National Library of Canada
Canadian Theses Service
Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada
Service des thèses canadiennes

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, tests publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30.

NL-339 (r. 88/04)

Canada

THE UNIVERSITY OF ALBERTA

THE FISCAL EQUALIZATION EFFECTS OF THE ALBERTA EDUCATION EQUITY GRANT

BY

RAYMOND JOHN SCHMIDT

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

EDMONTON, ALBERTA

FALL, 1988

Permission has been granted to the National Library of Canada to microfilm this thesis and to lend or sell copies of the film.

The author (copyright owner) has reserved other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without his/her written permission.

L'autorisation a été accordée à la Bibliothèque nationale du Canada de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur (titulaire du droit d'auteur) se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation écrite.

ISBN 0-315-45714-7

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR RAYMOND JOHN SCHMIDT

TITLE OF THESIS THE FISCAL EQUALIZATION EFFECTS OF THE ALBERTA EDUCATION EQUITY GRANT

DEGREE: DOCTOR OF PHILOSOPHY

YEAR THIS DEGREE GRANTED: 1988

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

(Student's Signature)

30 Greenwood Way

Sherwood Park, Alberta

T8A 0J5

Date:

THE UNIVERSITY OF ALBERTA

THE FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled THE FISCAL EQUALIZATION EFFECTS OF THE ALBERTA EDUCATION EQUITY GRANT submitted by RAYMOND JOHN SCHMIDT in partial fulfilment of the requirements for the degree of DOCTOR OF PHILOSOPHY in Educational Administration.

D. M. Richards, Supervisor

E. W. Ratsoy

C. S. Bumbarger

D. J. Collett

S. B. Lawton, External Examiner

Date: October 4, 1988

ABSTRACT

The purpose of the study was to determine the fiscal equalization effects of the Equity Grant, introduced by the Alberta Department of Education (hereafter referred to as Alberta Education) in 1985. That is, to what extent the Equity Grant contributed to the improvement of educational funding to less wealthy Alberta school jurisdictions.

The study addressed two problems, the first problem was to determine the fiscal equalization effects of overall provincial and local funding to school jurisdictions for the years 1981 through 1985. The second problem and the focal point of the study was to determine to what extent the new 1985 Equity Grant improved funding to less wealthy jurisdictions in comparison to the Alberta Education fiscal equalization grants for the period 1981 to 1984.

Alberta school jurisdictions were divided into ten groupings based on the form of governance (eg., Counties, Public School Districts), and to urban or rural location (eg., Large Cities, Towns and Villages). Data were made available from Alberta Education in machine-readable form. The measures of wealth used for the analysis were adjusted equalized assessment for 1981 to 1985 and average private household income for 1981. Three measures of dispersion, the Gini coefficient, the coefficient of variation and weighted per pupil dollar inputs, and one measure of relationship, the correlation coefficient, were employed in the analysis.

In relation to the first problem the study found that the long-term increase in the proportion of local funding to education was a growing force for fiscal disequalization due to the associated strong wealth correlations between local funding and jurisdiction wealth. The study results for the second problem indicated that the new Equity Grant, if

applied without save-harmless provisions, would produce improved fiscal equalization effects for all school jurisdiction groupings. In addition, the study revealed that using personal income as a measure of wealth may be a viable alternative to assessed value of property for the purpose of exacting the local education tax.

The study concluded with the recommendation that Alberta Education consider the possibility of adopting the analysis employed in the study as a conceptual framework for the on-going evaluation of the fiscal equalization effects of the Equity Grant.

ACKNOWLEDGEMENTS

I wish to express thanks to my dissertation supervisor, Dr. D. M. Richards and to Committee members Dr. E. W. Ratsoy, Dr. C. S. Bumbarger, Dr. D. J. Collett and external examiner, Dr. S. B. Lawton for their careful consideration of this study. A special thank you is due to Mrs. Chris Prokop for her tireless work in completing the seemingly endless runs necessary for the data analysis for this project. Thanks are also extended to Derek Norton, of the Alberta Education Finance and Support Services Branch for providing background information on the Equity Grant and to Harry Henshaw of the Alberta Education Information Services Branch for furnishing the requisite funding data in machine-readable form.

The text of the study was input entirely on an APPLE Macintosh using Microsoft Works and printed on an APPLE Laserprinter.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION TO THE STUDY

A major goal of the Alberta Department of Education in distributing funding to school jurisdictions is to promote equality of educational opportunity for students attending elementary and secondary schools throughout the province. Beginning in 1973, the Alberta Department of Education, hereafter referred to by it's formal name of Alberta Education, made a total of eight grants available to Alberta school jurisdictions. The grants were meant to compensate for differing fiscal capacities and for factors affecting the per-pupil cost of education in each jurisdiction. In 1985, as a part of the new Alberta Education Management and Finance Plan (Alberta Education, 1984) these fiscal equalization grants were replaced by a single three-component Equity Grant. The term Equity Grant has been used by Alberta Education to distinguish the new grant format from the previous fiscal equalization grants.

PURPOSE OF THE STUDY

The primary purpose of the study was to determine to what extent the 1985 Equity Grant increased school funding to less wealthy Alberta school jurisdictions in comparison to the fiscal equalization grants of preceding years. In order to establish a basis for the analysis, the provincial, the local, and the combined provincial and local per pupil school funding available to various categories of school jurisdiction were compared for the period 1981 to 1985.

SIGNIFICANCE OF THE STUDY

The Report of the Minister's Task Force on School Finance, entitled *Financing Schooling in Alberta* (Alberta Education, 1982), recommended that seven principles govern the financing of schooling. Principle One of the report is referred to as "Educational Equality and Financial Equity" and states that

> An Alberta school finance plan should have as its prime objectives:
>
> a. the equalization of educational opportunity, and
> b. fiscal equalization, insofar as it is compatible with equalization of educational opportunity.
>
> (Alberta Education, 1982:9)

The report goes on to define the two concepts as follows:

> ...'equalization of educational opportunity,' refers to the concept that each child should have access to an instructional program suitable to his or her learning potential; and that instructional programs should be of similar quality and depth from one school system to the next.
> ...'fiscal equalization,' implies that provincial funding policies must take into account the ability of the local jurisdiction to raise revenue for services, and the relative cost of providing the services to the jurisdiction.
>
> (Alberta Education, 1982:9)

In order to address those conditions, most educational finance plans have three components which are:

> minimum aid, equalization aid, and categorical aid. 'Minimum aid,' an adequate 'foundation level' of funding distributed to school systems on a common unit of need (such as per pupil), is intended to provide a minimum level of schooling for all students. 'Equalization aid' and 'categorical aid' refer to additional, differentiated financial support which is based on special factors such as variations in local wealth or the number of handicapped

pupils living in a jurisdiction.

(Alberta Education,1982:9)

The Alberta Education funding structure addresses these three components with various grants. The School Foundation Program Fund (SFPF) is the source of grants allocated on a per pupil basis. It provides a foundation level of operating funds for school jurisdictions. Equalization aid and categorical aid are distributed within the Alberta Education School Grants Regulations. Fiscal equalization grants, prior to 1985, provided additional funding to school jurisdictions to compensate for shortcomings in local wealth (e.g., Small Jurisdiction Grants, Small School Grants). Regular and Special Education Program Grants provide categorical aid for instructional programs which vary from jurisdiction to jurisdiction based on student need (e.g., English as a Second Language, Vocational Education).

The introduction of the Equity Grant by Alberta Education in 1985 marked a major change in the criteria governing the distribution of the former Fiscal Equalization Grants. As a result of the recommendations arising from the Alberta Education School Grant Simplification Deregulation Project (Alberta Education, 1984), eight fiscal equalization grants were coalesced into a single, three-component Equity Grant. The grant was based on three factors -- school jurisdiction fiscal capacity, sparsity of population and distance from major supply centres.

The education finance literature reveals a strong interest in the equalization of school funding in both Canada and in the United States. Numerous studies have been concerned with the measurement of the fiscal equalization effects of the government funding of schools. Deiseach (1974) and Jefferson (1982) completed doctoral dissertations at the University of Alberta measuring the fiscal equalization effects of Alberta Education funding to school jurisdictions. A major component of the Jefferson

study was the measurement of the fiscal equalization effects of the Alberta Education Fiscal Equalization Grants for the years 1975 through 1980. For purposes of extending the analysis, this study begins with the 1981 school year and, where appropriate, employs similar problem statements but a somewhat different methodology to those found in the Jefferson study.

The measurement of fiscal equalization effects is based on the relationship between school funding and the relative wealth of school jurisdictions. The measurement used in the present study and the one most frequently employed to establish the wealth of school jurisdictions is assessed value of property. Both the local supplementary requisition and the Alberta Government compulsory levy on non-residential property employ property assessment as the wealth measure. The feasibility of using personal income, often cited as an alternate wealth measure to property assessment (McMahon, 1977:363, Odden, 1978), was also explored in this study.

To the knowledge of the author, the new Equity Grant has not been subjected by Alberta Education, nor by any individual or agency, to the fiscal equalization analysis conducted in this study. The findings of this study may provide the basis for speculation on the not yet stated directions which will be taken by Alberta Education with respect to fiscal equalization funding. For instance, the removal of the former grants related to smallness (i.e., Small School Assistance Grants and Small Jurisdiction Grants) may be the signal of a change of attitude with respect to the viability of small school jurisdictions. The study may facilitate the development of an analytical framework to be used for an on-going review of the fiscal equalization effects of Alberta Education funding of Alberta schools.

STATEMENT OF THE PROBLEMS

Two problems were identified for the study. The first problem was to determine the fiscal equalization effects of provincial and local funding to school jurisdictions for the years 1981 through 1985. As stated above, this part of the study was meant to be a follow-up to the research conducted by Jefferson (1982). The second problem and the focal point of the study was to determine the fiscal equalization effects of the 1981 to 1984 aggregated fiscal equalization grants and the 1985 Equity Grant. In both problems 1 and 2, the fiscal equalization effects of funding based on the wealth measures ofproperty assessment and personal income were compared for the year for which income data were available, that is, the census year 1981. The property assessment measure adopted for all years of the study was adjusted equalized assessment per pupil. The personal income measure used for 1981 was average private household income.

The problems are as follows:

Problem 1: What were the fiscal equalization effects of provincial and local funding of Alberta school jurisdictions for the period 1981 through 1985?

Sub-problem 1.1: What was the distribution of provincial funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Sub-problem 1.2: What was the distribution of local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Sub-problem 1.3: What was the distribution of combined provincial and local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Problem 2: What were the fiscal equalization effects of the Alberta Education Equity Grant introduced in 1985?

Sub-problem 2.1: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in terms of mills of tax relief per school jurisdiction?

Sub-problem 2.2: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Sub-problem 2.3: What was the potential distribution of the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil?

DEFINITIONS

The following list of definitions is restricted to those terms which are open to subjective interpretation or which have a specific denotation within the context of school finance in the province of Alberta.

Adjusted Equalized Assessment: is the sum of equalized assessment and electrical power and pipeline tax revenue collected by Counties, Municipal Districts, Improvement Districts and Special Areas in Alberta.

Average Private Household Income: refers to the total income of all members of a private household where the members are not necessarily related.

Equalization Aid: is provincial funding to school jurisdictions meant to compensate for variations in local wealth, for example, the Equity Grant.

Categorical Aid: is provincial funding to school jurisdictions in support of specific local needs, for example, English as a Second Language grants.

Equalized Assessment: "An assessment based on live assessment but determined by the province's Assessment Equalization Board in order to establish comparability through reflecting reasonably current property values and construction costs among municipalities which have not made live assessment valuations within the same year (Alberta Education, 1981:181)." Live assessment is defined below.

Equalization of Educational Opportunity: "refers to the concept that each child should have access to an instructional program suitable to his or her learning potential; and that instructional programs should be of similar quality and depth from one school system to the next (Alberta Education, 1982:9)."

Equity Grant: refers to an Alberta Education grant to school jurisdictions introduced in 1985 that is meant to compensate for conditions that result in education-related inequalities that are beyond the control of school jurisdictions. The criteria for awarding Equity Grants to school jurisdictions are **fiscal capacity**, based on jurisdiction equalized assessment per pupil, **sparsity** of jurisdiction population and **distance** from major supply centres. The formula for deriving the1985 Equity Grant for each school jurisdiction was as follows (Alberta Education, 1985):

1. Fiscal Capacity = ($1067 x RP) - .019 $\left(\frac{EA + EPPL \times 1000}{NMR}\right)$

   If NMR < 19.0 then multiply the above by $\frac{NMR}{19.0}$

2. Sparsity = $100.74 x (SPARS - 0.490) x RP

3. Distance = $0.170 x (DIST - 40.0) x RP

4. 1985 Equity Entitlement = (1+2+3) (If negative, the amount is zero)

5. 1984 Grants Received = Sum of 1984 Fiscal Equalization Grants

6. **1985 Equity Grant** = a. If (4)< (5) then the greater of (4) or 0.80 x (5)

b. If (4)≥ (5) then the lesser of (4) or 1.20 x (5)

RP = Resident Pupil Count as of September 30, 1984

EA = 1984 Equalized Assessment

EPPL = 1984 Amount of Electric Power and Pipeline Tax Collected from Counties, Municipal Districts, Improvement Districts and Special Areas

NMR = Net Mill Rate = $\frac{[\text{1984 Supplementary Requisition - EPPL}}{\text{EA}} \times 1000]$

AREA = Number of Square Miles in School Jurisdiction

SPARS = AREA of School Jurisdiction divided by Resident Pupil Count (RP)

DIST = Distance in kilometres from School Jurisdiction Office to the nearest of Edmonton, Calgary, Red Deer, Medicine Hat or Lethbridge

Fiscal Equalization: is "the existence of an inverse relationship between the amount of provincial grant money distributed to school jurisdictions and the jurisdiction's wealth, both treated on a per pupil basis (Jefferson1983:176)."

Fiscal Equalization Effect: is the statistically measurable influence of a specific form of educational funding upon the relationship between overall school jurisdiction funding and wealth.

Fiscal Equalization Grants: were eight Alberta Education grants to school jurisdictions so named and given prior to 1985. The grants were the Supplementary Requisition Equalization Grant, the Small Jurisdiction Grant, the Small School Assistance Grant, the Declining Enrolment Grant, the Private School Opening Grant, the Incremental Grant, the Corporate Assessment Grant and the Location Allowance.

Fiscal Neutrality: for purposes of this study, implies that the educational services provided by a school jurisdiction are not related to the jurisdiction's ability to pay, based on assessment per pupil or per capita income.

Horizontal Equity: is the economic principle of equal treatment of equals .

Live Assessment: "Live, or taxable, assessments are used by municipalities to determine the taxes to be paid by each property owner (Nichols, 1981: 100)."

School Foundation Program Fund: "Each school jurisdiction qualifies for a flat per pupil amount for every student enrolled in its schools. This instruction grant amount does not vary across the province and bears no relation to relative local wealth of the school jurisdiction (Alberta Education, 1982:16)."

School Grants Regulations: are Alberta Education regulations governing the distribution of "equalization aid" and "categorical aid" grants to school jurisdictions.

Supplementary Requisition: "Supplementary requisitions comprise the local tax revenues derived by school boards to cover expenditures not funded by other sources of revenue (Nichols, 1981:99)."

Vertical Equity: is the economic principle of unequal treatment of unequals. .

Wealth: for purposes of this study, refers to a school jurisdiction's ability to pay . Wealth is measured by per capita income or by assessed valuation per pupil and was considered, in this study, to be synonymous with the "fiscal capacity" factor employed in the Equity Grant formula.

DELIMITATIONS

The study was delimited to operating Alberta school jurisdictions and excluded private schools and jurisdictions funded under the Federal Departments of [redacted]ce and Indian Affairs. Only the years 1981 to 1985 were examined for the fiscal equalization effects of provincial and local educational funding to Alberta school jurisdictions. This time period was adopted because a similar study by Jefferson (1982) dealt with a time period which concluded with 1980 and because 1985 was the introductory year of the new Equity Grant and the most current year for which machine-readable funding data were available from Alberta Education at the time of conducting the study.

LIMITATIONS

The use of personal income as a measure of jurisdiction wealth was delimited by the availability of reliable income data to a cross-sectional analysis for the census year 1981. Personal income data were available for Counties and for most city, town and village School Districts but the analysis was limited to 17 of the 30 School Divisions which were coterminous with the Municipal Districts used for census divisions. The scope of the study did not permit inter-provincial or international comparisons with respect to the fiscal equalization effects of government and local educational funding.

