The Relationship between Five Funding Variables and Investment Income in Michigan Public School Districts

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THE RELATIONSHIP BETWEEN FIVE FUNDING VARIABLES AND INVESTMENT INCOME IN MICHIGAN PUBLIC SCHOOL DISTRICTS

by

Elmer R. Hollenbeck

A Dissertation
Submitted to the
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The relationship between five funding variables and investment income in Michigan public school districts

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Investment of school district funds occurs within the framework provided by statutes and policies of the State and local Boards of Education. The purpose of this study was to determine the relationship between five funding variables and investment income in Michigan public school districts. The five funding variables studied were (1) pooling versus no pooling, (2) summer tax collections versus winter tax collections, (3) in-formula versus out-of-formula status, (4) size of operating budgets, and (5) size of fund balances. The two dependent variables studied were (1) investment income and (2) rate of return on investments as a function of expenditures.

1984-85 financial data from 127 randomly selected school districts were analyzed. The major findings of this study were:

1. Pooling does not have a significant effect on investment income (p > .05).

2. The levying of summer taxes has a significant effect on the amount of investment income a district earns (p < .001).
3. The formula status of districts is the best predictor of investment income \( (p > .05) \).

4. Out-of-formula districts had a significantly greater rate of return on investment income as a function of expenditures than did in-formula districts \( (p < .001) \).

5. Districts with large operating budgets have more investment income than districts with small operating budgets \( (p < .001) \).

6. Districts with large fund balances have more investment income than districts with small fund balances \( (p < .001) \).

Two recommendations were made in this study: (1) School districts should adopt clear and comprehensive investment policies, and (2) school districts should design and use practices which carry out their policies.
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DEDICATION

This dissertation is dedicated to my mother, Myrtle. My father passed away when six children were still living at home. Her goal in life at that time was to ensure my brothers and sisters and I all graduated from high school. Her perseverance in the attainment of that goal has inspired me to attain this educational achievement.

Elmer R. Hollenbeck
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CHAPTER I

INTRODUCTION

Michigan State Law (Public Act 132 of 1986) permits school districts to invest cash not immediately needed for district operation. State law also prescribes three conditions within which funds may be invested. The first condition is the investment instruments (Treasury bills, bonds, or notes; certificates of deposit, commercial paper, bankers' acceptance, mutual funds, investment pools) which may be used. The second condition is the way in which two or more funds may be combined (pooled) for the purpose of investment. The third condition is the financial institutions (Banks, dealers, credit unions, savings and loan associations) where funds may be deposited.

The restrictions placed on the investment of school district funds have been made to protect the public. Restrictions on the investment instruments which can be made and the financial institutions which may be used are intended to minimize the risk while providing a reasonable return on the investment. The second type of restriction is designed to ensure that the intent of the public to provide funds for particular purposes is not violated.
The General School Laws, as amended, contain the legal requirements for school district accounting. Included in the General School Laws are the Administrative Rules which have the effect of law on Michigan's local educational agencies. This accounting manual, having been adopted by the Michigan State Board of Education and incorporated into the Administrative Rules is, therefore, the required accounting manual for the local educational agencies (LEA) of this state. Additional requirements are found in General School Laws which are not specifically mentioned in the manual.

A fund is an independent fiscal and accounting entity with a self-balancing set of accounts as prescribed by the Michigan State Board of Education. Legal reporting requirements and the varied nature of school districts' operations preclude a single set of accounts for recording and summarizing all transactions of a school district. Records must be organized on a multiple-fund basis with each of the several funds being complete, independent accounting entities. Each fund must account for assets, liabilities, fund balances, revenues, and expenditures and may provide budgetary control in a balanced set of accounts. Account groupings may be used within a fund to provide the separate accountability necessary to conform with the legal and local policy requirements.
Six funds are mandated and should be sufficient to meet the purposes and legal requirements of the school district. These funds are (1) General Fund, (2) Debt Retirement Fund, (3) Building and Site Fund, (4) School Service Funds, (5) Trust and Agency Funds, and (6) Long-Term Debt Group of Accounts. The first three funds are used to record the transactions related to the educational goal of the school district, mainly the operations; related acquisition of sites, buildings, and equipment; and the redemption of the long-term indebtedness. The remaining funds are used to record the transactions related to the extracurricular activities under the direct or indirect control of the school district, and the accounting for long-term debt.

More specifically, the six funds and a brief description is presented below:

1. General Fund: All transactions related to the operation of the school district, except those transactions required by law to be entered in other funds, are recorded in the general fund. Local taxes and all other operating revenues or assets received or due from local, state, and federal sources are recorded in this fund. Expenditures financed by these revenues are also recorded in the general fund.

2. Debt Retirement: The receipt of funds and payment of interest, principal, and other expenses and
long-term bonded debt are recorded in the debt retirement fund. Primary sources of revenue for this fund are debt retirement tax levies and earned interest.

3. Building and Site Fund: The purpose of the building and site fund is to account for receipt and disbursement of monies used for the acquisition of capital assets, including equipment. Principal sources of revenues are from the sale of bonds, tax levies, and earned interest. Unexpended resources no longer needed on projects for which bonds were originally approved generally must be transferred to the debt retirement fund.

4. School Service Funds: School service funds may be used to account for activities where there is a need to determine the results of operations, such as food services, bookstore and interscholastic athletics. While numerous programs and co-curricular activities may lend themselves to separate accounting in school service funds during the year, only the operations of cafeteria, bookstores and interscholastic athletics will require separate reporting in the Annual Financial Report (Form B) to the Department of Education.

Since school service funds are subsidiary operations and obligations of the school district General Fund, the LEA Board of Education should establish operating policies regarding the carryover or disposition of the annual surplus or deficit resulting from these operations. The
question may arise as to which costs should be recorded in the school service fund and which in the general fund. The general principle to be followed is that at least the total direct cost of the activity should be recorded in the school service fund, while indirect costs such as space costs, athletic field maintenance, and utilities, may be recorded directly in the General Fund.

5. Trust and Agency Funds: The purpose of trust and agency funds is to account for assets held by a school district as the trustee or agent for individuals or private organizations. Student Activity Funds and gifts and bequests for specific purposes are examples of trust and agency funds. Prior to establishing a fund, the duration and disposition of that fund must be determined.

6. Long-Term Debt Group of Accounts: The purpose of this group of accounts is to record the total long-term debt of the school district as well as to record changes during the fiscal period. The general fixed asset group of accounts may also be included in a district accounting system. The fixed asset group of accounts is used to account for fixed assets owned by the school system.

