency and inequity. Chicago, IL: University of Illinois Press.
- Mann, D., & Inman, D. (1984, Fall). Improving education within existing resources: The instructionally effective schools approach. Journal of Education Finance, 10, 256-269.
- Moak, L. L., & Hillhouse, A. M. (1975). Concepts and practices in local government finance. Chicago, IL: Municipal Finance Officers Association.
- Odden, A. (1983a). School finance reform: Past, present and future. Denver, CO: Education Commission on the States.
- Odden, A., McGuire, C. K., & Belsches-Simmons, G. (1983b). School finance reform in the states: 1983. Denver, CO: Education Commission of the States.
- Odden, A., Augenblick, J., Adams, E. K., Cohen, J., & McGuire, C. K. (1981). School finance reform in the states: 1981. Denver, CO: Education Commission of the States
- Odden, A., & Dean Webb, L. (Eds.). (1983c). School finance and school improvement linkages for the 1980s. Cambridge, MA: Ballinger Publishing Company.
- Odden, A., & Dougherty, V. (1984). Education finance in the states: 1984. Denver, CO: Education Commission of the States.
- Rossmiller, R. A. (1982). Productivity and cost effectiveness as financing criteria. In W. W. McMahon and T. G. Geske (Eds.) Financing education: Overcoming inefficiency and inequity (pp. 78-99). Chicago, IL: University of Illinois Press.

- Sanathanan, L. (1975). Discriminant analysis. In D. J. Amlick and H. J. Walberg (Eds.) Introductory Multivariate analysis (pp. 236-256). Berkeley, CA: McCutchan Publishing Corp.
- Senate Bill 1077. (1985). Phoenix, AZ: Secretary of State, Publications.
- Schultz, T. W. (1982). Human capital approaches in organizing and paying for education. In W. W. McMahon and T. G. Geske (Eds.) Financing education: Overcoming inefficiency and inequity (pp. 26-51). Chicago, IL: University of Illinois Press.
- Snyder, P. C., & Hogan, E. E. (1975). Cost accountability for school administration. West Nyack, NY: Parker Publishing Company, Inc.
- Uerling, D. F. (1984, January). A model for analyzing selected school district expenditures. School Business Affairs, 50(1), 32, 45.
- Vosecky, E. W. (1969). A study of budgeting procedures in selected East Tennessee County school systems. In R. L. Johns et al. (Eds.) The economics and financing of education: A systems approach (2nd Ed.) (pp. 446-447). Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Wagner, I. D., & Sniderman, S. M. (1984). Budgeting school dollars: A guide to spending and saving. Washington, DC: National School Boards Association.