ORGANIZATION OF THE DISSERTATION

The dissertation is composed of five chapters. This first chapter contains the

purpose, significance, limitations, delimitations, relevant definitions and a statement of the problems dealt with in the study. Chapter 2, which is the review of the literature, defines the concept of equity within the context of school funding, explains the statistical techniques commonly used in fiscal equalization studies, describes similar studies conducted in Canada and the United States, and reviews the Alberta situation with respect to equity-related school funding. Chapter 3 describes the purpose of the study, the population under scrutiny, the data sources and the statistical procedures utilized in conducting the study. The findings of the data analyses are reported in Chapter 4. In Chapter 5, the findings of the study are summarized and conclusions are drawn in relation to the analysis of the study problems. The chapter concludes with a discussion of the implications arising from the study for theory, for further research and for practice in relation to school jurisdiction funding in Alberta.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The review of related literature is composed of four sections. First, the various dimensions of the concept of equity, within the context of school funding, are reviewed. The second section explores the applications and relative merits of those statistical techniques which are most commonly employed in the measurement of fiscal equalization effects. The third section briefly reviews those studies conducted recently in Canada and the United States that are concerned with the fiscal equalization effects of state and provincial educational funding. The final section examines the past and current fiscal equalization initiatives undertaken in support of elementary and secondary education in Alberta and comments on the concept of local autonomy in educational de[illegible]-making.

EQUITY IN SCHOOL FINANCE

A review of the extensive literature related to equity in school finance revealed a variety of approaches to this topic. Equity is, of course, a concept that is usually addressed from a philosophical perspective. The philosophical underpinnings of the concept of equity are therefore briefly examined within the context of education finance. More than one author has attempted to establish a conceptual framework that would define the relationship among those who should receive equitable treatment, the educational resources that should be made equitable, the principles that should govern appropriate distribution of resources, and the ways in which equity should be measured.

A four-part framework addressing the above issues in the form of the questions Who? What? How? and How much? is advocated by Berne and Stiefel (1979, 1984). It is adopted here as an aid to conceptualizing equity in school finance.

Philosophical Equity

Within the context of educational finance most authors do not clearly distinguish between equity and equality. Alexander (1982) however, points out the philosophical basis for the concept of equity and proposes a four-step equity hierarchy for educational finance. Alexander (1982:194) maintains that "equity in its broadest sense encompasses justice, equality, humanity, morality and right." He (1982:195) goes on to observe that

> equity is more than equality . Like justice, it is abstract and less susceptible to definition. Equality, on the other hand, as a general standard conveys an element of prescription and measurability. While justice may be commonly defined as giving everyone his due, the term "equality" more specifically refers to division, partition, and redistribution.

Bezeau (1977:219) points out that some authors "see equality as an easily measurable mathematical concept. Complete equality among pupils can be achieved if they have equal amounts of the resources that matter." Bezeau (1977:219) goes on to observe that "equity requires that the distribution of resources be fair and just in some sense. This concept clearly depends on important value judgements about what constitutes justice in a society." Other authors are less convinced that equity can be adequately defined within the context of educational funding. Jordan and McKeown (1980:124) maintain that

> In the absence of a uniformly accepted definition of the concept of equity as related to the funding of education, one is left with the contention that equity is the dream of the idealist, a term so complex that it defies a singular description.

Undeterred by such reservations, Alexander (1982) developed a hierarchy of philosophical equity for educational funding composed of the following categories:

1. Commutative equity
2. Distributive equity or equal distribution
3. Restitution
4. Positivism

At the lowest level of Alexander's equity hierarchy is commutative equity which "would simply be an exchange of resources which are indifferent to considerations of equality, educational need, initial endowments, etc." (Alexander, 1982:210). A provincial system of school finance based entirely on local funding would demonstrate commutative equity. Distributive equity, on the second level of the hierarchy, assumes that the province or state is responsible for school funding and that all local school jurisdictions receive the same per pupil funding. However, each jurisdiction is responsible for the quality of educational services provided. "The state here is not primarily concerned with the uniformity of services, efficiency of operation, or thoroughness of the educational program" (Alexander, 1982:211). Restitution is the third level of philosophical equity. Alexander (1982:212) states that

> Restitution requires the state to mitigate fiscal inequalities created by diseconomies of scale of schools or school districts, cost variations in delivering comparable educational services, and adjustments for effort disparities among school districts.

Restitutionary equity requires that the province or state compensate for the fiscal shortcomings of school jurisdictions but not for variations in the educational needs of students. Positivism, attributed to John Rawls (1977), on the other hand, promotes the unequal distribution of educational funding if the purpose is to benefit those students who

are least favoured. Further to this, Alexander (1982:197) states the following in defining positivism:

> That is, any initial disadvantage, regardless of reason--innate physical or mental condition, cultural incapacity, social or economic deprivation--may be justifiably mitigated by the state through its redistributive process.

Alexander's four-part hierarchy of philosophical equity provides a conceptual framework for examining the equity implications of different approaches to provincial and state educational funding to school jurisdictions. A more comprehensive framework is required, however, in order to capture the remaining equity-related school finance concepts.

An Overall Conceptual Framework for Equity in School Finance

There is a variety of approaches to conceptualizing equity in school finance. Berne and Stiefel (1984:7) provide a simple but comprehensive conceptual framework which is based on the following four questions:

1. Who? What is the makeup of the groups for which school finance systems should be equitable?
2. What? What services, resources, or, more generally, objects should be distributed fairly among members of the groups?
3. What principles should be used to determine whether a particular [illegible] is equitable?
4. What quantitative measures should be used to assess the [illegible]y?

What follows [illegible]mination of the concepts related to each of the above four questions. The review draws on the work of a number of authors in the field of educational finance.

Equity for whom? The two groups that are usually subject to scrutiny are the students who are the recipients of educational services, and the taxpayers who, either directly or indirectly, pay for the services provided by the school system. Berne and Stiefel (1984:8) posit that equity is important for students for two major reasons which are as follows:

> First, education is viewed as an investment in an individual child's future. In order to make the distribution of future life-status equitable, attention must be paid to the way current services are provided. A second rationale for the specification of children as a group depends, not on the effect that the quality of education has on future status, but rather on a concern for the experiences of the child in the present. A large part of a child's day is spent in school; there is an argument for providing those educational experiences in an equitable manner.

Further to this assertion, Lawton (1987:109) states the following:

> ... equity remains the paramount issue that attracts public interest and support. The underdog, it seems, has a special position in our hearts, and it seems unfair for one child, because of chance, to have access to a better public education than another.

Berne and Stiefel (1984:8) go on to state that equity for taxpayers is important because "equity in school finance also applies to those who pay for education services." However, the equity target for provincial and state school funding, and certainly for studies of the equity impact of funding, is invariably the student. The focus of this literature review will therefore be on equity for the student, usually referred to as "child equity."

Equity of what? Berne and Stiefel (1984:8) divide the objects that are to be distributed among students into three general categories, which are: inputs, outputs and outcomes. In addition, other authors have expressed some reservations about and offered alternative objects related to student equity which fall within the scope of the input-

output model proposed by Berne and Stiefel.

Schooling inputs are the basic resources required for education. Berne and Stiefel (1979:111) indicate, "there are a number of ways to specify inputs: actual dollars (revenues or expenditures), price adjusted dollars, or physical resources (teachers and books)" . In addition, both Nwaguogu (1984:69) and Rossmiller (1987:562) point to student equality of access to schooling as another input-related concern. A further intriguing variation, cited by Rossmiller (1987:563), is referred to as "third generation equity issues."

> The third generation equity issues are characterized by a focus on educational processes rather than being concerned exclusively with educational inputs. Equality of educational opportunity is viewed in terms of the use of school time, the quality of teaching, course content, classroom grouping practices, etc.

Schooling outputs are "those qualities, characteristics and skills that are developed through the schooling process" (Berne and Stiefel, 1979:111). The equitable distribution of schooling outputs may be determined by such indicators as student achievement test scores, subject area mastery or high school graduation. Schooling outcomes also pertain to long term achievement results for students. Nwaguogu (1984:70) refers to "equalizing educational effect on life's chances," while Berne and Stiefel (1984:12) suggest "that lifetime outcomes such as income, occupational status, personal satisfaction, ability to compete in the labour market, or status in life should be the object of interest."

Despite the general acceptance of schooling inputs, outputs and outcomes as appropriate objects for equitable distribution, only schooling inputs, specifically dollar revenues and expenditures, are easily measurable. Berne and Stiefel (1984:12) state that "outputs are likely to encounter more measurement problems and are less

controllable than inputs." Rossmiller (1987:564) maintains that

> The complexity of the educational process, and our lack of knowledge concerning precise relationships between inputs, processes and outputs, demonstrate that it is not feasible to define equality of educational opportunity in terms of outcomes for individual students.

In reviewing judicial decisions in the United States related to the concept of equity in school finance, Jordan and McKeown (1980: 116) found that "equity has been interpreted in terms of equal levels of fiscal resources rather than equality of educational process or outcome." The following further exploration of a conceptual framework for equity in school finance will therefore assume that schooling inputs are the only object for distribution to students that can be reliably measured.

What equity principles? An equity principle or principles must be applied in order to determine whether, for instance, schooling inputs are distributed in an equitable manner. Berne and Stiefel (1984:12) maintain that most equity principles can be incorporated under the following three concepts:

1. Horizontal equity or equal treatment of equals
2. Vertical equity or unequal treatment of unequals
3. Equal opportunity

In an address to Alberta educators, Atherton (1985:7) defined horizontal equity as follows:

> In the horizontal approach to the attainment of educational opportunity, the emphasis is placed on equality in the provision of inputs. It assumes by providing each student or group of students with the same quantity of fiscal resources all students will be guaranteed an equal educational opportunity.

A relatively simple source of inequity in North American education continues to be

differences in per pupil expenditure among school jurisdictions. Where like students are not funded equally, the principle of horizontal equity is violated.

Students are not alike however; some have special needs due to various disadvantages. Therefore, in order to function in a school setting, some unlike students must be treated unequally, usually by receiving additional services. Atherton (1985:7) explained the concept of vertical equity in the following manner:

> In the vertical approach to the attainment of educational opportunity the emphasis is shifted to the output side. Whereas the assumption in the horizontal approach is that needs are the same, the assumptions of the vertical equity approach are that needs are different. The vertical approach entails the view that because needs are different, different amounts of money are necessary to provide equal opportunities to learn and to provide equality of educational outputs.

Berne and Stiefel (1984:13) warn that applying the principle of vertical equity to school funding is subject to some reservations in that "both the identification of 'legitimate' differences among children and the selection of the nature and extent of the appropriate treatment must be made; these choices are based largely on values." In addition to treating child-based differences, such as physical handicaps, school-based programs such as English as a second language, or the regional problems faced by low-wealth school districts may also be subject to appropriate compensatory treatment in the interests of promoting vertical equity.

The principle of equal opportunity is best defined from a negative perspective. Berne and Stiefel (1984:17) posit that "there should not be differences according to characteristics that are considered illegitimate, such as property wealth per pupil, household income, fiscal capacity, or sex." In commenting on the principle of equal opportunity in relation to education finance reforms in the United States, Odden

(1982:314) states that

> In addition to recognizing differences among students and districts that require appropriately unequal treatment, recent school finance reforms also have sought to reduce the role of factors that should not be related to spending differentials. In particular, new school aid programs have sought to eliminate the links between equal educational opportunity and local district wealth and income, i.e., to create "fiscally neutral" school finance systems.

Within the context of school finance, the equal opportunity principle requires that the quality of education should not be a function of local wealth; this concept is usually referred to as fiscal or wealth neutrality. In commenting on the concept of fiscal neutrality, Coons (1980:131) makes the following claim:

> Dollars for a child's education may not be made to differ according to the presence in his district of oil wells or shopping centers. Why such a rule? Because the proximity of oil wells is irrelevant to both the child's needs and to any other legitimate policy goal of education.

Discussion

In reviewing the four-part conceptual framework utilized in the foregoing discussion of equity in school finance, the following observations seem pertinent. In answering the question "Equity for whom?" it is apparent that equity for the child, rather than the taxpayer is the primary concern. The question "Equity of what?" reveals that inputs, rather than outputs or outcomes are the only viable objects, given current research techniques. Of the three equity principles related to school finance, horizontal equity is the most easily achieved, while vertical equity has become the primary focus of equity-related concerns. Vertical equity will likely continue to be the subject of controversy due to the necessarily subjective manner in which differences are identified and treated. The principle of equal opportunity is widely accepted across North America.

However, achieving equal opportunity through promoting fiscal neutrality in school finance will continue to be subject to barriers due to the utilization of property taxes for a significant portion of school funding. Although it is the fourth part of the Berne and Stiefel conceptual framework for school finance outlined above, measuring the degree of child equity achieved through dollar inputs is the subject of the next major section of the literature review

MEASURING EQUITY IN SCHOOL FINANCE

There are numerous statistical measures employed in assessing the degree of equity achieved within the context of the three school finance-related equity principles. The level of horizontal and vertical equity is determined by using statistical measures of dispersion that usually analyse the per pupil education revenues provided in school jurisdictions or groups of school jurisdictions. In comparing the relative equality of opportunity for students in school jurisdictions under scrutiny, statistical measures of relationship are employed, usually to establish the degree of correlation between per pupil educational revenues and per pupil property wealth. The measures most often utilized in child equity studies are reviewed here as well as the principles which govern the interpretation of the findings in equity analysis studies.

Defining Measurement Terminology and Principles

Prior to discussing the statistical measures of equity in school finance, there are some measurement-related terms and principles that require some explanation. It is necessary to elaborate on the origin and the current usage of the term "fiscal equalization." In addition, the principles which govern the interpretation of the results

of dispersion and relationship measures and the variables usually employed in financial equity studies are reviewed.

The concept "fiscal equalization" appears to have been used originally to refer to the provision of funding to school jursidictions such that all students in a state or province would receive the same advantages (Jordan and McKeown,1980:99), which is an expression of horizontal equity. The current meaning of the concept fiscal equalization appears to encompass both horizontal and vertical equity, depending on the frame of reference. Two recent Alberta studies (Jefferson, 1982, Milne,1982) used the term to refer to the achievement of vertical equity. The Alberta Education report of the Minister's Task Force on School Finance (1982:9) states that

> ...'fiscal equalization,' implies that provincial funding policies must take into account the ability of the local jurisdiction to raise revenue for services, and the relative cost of providing the services to the jurisdiction,

which appears to refer to compensating less wealthy school jursidictions with provincial funds, which would be an expression of vertical equity. Therefore, in this study the term fiscal equalization denotes the extent to which government school funding practices improve vertical equity among school jurisdictions.

Three principles which are fundamental to the measurement of equity in school funding are "fiscal neutrality", the "Pigou-Dalton" condition and the "pareto-optimal" criterion. Perhaps the most familiar of equity measurement principles is that of fiscal neutrality, which is mentioned briefly in the above discussion of the concept equal opportunity. Carroll (1982:243) maintains that "a school finance system is fiscally neutral if differences among districts' per-pupil revenues are independent of their abilities to pay." Therefore, as Goertz (1983:481) points out, "two districts which levy

the same property tax rate should receive identical per-pupil revenues through combined state aid and local taxes, regardless of wealth." Bezeau (1979:134) posits that the most basic concept underlying the measurement of inequality in school finance is the principle of transfers or the Pigou-Dalton condition. The principle of transfers requires that "if a transfer of per pupil expenditures takes place from a board to a poorer board the measure of inequality must be reduced provided that the transfer is not so great to reverse or more than reverse the board's relative per pupil expenditure positions." The pareto optimal criterion governs the redistribution of government funds to school jurisdictions. Jordan and McKeown (1980:88) explain that

> In evaluating societal preferences and changes in total satisfaction of individuals, the general consensus appears to be that any change benefiting at least one person without harming others increases satisfaction. An optimum is attained when no further changes of this type can occur; this is called the "pareto optimal" criterion.

Within the context of school finance pareto optimality is difficult to realize because the redistribution of funding from wealthy to less wealthy school jurisdictions on other than a very small scale is likely to be politically unfeasible. Consequently, pareto optimality would most likely be achieved to the benefit of less wealthy school jurisdictions only when total government funding is increased so that no jurisdiction would lose.

The variables employed in fiscal equalization studies are surprisingly few. The dependent variables are provincial and local revenue or expenditure per pupil. The pupil count can be taken in a variety of ways such as resident pupils, as in Alberta, or average daily membership (ADM), as in many states (Garms, 1979:419). Independent variables can be divided into three categories which are those based on variations in wealth and effort, on variations in educational need , and on variations in cost (Garms, 1979:419).

Jurisdiction wealth is measured by equalized property valuation (assessment) per pupil, but some appropriate measure of per capita income may also be employed where such data are available. Jurisdiction tax effort is the tax rate (mill rate), based on the equalized assessed valuation that is required to raise the necessary share of educational funding (supplementary requisition) from the local tax base. Variations in educational need usually involve the development of pupil weighting criteria for students requiring special education services, such as the physically or mentally handicapped or some other form of compensatory or enriched education, such as English as a second language or bilingual programs. Variations in educational costs may be based on such criteria as jurisdiction size, sparsity of population (Johns, 1975) or distance from major population centres. With the terminology and principles of measurement clarified, an examination of the two types of statistical measures, those of dispersion and those of relationship may proceed.

Measures of Dispersion

Measures of dispersion are employed in assessing both horizontal and vertical equity. Hill and King (1981:128) divide measures of fiscal equalization into two broad categories which are "general purpose statistical measures, reflecting central tendency and dispersion; and special purpose measures (or inequality indices), usually derived from or with regard to a social welfare function." The general purpose measures that are reviewed here are ranges, the relative mean deviation, variance, and the coefficient of variation. The social welfare-based measures considered are McLoone's permissable variance index, the Gini coefficient, Atkinson's index, and Theil's measure.