An area of special concern in a multiple-fund system is the interfund transactions that necessarily result in such a system. Four important principles should be observed in relation to interfund transactions: (1)
interfund transactions should be limited, (2) interfund payables and receivables should not be recorded when there is no intent or ability to settle such interfund obligations, (3) interfund transactions between two or more funds must be recorded by a balanced entry to each fund, and (4) the collection of a receivable from, or payment of a payable to another fund will not improve the overall cash position of the local educational agency.

There are two accounting practices which are related to the four principles described above. These practices are commingling and pooling. Commingling is the combining of dollars from two or more funds from within one school district. Pooling for the purpose of this study is combining the resources from different funds within the district for the purpose of creating larger investment amounts. The individual funds retain their identity and accountability. Various methods have been developed to ensure that the interest earned on commingled or pooled funds can be reapportioned to their various source funds. At the same time, evidence (Haag, 1977) suggests that greater investment earnings can be achieved when the pooling of funds provides a larger dollar amount for investment.

The revenues received and monies expended during a school year do not always balance. The resulting positive or negative balance is accumulated during the life
of the school district. The accumulated fund balance will decrease or increase in a particular school year depending on whether or not revenues exceeded expenditures in that particular school year. If the accumulated fund balance is not needed to immediately fund the operation of the district, the funds may be invested. Therefore, the amount of the fund balance may affect the interest earnings on investments of a school district.

Earnings from investments is a large part of local sources of revenue (Dembowski, 1982). However, studies have not been undertaken to determine which factors or combination of factors have the greatest impact on the investment income of school districts. Three factors would appear to bear directly on investment earnings. These factors are: (1) Tax Revenue, (2) State Aid Revenue, and (3) Fund Balance. The investment strategies of district financial managers depends on knowing how these factors interact to impact on investment income.

The amount of dollars available for investment is dependent, in part, upon when income is received. Michigan school districts are permitted to collect revenue in the form of a property tax. Statutes limit these tax collections to the summer, the winter, or a combination of summer and winter tax levies (Michigan Public Act 333 of 1982).

Another factor affecting investment is the receipt of funds from the state. These payments are made in
installments during the school year and follow a fixed schedule. Michigan school districts are characterized as in-formula or out-of-formula districts (Michigan Public Act 90 of 1977). An in-formula district receives revenue from the state on a per pupil basis as established by Michigan law on an annual basis. An out-of-formula school district does not receive revenue from the state on a per pupil basis.

The Michigan State Board of Education publishes Bulletin 1014 on an annual basis to provide financial and statistical information relating to the expenditures of Michigan school districts operating K-12 programs. The data are taken from the Annual School District Financial Report, DS-4169. Data contained in this report show that revenue and expenditures between school districts vary considerably.

Investment of school district funds takes place within the framework provided by the statutes and policies described above. All have an effect on funding of Michigan public schools. Other factors influence the amount of dollars available for investment. However, how these factors affect returns on investment is not understood. Therefore, the research question of this study is What is the relationship of the five funding variables: (1) pooling of funds, (2) summer or winter tax collection, (3) in-formula or out-of-formula status, (4) dis-
district size (operating budget), and (5) amount of fund balance, with investment income in Michigan public school districts?

Operational Definitions

In order to facilitate clarity of the variables to be studied, the following definitions will be used:

**Commingling**: Is the combining of dollars from two or more funds within one school district for the purpose of investment.

**Pooling**: Is the combining of dollars from two or more school districts for the purpose of investment. In this study the terms commingling and pooling will be used interchangeably.

**Fund Balance**: Is the amount of assets over liabilities as shown on the balance sheet of school districts. The assets include (but are not limited to) cash, receivables, and investments and the liabilities include (but are not limited to) accrued payroll and accounts payable.

**In-formula districts**: Are K-12 school districts which receive membership revenue from the state. A state aid formula is determined by state government on an annual basis. The amount of revenue received by a district will depend, in part, on this formula.

**Investment**: Is the money invested or the property purchased for the purpose of earning interest. The
implication here is that money committed in one period is expected to yield more money in a future period.

**Investment earnings:** Are the monies received over the amount of the investment.

**Out-of-formula districts:** Are K-12 school districts which do not receive membership revenue from the state. This situation occurs when the local tax revenue per student exceeds the revenue determined by the state aid formula.

**Size:** Of school districts will be characterized by the dollar amount of expenditures during a school fiscal year.

**Summer tax collections:** Are collection of tax revenues that are levied against property on July first of the school fiscal year.

**Winter tax collections:** Are collections of tax revenues that are levied against property on December first of the school fiscal year.

**Purpose of Study**

The purpose of this study determined the relationship between five funding variables and investment income in Michigan public school districts. These five funding variables are (1) pooling versus no pooling, (2) summer tax collections versus winter tax collections, (3) in-formula versus out-of-formula status, (4) size of operating budgets, and (5) size of fund balances.
Research Hypotheses

Five hypotheses have been developed to study the relationship between the five funding variables and investment income. These hypotheses are:

1. The investment income for school districts who use pooling as an investment strategy will be significantly greater than those districts who do not use pooling (Dembowski, 1982).

2. The investment income for school districts who levy a summer tax will be significantly greater than those districts who levy a winter tax (Gallagher, 1976).

3. There will be no significant difference in investment income for school districts who are out-of-formula versus those districts who are in-formula (Haag, 1977).

4. The investment income of school districts will show a positive and significant relationship to expenditures (Dembowski, 1982).

5. The investment income of school districts will show a positive and significant relationship to fund balance (Hentschke, 1984).

Conceptual Framework

As public entities, school districts have a stewardship responsibility for funds entrusted by the public for
its use. In practice, this responsibility is to use the funds of the district for the education of its youth as determined by the public and directed by its representatives, the Board of Education. When funds are not immediately needed, the funds may be invested for the purpose of earning interest. Statutes guide the investment strategy of a district and protect the public so that the investment instruments which may be used offer the least risk.

Revenue from investments is a large part of local sources of revenue (Dembowski, 1982). A study by Dembowski (1982) indicated that well over $1 billion were earned on school district investments in the United States in the 1980-81 school year. With these large amounts of revenue at stake, it is no wonder that cash management and the investment strategies of investment managers have become recognized as increasingly important functions in school business operations.

Limitations

The data presented in this study are for the 1984-85 school fiscal year. The fiscal and accounting year begins with the first day of July in each year.

Overview

An introduction to the study, definitions of substantive terms, and specific information regarding the
purpose, limitations, and conceptual framework for the study are included in this chapter. Five hypotheses have been developed to study the relationship between five funding variables and investment income. A review of literature guiding this research is presented in Chapter II. In Chapter III, the design of the study and research procedures are described. The findings of the study are presented in Chapter IV. The study concludes with Chapter V where the findings are discussed and implications made for future research.
CHAPTER II

REVIEW OF LITERATURE

Introduction

There has been a change in investment management with the emergence of a vast amount of research in the securities markets and portfolio management. This research has opened new avenues for analyzing the process of security analysis and portfolio management and led to a re-evaluation of many existing practices. Probably the main benefit of this research was to focus on portfolio composition as the essential question of investment management. Developments in the field of business and finance illustrated the central importance of portfolio management in reconciling the needs of the investor with existing conditions in the money market (Sprecher, 1975).

Investment in Michigan public school districts is a constrained function when compared to fiscal management and investment in other businesses, especially in the private sector. Because it is so constrained, the opportunities for innovation are limited. Despite these limitations, changes have taken place that offer more flexibility to the investment manager.

Developments in public school investment have occurred largely in the last twenty years (Hentschke, 1975).
1984). The first studies identified cash management and investment as a legitimate and desired public school management activity (Hentschke, 1984). These studies focused on school district and banking relationships and cash flow charting. Studies were then undertaken that focused on more detailed, sophisticated decisions about investing.

The purpose of this study determined the relationship between five funding variables and investment income in Michigan public school districts. These five funding variables are: (1) pooling versus no pooling, (2) summer tax collections versus winter tax collections, (3) in-formula versus out-of-formula status, (4) size of operating budgets, and (5) size of fund balances. A review of literature guiding this research is presented below. This chapter is divided into the following sections: (a) Cash Management, (b) Legal Constraints, (c) Risk, Liquidity, and Yield, (d) Pooling, (e) Tax Revenue, (f) State Aid Formula, and (g) Summary.

**Cash Management**

The effectiveness of the cash management operation determines, to a large extent, the size of the investment program. Cash management and investment functions are so interrelated that, although two similar organizations may have comparable cash revenues, the average short-term
investment portfolio of one may differ greatly from the other. This is possible if cash management administration is far superior in one institution than in another (Haag, 1977).

Cash management is concerned with what happens between the time cash is received as revenue and when it is expended. More specifically, cash management is concerned with the conversion of accounts receivable to cash receipts, accounts payable to cash disbursement, the rate at which cash disbursements clear the bank (float) and what is done with cash in the meantime. The primary financial goals of cash management are to maximize availability and yield. The availability goal is to maximize the amount of cash available to meet daily needs and to increase cash available for investment. The yield goal is to earn the maximum return on cash invested (Haag, 1977).

These goals conflict with each other to the extent that cash invested may not be readily available to meet obligations of the district. Since bills must be paid, the yield goal is necessarily secondary. The timing of cash inflows and outflows may be manipulated to favorably affect yield. Additional financial goals include the minimization of the monetary and manpower costs of the cash management process (Dembowski, 1982).

The National Industrial Conference Board (1961) stated that financial managers who get the most from
their cash do so in five primary ways: (1) speed up collections, (2) reduce inventories, (3) improved control of payments, (4) improved control of bank balances, and (5) shrewd investment of cash surpluses.

Haag (1977) stated that effective administration of working capital (cash) involves many details. Nearly all phases of the management of cash fall into four categories as follows: (1) receipt of cash and the banking function, (2) disbursement control, (3) cash flow forecasting, and (4) investing excess temporarily idle cash.

Investments are not conducted without cost. There are direct costs, such as commissions and taxes. There are also implicit costs such as the investor's time in seeking out and evaluating investment opportunities (Fischer and Jordan, 1975). However, cash management does not cost, it pays. Organizing for efficient cash administration is important. Whether an institution employs someone to develop and run a program, or a consultant to develop a program and to train personnel to run the program, the cost should be a small fraction of what the program will produce in increased resources (Haag, 1977).

An investment strategy should govern the actions that are taken in the day-to-day cash management program of any district. This strategy should center on the cash management goals of availability and yield. There are
three primary inputs of importance in developing an investment strategy (Dembowski, 1982). These are: (1) the amount of money available to invest. The cash flow schedule combined with information on outstanding investments determines the forecast of the amount of cash available for investment, (2) money market conditions, and (3) the investment portfolio: What is the mix of securities and for what period of time?

While not as lucrative, the nonfinancial goals of cash management are equally as important to a school district. The most important nonfinancial goals include promoting favorable business relations with vendors and banks; ensuring the orderly conduct of the financial aspects of a district's operations; and building the trust and goodwill of the taxpaying community (Dembowski, 1982).

**Legal Constraints**

The investment practices of school districts are strictly regulated by statutory law. Only within the scope of what is legally permitted for investing do the other considerations of risk, liquidity, and yield apply. The financial management operations of the school districts in Michigan are regulated by the Education Law, School Code of 1976.

Michigan laws constrain management behavior in five ways. One, they constrain the manner in which cash may
be collected. For example, they stipulate the dates and procedures that must be followed when school district financial managers collect taxes. Two, they stipulate the kinds of investments school district financial managers may purchase. Three, state regulations specify the conditions under which school districts may borrow money. Four, school district financial managers are restricted in the types of financial institutions with which they can do business. Finally, state law states that earnings of an investment shall become a part of the fund for which the investment was made (Dembowski, 1982).

The investments that a Michigan public school district is allowed to purchase are as follows (MCLA, Section 380.1223):

1. Bonds, bills, or notes of the United States; obligations, the principal and interest of which are fully guaranteed by the United States; or obligations of the state.

2. Certificates of deposit issued by a state or national bank, savings accounts of a state or federal savings and loan association, or certificates of deposit or share certificates of a state or federal credit union organized and authorized to operate in this state.

3. Commercial paper rated prime at the time of purchase and maturing not more than 270 days after the date of purchase.
4. Bankers' acceptance issued by a bank that is a member of the Federal Deposit Insurance Corporation.

5. Mutual funds composed entirely of investment vehicles that are legal for direct investment by a school district.

6. Investment pools, as authorized by the surplus funds investment pool act, Act No. 367 of the Public Acts of 1982, being sections 129.111 to 129.118 of the Michigan Compiled Laws, composed entirely of instruments that are legal for direct investments by a school district.

Risk, Liquidity, and Yield

Once the legality of an investment is understood, an investment manager should next consider risk. The risk of financial loss should temper all school district investment practices (Dembowski, 1982). A review of a number of studies (Dembowski, 1982; Haag, 1977; Moor, 1977; Renwick, 1971; Sprecher, 1975) defined risk as the chance of not recovering a portion of one's principal and interest because of default by the debtor with whom an investment was made.