Ranges. The range is simply a measure of the difference between the highest and the lowest values of a distribution and is probably one of the most commonly employed

measures of equality. Bezeau (1979:135) maintains that "from theoretical and empirical points of view it is one of the least acceptable." Bezeau goes on to point out that the range "violates the principle of transfers since transfers have no effect on the range if they occur within the highest and lowest per pupil revenue values." Garms et al (1978:318) observes that "since it measures only the two cases, the most extreme ones, it often gives a false impression." In order to compensate somewhat for the shortcomings of the range, the restricted range and the federal range ratio may be employed. The restricted range is the difference in absolute dollars between the per pupil revenue or expenditure at the 5th and 95th percentiles. The federal range ratio is the restricted range divided by the value at the 5th percentile. Goertz (1983:477) states that "both of these measures are limited, however, in that they do not consider the 5 percent of the pupils at the bottom and the top of the distribution, nor do they tell anything about the distribution of expenditures within the restricted range."

Relative Mean Deviation. Mark and Carruthers (1982:194) maintain that by measuring deviations around the mean "one can identify where in the distribution of district expenditures improvements or regressions are occurring." Hill and King (1981:128) state that the relative mean deviation "is obtained by dividing the absolute mean deviation by the mean" and go on to observe (1981:134) that the "relative mean deviation has some desirable characteristics, but violates the Pigou-Dalton condition - if the transfer does not cross the mean, it is not registered."

Variance. Variance and the standard deviation are common statistical measures which are also concerned with deviations around the mean. Hill and King (1981:134) posit that variance and standard deviation have some advantages. For instance, they conform to the principle of transfers "but fall down due to their dependence on the mean

and the units of measure, effectively limiting their usefulness as they cannot be ordinally ranked."

Coefficient of Variation. The coefficient of variation is a very simple measure. It is the standard deviation divided by the mean, the quotient of which is often multiplied by 100 so that it can be expressed as a percent. This measure conforms to the principle of transfers, is unitless and is independent of the mean. Hill and King (1981:134) state that the coefficient of variation is "the best variable by far of the statistical analysis techniques."

McLoone's "Permissible Variance" Index. The McLoone index is the measure of "the ratio of the actual sum of per-pupil objects below the median to the sum of the per-pupil objects that would exist if each pupil below the median were at the median per -pupil object (Berne and Stiefel, 1984:19)." This measure of fiscal equalization is unique in that it is concerned only with school jurisdictions below the median with respect to revenue or expenditure on education which means that the top 50 percent of school jurisdictions are ignored. The McLoone index, of course, violates the principle of transfers. The underlying assumption is that equality is achieved when all school systems in the lower 50 percent reach the median educational expenditure. Hill and King (1981:129) posit that permitting expenditures to vary in the top 50 percent of school systems without restraint "would be most appropriate where the need to provide for "lighthouse districts" - wealthier districts that spend more on pioneering techniques - is widely accepted."

The Gini Coefficient and the Lorenz Curve. "A Lorenz curve is a graphic representation of the distribution of the cumulative proportion of wealth (or income) associated with the cumulative proportion of population." (Lows, 1984:83) The

measurement technique, when applied to educational revenue or expenditures, begins by ranking school districts according to per-pupil objects. On the horizontal axis, the cumulative percentages of students are plotted from the least to the most wealthy districts, that is, from 0 percent to 100 percent. On the vertical axis, the cumulative percentages of per-pupil objects are plotted, also from 0 percent to 100 percent. Figure 2.1 illustrates the Lorenz Curve. The diagonal " line of absolute equality"

Interpreting the Lorenz Curve

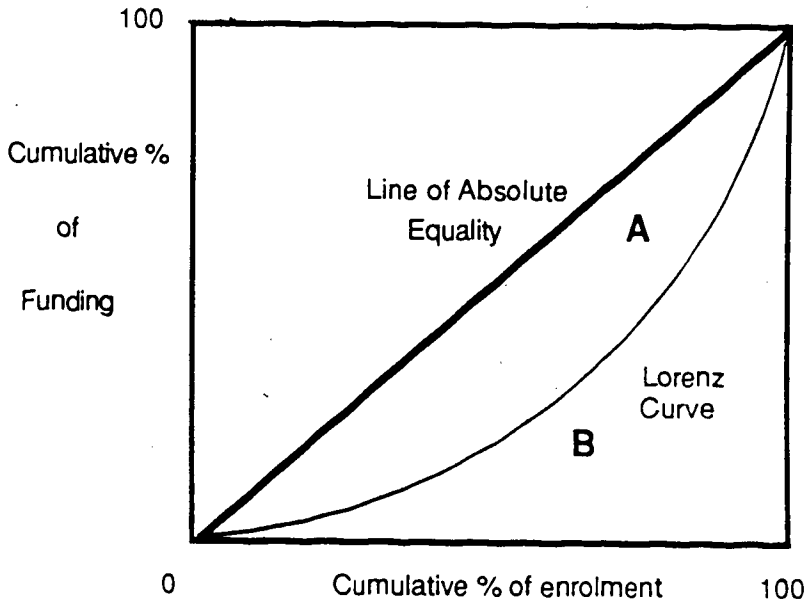

Figure 2.1

represents equal per pupil objects for all school jurisdictions. The Lorenz curve can lie above or below the line of absolute equality; the further the deviation from the diagonal, the greater the inequality. Bezeau (1979:142) and Hill and King (1981:129) maintain that there are problems with the Lorenz curve; "it is of limited use for ordinal ranking purposes. Lorenz curves often cross, making an unambiguous ranking of the crossing

pair impossible." The Gini coefficient, which is derived from the Lorenz curve, does not suffer from the same limitations. Bezeau (1979:143) defines the Gini coefficient as an index derived from "the area between the diagonal and the Lorenz curve [A] divided by the triangular area [B] defined by the diagonal and the two axes. This ratio clearly varies between zero and one." When the index is at 0.0, there is complete equality; at 1.0 there is complete inequality. The Gini coefficient is one of the most frequently used measures of fiscal equality. It has the advantages of being unitless, rankable, independent of the mean and the population size and it obeys the principle of transfers (Bezeau, 1979:143, Hill and King, 1981:132).

Atkinson's Index. The Atkinson index is a normative measure which is derived from social welfare theory and was originally designed as a measure related to personal income. This social welfare-derived measure is highly complex and what follows is admittedly an over-simplification (see Berne and Stiefel,1984:21-22). Bezeau (1979:140) posits that "Atkinson's measure is essentially a comparison of the equally distributed equivalent income with average income." The equally distributed average income "is simply the income an individual needs to achieve the average level of welfare in society (Bezeau, 1979:140)." The Atkinson measure employs a social welfare function, individual utility functions and an index of aversion to inequality. In applying the measure to school finance, school jurisdiction per-pupil revenue or expenditure is substituted for personal income. Fiscal equalization in school finance improves as the level of the equally-distributed average revenue or expenditure per-pupil approaches actual per-pupil revenue or expenditure. The measure varies between 0.0, which is perfect equality and 1.0, which is complete inequality. Apart from the difficulty of comprehending this measure, Hill and King (1981:134) maintain that "Atkinson's index

is virtually perfect. The only criterion it fails to meet is its greatest strength -- the fact that it can be adjusted, based on various preferences, to weight whichever part of the distribution is desired."

Theil's "Entropy" Measure. The Theil measure is an adaptation from information theory and physics. The concept of entropy, which is a measure of the unavailable energy in a thermodynamic system, is applied to fiscal equalization. Bezeau (1979:139) explains that "Theil's measure is essentially the expected information in the distribution subtracted from the maximum possible expected information." When applied to per-pupil expenditure "the information content is based on each pupil's share of the total expenditure and this is maximized when every pupil has an equal share (Bezeau,1979:139)." In other words, reducing the "entropy" in financial support to schools should result in a more equitable distribution of educational funding. Although considered theoretically sound, Theil's measure has been criticized for being difficult to understand (Mark and Carruthers, 1982:195, Berne and Stiefel,1984:21). The measure does exhibit independence from the mean and the unit of measurement but Hill and King (1981:134) find that Theil's measure "does suffer from dependence on the sample size, ruining its ordinal ranking ability."

Discussion

In examining the relative merits of measures of central tendency and dispersion and the social welfare-based measures, those that appear to find the most favour are the coefficient of variation, the Gini coefficient, and Atkinson's index.

Measures of Relationship

There are a number of measures of relationship used to assess equal opportunity or wealth neutrality among school jurisdictions. Three of the more frequently employed

measures are discussed here; the correlation coefficient, slopes and elasticities. The correlation coefficient measures the degree of the linear relationship between two or more variables and ranges from -1 to +1. Jordan and McKeown (1980:96) observe that "a correlation coefficient not only summarizes strength of association between two variables but also compares the strength of the relationship. The closer to +1 or -1, the stronger the relationship." Berne and Stiefel (1984:27) maintain that "as a measure of equal opportunity, a correlation coefficient of 0 is indicative of perfect equity, and a value of 1 signifies the most inequitable case." Berne and Stiefel (1984:28) go on to state that "the simple correlation is a preferred measure of equal opportunity because it records the direction of the relationship (positive or negative) as well as the strength."

While the correlation coefficient is employed to assess the linear relationship between two variables, slopes and elasticities are two wealth neutrality measures which are used to assess the magnitude of the relationship. Slopes indicate the degree of change in the dependent variable, such as per-pupil revenue, that is related to a one unit change in the independent variable, such as school jurisdiction per-pupil assessed property value. Berne and Stiefel (1984:28) give the following example:

> with per-pupil objects measured in dollars and per-pupil property values measured in thousands of dollars, a slope of 5 indicates that every change in assessed value of $1,000 per pupil is associated with a five dollar per-pupil change in the object.

Berne and Stiefel (1984:29) go on to state that "in an equal-opportunity context a slope of zero is equated with equity, and for positive slopes, the higher the value, the more inequitable the relationship." Elasticities also measure the magnitude of relationships but employ percentage rather than the absolute unit changes used in determining slopes. Berne and Stiefel (1984:29) illustrate the application of elasticities as follows:

> Suppose an elasticity of .3 exists, with per-pupil objects and per-pupil property values as the dependent and independent variables respectively. This means that a 1 percent change in per-pupil property values is associated with a .3 percent change in per-pupil objects.

Berne and Stiefel (1984:29) go on to explain that "when used as an equal-opportunity measure, an elasticity of zero is equitable, and inequity increases as the elasticity increases."

Discussion

There are fewer measures of relationship utilized in fiscal equalization studies than measures of dispersion. In perusing the literature, the most popular measure of relationship used to assess equal opportunity or wealth neutrality is the correlation coefficient.

FISCAL EQUALIZATION STUDIES

A brief review of recent studies conducted in both Canada and the United States serves to illustrate the scope of current research related to the fiscal equalization effects of provincial and state educational funding of basic education. The review outlines only the purpose and measurement techniques of each study and does not report findings. This section concludes with some observations about the differences between Canadian and U.S. approaches to fiscal equalization.

Canadian Studies

Fiscal equalization studies conducted in Alberta, Ontario, British Columbia and Atlantic Canada are briefly summarized here. Due to their relevance to this study, the Alberta studies are reviewed in more detail than are the studies conducted in other

provinces.

In 1982, Jefferson assessed the fiscal equalization effects of provincial education funding to school jurisdictions in Alberta. The study was divided into two parts; the first part used the coefficient of variation and the Gini coefficient to assess the equalization effects of Alberta government funding to school jurisdictions for the years 1975 to 1980. In the second part of the study the above statistical techniques were employed again to measure the potential fiscal equalization effects of using hypothetical power equalizing and percentage equalizing funding mechanisms for provincial funding for the same years. In reporting the results of the study, school jurisdictions were placed in four groups which were Divisions, Counties, Public School Districts and Roman Catholic Separate School Districts.

The fiscal equalization effects of the Alberta Education School Supplementary Requisition Equalization Grant (SREG) for the year 1979 was the subject of a study by Milne (1982). The study also examined the hypothetical equalization effects of substituting a percentage-equalizing grant formulation for the SREG formulation. In addition, results were reported both with and without a save harmless or "grandfather" limit on the SREG grant. School jurisdictions were divided into seven groups -- Rural, Large Urban, Other Major Urban, Total Urban, Public Districts, Roman Catholic Separate Districts and Other. The standard deviation and the coefficient of variation where the principal measures of inequality employed in the study.

In a 1981 study, Hill and King employed a variety of fiscal equalization measures, including the coefficient of variation and the Gini coefficient, to assess four aspects of educational expenditure in Alberta for the period 1971 to 1978. The study measured inequalities in gross expenditure per pupil, instructional expenditure per pupil,

average School Foundation Program Fund (SFPF) grants and average total provincial grants. School jurisdictions were compared on the basis of geographic location, student population and organization type.

Deiseach (1974) studied the fiscal equalization effects of funding under the Alberta School Foundation Program for the years 1961 to 1971. This longitudinal study employed the Gini coefficient and the coefficient of variation and considered two variables; foundation funding and jurisdiction operational expenditure on school programs. Measures of jurisdiction wealth were equalized property assessment per capita and personal income per capita grouped by census division.

In assessing instructional expenditures per pupil in British Columbia from 1970 to 1982, Mark and Carruthers (1982) used a full complement of statistical measurement techniques. They employed the range, the standard deviation, the relative mean deviation, the coefficient of variation, Theil's measure, Atkinson's measure, and the Gini coefficient. Bezeau (1979), in measuring inequalities in per pupil expenditures of Ontario school boards over the period 1965 to 1976, used the the coefficient of variation, the Gini coefficient, Theil's measure, and Atkinson's measure. In a study assessing educational expenditure equity in Atlantic Canada, Lake (1983) utilized three measures of dispersion, the coefficient of variation, the McLoone Index and the Federal Range Ratio, while the Gini coefficient was employed as an indicator of wealth neutrality.

United States Studies

A large number of fiscal equalization studies have been conducted in the United States. A representative sample of studies that were conducted within the past ten years is briefly discussed here. In assessing the equality of per-pupil expenditure in Missouri for the school year 1976-77, Odden (1978) used the following measures of dispersion:

the range, the federal range ratio, the relative mean deviation, variance, the coefficient of variation and the Gini coefficient. In the same study the slope and the correlation coefficient were used in measuring fiscal neutrality. Hickrod, Chaudhari and Lundeen (1980) explained their use of the coefficient of variation, the McLoone Index, and the Gini Index in their report entitled "Progress toward school finance equity goals in Indiana, Iowa and Illinois." Cronk and Johnson (1983), in conducting an equity analysis of Pennsylvania's basic instruction subsidy program for the period 1978 to 1980, used six dispersion- type measures. They were, the range, the restricted range, the federal range ratio, the coefficient of variation, the McLoone Index and the Gini coefficient. Goertz (1983) assessed the distribution of current expenditures per pupil in New Jersey for the period 1976 to 1982 using four measures of dispersion, the restricted range, the federal range ratio, the coefficient of variation, and the McLoone Index. A study concerned with school finance equity in Minnesota (Krupey and Hopeman, 1983) assessed the dispersion of state funds to school districts using the federal range ratio, the coefficient of variation, the McLoone Index and the standard deviation. Jones and Salmon (1985) conducted a fiscal equalization study for school finance in Virginia employing four measures of dispersion: the Gini coefficient, the federal range ratio, the coefficient of variation, and the McLoone Index. In the same study, the correlation coefficient and the coefficient of elasticity were used as wealth neutrality measures.

In order to illustrate the magnitude of the interest in fiscal equalization studies in the United States, the following journal articles reporting recent studies conducted in the United States are listed by state as follows: Florida (Alexander and Shiver, 1983); Illinois (Hickrod and Hubbard, 1978, 1981, Lows, 1985, Toenjes, 1986); Maryland (Williams, 1983); Massachusetts (Morgan, 1985); Michigan (Phelps, 1983);

Minnesota (Hopeman, 1985, Kaiser and Nelson, 1982); New Mexico (King, 1983); North Carolina (MacPhail-Wilcox, 1985); Ohio (Cohen, 1983); Oklahoma (Augenblick and McGuire, 1983, Hornbostel, 1985); Rhode Island (Ward, 1978) and Wisconsin (Cibulka, 1986).

Comparing Fiscal Equalization in Canada and the United States

Overall, there is less disparity in educational funding in Canadian provinces than may be found in U.S states. Lawton found (1979) that, for 1975, the average coefficient of variation in the funding of school districts was .09 for provinces and .17 for states. Lawton (1979, 1981) attributes the tendency of American governments to tolerate more inequality in educational funding than do their Canadian counterparts to the divergent political heritages of the two countries. Lawton (19[illegible]0) posits t[illegible]

> when Canadians speak of equality, they tend to mean equality of ultimate condition, which is the meaning of the term under socialism. When Americans speak of equality, they tend to mean equality of opportunity, or a fair start in the race of life, which is the meaning under classical liberalism.

The tendency for Americans to accentuate the individual above the common good and for Canadians to do the opposite, of course, pervades all aspects of our two cultures.