Even where legally permitted, high risk or speculative investments should be avoided because it is taxpayer money that is being risked. To reduce the risk of default or loss, some states require collateral on all school district investments. The Federal Deposit Insur-
The Federal Deposit Insurance Corporation (FDIC) insures the first $100,000 of all deposits, thus collateral is not needed for investments up to that amount. Banks bid lower on investments that require collateral because collateral requirements cost the banks cash to maintain the necessary assets instead of using them for other, more lucrative purposes (Dembowski, 1982). Michigan education law does not require collateral for investment purposes (School Code of 1976).

The risks in investment practices can be reduced by diversification. A review of studies (Dembowski & Davey, 1984; Fischer & Jordan, 1975; Moor, 1977; Norby, 1975; Renwick, 1971; Sprecher, 1975) defined diversification as the process of investing in several assets rather than one asset. Optimal diversification means maximizing expected return for a given acceptable level of risk.

Once the legality and risk of an investment are understood, an investment manager should consider liquidity and yield (Dembowski, 1982). Review of a number of studies (Dembowski, 1982; Dembowski & Davey, 1984; Haag, 1977; Sprecher, 1975) defined liquidity as the ability to quickly convert a security to cash without the loss of principal and interest. Highly liquid securities are desirable to assure that all bills will be paid on time in the event of some unanticipated cash deficit. Liquidity may also have an effect on future investments. If a
school districts' investment is not liquid, opportunity loss on future investments may occur. Opportunity loss is the inability to purchase an asset with a higher interest rate by liquidating an already purchased asset (Jones, Latane, & Tuttle, 1975).

The yield of investments varies with the type of security used. Yield represents the income from investment efforts and is the ultimate purpose for which investments are made. There are a number of factors that will affect the yield of an investment (Dembowski, 1982; Dembowski & Davey, 1984; Fischer & Jordan, 1975; Haag, 1977; Jones & Howard, 1973; Renwick, 1971). Generally, the yield is higher when: (a) the maturity date is farther away, (b) the risk is greater, (c) the liquidity of the investment is less, (4) the denomination of the investment is greater, and (e) the investment does not require collateral.

Pooling

In the latest research, in the early 1980's, several leaders pursued research and development associated with redefining the existing organization from one school district to a consortium of school districts. Dembowski (1982) surveyed all 50 states in 1979-80 and reported that 40 states allowed for pooling of accounts to produce larger amounts for investing. In 1982, the pooled fund
concept was created in Pennsylvania and Michigan. The school districts involved benefited through pooling by having a larger pool of investable funds available. This made possible investments in larger denominations thereby producing a higher investment yield (Hentschke, 1984).


1. Make investment possible in such a manner that invested funds need not be designated as being made for or belonging to any specific fund.

2. Pool all available investment resources so that amounts to be invested can be in denominations large enough ($100,000 or more) to secure maximum rates of return and to minimize investment service costs and recordkeeping detail.

3. Permit the free cash resources of every fund to be equally and continuously invested to a maximum extent.

4. Insure equitable allocation of the income from invested funds to every major group fund and to required individual funds within each major fund.
5. Permit selling or liquidation of investments at any time to cover either expected or unexpected disbursements of any fund without regard to which fund's investments are being sold.

6. Facilitate the control of all bank accounts.

7. Simplify recordkeeping relative to all investment transactions so that no concern is necessary as to which fund's investment is bought or sold.

8. Reduce the need for accurate projections of cash flows of individual funds.

9. Accomplish all of the above without violating the principles of self-balanced funds on the accounts at all times without in any way complicating the account recordkeeping.

The apportionment of investment earnings to each major group fund can be accomplished efficiently and accurately. As an outgrowth of fund accounting under manual accounting methods, there is a widespread belief that each fund should have a separate bank account. Fund accounting requires that each major fund group to be independent of each other group. Each fund is self-balancing and related to the trust concept. With the introduction of electromechanical bookkeeping, followed by electronic methods and computerization of most bookkeeping operations, principles of fund accounting can be observed while having all cash of all funds in a single...
bank account. Efficient pooling of investment requires a method for investing idle cash (cash not earning interest income) without regard to which fund owns the cash being invested. This requires a method for pooling all short-term resources for investment without disturbing the status of cash accounts of the various funds from which cash is invested. Both cash management and short-term investing are simplified when investment of cash from several or all major fund groups is possible without concern for the origin and without reflecting investment transactions in the account of any major fund groups.

Tax Revenue

Michigan public school districts are permitted to collect revenue in the form of a property tax. Statutes limit these collections to the summer, the winter, or a combination of summer and winter tax levies (Michigan Public Act 333 of 1982).

The amount of dollars available for investment is dependent, in part, upon when revenue is received. Gallagher (1976) studied 202 Michigan public school districts to determine if the levying of a summer property tax versus a winter property tax would have an effect on school districts' investment income. He reported that over $43 million could have been realized if the taxes had been collected from a summer tax levy rather than a winter tax levy.
State Aid Formula

The Michigan state aid formula is designed so that each public school district levying the same millage receives an equal amount of revenue for each pupil in the district. This formula is established by Michigan law on an annual basis. However, it is possible for one school district to generate more revenue per pupil for the same millage effort than another school district. This situation occurs when the product of the state equalized value of the property in a district multiplied by the operating tax levy exceeds the revenue generated by the state aid formula. When this occurs the district is classified as an out-of-formula district and does not receive state aid on a per pupil basis (Michigan Public Act 90 of 1977).

Summary

The review of literature showed much lacking in both basic and applied research. Research on investments in Michigan public school districts is in the elementary stages. Some progress has been made in establishing data related to the pooling concept and the timing of property tax revenue. The primary outcome of the literature review was the indication that more research is needed. The review of literature served as a basis for the development of the research hypotheses generated for this study.
CHAPTER III
DESIGN AND METHODOLOGY

Introduction

The purpose of this study determined the relationship between five funding variables and investment income in Michigan public school districts. These five funding variables are (1) pooling versus no pooling, (2) summer tax collections versus winter tax collections, (3) in-formula versus out-of-formula status, (4) size of operating budgets, and (5) size of fund balances.

An introduction to the study, definitions of substantive terms and specific information regarding the purpose, limitations, and conceptual framework for the study were included in Chapter I. A review of literature guiding this research was presented in Chapter II. In this chapter, the design of the study and research procedures are described.

This chapter is divided into the following sections: (a) Subjects, (b) Sampling Plan, (c) Design and Instrumentation, (d) Data Gathering Procedures, (e) Data Analysis Procedures, and (f) Chapter Summary.

Five hypotheses have been developed to study the relationship between the five funding variables and investment income. These hypotheses are:

27
1. The investment income for school districts who use pooling as an investment strategy will be significantly greater than those districts who do not use pooling (Dembowski, 1982).

2. The investment income for school districts who levy a summer tax will be significantly greater than those districts who levy a winter tax (Gallagher, 1976).

3. There will be no significant difference in investment income for school districts who are out-of-formula versus those districts who are in-formula (Haag, 1977).

4. The investment income of school districts will show a positive and significant relationship to expenditures (Dembowski, 1982).

5. The investment income of school districts will show a positive and significant relationship to fund balance (Hentschke, 1984).

Subjects

The focus of this study is investment income earned during the 1984-85 school fiscal year by Michigan public school districts with the exception of the Detroit Public School District. The Detroit district was eliminated because of the districts' size in relation to the other Michigan kindergarten through grade twelve districts.
Sampling Plan

The 524 Michigan public school districts listed in Bulletin 1014 (Michigan State Board of Education, 1984-85) was ordered on the basis of operating budget from 1 to 524. The district with the largest operating budget was ranked number 1 and the district with the smallest operating budget was ranked number 524. The sample was randomly selected from a table of random numbers in Appendix C of Educational Research (Borg & Gall, 1983).

The sample for this study consisted of 131 districts (25%) of the Michigan public school districts listed in Bulletin 1014. A 25% random sample was used to control for such variables as the expertise of the investment manager in school districts, the districts investment strategy, Board of Education policies and regulations, and districts' cash flow. A large sample was also used to assure that all types of districts were represented when subgrouping was done for data analysis. Large sample statistics involve smaller sampling errors, greater reliability, and increase the power of a statistical test applied to the data (Isaac & Michael, 1982).

Based on the scope of this research, a sample of 25% of the finite population of 524 districts is adequate to insure that a few extreme cases will not significantly bias the data. The use of 131 districts randomly
selected was consistent with the resources available for this study. These resources included printing costs, postage, and the ability to follow-up to insure a maximum return rate. A complete return on a sample size of 131 from a population of 524 is consistent with a confidence level of 90% and a sampling error of 6.3 (Portman, Mauradian, Bruno, 1985).

**Design and Instrumentation**

A survey form developed specifically for this study was used to collect data. The survey form and instructions regarding the survey are contained in Appendix A. A self-addressed, stamped envelope was enclosed to aid prompt return.

The survey was reviewed by three business managers in Michigan school districts and the Associate Superintendent of Planning and School Management, Michigan Department of Education to determine whether the instrument, on the face of it, appeared to measure what it claimed to measure. The results of the survey for question number 4 were compared with Michigan State Department of education records to determine the reliability of the responses.

**Data Gathering Procedures**

The survey form was mailed on January 5, 1987 to the 131 districts randomly selected for the study. The
survey was addressed to the Business Manager of the selected districts, or in the absence of a Business Manager, to the Superintendent of Schools listed in the 1986 Michigan Education Directory and Buyer's Guide.

The selected districts were asked to return the survey no later than January 19, 1987. All non-respondents were contacted via telephone the week of January 19, 1987 and asked for the survey data. The analysis of data was made on responses received no later than January 23, 1987. In reporting the data the confidence interval was calculated to permit appropriate interpretations of the findings.

Data Analysis Procedures

Several statistical analyses were conducted to determine the relationship between the funding variables and investment income. For each of the hypotheses, the statistical technique is shown in figure 1. A t-test was used to analyze data regarding the pooling strategy. Analysis of variance techniques were used to assess data relative to tax collections. A t-test was also used to analyze data regarding the formula status of districts. The Pearson product-moment correlation was used to describe the relationship between investment income and the size of operating budgets and the size of fund balances. The rate of return of investment income as a
<table>
<thead>
<tr>
<th><strong>Hypotheses</strong></th>
<th><strong>Technique</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The investment income for school districts who use pooling as an investment strategy will be significantly greater than those districts who do not use pooling.</td>
<td>T-test for independent samples</td>
</tr>
<tr>
<td>2. The investment income for school districts who levy a summer tax will be significantly greater than those districts who levy a winter tax.</td>
<td>Analysis of Variance</td>
</tr>
<tr>
<td>3. There will be no significant difference in investment income for school districts who are out-of-formula versus those districts who are in-formula.</td>
<td>T-test for independent samples</td>
</tr>
<tr>
<td>4. The investment income of school districts will show a positive and significant relationship to expenditures.</td>
<td>Pearson product-moment correlation</td>
</tr>
<tr>
<td>5. The investment income of school districts will show a positive and significant relationship to fund balance.</td>
<td>Pearson product-moment correlation</td>
</tr>
</tbody>
</table>

*Figure 1. Research Hypotheses and Statistical Techniques*
function of expenditures and fund balance was used in this analysis.

Stepwise multiple regression was used to determine which of the three independent variables accounted for the most variance on the dependent variable. Measurement scales for computing central tendency and dispersion were also used.

Summary

In this chapter an overview of the methodology was provided. The subjects and sampling plan, design and instrumentation, data gathering procedures, and data analysis procedures were outlined. The findings of the study are contained in Chapter IV. The study concludes with Chapter V where the findings are discussed and implication made for future research.
CHAPTER IV

FINDINGS

Introduction

The findings of the data analysis are contained in this chapter. The results of research based on the six survey questions are presented. Five hypotheses were developed to determine the relationship between five funding variables and investment income in Michigan public school districts.

Review of Design and Methodology

A random sample of 131 districts (25%) of the K-12 Michigan public school districts listed in Bulletin 1014 (1984-85) were selected for the study. A six question survey developed specifically for this study was used to collect data. The survey was mailed on January 5, 1987, to the 131 districts randomly selected. The survey was addressed to the Business Manager of the selected districts, or in the absence of a Business Manager, to the Superintendent of Schools listed in the 1986 Michigan Education Directory and Buyer's Guide.

The selected districts were asked to return the survey no later than January 19, 1987. All non-respondents...
were contacted via telephone the week of January 19, 1987 and asked to report the survey data over the phone. There were 109 districts who returned the survey and 18 districts who responded via telephone for a total of 127 respondents. The analysis of data was made on responses received no later than January 23, 1987.

The response rate was 97%. Based upon the sampling method and the response rate, these returns are consistent with a confidence level of 90% and a sampling error of 6.3.