Discussion

There are many examples of fiscal equalization studies which have been conducted recently in Canada and especially in the United States. The measures of dispersion which appear to be most frequently employed are the coefficient of variation, the Gini coefficient and the McLoone Index, while the wealth neutrality measure of choice is the correlation coefficient.

FISCAL EQUALIZATION IN ALBERTA

This section of the literature review serves four purposes, which are as follows:

1. to briefly outline the manner in which educational funding is provided to Alberta school jurisdictions;
2. to review the background to the introduction of the Equity Grant in 1985;
3. to comment on the recent Alberta Education discussion paper entitled *Equity in Education Financing* which describes five options for providing fair and equitable funding to Alberta school jurisdictions; and
4. to comment on the relationship between school jurisdiction autonomy and fiscal equalization.

School Funding in Alberta

There are certain elements common to school finance plans in both Canada and the United States. The components of the Alberta school finance plan are outlined here with the aid of a five-part conceptual framework developec by Berne and Stiefel (1979:121), which they refer to as the "structural elements of school finance plans." The structural elements are as follows:

1. Aid allocation
2. Special adjustments
3. Constraints
4. Taxpayer issues
5. Fiscal issues

Aid allocation. The current educational funding regime, referred to as the Management and Finance Plan (MFP), was introduced by Alberta Education in 1984. A Report of the Council of Ministers of Education, Canada, entitled *The Financing of Elementary and Secondary Education in Canada* (1986:7) states that

The revenues of the local authorities in Alberta come from four major sources: School Foundation Program Fund (SFPF); other provincial grants; supplementary requisitions from municipalities; and miscellaneous revenues.

For purposes of illustration, Table 2.1 summarizes the source, the application and the amount of the four major sources of school funding in Alberta for 1985. The SFPF, which accounted for 82 percent of Alberta Education funding, but only 63.2 percent of overall funding in 1985, is a flat grant distributed unconditionally to school jurisdictions on a per student basis. It provides a base or foundation level for school funding. Local school jurisdictions supplement the foundation level of funding by requisitioning municipalities for the additional funds required. The resulting supplementary requisition is derived from a tax on the equalized assessed value of property, and amounted to 30.8 percent of overall school funding in 1985.

Special adjustments. "Other grants", such as grants for Early Childhood Services, Special Education and the Equity Grant, amounted to 11.4 percent of overall school funding. These were distributed by Alberta Education on the basis of local needs. The Equity Grant was meant to adjust for variations in school jurisdiction fiscal capacity, population density (sparsity) and distance from major population centres.

Constraints. School funding in Alberta is notable for a lack of constraints; there are no legislated maximum or minimum tax rates or other restrictions on school jurisdiction spending. The only constraint is the save-harmless provision on the Equity Grant which, in 1985, restricted the grant to a minimum of 80 percent and a maximum of 120 percent of the equalization funding of the previous year. On the introduction of the Equity Grant in 1985, the goal was to eliminate the provision altogether over a five-year period (Alberta Education, 1987).

Table 2.1

School Funding in Alberta, 1985

	Source	Amount ($Millions)	Application
SFPF	1. General revenues 2. Levy on non-residential property	$ 838.9 (44.1%) 147.1 (7.7%)	1. Basic instruction 2. Transportation 3. Administration 4. Debt service
Other Grants	1. General revenues	216.6 (11.4%)	1. Equity Grants 2. Early Childhood services 3. Special Education 4. Various other grants
Supplementary Requisition	1. Local property taxes	584.9 (30.8%)	1. Provides the difference between total provincial government revenue and total expenditure
Miscellaneous	1. Federal grants 2. Transportation fees 3. Cafeteria and book sales 4. Private donations	114.1 (6.0%)	1. Various expenditure areas

Source: Adapted from *The Financing of Elementary and Secondary Education in Canada* (A Report of the Council of Ministers of Education, Canada,1986:8-9)

Taxpayer issues. There are two prominent issues with respect to the collection of education-related taxes. One is the use of the property tax as the source of the local

supplementary requisition. The second is the large variation in "fiscal capacity" or per-pupil equalized assessments between school jurisdictions. The problem of "municipal overburden" or the use of the property tax for both municipal and education funding, is often raised by local governments in Alberta. In addition, the property tax is generally considered to be a regressive (Benson, 1978:287, Cohn, 1979:284) form of taxation. Cohn (1979:284) posits that "people possessing more property value (or earning higher income) are likely to pay a smaller proportion of their property value (or income) in taxes than those with lower property value (or income)."

There is a vast range in the fiscal capacity of Alberta school jurisdictions, as indicated by the per-pupil equalized assessment data for 1986, displayed in Table 2.2. The table, which is taken from the recent Alberta Education discussion paper *Equity in Education Financing* (1987), indicates an average equalized assessment per pupil of $49,500, with 114 jurisdictions at $50,000 or less, and 62 jurisdictions at more than $50,000 in equalized assessment per pupil. Because of the disparity in fiscal capacity, the resulting uneven tax burden is a perennial source of discontent for residential, commercial and industrial property taxpayers across the province.

Fiscal issues. There are two overarching concerns with respect to school funding in Alberta. The first is the limitations imposed on educational planning imposed by the the provision of provincial government school funding on an annual basis. The second is the increasing share of school funding which is born by the local supplementary requisition. Educational planning for all school jurisdictions is driven by the annual announcement of the level of funding that will be provided by Alberta Education for the upcoming fiscal year. This level of funding is generally not based on the perceived needs of school jurdisdictions, but is necessarily subject to the same political and economic

Table 2.2

Equalized Assessment Per Resident Pupil in Alberta (1986)

Assessment Per Pupil	Number of Jurisdictions
$0-10,000	2
10-20,000	14
20-30,000	39
30-40,000	41
40-50,000	18
50-60,000	20
60-70,000	6
70-80,000	9
80-90,000	7
90-100,000	1
100,000 +	19

1. Actual Range: $8,600 to $991,000
2. Average: $49,540
3. Median: $37,300

Source: Alberta Education, *Equity in Education Financing* (1987)

pressures that affect funding for other government departments such as higher education, health care and social welfare. Consequently, there is likely to be some reluctance on the part of school jurisdictions to plan for the introduction of education-related programs beyond a one-year period.

Since the introduction of the School Foundation Program Fund (SFPF) in 1961, the proportion of school funding provided by the local supplementary requisition has increased annually from 5.42 percent in 1961 to 31.16 percent in 1986 (Alberta Education, 1987). An additional problem facing school jurisdictions is the often unequal distribution of property assessment between Public School Districts and Roman Catholic Separate School Districts. Increased reliance on a source of school funding which is

related to local fiscal capacity is undoubtedly a negative factor in pursuing the goal of fiscal equalization for Alberta school jurisdictions.

Background to the 1985 Equity Grant

The introduction of the Alberta Education Equity Grant may be attributed primarily to the perceived need to simplify the annual award of equalization grants to Alberta school jurisdictions. Additionally, the criteria used to determine the amount of the new grant were thought to compensate more adequately for inequities among Alberta school jurisdictions than did the former aggregation of eight fiscal equalization grants (Alberta Education, 1985). Despite the positive attributes, the new Equity Grant is not without shortcomings, which are discussed below.

The impetus for simplifying the Alberta Education funding program came initially from the 1982 Report of the Minister's Task Force on School Finance (1982:28). A further step toward reducing complexity was the Coalescence of Grants Study, which was conducted under the aegis of the School Grant Simplification and Deregulation Project (1984). The Project was implemented with the introduction of the Management Finance Plan (MFP) in 1984. Duke (1985) states that "one of the more significant changes under MFP was the development of a new equity grant which combines the funding previously allocated for a number of grants." The Alberta Education Program Policy Manual (1985) states that

> The Equity Grant has replaced the 1984 Supplementary Requisition Equalization Grant, the Small Jurisdiction Grant, the Small School Assistance Grant, the Location Allowance, and the Teacher Housing Unit Grants. As well, Incremental Grants will be decreased in availability, and Declining Enrolment, and Private School Opening Grants will be eliminated.

In addition to the problem of complexity, the credibility of the former equalization

grants was also subject to question. In a study reported in 1981, Ratsoy, et al. (1981:44) found that "not all of the Fiscal Equalization Grants are in fact producing general equalization impacts" and went on to conclude that

> Because the aggregate of all grants tends to eliminate any specific trends that grants may have singly, the suggestion is that an interactive effect exists such that the equalizing effects of certain individual grants appear to be neutralized by others.

The Equity Grant was introduced in order to correct the shortcomings of the aggregated Fiscal Equalization Grants. The guidelines for the "Fiscal Equity Program" outlined in the Alberta Education Program Policy Manual (1985) are as follows:

1. The Equity Grant funding should reflect the principles of simplicity, deregulation, and local discretion/responsibility for educational outcomes.

2. The Equity Grant may consider variation in resident pupil population, sparsity, fiscal capacity and distance. These factors will be determined as follows:

   a. The **fiscal capacity** component provides funding support for school boards with a low amount of assessment per pupil.

   b. The **sparsity** component provides funding support for school boards with territory that is sparsely populated. This component is intended to compensate for higher per pupil costs because of lower pupil/teacher ratios, necessary smallness of school jurisidiction size, and above average pupil transportation costs.

   c. The **distance** component provides funding support for school boards which operate at a distance from major supply centres. This component is intended to cover some of the costs associated with higher shipping costs, isolation pay, and special teacher housing.

In order to qualify for the Equity Grant, school jurisdictions are subject to certain benchmarks, which are set annually. The Supplementary Requisition Equalization Grant

(SREG) compensates for below average fiscal capacity by providing provincial funds sufficient to raise the effective requisition yield per resident pupil to a benchmark level, which was $1,067 in 1985. School jurisdiction failure to achieve the benchmark for minimum fiscal effort, which was 19 mills in 1985, would result in a reduced SREG. The sparsity component of the Equity Grant is based on the jurisdiction area, in square miles, divided by the number of resident pupils. The benchmark ratio for 1985 was .49, meaning that jurisdictions with ratios above this level would be more sparsely populated and would qualify for funding. In 1985, school jurisdictions more than 40 kilometers from a major population centre qualified for the distance component of the Equity Grant (Alberta Education, 1985).

Two areas of concern with regard to the effectiveness of the Equity Grant allocation should be noted here. First, as discussed above, the full potential of the Equity Grant has not been realized due to the save-harmless constraints which were meant to be eliminated over a five-year period when the grant was introduced in 1985. Another more serious shortcoming of the Equity Grant is the subjective manner in which the benchmarks for fiscal capacity, sparsity and distance are established; the benchmarks are not related to quantifiable differences in the purchasing power of school jurisdictions across the province, but rather, to value judgements. Although a quantifiable benchmark for fiscal capacity such as requisition yield per resident pupil can be established, the relationship between the benchmark and local education costs cannot be determined.

The premise upon which sparsity and distance grants is based, that of regional education cost differences, is not supported by studies conducted under the auspices of Alberta Education. A study completed in 1981 by Peat, Marwick and Partners (1981),

which explored the possibility of establishing a regional Education Price Index for Alberta "indicated practically no price variations between large and small areas, between city districts and other, and between regional zones." Furthermore, the 1982 Report of the Minister's Task Force on School Finance (1982:20) recommended that "provincial funding arrangements should not be changed to provide explicitly for adjustment of provincial aid on the basis of regional education price indices." There appears to be a need to refine the criteria for determining the amount of the Equity Grant. Removing the save-harmless restrictions on the Grant is already under active consideration, as may be seen in the following section.

Five Options for Equity in Education Finance

In October, 1987 Alberta Education distributed a discussion paper entitled *Equity in Education Financing* which requested public reaction to the problem of ensuring "that our method of financing school jurisdictions is a fair and equitable one which provides school jurisdictions across the province with sufficient revenues to meet the needs of their students (Alberta Education, 1987)." The resulting public response was meant to influence the nature of the equity funding provisions to be included in the new School Act, referred to as Bill 59. The discussion paper reaffirms the commitment of Alberta Education to improving both child and taxpayer equity and reviews the prevailing situation of increasing disparity in fiscal capacity among school jurisdictions in Alberta.

Five alternative ways of proceeding with improving equity in financing schools are presented in the discussion paper. The alternatives are stated as follows (Alberta Education, 1987):

Option 1: Maintain the Current Equity Grant at the 1987-88 Stage - 50 percent of Full Implementation

Option 1 is simply to maintain the status quo with respect to the sources and methods of distribution of revenues for school funding; leaving the Equity Grant at the current 50 percent save-harmless level.

Option 2: The Present Plan with Full Implementation of the Equity Grants

Like option 1, option 2 is also to maintain the status quo except that the Equity Grant would be implemented without the save-harmless provisions in place. This option would require either that additional funds be allocated from government general revenues or that existing government funding to school jurisdictions be redistributed.

Option 3: Grant Equity Adjustment - the Existing Taxation Structure with Grant Adjustments to Compensate for Low and High Assessment Capacity

Unlike options 1 and 2, option 3 would redistribute all government funding so that low fiscal capacity school jurisdictions would receive higher funding, while jurisdictions with access to a higher assessment base would receive less government funding.

Option 4: Full Non-Residential Tax Revenue Sharing - Provincial Taxation on Non-Residential Assessment and School Board Taxation Limited to Requisitions on Residential and Farm Property

Option 4 is clearly a major departure from the existing education funding regimen but not an unusual concept. The imposition of a province-wide property tax levy has been previously suggested in the literature (Bumbarger et al.,1982:165). The pooling and equitable redistribution of non-residential assessment revenues on a province-wide basis is an inviting prospect if the only concern with respect to the sources and methods of distribution of revenues is fiscal equalization.

Option 5: Limited Non-Residential Tax Revenue Sharing - the Present Plan but School Boards Limited in the Amount they can Tax Non-Residential Property

Option 5 is a variation of option 4 in that one-half of all non-residential assessment would be pooled and redistributed on a province-wide basis, while the other half would be subject to taxation by the local school jurisdiction but at a mill rate set provincially.

The option which is likely to receive the widest support from school boards is option 2, wherein increased government funding rather than redistribution of existing funds would serve to improve funding equity through the removal of save-harmless restrictions on Equity Grants. The option which appears to be most supported by the presentation of advantages and disadvantages in the Alberta Education discussion paper is option 4; the introduction of full non-residential tax revenue sharing. Less wealthy jurisdictions would certainly benefit from the pooling of commercial and industrial assessment. However, the loss of revenue to jurisdictions with high non-residential assessment and the threat this option would pose to the autonomy of school boards is likely to result in stiff opposition from a significant number of school jurisdictions. By way of illustration, a motion passed unanimously at the December 17, 1987 meeting of the Strathcona County Board of Education states:

1. That the Board of Education oppose any equity plans that will reduce local autonomy.

2. That the Board of Education encourage Alberta Education to solve inequities in education funding by providing more funds from general revenue and not from existing grant structures.

3. That the Board of Education encourage Alberta Education to solve funding inequities by investigating alternate forms of funding.

4. That the Board of Education acknowledge that Option 2 of the proposed options is acceptable only if equity is achieved through additional funding.

In Alberta, school jurisdiction autonomy and fiscal equalization appear to have a dichotomous relationship. That is, although both concepts are deemed to be desirable, it is likely that one can only be achieved at the expense of the other. The next section of the literature review comments on the relationship between the goal of equality of educational opportunity and the autonomy of local school authorities.

A Comment on School Jurisdiction Autonomy

The need to preserve some measure of autonomy for local school authorities is well supported in the literature. However, the potential for conflict with equity-related aspirations is also recognized. In reviewing the ideas of one of the American pioneers of education finance reform, Ellwood P. Cubberley, Ward (1987:471) states that Cubberly advocated the "use of state funds for equalization of local school spending" but

> Cubberley did not favor complete equalization of either per pupil resources or educational tax rates. He felt equalization was necessary to a point to ensure an adequate education and an equal local tax rate, but that local school districts should have the option, and, in fact, be encouraged to exceed the state minimum levels.

The school finance reform movement of the 1960's and 1970's in the United States produced an impasse between the advocates of the concept of "local leeway" in school finance decision-making and those who demanded an equitable system of school funding. Jordan and McKeown (1980:80) explain this situation as follows:

> The result has been that two traditional American values have come into conflict in the financing of public education in the various states. The egalitarian position of equal treatment irrespective of circumstances has come into direct conflict with the libertarian position of freedom to choose.

Local autonomy and freedom of choice or liberty are principles which are also very much a part of financing schools in Canada.

In commenting on the Canadian situation, Gordon (1985) points out the relationship between local autonomy and the fiscal accountability of school jurisdiction authorities. He cautions that local autonomy has given way to increasing provincial influence over the years. Gordon (1985:4) states:

> Local control or autonomy has always been closely linked with a measure of financial responsibility. Initially the local responsibility was paramount and the province played a monitoring role. However, since World War II there has been more intervention by the provinces, both in finance and program, to the point where there is genuine concern in some quarters that local autonomy is being de-emphasized too much and may even disappear - in substance, if not in form.