Thirty-three (25%) of the returned surveys were randomly selected to check reliability. Answers given by respondents to question 4 were compared to figures reported by the State Department of Education. For the 33 districts, the Department of Education expenditure figures showed a total of $109,408,537 while the same total compiled from the survey was $112,407,683. A comparison of these two figures shows a difference of $2,999,146 (2.7%). This discrepancy could have resulted from survey data presented for a school year other than 1984-85. A responding district may have also included expenditures for other funds as well as general operating funds.

**Independent Variables**

The three independent variables of this study relate to the first three questions in the survey. These
variables are pooling versus non-pooling, summer versus winter tax collections, and in-formula versus out-of-formula status.

Of the 127 districts who responded in the sample, 36 (28.3%) reported that they used pooling as an investment strategy while the remaining 91 (71.7%) of the districts did not use pooling. Fifty-two (40.9%) districts reported collecting 100% of their taxes in the winter. Sixty-six (52%) collected half of their taxes in the winter and half in the summer while the remaining nine districts (7.1%) reported total general fund tax collections in the summer. Finally, 94 (74%) of the districts reported being in-formula while the remaining 33 (26%) reported being out-of-formula.

**Dependent Variables**

Four dependent variables were used in this study. Three of these variables relate to questions 4-6 of the survey. These variables are expenditures, fund balance, and investment income. The other dependent variable is rate of return (ROR) as a function of expenditures and is computed by dividing investment income by expenditures. Table 1 contains descriptive statistics for each of the dependent variables of this study. The statistical analyses in this study were conducted with the use of the statistical programs in *Statistical Methods SPSS/PC+* (Norusis, 1986).
The data in Table 1 shows that expenditures ranged from a high of $69,492,410 to a low of $465,502. The mean for expenditures was $9,164,332. All but the eight largest districts in the survey were within one standard deviation of the mean. The distribution of expenditures within the sample is skewed to the high side with 93.7% of all districts' scores within one standard deviation of the mean.

The variance within fund balance and investment income vary considerably among districts. Data contained in the Annual School District Financial Report, DS-4169, also show that these figures vary considerably. The figures for fund balance show a more normal distribution while the figures for investment income are positively skewed, that is, all scores are contained within one standard deviation except for those districts with large investment income figures.

The rate of return as a function of expenditures shows a mean of 1.82 and a standard deviation of .82. Examination of the ROR distribution shows that it is positively skewed because all scores are within one standard deviation except for those at the extreme upper level.

Hypotheses

Five hypotheses were developed to determine the relationship between five funding variables and
<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditures</td>
<td>$9,164,332</td>
<td>$12,507,295</td>
<td>$8,465,502</td>
<td>$69,492,410</td>
</tr>
<tr>
<td>Fund Balance</td>
<td>$971,435</td>
<td>$1,654,296</td>
<td>$957,820</td>
<td>$13,265,861</td>
</tr>
<tr>
<td>Investment Income</td>
<td>$187,000</td>
<td>$320,278</td>
<td>$7,321</td>
<td>$2,245,786</td>
</tr>
<tr>
<td>ROR - Expenditures</td>
<td>1.82</td>
<td></td>
<td>.36</td>
<td>4.26</td>
</tr>
</tbody>
</table>
investment income. In this section the findings of the analyses for these hypotheses are reported.

**Hypothesis 1**

"The investment income for school districts who use pooling as an investment strategy will be significantly greater than those districts who do not use pooling." A t-test for independent samples was used to test this hypothesis. The results of this analysis are presented in Table 2.

Inspection of Table 2 shows that a t value of -1.17 with 68 degrees of freedom is not statistically significant at the .05 level of confidence. Based on these results, Hypothesis 1 is rejected. Further inspection of Table 2 shows that the average investment income of non-pooling districts is nearly twice as high as that for pooling districts while the variances as measured by the standard deviation are similar (F = 1.14 > .05). Thus, it appears that non-pooling districts achieve a much higher return on investment than do districts which use pooling.

**Hypothesis 2**

"The investment income for school districts who levy a summer tax will be significantly greater than those districts who levy a winter tax." An Analysis of Vari-
Table 2
A Comparison of Investment Income
By Pooling Versus Non-Pooling Districts

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>DF</th>
<th>t-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pooling</td>
<td>36</td>
<td>$135,731</td>
<td>$305,364</td>
<td>68</td>
<td>-1.17</td>
<td>NS</td>
</tr>
<tr>
<td>Non-Pooling</td>
<td>91</td>
<td>$207,282</td>
<td>$325,394</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ance was used to analyze differences between the three conditions of tax levy and investment income. Results of this analysis are presented in Table 3.

An F-ratio of 7.31 with 2 degrees of freedom is statistically significant at the .001 level. See Table 3. Based upon these findings, a series of t-tests were performed to determine which tax collection factors were contributing to the differences. The three resulting analyses are presented in Tables 4-6.

There were no significant differences in investment income between those districts which collect all their taxes in the summer and those districts which collect 50% of their taxes in the summer. See Table 4. Statistically significant t values (p < .001) are presented in Tables 5 and 6. In both cases, the average investment income for summer tax collecting districts was greater than for those districts collecting all of their taxes in the winter. Thus, Hypothesis 2 is not rejected.

Hypothesis 3

"There will be no significant difference in investment income for school districts who are out-of-formula versus those districts who are in-formula." This hypothesis was tested by performing an independent t-test. The results of this analysis are presented in Table 7.

An inspection of Table 7 shows that a t value of -1.76 with 41 degrees of freedom is not statistically
Table 3

A Comparison of Investment Income and Timing of Tax Collections

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Mean of Squares</th>
<th>DF</th>
<th>F-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax Collection</td>
<td>1.36E + 10</td>
<td>6.81E + 9</td>
<td>2</td>
<td>7.31</td>
<td>.001</td>
</tr>
<tr>
<td>Residual</td>
<td>1.16E + 18</td>
<td>9.32E + 8</td>
<td>124</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4
A Comparison of Investment Income and Timing of Tax Collections

<table>
<thead>
<tr>
<th>Percent Collected</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>DF</th>
<th>t-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 50%</td>
<td>66</td>
<td>$239,299</td>
<td>$322,045</td>
<td>73</td>
<td>-1.43</td>
<td>NS</td>
</tr>
<tr>
<td>100%</td>
<td>9</td>
<td>$436,228</td>
<td>$726,468</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5
A Comparison of Investment Income and Timing of Tax Collections

<table>
<thead>
<tr>
<th>Timing of Collection</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>DF</th>
<th>t-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% Summer</td>
<td>66</td>
<td>$239,299</td>
<td>$322,045</td>
<td>116</td>
<td>2.36</td>
<td>.001</td>
</tr>
<tr>
<td>100% Winter</td>
<td>52</td>
<td>$77,486</td>
<td>$108,303</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6
A Comparison of Investment Income
and Timing of Tax Collections

<table>
<thead>
<tr>
<th>Timing of Collection</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>DF</th>
<th>t-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Summer</td>
<td>9</td>
<td>$436,228</td>
<td>$726,468</td>
<td>59</td>
<td>2.39</td>
<td>.001</td>
</tr>
<tr>
<td>100% Winter</td>
<td>52</td>
<td>$77,486</td>
<td>$108,303</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7
A Comparison of Investment Income and Formula Status

<table>
<thead>
<tr>
<th>Formula Status</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>DF</th>
<th>t-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-formula</td>
<td>94</td>
<td>$150,537</td>
<td>$265,328</td>
<td>41</td>
<td>-1.76</td>
<td>NS</td>
</tr>
<tr>
<td>Out-of-formula</td>
<td>33</td>
<td>$290,864</td>
<td>$429,271</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
significant at the .05 level of confidence. Based on these results, Hypothesis 3 is rejected.

The average investment income for the 33 out-of-formula districts is nearly twice that of the in-formula districts. The difference in within group variances is large and significant ($F = 2.62, p < .001$). Thus, the investment income of out-of-formula districts is much greater and more variable than that for in-formula districts.

**Hypothesis 4**

"The investment income of school districts will show a positive and significant relationship to expenditures." This hypothesis was tested using the Pearson product-moment correlation. Results of the correlation are presented in Table 8.

<table>
<thead>
<tr>
<th>Table 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correlation of Expenditures and Fund Balance With Investment Income</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fund Balance</th>
<th>Investment Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditures</td>
<td>.7412*</td>
<td>.8856*</td>
</tr>
<tr>
<td>Fund Balance</td>
<td>.8604*</td>
<td></td>
</tr>
</tbody>
</table>

*p < .001

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An inspection of Table 8 shows that the correlation between expenditures and investment income is +.8856 which is statistically significant at the .001 level of confidence. Therefore, the data failed to reject Hypothesis 4.

**Hypothesis 5**

"The investment income of school districts will show a positive and significant relationship to fund balance."

The Pearson product-moment correlation was also used to test this hypothesis with the results contained in Table 8.

The values in Table 8 show that the correlation between fund balance and investment income is +.8604 which is statistically significant at the .001 level of confidence. Therefore, the results fail to reject Hypothesis 5.

**Multiple Regression Analysis**

A focus of this study was to determine whether the three independent variables held a significant mathematical relationship to the dependent variable rate of return as a function of expenditures (RORE). A stepwise multiple regression analysis was employed to detect any relationship. The .05 level of significance was used to define limits of inclusion. Results of the multiple regression are contained in Table 9.
Table 9
Weighted Regression Analysis for Formula Status, Pooling, Summer Tax Collection, and Rate of Return on Expenditures

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Correlation Coefficient (r)</th>
<th>Stepwise Multiple Correlation (R)</th>
<th>(R²) Stepwise</th>
<th>R² Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula Status</td>
<td>.4861</td>
<td>.4861</td>
<td>.4861</td>
<td>.2363</td>
<td></td>
</tr>
<tr>
<td>Pooling</td>
<td>.0380</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer Tax</td>
<td>.0406</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An inspection of Table 9 shows that the variable formula status is the only independent variable which makes a statistically significant contribution to predicting the rate of return on investment as a function of expenditures. More specifically, the in-formula, out-of-formula status of a district accounts for about 24% of the variation in the rate of return on investments. Neither pooling or the timing of tax collections contribute significantly to predicting the rate of return on investments.

Because of the results discovered in Table 9 a t-test was performed to compare the rate of return on investment to the formula status of districts. The results presented in Table 10 show a statistically significant difference between in-formula and out-of-formula districts when compared to rate of return (t = -5.55, p < .001). When the means and standard deviations are examined, rate of return favors out-of-formula districts.

These results are similar to those found in the analysis of Hypothesis 3. In both cases, out-of-formula districts performed better than in-formula districts. When investment income is used as the dependent variable, the difference is not significant but the average investment income is greater for out-of-formula districts. Therefore, out-of-formula districts perform better than do in-formula districts whether rate of return or investment income is used.
Table 10
A Comparison of Rate of Return On Investment to In-Formula Versus Out-of-Formula Status

<table>
<thead>
<tr>
<th>Formula Status</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>DF</th>
<th>t-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-formula</td>
<td>94</td>
<td>1.59</td>
<td>.67</td>
<td>47</td>
<td>-5.55</td>
<td>.001</td>
</tr>
<tr>
<td>Out-of-formula</td>
<td>33</td>
<td>2.49</td>
<td>.84</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

The findings of this study support the review of literature in most cases. Investment income is greater in districts that levy a summer tax. Investment income also shows a positive and significant relationship to expenditures and fund balance. Results regarding pooling and rate of return as a function of expenditures are not consistent with the review of literature. The findings regarding the formula status of districts clearly showed that out-of-formula districts have a higher level of investment income than do in-formula districts.

The study concludes with Chapter V which contains a summary of the study, conclusions, recommendations, and suggestions for further research.
CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

The purpose of this study was to determine the relationship between five funding variables and investment income in Michigan public school districts. These five funding variables are: (1) pooling versus no pooling, (2) summer tax collections versus winter tax collections, (3) in-formula versus out-of-formula status, (4) size of operating budgets, and (5) size of fund balances. A review of literature was conducted in relationship to the five hypotheses developed to study the relationship between the five funding variables and investment income. A survey questionnaire containing six research questions was developed to gather data from the districts selected in the random sample.

The random sample for this study consisted of 131 districts or 25% of the Michigan public school districts listed in Bulletin 1014 (1984-85). A 25% random sample was used to control for such variables as the expertise of the investment manager in school districts, the districts' investment strategy, Board of Education policies and regulations, and districts' cash flow. A large
sample was also used to assure that all types of districts were represented when subgrouping was done for data analysis.

The questionnaire was mailed on January 5, 1987, to the 131 districts randomly selected for the study. The selected districts were asked to return the questionnaire no later than January 19, 1987. A follow-up telephone call was made to non-respondents during the week of January 19, 1987. There were 109 districts who returned the survey and 18 districts who responded via the telephone for a total of 127 responses.

Conclusions

The findings of this study show that districts vary considerably in their reported financial data. The results of this study should not be considered to be the same for all school districts. Data for each district should be examined independently to determine which of the funding variables have an effect on the investment income of that district.