Despite this grim prediction for the future of local autonomy, the 1982 Alberta Education Report of the Minister's Task Force on School Finance strongly supported the principle of local control of school jurisdictions. The specific principles related to local autonomy as stated in the Report are as follows (Alberta Education, 1982:25):

> An Alberta school finance plan should:
>
> 1. Recognize the importance of autonomy for, and accountability of local school authorities.
> 2. Avoid infringement on local choice of method of program delivery.
> 3. Allow local school jurisdictions the opportunity to raise money for the financing of public education when such financing in not provided for in the provincial plan of school support.

However, the more recent Alberta Education discussion paper *Equity in Education Financing* (1987) does not list local autonomy as one of the eight "Principles of a School

Finance Plan for Alberta", that appear, apparently for the first time, in the discussion paper. The concept of local autonomy is mentioned throughout the paper, but not as one of the key principles of a school finance plan, as it was in the 1982 Minister's Task Force Report. On the contrary, the concept is referred to as "the issue of local autonomy and control," and regarded as a possible obstacle to achieving equity in school funding in Alberta.

Discussion

The framework for this review of the various aspects of the provision of school funding in Alberta is a five-part conceptual framework developed by Berne and Stiefel (1979). The introduction of the 1985 Equity Grant was a response to the need to simplify the annual award of equalization grants to school jurisdictions and also to provide funding which offered superior fiscal equalization characteristics. A strong case for improving fiscal equalization for Alberta school jurisdictions through province-wide non-residential tax revenue sharing was made in the Alberta Education discussion paper *Equity in Education Financing* (1987). The conflict between egalitarian and libertarian interests within the context of school funding is well illustrated by the apparent decline in stature of the principle of local autonomy as compared to fiscal equity, in the current Alberta Education proposal (1987) to reform school funding.

SUMMARY

This chapter was composed of four sections. The literature review first explored the various dimensions of the concept of equity, within the context of funding for schools. Second, the statistical measurements of dispersion and relationship commonly used in

fiscal equalization studies were reviewed. Examples of studies conducted recently in Canada and the United States that are concerned with the fiscal equalization effects of state and provincial educational funding were given in the third section. The fourth and final section reviewed recent fiscal equalization initiatives taken in relation to school funding in Alberta and commented on the on-going controversy over local autonomy in educational decision-making.

CHAPTER 3

THE DESIGN OF THE STUDY

This chapter describes the population under scrutiny, the data sources, the research problems and the statistical procedures utilized in conducting the study.

POPULATION

The population of the study was all operating Alberta school jurisdictions but excluded private schools, Department of National Defence and Department of Indian Affairs schools. The total number of operating school jurisdictions ranged from 136 in 1981 to 139 in 1985. For purposes of comparison, school jurisdictions were categorized according to type of jurisdiction, that is, School Divisions, Counties, Public School Districts and Roman Catholic Separate School Districts (RCSSD's) and to urban or rural location, which included Large Cities, Other Cities, Total Cities, Towns and Villages, Total Urban and Total Rural. Both the Jurisdiction Type and Urban-Rural categories were used in fiscal equalization studies for school funding in Alberta conducted by Hill and King (1981) and Milne (1982). The Urban-Rural dimension was not employed in the Jefferson (1982) study.

The relationship between the two categories of jurisdictions was as follows: the Urban categories of Large Cities, Other Cities, Total Cities, Towns and Villages and Total Urban, were composed of the Jurisdiction Type categories of Public School Districts and RCSSD's. The Rural category included School Divisions, Counties and from six (1981) to

nine (1985) Rural School Districts not represented in the Jurisdiction Type category. These School Districts could not be placed in either the Public School District or Roman Catholic Separate School District groupings because they were neither "public" nor Roman Catholic "separate" and were therefore excluded from the Jurisdiction Type category. However, these non-representative jurisdictions were placed in the appropriate Urban or Rural groupings. For instance, in 1981 the following six school jurisdictions (given with code numbers) were excluded from Jurisdiction Type analysis but included in the urban groupings: 7020 St. Albert Protestant Separate, 6010 Thibault Roman Catholic Public, 7070 Glen Avon Protestant Separate, 5050 Barons Consolidated, 5050 Lousana Consolidated and 5030 Falher Consolidated.

A listing of the operating school jurisdictions included in each category for the years 1981 to 1985 may be found in Appendix A. The jurisdictions are listed in numerical order of the jurisdiction number codes, which are: School Divisions (1000), Counties (2000), Public School Districts (3000), RCSSD's (4000), Consolidated School Districts (5000), Roman Catholic Public School Districts (6000) and Protestant Separate School Districts (7000).

DATA SOURCES

The requisite data for the study were available from both provincial and federal government sources. Statistical analyses were conducted with the assistance of the University of Alberta Department of Educational Administration, utilizing University of Alberta computing facilities. The Alberta Education Department of School Business Administration Services supplied the Annual Financial and Statistical Analysis

statements of Assessments and Requisitions and the Audited Financial Statements for Alberta school jurisdictions for the period 1981 to 1985 in machine-readable form. The Alberta Education Financial and Administrative Services Branch supplied data relevant to the 1985 Equity Grant, also in machine-readable form. Income data for the province of Alberta were available from Statistics Canada (1983) for the census year 1981. Data used in the study are listed in Appendix A. Education Price Index data for Alberta were available from Statistics Canada (1986). The base year for the Price Index was the census year 1981, which coincided with the beginning year of the study. All analyses related to the Education Price Index for Alberta used the following data:

	1981	1982	1983	1984	1985
Education Price Index for Alberta:	100.0	115.6	120.4	123.7	127.8

THE RESEARCH PROBLEMS

The study was composed of two parts; the first part of the study addressed the following problem:

Problem 1: What were the fiscal equalization effects of provincial and local funding of Alberta school jurisdictions for the period 1981 through 1985?

Some aspects of this part of the study were a follow-up of research initiated by Jefferson (1982) wherein provincial and local funding for the period 1975 to 1980 were under scrutiny. Three sub-problems were researched which dealt with the fiscal equalization effects of first, provincial funding, second, local funding and third,

combined provincial and local funding (total funding) to school jurisdictions. The second part of the study was concerned with the following problem:

Problem 2: What were the fiscal equalization effects of the Alberta Education Equity Grant introduced in 1985?

This problem was the primary focus of the study and was concerned with the actual and potential fiscal equalization impact of the new Alberta Education Equity Grant. In addition, for purposes of comparison, the fiscal impact of aggregated fiscal equalization grants for each year of the period 1981 to 1984, was analyzed. The analysis was divided into three sub-problems.

Adjusted equalized assessment per pupil was employed as the measure of school jurisdiction wealth for the years under study. Adjusted equalized assessment was used because it is more inclusive than equalized assessment. That is, revenue from electrical power and pipeline taxes collected by Counties, Municipal Districts, Improvement Districts and Special Areas is included, giving a more accurate estimate of rural school jurisdiction wealth.

Although per pupil property assessment continues to be the favoured wealth measure, personal income is often cited as a superior measure of a jurisdiction's ability to-pay (Berne and Stiefel, 1984:182, Bezeau, 1986:89). Therefore, average private household income data for census regions which were coterminous with school jurisdictions were also used as a measure of wealth where that information was available from the 1981 census. Although data such as average individual income and average household income were available, average private household income was selected as the wealth measure because it most closely approximated the situation of the private

residential property tax payer. Average private household income data were available for 110 of 136 school jurisdictions (17 of 30 Divisions, 30 of 30 Counties, 19 of 29 School Districts, 41 of 45 RCCSD's, 4 of 4 Large City, 17 of 17 Other City, 21 of 21 Total City, 41 of 46 Towns and Villages, 62 of 67 Total Urban and 48 of 69 Total Rural). Including an income-based indicator of school jurisdiction wealth permitted comparisons of the two most popular wealth measures used in relation to funding basic education across North America.

Six sub-problems where derived from the two overall problems stated above. The sub-problems and the procedures used in their analyses are stated below.

Sub-problem 1.1: What was the distribution of provincial funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Provincial funding was taken to be the sum of grants, expressed in per pupil terms, allocated under the School Foundation Program Fund, the School Grants Regulations and the Other Grants, as stated in the audited financial statement for each jurisdiction for the years 1981 to 1985. There is a difference of opinion over whether the Alberta Government SFPF levy on all non-residential property is a local or a provincial contribution to educational funding (Hill and Paige, 1981:123). For purposes of this study, the SFPF levy was considered to be a provincial contribution because school jurisdictions have no control over the amount of the levy. Provincial funding was first expressed in terms of weighted per pupil dollar inputs which provided an easily interpreted dollar amount for the funding to each school jurisdiction grouping. Weighted per pupil dollar inputs could also be regarded as a simple measure of horizontal equity. Pupil weighting gives a more accurate figure for purposes of comparing different types

of jurisdiction groupings because the student population size of each jurisdiction is taken into account. Weighted per pupil dollar inputs for all forms of educational funding to school jurisdictions are given in Appendix B. The following formula was used in calculating weighted per pupil dollar inputs:

Weighted per pupil dollar inputs = $\sum$ Students x Funding/Students

In order to establish the relationship between the allocation of provincial funding and school jurisdiction wealth, indicated by adjusted equalized assessment per pupil and by average private household income (for 1981), three measures of inequality were employed. They are the correlation coefficient, the Gini coefficient and the coefficient of variation. Correlation coefficients for the relationship between provincial funding and the two wealth measures, adjusted equalized assessment per pupil and average private household income, were determined for all jurisdictions and for each jurisdiction category for the years 1981 to 1985. The following formula, given by Berne and Steifel (1984:73) was used to derive correlation coefficients:

$$r = \frac{\sum_i P_i x_i w_i}{\sqrt{\sum_i P_i x_i^2}\ \sqrt{\sum_i P_i w_i^2}}$$

P_i = Resident Pupils
x_i = per pupil dollar inputs
w_i = per pupil adjusted equalized assessment

The Gini coefficient was employed as a measure of vertical equity, that is, to determine to what extent less wealthy school jurisdictions were receiving more provincial funding on a per pupil basis than were more wealthy jurisdictions. The Gini coefficient is derived from the Lorenz Curve which Hill and King (1981:129) refer to as "by far the oldest and best known inequality measures." In this study, the Lorenz Curve was

developed, first, by ranking school jurisdictions in ascending order according to adjusted equalized assessment per pupil. The cumulative percentage of enrolment was indicated on the horizontal or X axis from 0 to 100 while the cumulative percentage of provincial grants was plotted on the vertical or Y axis. A diagonal "line of absolute equality" indicated where an equal proportion of students receive an equal proportion of funding. The Lorenz Curve is given in Figure 3.1. The Lorenz Curve is normally produced above or below the diagonal line; the lower or higher the curve, the less equal the distribution of funds. The Gini coefficient is a measure of the ratio between the area from the "line of absolute equality" (Area A on Figure 3.1) to the Lorenz Curve, and the triangular area below or above the "line of absolute equality" (Area A+B on Figure 3.1). It is a more precise measure of inequality than the Lorenz Curve. Symbolically, the relationship, given by Johns (1977:505), is as follows:

$$\text{Gini} = \frac{\text{Area A}}{\text{Area (A+B)}}$$

A negative Gini coefficient, shown by a Lorenz Curve that is above the "line of absolute equality," indicates that less wealthy jurisdictions are receiving more provincial funding per student than more wealthy jurisdictions. A positive Gini coefficient demonstrates the opposite situation. The formula which is usually given for the calculation of the Gini coefficient (Hickrod, Chaudhari and Lundeen,1980:200) and which gives positive and negative values is as follows:

$$\text{Gini} = \sum_{i=2}^{n} (X_{i-1}\, Y_{i-1} - X_i\, Y_{i-1})$$

X_i = cumulative proportion of pupils from poorest to richest

Y_i = cumulative proportion of funding associated with pupils

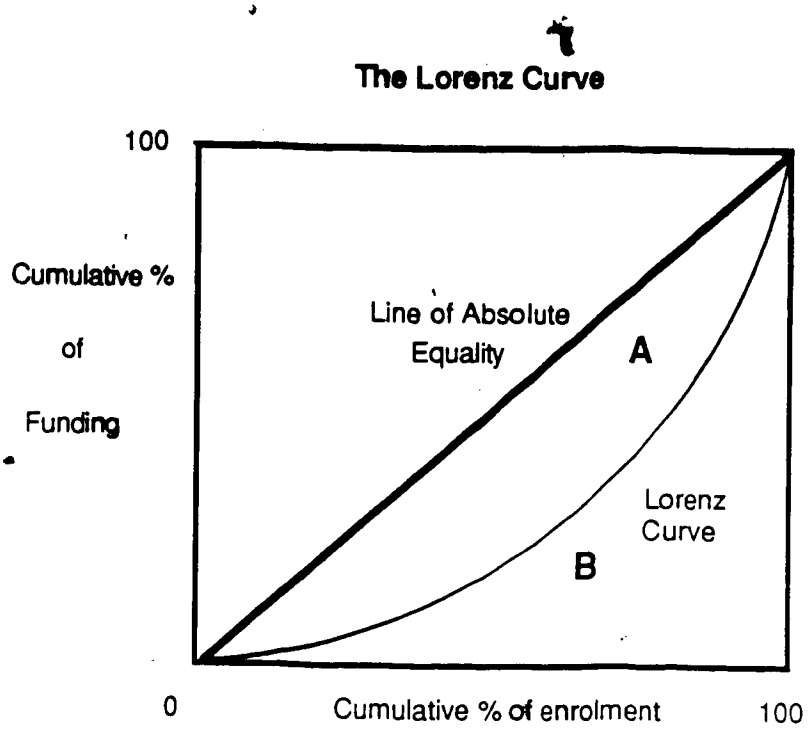

Figure 3.1

The Bigini coefficient, developed by Lows (1984), was adopted for this study because this new approach compensates for the problem of interpreting the Gini coefficient when the Lorenz Curve crosses the "line of absolute equality." Hickrod, Chaudhari and Lundeen (1980:185) maintain that "as long as the curve does not cross the line, the interpretation is straightforward. Unfortunately, the curve does cross the line in some instances, and this makes interpretation difficult." Lows devised a new method of calculating the Gini coefficient which incorporates the crossover points as a part of the equation. To distinguish this new approach from the Gini coefficient, Lows (1984:91) refers to it as the Bigini coefficient, or the "Gini coefficient for a bivariate set of measurements." The formula for the Bigini coefficient is as follows:

$$\text{Bigini} = \sum_{i=2}^{n} / X_1^2 . X_{i-1}^2 - X_i Y_i - X_i Y_{i-1} + X_{i-1} Y_i + X_{i-1} Y_{i-1} /$$

The Bigini coefficient does not indicate negative values. Therefore, both the Gini coefficient and the Bigini coefficient were calculated so that the appropriate negative or positive value could be taken from the Gini coefficient and assigned to the value derived from applying the Bigini formula. Raymond L. Lows of Northern Illinois University, the originator of the Bigini measure, stated in recent correspondence, that "at the 1987 Annual Conference of the American Education Finance Association in Washington D.C., there were a number of references to the Bigini Coefficient." Lows went on to say that "I believe it will become one of the standard measures of distributional inequality." The Bigini coefficient was applied to the distribution of provincial funds to all school jurisdictions and to each category of jurisdiction for each year of the period 1981 to 1985.

The coefficient of variation, which is the standard deviation divided by the mean, was used to determine the level of variation in the allocation of provincial per pupil funding, from year to year for all jurisdictions and within jurisdiction groupings. An increasing coefficient of variation indicated more variation in the distribution of grants and, therefore, more discrimination on the basis of school jurisdiction wealth, in the allocation of provincial grants. Differences between coefficients of variation are usually expressed in percentage terms. It is possible to compute the coefficient of variation using either the pupil or the jurisdiction unit of analysis. The pupil unit of analysis was used, as recommended by Berne and Stiefel (1984:59); this was done so that the number of students per jurisdiction-- which varies considerably-- would be appropriately reflected in the analysis. The formula given by Berne and Stiefel (1984:56) for the coefficient of variation, using the pupil unit of analysis is as follows:

$$\sqrt{\frac{\sum_i P_i \, (\bar{X}_p - X_i)^2}{\sum_i P_i}} \Big/ \bar{X}_p$$

P_i = number of pupils in jurisdiction i

X_i = per pupil dollar inputs in jurisdiction i

$\sum_i P_i$ = number of pupils in the jurisdiction grouping

$\bar{X}_p$ = the mean calculated with the pupil unit of analysis

The second sub-problem was concerned with the fiscal equalization effects of local school funding and is stated as follows:

Sub-problem 1.2: What was the distribution of local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Local funding was considered to be the per pupil supplementary requisition for each school jurisdiction. Local funding was first expressed in terms of weighted per pupil dollar inputs. Three statistical measures of fiscal equalization were used in dealing with sub-problem 1.2. Correlation coefficients for the relationship between local funding and school jurisdiction wealth, measured by both adjusted equalized assessment per pupil and average private household income (for 1981), were determined for each jurisdiction category for the years 1981 to 1985. The Bigini coefficient and the coefficient of variation served as measures of inequality in the same manner as described in sub-problem 1.1.

The third sub-problem dealt with the fiscal equalization effects of combined provincial and local funding and is stated as follows:

Sub-problem 1.3: What was the distribution of combined provincial and local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and average private household income?

Weighted, per pupil dollar inputs, correlation coeffients, the Bigini coefficient and the coefficient of variation were employed as measures of inequality for combined provincial and local funding to school jurisdictions. The procedure is described in the discussion of sub-problem 1.1.

The first sub-problem of problem two is concerned with the fiscal equalization effects of Alberta Education grants that were specifically designed to reduce inequality in school funding across the province. The sub-problem is stated as follows:

Sub-problem 2.1: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in terms of mills of tax relief per school jurisdiction?

Fiscal equalization grants are the sum of eight Alberta Education categorical grants that were made to school jurisdictions prior to 1985. Aggregated fiscal equalization grants and the Equity Grant are expressed in terms of mills of tax relief so that wealth-related comparisons can be made for provincial equalization funding between jurisdiction groupings. The range of support to jurisdictions within each grouping is given in five mill increments from 0 to 40 or more mills. The conversion of dollar amounts to mills employs the following formula given by Jefferson (1982:75):

$$ESi = TGi/Di$$

ESi = the provincial support, in mills, received by jurisdiction i

TGi = the total equalization grants received by the jurisdiction

Di = the dollars per mill (equalized assessment divided by 1000) for jurisdiction i

The number of mills of tax relief was calculated for each category of school jurisdiction for the years 1981 through 1985. The resulting data, listed in Appendix C, provided a basis for both longitudinal observations employing the 1975 through 1980 data found in the Jefferson (1982:89-98) study and for comparing the tax relief provided by the new Equity Grant to that provided in previous years.

The second sub-problem associated with the second problem of the study deals with the fiscal equalization effects of Alberta Education equalization funding using both property assessment and income as measures of wealth. The sub-problem is stated as follows:

Sub-problem 2.2: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Weighted per pupil dollar inputs, correlation coefficients, the Bigini coefficient and the coefficient of variation were employed in the analysis in the manner described for sub-problem 1.1.

The third sub-problem associated with the second problem of the study is stated as follows:

Sub-problem 2.3: What was the potential distribution of the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil?

Sub-problem 2.3 employed a cross-sectional analysis for the fiscal year 1985. The 1985 Equity Grant allocations were subject to the save-harmless limitations of no less than 80 percent and no more than 120 percent of the 1984 aggregated fiscal equalization grants. This restriction was used so that school jurisdictions could gradually adjust annual fiscal planning to the new Equity Grant program over a six to seven year period. In 1986, save-harmless limitations were 60 percent and 140 percent of the aggregated 1984 funding and in 1987, limitations were 50 percent and 150 percent of the 1984 grants.

The analysis was conducted by deriving the amount of the 1985 Equity Grant without the save-harmless provision (referred to as the formula Equity Grant), by adding the fiscal capacity, sparsity and distance components of the grant for each jurisdiction. The amount of the formula Equity Grant, which was a negative value for a number of jurisdictions, was then added to the combined provincial and local funding for each jurisdiction grouping. The resulting values represent the true impact of the Equity Grant without the save-harmless provision. Potential per pupil provincial and local funding for each jurisdiction grouping, utilizing the Equity Grant formula, was then compared to two other funding values. Those values were, first, the total funding distributed to jurisdictions in 1985, including the save-harmless Equity Grant and, second, the total funding which would have been available to jurisdictions without any form of Equity Grant. Comparisons were made using weighted per pupil dollar inputs, the correlation coefficient, the Bigini coefficient and the coefficient of variation.

SUMMARY

Table 3.1 is a summary of the time periods, the measures of wealth, and the

statistical techniques employed in addressing the six sub-problems identified for the study.

Table 3.1

Summary of the Statistical Techniques Employed with the Study Sub-Problems

Study Sub-Problems	Time period and Wealth Measure		
	1981 Income*	1981-1985 Assessment	1985 Only Assessment
Problem 1.1 Provincial funding	W.P.P.D.* Correlation* Bigini* Variance*	W.P.P.D. Correlation Bigini Variance	
Problem 1.2 Local funding	W.P.P.D. Correlation Bigini Variance	W.P.P.D. Correlation Bigini Variance	
Problem 1.3 Local and provincial funding	W.P.P.D. Correlation Bigini Variance	W.P.P.D. Correlation Bigini Variance	
Problem 2.1 Aggregated fiscal equalization grants and the Equity Grant		Mills of tax relief	
Problem 2.2 Aggregated fiscal equalization grants and the Equity Grant	W.P.P.D. Correlation Bigini Variance	W.P.P.D. Correlation Bigini Variance	
Problem 2.3 Potential distribution of the 1985 Equity Grant			W.P.P.D. Correlation Bigini Variance

* Income = average private household income
W.P.P.D. = weighted per pupil dollar inputs
Correlation = coefficient of correlation
Bigini = Bigini coefficient
Variance = coefficient of variance

CHAPTER 4

ANALYSIS AND FINDINGS

This chapter contains the results of the data analysis and a discussion of the findings for each of the six study sub-problems. The analysis is divided into two sections. First, there is a report of the fiscal equalization effects of school funding provided from both provincial and local sources (Problem 1). Second, there is an analysis of the effects of specific provincial grants meant to enhance fiscal equity for Alberta school jurisdictions (Problem 2).

Four statistical measures of inequality were used in the study. They are explained in detail in Chapters 2 and 3. However, to review, the manner in which these measures were utilized in the study is as follows:

Weighted per pupil dollar inputs provide an easily interpreted dollar amount for provincial and local funding of various groupings of school jurisdictions. Weighting gives a more accurate figure for purposes of comparing different types of jurisdiction groupings because the student population size of each jurisdiction within a grouping is taken into account.

The **correlation coefficient,** which can take values between -1 and +1, is used to express the relationship between two variables which, in the case of the present study, is the relationship between wealth and various types of funding to school jurisdictions. The higher the negative value of the correlation coefficient, the more the per pupil funding arrangement favours less wealthy jurisdictions. An arbitrary level as to what correlation was practically significant or important was set at .250 and above.

The **Bigini coefficient,** which is unitless and ranges between -1 and +1, measures the extent to which per pupil funding inputs for school jurisdiction groupings deviate from a situation of perfect equality. Values between 0 and -1 indicate that less wealthy jurisdictions are receiving more funding per pupil than more wealthy jurisdictions, while values between 0 and +1 indicate the opposite situation.

The **coefficient of variation,** which usually ranges between 0 and +1, but can exceed +1, is used to measure equality relative to the mean for per pupil funding inputs for jurisdiction groupings. Differences between coefficients of variation are usually expressed in terms of percent. The more closely the coefficient of variation approaches zero, the less variation there is in per pupil funding. Interpretation of the coefficient of variation, for purposes of this study, depends upon the extent to which the variation in per pupil funding is a result of higher per pupil funding allocated to less wealthy jurisdictions.

THE PROBLEMS

The analysis and findings are presented, in turn, for each of the two major problems that were identified for this study. The first problem is as follows:

> **What were the fiscal equalization effects of provincial and local funding of Alberta school jurisdictions for the period 1981 through 1985?**

The objective of the first part of the study was to determine to what extent provincial and local funding, expressed in per resident pupil terms, favoured less wealthy school jurisdictions. Wealth was expressed in terms of equalized assessment per resident pupil, and for 1981, also in terms of average private household income.

To review, provincial funding was taken to be the sum of grants, expressed in per pupil terms, allocated under the School Foundation Program Fund, School Grants Regulations and Other Grants, as stated in the audited financial statement for each year, for each jurisdiction. Additionally, local funding, which is generally thought to favour wealthy jurisdictions, was examined in order to determine the extent of the probable disequalizing influence. Local funding was defined as the per pupil, supplementary requisition for each school jurisdiction. Finally, the fiscal equalization effects of combined provincial and local funding, that is, the total annual funding to each jurisdiction, were determined for each year of the study in order to establish a basis for the analyses conducted in dealing with the second major problem.

The second major problem was as follows:

What were the fiscal equalization effects of the Alberta Education Equity Grant introduced in 1985?

Determining the fiscal equalization effects of the Equity Grant, which in 1985 replaced the former fiscal equalization grants, was the primary focus of the study. The analysis involved both longitudinal and cross-sectional approaches. From the longitudinal perspective, the funding provided by aggregated fiscal equalization grants and the Equity Grant, for the period 1981 through 1985, was subjected to scrutiny. Additional comparative data related to the fiscal equalization grants, for the period 1975 through 1980, were available from a study conducted by Jefferson (1982). The benefit to school jurisdictions provided by aggregated fiscal equalization grants for each year of the period 1981 through 1984, and by the 1985 Equity Grant was first expressed in terms of mills of tax relief. In addition, the fiscal equalization impact of the 1981 to 1984 aggregated fiscal equalization grants and the 1985 Equity Grant was analyzed, as

in Problem 1, in terms of weighted per pupil dollar inputs, the correlation coefficient, the Bigini coefficient and the coefficient of variation. From the cross-sectional perspective, the 1985 Equity Grant was analyzed focussing only on the year 1985, with the objective of determining the potential fiscal equalization impact of the new grant formula without the 20 percent - 80 percent save-harmless provision, which was part of the 1985 formula. The results of the analyses conducted in relation to Problem 2 will provide some insight with respect to the probable long-range impact of Alberta Education equity funding to Alberta school jurisdictions.

PROBLEM 1

Problem 1 is divided into three sub-problems which are concerned with measuring the fiscal equalization effects of provincial, local, and combined provincial and local funding of school jurisdictions.

Distribution of Provincial Funding: Analysis

This section of the study examines the fiscal equalization effects of Alberta Education funding to school jurisdictions for the period 1981 to 1985 using adjusted equalized assessment per pupil as the measure of wealth and, for purposes of comparison, average private household income as a wealth measure for the year 1981. The related study sub-problem is stated as follows:

Sub-problem 1.1: What was the distribution of provincial funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Tables 4.1 to 4.5 indicate the results of analyzing the fiscal equalization effects of provincial funding using weighted per pupil dollar inputs, the correlation coefficient, the Bigini coefficient and the coefficient of variation. In these tables, and in all subsequent tables, the jurisdictions are divided into two overall categories, which are Jurisdiction Type, based on the form of organization, and Urban-Rural, based on location.

Weighted per pupil dollar inputs. Over the period of the study, provincial funding to school jurisdictions increased substantially as indicated by weighted per pupil dollar inputs given in Table 4.1. For all school jurisdictions, the increase from $2130.08 per pupil in 1981 to $2879.55 per pupil in 1985, represents a 35.2 percent increase over 1981 funding. There was a comparatively large increase of 17.7 percent in provincial funding for all jurisdictions in 1982, as compared to increases of 9.3 percent in 1983, no increase in 1984 and a 5.5 percent increase in 1985. The 35.2 percent increase in provincial educational funding over the five years of the study compares favourably with the 27.8 percent increase in the Education Price Index for Alberta (Statistics Canada, 1986). On a year to year basis the increases were as follows:

	1981-82	1982-83	1983-84	1984-85
Provincial Funding Increase:	17.7%	9.3%	0.0%	5.5%
Education Price Index Increase:	15.6%	4.2%	2.7%	3.3%

Weighted per pupil dollar inputs, given in Table 4.1, indicate a wide variation in the level of provincial funding provided to the various jurisdiction groupings over the period 1981 to 1985. School Divisions and Towns and Villages consistently received more than the average provincial per pupil funding. In 1981, funding to School Divisions was 7.2 percent higher and to Towns and Villages, 14.0 percent higher than

the average. By 1985, provincial funding to School Divisions had increased to 11.5 percent, and for Towns and Villages to 16.1 percent above the level of per pupil funding

Table 4.1

Provincial Funding for 1981 to 1985: Weighted Per-Pupil Dollar Inputs

	Population	1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	2130.08	2506.84	2738.52	2729.79	2879.55
Jurisdiction Type						
Divisions	N=30	2283.29	2687.63	2932.11	2965.77	3208.61
Counties	N=30	2107.71	2529.48	2707.71	2743.57	2844.33
Public Districts	N=25-27	2075.63	2427.45	2688.05	2629.71	2787.45
RCSSD	N=45-47	2153.60	2514.98	2725.09	2752.87	2858.24
Urban-Rural						
Large Cities	N=4	2070.13	2404.17	2653.00	2587.86	2700.02
Other Cities	N=17-19	2060.71	2492.07	2761.66	2754.23	2987.46
Total Cities	N=21-23	2068.18	2422.55	2676.46	2624.86	2764.58
Towns & Villages	N=46-47	2429.23	2822.20	2956.82	3194.75	3343.84
Total Urban	N=67-70	2093.08	2448.48	2696.20	2662.48	2803.44
Total Rural	N=69	2197.60	2601.42	2807.15	2843.47	3010.74

Provincial Funding = SFPF + School Grants Regulations + Other Grants/Enrolment
Weighted Per-Pupil Dollar Inputs = Σ Resident Pupils x Funding/Resident Pupils

for all jurisdictions. Roman Catholic Separate School Districts (RCSSD'S) and Counties were within 1 percent, while Public School Districts ranged from 1.9 percent to 3.7 percent under the per pupil funding for all jurisdictions for the five years of the study. The four Large City school districts in Calgary and Edmonton received consistently less than average per pupil funding. The disparity grew from 2.8 percent in 1981 to 6.25 percent in 1985. The provincial funding to Other City school districts improved, however, from a deficit of 3.3 percent in 1981 to 3.7 percent above average in 1985. Taking the Urban-Rural perspective, urban jurisdictions received from 1.7 percent

(1981) to 2.6 percent (1985) less than average funding while rural jurisdictions received from 3.2 percent (1981) to 4.6 percent (1985) more than the per pupil funding for all jurisdictions. Through reviewing provincial funding to school jurisdictions in terms of weighted per pupil dollar inputs, the disparities in funding for the various types of jurisdictions were established. The remaining statistical measures were used in order to determine to what extent variations in provincial funding were related to jurisdiction wealth.

Correlation coefficients. Coefficients of correlation between provincial funding to school jurisdictions and jurisdiction wealth, measured by adjusted equalized assessment per pupil and by average private household income are given in Table 4.2. Important correlation coefficients (>.250) are indicated in bold print. The overall lack of strong correlation between provincial funding and wealth for all jurisdictions is the most obvious feature of the data in Table 4.2. Correlation coefficients were strongly positive for Public School Districts for the years 1981 (.419), 1982 (.773) and 1983 (.439) and for Total Rural jurisdictions for the same period at .517, .648, and .407 respectively. The stronger relationship between wealth and provincial funding for 1982 may be related to the large increase in funding for that year as noted in Table 4.1. For Counties, however, correlation coefficients were non-existent for 1982 (.002)but were moderately negative for 1981 (-.377), 1983 (-.325), 1984 (-.362) and 1985 (-.358). Provincial funding to Total Urban jurisdictions exhibited relatively low negative correlation coefficients for all years of the study. Despite the perceived lack of affluence of RCSSD's, negative coefficients of correlation between wealth and provincial funding for the RCSSD group were weak for the period of the study. Returning to the weighted per pupil dollar input data of Table 4.1, however, this lack of strong negative

correlation is understandable because provincial funding to RCSSD's did not vary more than 1 percent from the level of funding to all jurisdictions.

Comparing the average private household income/wealth measure with the adjusted equalized assessment/wealth measure for 1981, for all jurisdictions, we see that

Table 4.2

Relationship of Jurisdiction Wealth to Provincial Funding Given by the Correlation Coefficient

		1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	N=136-139	-0.223	0.171	**0.272**	0.139	-0.068	0.003
Jurisdiction Type							
Divisions	N=30	-0.198	0.220	0.122	0.104	0.228	**0.314**
Counties	N=30	**-0.443**	**-0.377**	0.002	**-0.325**	**-0.362**	**-0.358**
Public Districts	N=25-27	**-0.272**	**0.619**	**0.773**	**0.439**	0.035	**-0.329**
RCSSD	N=45-47	-0.210	-0.059	-0.107	-0.138	0.050	-0.116
Urban-Rural							
Large Cities	N=4	**-0.515**	-0.016	**-0.241**	**0.408**	-0.023	**0.436**
Other Cities	N=17-19	-0.202	**-0.302**	0.044	0.066	-0.079	**-0.405**
Total Cities	N=21-23	-0.216	**-0.312**	-0.068	-0.046	-0.170	-0.207
Towns & Villages	N=46-47	-0.164	-0.101	-0.194	-0.199	-0.222	-0.061
Total Urban	N=67-70	**-0.280**	-0.193	-0.227	-0.210	**-0.268**	**-0.289**
Total Rural	N=69	-0.198	**0.517**	**0.648**	**0.407**	0.144	0.183

Government Funding = SFPF + School Grants Regulations + Other Grants/Enrolment

** Wealth = Adjusted Equalized Assessment per Resident Pupil for the years 1981 to 1985.

*** The additional measure of wealth for the year 1981 was average private household income.
Average private household income data were available for 110 school jurisdictions (17 Divisions, 30 Counties, 19 School Districts, 41 RCCSD's, 4 Large City, 17 Other City, 21 Total City, 41 Towns and Villages, 62 Total Urban and 48 Total Rural) where the census boundaries were coterminous with school jurisdictions.