Evidence suggests that greater investment income can be achieved when the commingling or pooling of funds provides a larger dollar amount for investment (Haag, 1977; Dembowski, 1982). Hentschke (1984) also reported that pooling made possible investments in larger denominations ($100,000) thereby producing a higher investment yield.
The findings of this study do not support the previous evidence regarding the pooling concept. In this study non-pooling districts had investment income of nearly double the pooling districts. These results may have occurred because the pooling districts had large enough investments in each fund so that the combination of funds did not have an effect on the investment yield. Smaller districts may have pooled but the total amount of funds did not significantly affect the investment yield.

The levying of summer taxes has a significant effect on the amount of investment income a district may earn. There wasn't a significant difference on whether a district levies 50% or 100% of their taxes in the summer. In both cases the districts performed much better than those districts that only levy a winter tax. The districts who levy a summer tax have tax revenues to invest over a longer period of time thus increasing their investment income. Gallagher (1976) also reported higher investment income from summer tax levies.

The Michigan state aid formula is designed so that each public school district levying the same millage receives an equal amount of revenue for each pupil. A review of literature did not identify whether the formula status of a district had an effect on investment income. The findings of this study showed that the average investment income for the 33 out-of-formula districts is
nearly double that of the in-formula districts. The data of this study support the proposition that "the investment income of the out-of-formula districts will be greater than the investment income of in-formula districts."

The stepwise multiple regression analysis of the above three independent variables showed that the formula status of districts was the only independent variable which makes a statistically significant contribution to predicting the rate of return on investment as a function of expenditures. Pooling and the timing of summer tax collections cannot be used generally in the prediction of the rate of return on investments.

The findings show that larger districts tend to have a greater amount of investment income than smaller districts. Similarly, districts with larger fund balances also show more investment income than districts with smaller fund balances. These results are explained by the larger amounts of funds used for investment purposes.

The findings of this research indicate that school districts vary considerably. The cash management and investment functions of individual school districts must be analyzed to determine if the maximum use of funds is being made for investment purposes. Cash management and investment functions are so interrelated that, although two similar districts may have comparable cash revenues,
the average short-term investment portfolio of one may differ greatly from the other.

Recommendations

School districts should make every effort to ensure that appropriate programs are implemented that would have a positive effect on investment income. Minimally, the strategy should include:

1. A good cash receipts and disbursement forecast should be developed to ensure that maximum use of available cash is made.

2. The development of a good recordkeeping system to control, audit, report, and measure the effectiveness of the investment program.

3. The development of a system to measure the effectiveness of the investment program. Total investment income does not measure effectiveness. Rather, one must ask "How well did we do with the funds available and under the market conditions that existed during the fiscal year?"

4. The development of a close working relationship between the school district and financial institutions to take advantage of their expertise.

5. The development of a variety of investment sources so that many alternatives are possible when making investments.
6. The development of Boards of Education policies that will enhance the investment potential of school districts.

7. The development of inservice or training programs for the investment manager to increase his or her effectiveness.

This research study was designed to determine the relationship between five funding variables and investment income. There are other funding variables that were not included in this study and should be researched. Each school district should examine all of these funding variables to determine the effects of these variables on their particular school district. Because school districts vary considerably, these funding variables do not impact investment income the same for all districts.

Suggestions for Further Research

This research study was limited to the study of investment income for one school year (1984-85) in Michigan public school districts. Variables of pooling, tax collections, formula status, size of operating budgets, and size of fund balance were considered. Future research might include a study of only one variable in a longitudinal study on the effect of investment income. Future research might include other variables such as statutes which affect investments, the expertise of
investment managers, Board of Education policies and procedures, the types of investments used by school districts, or the effect of the school-banking relationship.

A single study cannot hope to cover all the questions related to the investment income of school districts. This study is a single contribution to the body of research needed to determine which funding variables have the most positive relationship to investment income of public school districts.
School District: __________

Please answer all questions based on the status of your district for the 1984-85 school year.

Questions 1-3: Please place a √ mark in the appropriate space before your answer.

1. Does your district use pooling as an investment strategy?
   ______ Yes  ______ No

2. Does your district levy a summer tax?
   ______ Yes  ______ No
   If yes: a) ______ 50%  b) ______ 100%

3. Is your district in-formula?
   ______ Yes  ______ No

Questions 4-6: Answers to these questions are to be obtained from DS-4169 (Form B) for the 1984-85 school year.

4. What were your districts' total general fund expenditures, outgoing transfers, and other transactions? (Page 5, Line 37)
   $____________________

5. What were your districts' Reserves and Fund Balance? (Page 1, Line 29, Column 1)
   $____________________

6. What were your districts' earnings from investments and deposits? (Page 2, Line 9)
   $____________________

Please return prior to January 19, 1987 to:

Bay City Public Schools
Mr. Elmer R. Hollenbeck
Assistant Superintendent for Business and Finance
910 N. Walnut
Bay City, MI 48706
Appendix B

Definitions of Terms and Instructions for Completing Survey
Definitions of Terms and Instructions for Completing Survey

Question Number 1

Pooling is defined as the combining of funds (General, Debt, Building and Site, etc.) for the purpose of providing a larger dollar amount for investing. If you combined funds for the purpose of investing, please check yes.

Question Number 2

If a summer tax (July 1) was levied in 1984-85, please check yes and the amount (50 percent or 100 percent) that most clearly describes your district.

Question Number 3

If your district received Section 21 pupil membership state aid in 1984-85, please check yes. If you did not receive Section 21 state aid (your operating tax levy was greater than the amount of revenue generated by the state aid formula) please check no.

Question Numbers 4-5-6

Answers for these questions are to be obtained directly from DS-4169 (Form B) for the 1984-85 school year.
Appendix C

Sample Letter Regarding Validity of Questionnaire
November 25, 1986

Dr. James Phelps
Department of Education
Associate Superintendent
Planning & School Management
Box 30008
Lansing, MI 48909

Dear Dr. Phelps:

I am completing my Doctoral program at WMU with a dissertation on the subject of investments. I am asking you to assist me in my program by examining the enclosed survey of six questions. Also enclosed is a copy of the five hypotheses developed for this study.

Do the questions on the survey appear to provide the basic information necessary for me to complete an analysis based on the five hypotheses? I would appreciate you taking a few minutes to write down your comments and submitting them to me in the enclosed, stamped, addressed envelope.

Thank you very much. If you have any questions regarding this matter, please call me at 517/686-9700, ext. 130.

Sincerely,

Elmer R. Hollenbeck
Assistant Superintendent for Business and Finance

ERH: fam
BIBLIOGRAPHY


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