Important correlations (>.250) are given in bold print.

provincial funding was negatively correlated, at -.223 with income and positively correlated, at .171, with assessment. For Total Rural jurisdictions, provincial funding showed a weak negative correlation with income (-.198) but a strong positive

correlation (.517) with assessment. It appears that provincial school funding is more favourable to less wealthy school jurisdictions in terms of the income/wealth measure than if applying the traditional assessment/wealth measure.

The relationship between the two wealth measures was also subject to analysis. The coefficients of correlation between the two measures of wealth are given in Table 4.3.

Table 4.3

Relationship of the Wealth Measures, Adjusted Equalized Assessment and Average Private Household Income for 1981 Given by the Correlation Coefficient

Jurisdiction Type		Urban-Rural	
Divisions	.165	Large Cities	-.596
Counties	.486	Other Cities	.492
Public Districts	.484	Total Cities	.465
RCSSD	.312	Towns and Villages	.269
		Total Urban	.387
All Jurisdictions	.311	Total Rural	.223

Wealth = Adjusted Equalized Assessment per Resident Pupil or Average Private Household Income for 1981

Average private household income data were available for 110 school jurisdictions (17 Divisions, 30 Counties, 19 School Districts, 41 RCCSD's, 4 Large City, 17 Other City, 21 Total City, 41 Towns and Villages, 62 Total Urban and 48 Total Rural) where the census boundaries were coterminous with school jurisdictions.

Correlation coefficients between income and property assessment were moderately positive for all jurisdiction groupings, with certain exceptions. The correlation coefficients for Divisions, Large Cities, Towns and Villages and Total Rural groupings were not significant. It appears that the two wealth measures, with some noted exceptions, have similar capacities for defining wealthy and less wealthy school jurisdictions.

Bigini coefficient. The fiscal equalization effects of provincial funding to school jurisdictions as measured by the Bigini coefficient are given by Table 4.4. When using the Bigini coefficient as a measure of fiscal equalization, the values can only be

Table 4.4

Fiscal Equalization Effects of Provincial Funding Given by the Bigini Coefficient

		1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	N=136-139	-0.413	-0.397	-0.405	-0.414	-0.418	-0.412
Jurisdiction Type							
Divisions	N=30	-0.244	0.111	0.117	0.127	0.109	0.130
Counties	N=30	-0.264	-0.189	-0.141	-0.119	-0.107	-0.113
Public Districts	N=25-27	-0.312	-0.437	-0.427	-0.423	-0.445	-0.462
RCSSD	N=45-47	-0.570	-0.592	-0.678	-0.700	-0.683	-0.696
Urban-Rural							
Large Cities	N=4	-0.131	-0.214	-0.220	-0.198	-0.222	-0.209
Other Cities	N=17-19	-0.213	-0.249	-0.247	-0.231	-0.250	-0.299
Total Cities	N=21-23	-0.356	-0.513	-0.554	-0.545	-0.576	-0.591
Towns &Villages	N=46-47	-0.304	-0.209	-0.164	-0.213	-0.121	-0.093
Total Urban	N=67-70	-0.528	-0.681	-0.713	-0.697	-0.693	-0.698
Total Rural	N=69	-0.219	0.103	0.115	0.117	0.113	0.119

* Government Funding = SFPF + School Grants Regulations + Other Grants/Enrolment

** Wealth = Adjusted Equalized Assessment per Resident Pupil for the years 1981 to 1985

*** The additional measure of wealth for the year 1981 was average private household income Average private household income data were available for 110 school jurisdictions (17 Divisions, 30 Counties, 19 School Districts, 41 RCCSD's, 4 Large City, 17 Other City, 21 Total City, 41 Towns and Villages, 62 Total Urban and 48 Total Rural) where the census boundaries were coterminous with school jurisdictions.

interpreted in a relative sense. By contrast, for instance, coefficients of variation give specific values for the range of a distribution above and below the mean. Positive Bigini coefficients indicate that wealthy school jurisdictions are receiving relatively more per

pupil funding than less wealthy jurisdictions, while negative coefficients point to a situation of enhanced fiscal equalization for less wealthy jurisdictions.

Examining the data in Table 4.4, it appears that from 1981 to 1985 there was little year to year variation in the values of Bigini coefficients for most jurisdiction groupings. The exception to this observation was the relatively large increase in the value of the negative Bigini coefficient from 1981 to 1982 (-.592 to -.678) for provincial funding to RCSSD's. This anomaly may be related to the large increase in provincial funding which occurred in 1982. The positive Bigini coefficients for School Divisions (1981=.111, 1985=.130), although not strongly positive, point to a distribution of funding that favoured more wealthy jurisdictions. Provincial funding to Counties (1981= -.189, 1985= -.113), favoured less wealthy jurisdictions, but decreasingly so. In comparison to the coefficients for Divisions and Counties, the Bigini coefficients for provincial funding to Public Districts (1981= -.437, 1985= -.462) and especially to RCSSD's (1981= -.592, 1985= -.696) were strongly negative. These latter coefficients indicate per pupil funding patterns that are highly favourable to the less wealthy jurisdictions within these groupings.

From the Urban-Rural perspective, Total Cities maintained relatively strong negative Bigini coefficients (1981= -.513, 1985= -.591), while there was a decline in the negative value of the Bigini coefficient for Towns and Villages from -.209 in 1981 to -.093 in 1985. The decline indicates reduced assistance to less wealthy Towns and Villages [illegible] positive Bigini coefficients for provincial funding to Total Rural (1981= .103, 1985= .119) jurisdictions shows a gradually increasing tendency to favour the more wealthy rural jurisdictions. Strongly negative Bigini coefficients indicate that the less wealthy school jurisdictions in the Total Urban

grouping (1981 [redacted] 985= -.698) received relatively more provincial funding.

Using the [redacted] private household income as an alternate measure of wealth for 1981 yields a [redacted] of observations. In terms of income, a negative Bigini coefficient (-.219) indicates that the provincial funding to school jurisdictions was more favourable to the less wealthy jurisdictions in the Total Rural grouping. By contrast, a positive coefficient is associated with assessment (.103). It would appear, therefore, that rural jurisdictions receiving provincial funding are less wealthy in terms of income than in terms of property. That seems likely to be an accurate observation with respect to rural agricultural land owners. For the Total Urban grouping, the income/wealth measure (-.528) provides a somewhat lower negative Bigini coefficient for provincial funding than does the assessment/wealth measure (-.681). These findings indicate that urban property tax payers were more wealthy in terms of income than in terms of property; a finding which confirms empirical observations with respect to the relationship between urban property and income wealth. For all jurisdictions, the Bigini coefficient for the income/wealth measure (-.413) is very close to that of the assessment/wealth measure (-.397), suggesting that the two measures distinguish between wealthy and less wealthy jurisdictions in a similar manner.

Coefficient of variation. Coefficients of variation in provincial funding to Alberta school jurisdictions are given in Table 4.5. A consistent variation of less than 10 percent above and below the mean was found for all jurisdictions for each of the five years of the study. Rural jurisdictions, characterized by Counties and Divisions, showed the least variation, at less than 8 percent. Public Districts and RCSSD's had the most variation in provincial funding between jurisdictions, at as much as 33 percent and 28 percent respectively. Only two jurisdiction groupings experienced year to year

variations in provincial funding over the period of the study. A slight decrease in the degree of variation in funding was noted from 33.3 percent (1981) to 31.5 percent (1985) for Public Districts and from 28.5 percent (1981) to 25.5 percent (1985) for RCSSD's.

Examining the Urban-Rural groupings, the major influence on the higher variation in the level of provincial funding for urban jurisdictions appears to relate to the four Large City jurisdictions (averaging 3.0 percent from 1981 to 1985). This is evident from the relatively small variation in provincial funding indicated for the Other City (averaging 9.0 percent from 1981 to 1985) and Towns and Villages (averaging 5.0 percent from 1981 to 1985) groupings, which make up the remainder of the urban category.

Table 4.5

Coefficients of Variation for Provincial Funding By Year

		1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	0.098	0.098	0.097	0.096	0.096
Jurisdiction Type						
Divisions	N=30	0.055	0.056	0.059	0.059	0.058
Counties	N=30	0.073	0.077	0.077	0.076	0.075
Public Districts	N=25-27	0.333	0.330	0.325	0.319	0.315
RCSSD	N=45-47	0.285	0.275	0.266	0.260	0.255
Urban-Rural						
Large Cities	N=4	0.327	0.327	0.328	0.329	0.329
Other Cities	N=17-19	0.098	0.095	0.093	0.088	0.085
Total Cities	N=21-23	0.232	0.229	0.226	0.222	0.220
Towns & Villages	N=46-47	0.054	0.054	0.049	0.047	0.046
Total Urban	N=67-70	0.207	0.205	0.201	0.198	0.196
Total Rural	N=69	0.033	0.034	0.034	0.033	0.033

Provincial Funding = SFPF + School Grants Regulations + Other Grants/Resident Pupils

The coefficients of variation for provincial funding to the various jurisdiction

groupings were complementary to the findings for fiscal equalization identified through the application of Bigini coefficients. Specifically, those jurisdictions with relatively high negative Bigini coefficients for provincial funding, such as Public Districts and RCSSD's, were also found to have higher coefficients of variation. Negative Bigini coefficients indicate that less wealthy jurisdictions were receiving more per pupil funding than more wealthy jurisdictions. These higher coefficients of variation in provincial funding are likely an indication of the wider range in per pupil funding required to accommodate higher per pupil funding to less wealthy jurisdictions.

Distribution of Provincial Funding: Findings

The analysis of the distribution of provincial funds to Alberta school jurisdictions in terms of both adjusted equalized assessment per resident pupil and private household income yields a number of relevant findings. The distribution of provincial funds to Alberta school jurisdictions increased substantially from 1981 to 1985 (35.2 percent). The increase was 7.4 percent more than the rise in the Education Price Index. There were no strong trends in wealth correlations for jurisdiction groupings from 1981 to 1985. In terms of adjusted equalized assessment per pupil, less wealthy Public School Districts and RCSSD's were more likely to receive additional provincial funding than less wealthy School Districts or Counties over the period of the study. However, the findings varied with the measure of wealth that was employed. Rural jurisdictions that were less wealthy in terms of average private household income received more provincial funding than those rural jurisdictions that were less wealthy in terms of property. This finding indicates that rural jurisdictions are less wealthy in terms of income than in terms of property, which would seem to be an accurate observation for the relationship between agricultural income and the assessed value of agricultural land

in rural areas. The opposite situation was observed for urban jurisdictions, which would indicate that urban taxpayers were more wealthy in terms of income than in terms of property. Taking all jurisdictions together, there was little to distinguish between the distribution of provincial funding in terms of assessment (Bigini = -.397) and in terms of income (Bigini = -.413). This indicates that, although the income/wealth measure yields similar results to the assessment/wealth measure for all jurisdictions, it could be a valuable alternate measure which distinguishes between urban and rural wealth.

Distribution of Local Funding: Analysis

This section of the study examines the fiscal equalization effects of local funding by school jurisdictions for the period 1981 to 1985 using adjusted equalized assessment per pupil as the measure of wealth and, for purposes of comparison, average private household income as a wealth measure for the year 1981. The related study sub-problem is stated as follows:

Sub-problem 1.2: What was the distribution of local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Tables 4.6 to 4.9 provide measures of the fiscal equalization effects of local funding using weighted per pupil dollar inputs, the correlation coefficient, the Bigini coefficient and the coefficient of variation.

Weighted per pupil dollar inputs. From 1981 to 1985 local funding to school jurisdictions increased substantially, as indicated by weighted per pupil dollar inputs given in Table 4.6. For all school jurisdictions, the increase from $901.25 per pupil in 1981 to $1381.17 per pupil in 1985, represents a 53.2 percent increase over 1981 funding. The Education Price Index for Alberta (Statistics Canada, 1986)

recorded only a 27.8 percent increase in education-related prices from 1981 to 1985. On a year to year basis, the percentage increase in local funding compared to the percentage increase in the Education Price Index was as follows:

	1981-82	1982-83	1983-84	1984-85
Local Funding Increase:	27.8%	11.0%	2.7%	6.1%
Education Price Index Increase:	15.6%	4.2%	2.7%	3.3%

Over the period of the study, School Divisions provided a higher level of local funding to education than did the Counties. The discrepancy was as high as 12.3 percent

Table 4.6

Local Funding for 1981 to 1985: Weighted Per Pupil Dollar Inputs

		1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	901.25	1146.36	1272.30	1306.56	1381.17
Jurisdiction Type						
Divisions	N=30	807.63	1074.17	1158.01	1169.79	1250.97
Counties	N=30	746.73	957.70	1031.32	1104.22	1226.29
Public Districts	N=25-27	1059.79	1332.33	1486.14	1490.67	1546.05
RCSSD	N=45-47	801.54	1002.87	1165.83	1228.12	1288.65
Urban-Rural						
Large City	N=4	1009.87	1289.58	1478.37	1502.08	1568.77
Other City	N=17-19	1001.65	1176.70	1273.14	1267.71	1299.98
Total City	N=21-23	1008.17	1265.96	1434.05	1449.94	1508.39
Towns & Villages	N=46-47	635.55	780.28	824.61	874.02	932.77
Total Urban	N=67-70	984.63	1234.39	1391.08	1411.33	1469.72
Total Rural	N=69	769.43	1003.67	1079.74	1129.48	1228.55

Local funding = Supplementary Requisition/Resident Pupils
Weighted Per-Pupil Dollar Inputs = Σ Resident Pupils x Funding/Resident Pupils

in 1983. In 1985, however, the difference was reduced to only .02 percent. Public School Districts consistently funded education to a substantially higher level than

RCSSD's, with a difference of 32.8 percent indicated for 1983, while the funding gap closed to

19.9 percent by 1985. Examining city school districts, there was an increasing spread in local education funding between the four Large City jurisdictions and the Other City school districts. No difference in funding was noted in 1981. By 1985, Large City districts provided 20.7 percent more per pupil dollars than Other City school districts. Education funding provided by Town and Village school districts was strikingly low for all five years of the study. Town and Village local funding was as much as 54.4 percent lower than funding for all jurisdictions in 1983 and only rose to a level of 48.0 percent below average in 1985.

Overall, urban school jurisdiction funding to education was greater than rural funding by a margin of 28.1 percent in 1981, 22.9 percent in 1982, 28.9 percent in 1983 and 25.0 percent in 1984. The margin narrowed to 19.6 percent in 1985. The influence of the much higher education funding by Large City jurisdictions on the Total Urban weighted per pupil dollar input figures probably account for most of the discrepancy between urban and rural local education funding.

Correlation coefficients. Coefficients of correlation between local funding to school jurisdictions and jurisdiction wealth, measured by adjusted equalized assessment per pupil and by average private household income are given in Table 4.7. Important correlation coefficients (>.250) are indicated in bold print. Over the five years of the study, wealth correlations in terms of assessment were strongly positive, and increasingly so for all jurisdiction groupings. Wealth correlations were stronger for RCSSD's (1981= .891, 1985= .900) than for Public School Districts (1981= .665, 1985= .760) and stronger for Total Cities (1981= .961, 1985= .935) than for Towns

and Villages (1981= .764, 1985= .755).

Anomalies in the correlation coefficients for jurisdiction groupings in some years were apparent. A marked decrease in correlation between jurisdiction wealth and local funding occurred in 1982 for Public Districts and RCSSD's. The School Districts most affected by this trend were those in Towns and Villages. Conversely, wealth correlations

Table 4.7

Relationship of Jurisdiction Wealth to Local Funding Given by the Correlation Coefficient

		1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	N=136-139	**0.266**	**0.654**	**0.645**	**0.664**	**0.734**	**0.787**
Jurisdiction Type							
Divisions	N=30	-0.091	**0.566**	**0.725**	**0.766**	**0.811**	**0.869**
Counties	N=30	**0.327**	**0.633**	**0.716**	**0.733**	**0.668**	**0.691**
Public Districts	N=25-27	**0.533**	**0.665**	**0.588**	**0.619**	**0.774**	**0.760**
RCSSD	N=45-47	**0.295**	**0.891**	**0.822**	**0.878**	**0.891**	**0.900**
Urban-Rural							
Large Cities	N=4	**-0.454**	**0.986**	**0.992**	**0.997**	**0.833**	**0.914**
Other Cities	N=17-19	**0.563**	**0.984**	**0.980**	**0.978**	**0.980**	**0.961**
Total Cities	N=21-23	**0.547**	**0.961**	**0.937**	**0.936**	**0.953**	**0.935**
Towns & Villages	N=46-47	0.035	**0.764**	**0.538**	**0.626**	**0.712**	**0.755**
Total Urban	N=67-70	**0.392**	**0.800**	**0.639**	**0.631**	**0.766**	**0.784**
Total Rural	N=69	0.072	**0.688**	**0.659**	**0.686**	**0.812**	**0.843**

Local funding = Supplementary Requisition/Resident Pupils

** Wealth = Adjusted Equalized Assessment per Resident Pupil for the years 1981 to 1985.

*** The additional measure of wealth for the year 1981 was average private household income.
Average private household income data were available for 110 school jurisdictions (17 Divisions, 30 Counties, 19 School Districts, 41 RCCSD's, 4 Large City, 17 Other City, 21 Total City, 41 Towns and Villages, 62 Total Urban and 48 Total Rural) where the census boundaries were coterminous with school jurisdictions.

Important correlations (>.250) are given in bold print.

for School Divisions and Counties increased markedly in 1982. As indicated in Table

4.6, there was a large increase (27.2 percent) in local funding made by all jurisdictions in 1982. It is likely that the correlation coefficients point to a situation in which wealthy jurisdictions in Counties and in School Divisions responded strongly to the perceived need for higher local funding. Their response resulted in increased wealth correlations (Counties: 1981= .633, 1982= .716, Divisions: 1981= .566,1982= .725). Meanwhile, school jurisdictions in Towns and Villages likely responded in a more uniform manner, with both wealthy and less wealthy jurisdictions contributing to an overall 22.8 percent increase in funding, resulting in a lower wealth correlation for 1982 (Towns & Villages: 1981=.764, 1982=.538). Wealth correlations for all city jurisdiction groupings were very high from 1981 to 1984, with a slight decline noted for 1985. In rural jurisdictions, steadily increasing, highly positive wealth correlations were indicated for School Divisions (1981=.566, 1982=.869); Counties displayed an irregular pattern from year to year, with positive correlation coefficients increasing to a lesser extent overall during the five years of the study (1981=.633, 1982=.691).

In 1981 coefficients of correlation between average private household income and local funding for all jurisdictions groupings were substantially less than correlations with the value of assessed property. The exception was local funding by Public Districts with a correlation coefficient of .533 for income/wealth and only .665 for assessment/ wealth.

Wealth correlations, in terms of assessment, for local education funding for all school jurisdictions increased from .654 in 1981 to .787 in 1985. Increasing wealth correlations from 1981 to 1985 point to a pattern of distribution of local school funding which is clearly a force for fiscal disequalization in Alberta.

Bigini coefficient. The fiscal equalization effects of local funding to school jurisdictions, as measured by the Bigini coefficient, are given by Table 4.8. In using Bigini coefficients as a measure of fiscal equalization, the values must be interpreted in a relative sense. Positive Bigini coefficients indicate that wealthy school jurisdictions are receiving relatively more per pupil funding than less wealthy jurisdictions, while negative coefficients point to a situation of enhanced fiscal equalization for less wealthy jurisdictions. There is an ambiguous side to interpreting the fiscal equalization impact of local funding as measured by the Bigini coefficient. A negative Bigini coefficient indicates that less wealthy jurisdictions are providing relatively more per pupil local funding. However, this situation very likely requires more fiscal effort on the part of property taxpayers in less wealthy jurisdictions. This study was concerned with child or student equity, rather than taxpayer equity, but it is important to point out that a negative Bigini coefficient may indicate a positive fiscal equalization effect for schools and students but certainly at the expense of local taxpayers.

Examining the data in Table 4.8, it appears that there were two distinct and opposite trends with respect to fiscal equalization in relation to local educational funding for urban Alberta jurisdictions from 1981 to 1985. Bigini coefficients for local education funding for RCSSD's were strongly negative and grew from -.355 in 1981 to -.533 in 1985, indicating a situation wherein less wealthy RCSSD's were increasing per pupil funding each year to a higher degree than were more wealthy RCSSD's. The major factor in this trend was the funding activities of the Large Urban RCSSD's. Both the Other City and the Towns and Villages groupings exhibited only slightly positive Bigini coefficients for local funding. Conversely, Bigini coefficients for local education funding by Public School Districts were positive and relatively stable at from .368 in 1981 to .360 in

1985, signifying that wealthy jurisdictions were funding education to a higher level than were less wealthy jurisdictions for each year of the study.

Table 4.8

Fiscal Equalization Effects of Local Funding Given by the Bigini Coefficient

		1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	N=136-139	-0.321	-0.222	-0.219	-0.236	-0.238	-0.245
Jurisdiction Type							
Divisions	N=30	-0.260	0.265	0.315	0.336	0.314	0.336
Counties	N=30	-0.199	-0.098	0.078	0.085	0.098	0.110
Public Districts	N=25-27	-0.235	0.368	0.351	0.357	0.357	0.360
RCSSD	N=45-47	-0.455	-0.355	-0.486	-0.515	-0.504	-0.533
Urban-Rural							
Large City	N=4	-0.105	-0.123	-0.130	-0.136	-0.180	-0.178
Other City	N=17-19	0.133	0.098	0.100	0.094	0.068	0.099
Total City	N=21-23	-0.271	-0.305	-0.317	-0.354	-0.384	-0.397
Towns &Villages	N=46-47	-0.247	0.070	0.067	0.043	0.104	0.109
Total Urban	N=67-70	-0.387	-0.456	-0.513	-0.505	-0.501	-0.514
Total Rural	N=69	-0.189	0.213	0.279	0.290	0.280	0.293

Local funding = Supplementary Requisition/Resident Pupils

** Wealth = Adjusted Equalized Assessment per Resident Pupil for the years 1981 to 1985

*** The additional measure of wealth for the year 1981 was average private household income.
Average private household income data were available for 110 school jurisdictions (17 Divisions, 30 Counties, 19 School Districts, 41 RCCSD's, 4 Large City, 17 Other City, 21 Total City, 41 Towns and Villages, 62 Total Urban and 48 Total Rural) where the census boundaries were coterminous with school jurisdictions.

Bigini coefficients for rural jurisdictions were positive, with School Divisions much more strongly positive (1981=.265, 1985=.336) than Counties (1981= -.098, 1985=.110). The trend grew stronger for each successive year of the study. That is, relatively wealthy School Divisions were more likely to fund education at a higher level than relatively wealthy Counties. The reason for this difference may be related to the

different forms of education system governance in effect in School Divisions and in Counties. That is, County school boards, which are composed of members responsible for both municipal and educational public spending, may exercise more fiscal restraint on education than would school boards in School Divisions, which are concerned only with educational spending.

For three jurisdiction groupings, using average private household income as the measure of wealth yielded results dissimilar to those achieved when the adjusted equalized assessment measure was used. The jurisdictions affected were School Divisions (income = -.260, assessment = .265), Public School Districts (income = -.235, assessment = .368) and Towns and Villages (income = -.247, assessment = .070). For all three groupings, the assessment wealth measure produced a positive Bigini coefficient while the income wealth measure gave a negative Bigini coefficient for the year 1981. Therefore, if income were used as the measure of wealth for the three jurisdiction groupings cited, the negative Bigini coefficient would indicate that less wealthy jurisdictions, in terms of income (but more wealthy in terms of property), were providing relatively more education funding than more wealthy jurisdictions. This represents a positive fiscal equalization outcome for students, but an ambiguous situation for local taxpayers.

Coefficient of variation. Coefficients of variation for local educational funding to Alberta school jurisdictions are given in Table 4.9. On a year to year basis there were few significant changes in coefficients of variation for any of the jurisdiction groupings. A consistent range of variation of 12.0 percent above or below the mean was found for all jurisdictions for the five years of the study. School Divisions and Counties showed the least variation, at less than 8.0 percent. Public Districts and RCSSD's displayed

variations in local funding to education averaging 35.0 percent and 30.0 percent respectively, over the period of the study. In examining the Urban-Rural groupings, the major influence on the higher variation in the level of local funding for urban jurisdictions appears to be from the four Large City jurisdictions (35.0 percent). This is evident from the relatively small variation in funding indicated for the Other City (11.0 percent) and Towns and Villages (6.0 percent) groupings that make up the remainder of the urban category.

Table 4.9

Coefficients of Variation for Local Funding By Year

		1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	0.120	0.122	0.122	0.123	0.121
Jurisdiction Type						
Divisions	N=30	0.059	0.058	0.059	0.059	0.060
Counties	N=30	0.086	0.081	0.080	0.086	0.090
Public Districts	N=25-27	0.340	0.347	0.350	0.348	0.346
RCSSD	N=45-47	0.303	0.301	0.291	0.289	0.292
Urban-Rural						
Large Cities	N=4	0.347	0.349	0.347	0.348	0.344
Other Cities	N=17-19	0.113	0.108	0.105	0.099	0.098
Total Cities	N=21-23	0.246	0.250	0.249	0.247	0.245
Towns &Villages	N=46-47	0.063	0.061	0.055	0.053	0.053
Total Urban	N=67-70	0.228	0.232	0.230	0.229	0.226
Total Rural	N=69	0.038	0.035	0.035	0.037	0.039

Local Funding = Supplementary Requisition/Resident Pupils

Coefficients of variation found for local funding to the various jurisdiction groupings were generally complementary to the findings for fiscal equalization identified through the application of Bigini coefficients. Specifically, those jurisdictions with relatively high negative and positive Bigini coefficients for local funding, such as Public Districts (high positive) and RCSSD's (high negative), were also found to have higher

coefficients of variation. These higher coefficients of variation are likely an indication of the increased range of per pupil funding amounts which are a result of higher school funding levels by both wealthy jurisdictions (positive Bigini coefficient) and less wealthy jurisdictions (negative Bigini). The exception to this observation is local funding provided by School Divisions which was characterized by relatively high Bigini coefficients and low coefficients of variation over the five years of the study. This finding indicates very little variation in the level of local funding for School Divisions (6 percent) but wealthy Divisions consistently funded schools at a higher level than less wealthy Divisions.

Distribution of Local Funding: Findings

Examining the distribution of local educational funding to Alberta school jurisdictions from 1981 to 1985 reveals an increasing local participation in overall educational funding and a pattern of distribution which differed significantly from that of provincial funding. Over the period of the study, the increase (53.2 percent) in local per pupil funding for all jurisdictions substantially exceeded the increase in the Alberta Education Price Index (27.8 percent). Public School Districts increased local funding more than RCSSD's, from 1981 to 1985. However, a more detailed examination shows that it was wealthy Public School Districts and less wealthy RCSSD's that contributed increasingly more funding from year to year. Wealthy School Divisions provided more educational funding than did wealthy Counties. Overall, wealthy rural jurisdictions and less wealthy urban jurisdictions contributed the highest per pupil funding over the period of the study. Local educational funding was strongly correlated with assessment/wealth for all jurisdiction groupings from 1981 to 1985, but less strongly correlated with income for 1981. The increase in assessment/wealth correlations with local

funding, from 1981 to 1985, is an indication of increasing fiscal disequalization for Alberta school jurisdictions.

Distribution of Combined Provincial and Local Funding: Analysis

This section of the study first, reviews the relationship between provincial and local school funding in Alberta and goes on to examine the fiscal equalization effects of provincial and local funding to school jurisdictions for the period 1981 to 1985. The measures of wealth are adjusted equalized assessment per pupil and, for purposes of comparison, average private household income for 1981.

Table 4.10

Ratio of Provincial to Local Education Funding, 1981-85

	All Jurisdictions	Divisions	Counties	Public School Districts	RCSSD's
	Prov./Loc. (%)	Prov./Loc. (%)	Prov./Loc. (%)	Prov./Loc. (%)	Prov./Loc. (%)
1981	70/30	74/26	74/26	66/34	73/27
1982	69/31	71/29	73/27	65/35	71/29
1983	68/32	71/29	72/28	64/36	70/30
1984	68/32	72/28	71/29	64/36	69/31
1985	68/32	72/28	70/30	63/37	69/31

Provincial Funding = SFPF + School Grants Regulations + Other Grants/Resident Pupils

Local Funding = Supplementary Requisition/Resident Pupils

The ratio of provincial to local funding is a matter of growing concern to school jurisdiction trustees and educators because, as the provincial share of educational funding declines from year to year due to fiscal constraints, the possibility of providing

compensatory funding from provincial sources also declines. For purposes of illustration, the ratios of provincial to local per pupil funding for two rural (School Divisions and Counties) and two urban (Public School Districts and RCSSD's) jurisdiction groupings for the period 1981 to 1985 are given in Table 4.10. The standard property tax on all non-residential property, levied by the Government of Alberta as a source of revenue for the SFPF, was considered to be a part of provincial rather than local funding, as recommended by Hill and Paige (1981,123) in their report "Defining the Local Contribution to Local Expenditures - A Preliminary Report." The overall increase in the local contribution or decrease in the provincial contribution to education funding was 2 percent over the period 1981 to 1985. There was up to a 9 percent (1985) difference in the provincial/local funding ratio between urban Public School Districts and rural Counties and a difference averaging 6 percent between urban RCSSD's and Public School Districts over the period of the study. The decrease in the proportion of provincial funding was found to be a long-term trend that has been well-documented elsewhere (Jefferson, 1982:123, Richards, 1986:30).

The study sub-problem related to provincial and local school funding is stated as follows.

Sub-problem 1.3: What was the distribution of combined provincial and local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Tables 4.11 to 4.14 provide measures of the fiscal equalization effects of provincial and local funding, utilizing weighted per pupil dollar inputs, the correlation coefficient, the Bigini coefficient and the coefficient of variation. The term "total funding" will also be used to refer to combined provincial and local funding to school jurisdictions.

Weighted per pupil dollar inputs. Over the period of the study, provincial and local funding to school jurisdictions increased substantially as indicated by weighted per pupil dollar inputs given in Table 4.11. For all school jurisdictions, the increase from $3031.33 per pupil in 1981 to $4260.72 per pupil in 1985 represented a 40.6 percent increase over 1981 funding. The Education Price Index for Alberta (Statistics Canada,1986) recorded only a 27.8 percent increase in education-related prices from 1981 to 1985. On a year to year basis, the percentage increase in total funding, compared to the percentage increase in the Education Price Index was as follows;

	1981-82	1982-83	1983-84	1984-85
Provincial and Local Funding Increase:	20.5%	9.9%	0.6%	5.6%
Education Price Index Increase:	15.6%	4.2%	2.7%	3.3%

Table 4.11

Combined Provincial and Local Funding for 1981 to 1985: Weighted Per Pupil Dollar Inputs

		1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	3031.33	3653.20	4010.82	4036.35	4260.72
Jurisdiction Type						
Divisions	N=30	3090.92	3761.80	4090.12	4135.56	4459.58
Counties	N=30	2854.44	3487.18	3739.03	3847.79	4070.62
Public Districts	N=25-27	3135.42	3759.78	4174.19	4120.38	4333.50
RCSSD	N=45-47	2955.14	3517.85	3890.92	3980.99	4146.89
Urban-Rural						
Large Cities	N=4	3080.00	3693.75	4131.37	4089.94	4286.79
Other Cities	N=17-19	3062.36	3668.77	4034.80	4021.94	4287.44
Total Cities	N=21-23	3076.35	3688.51	4110.51	4074.80	4272.97
Towns & Villages	N=46-47	3064.78	3602.48	3781.43	4068.77	4276.61
Total Urban	N=67-70	3077.71	3682.87	4087.28	4073.81	4273.16
Total Rural	N=69	2967.03	3605.09	3886.89	3972.95	4239.29

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

Weighted Per-Pupil Dollar Inputs = Σ Resident Pupils x Funding/Resident Pupils

There was no substantial difference in combined provincial and local funding between Total Urban and Total Rural jurisdictions over the five years of the study. However, urban jurisdictions consistently received slightly higher total funding than did rural jurisdictions. The difference in total funding ranged from a high of 5.2 percent in 1983, to a low of 0.8 percent in 1985. There were no appreciable differences in funding between the urban jurisdiction groupings of Large Cities, Other Cities and Towns and Villages from 1981 to 1985. Within jurisdiction types, however, funding differences did prevail. Per pupil provincial and local funding averaged 8.5 percent higher for School Divisions than for Counties over the five years of the study with a spread of 9.6 percent in 1985. Public School Districts averaged 5.7 percent higher total funding than RCSSD's from 1981 to 1985, with a high of 7.3 percent in 1983.

Correlation coefficients. Coefficients of correlation between total funding to schooljurisdictions and jurisdiction wealth, as measured by adjusted equalized assessment perpupil and by average private household income, are given in Table 4.12. Important correlation coefficients (>.250) are indicated in bold print. All correlation coefficients for assessment/wealth and total education funding are positive for the period of the study. Correlation coefficients for all jurisdictions are moderately positive and declining slightly from a high of .575 in 1982, to a low of .424 in 1984. Positive wealth correlations indicate that wealthier jurisdictions were receiving relatively more per pupil provincial and local funding than were less wealthy jurisdictions. Total funding to School Divisions was increasingly linked to wealth; correlation coefficients increased from .480 in 1981 to .664 in 1985. In comparison to Divisions, Counties displayed weak wealth correlations throughout the period of the study. The coefficient of correlation between wealth and Public School District total funding was strongly

positive in 1981 at .856 but had declined to .532 by 1985. There were no strong correlations between total education funding to RCSSD's and to Towns and Villages from 1981 to 1985. The correlations between wealth and educational funding were very high

Table 4.12

Relationship of Jurisdiction Wealth to Combined Provincial and Local Funding Given by the Correlation Coefficient

		1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	N=136-139	-0.060	**0.512**	**0.575**	**0.527**	**0.424**	**0.465**
Jurisdiction Type							
Divisions	N=30	-0.174	**0.480**	**0.534**	**0.560**	**0.647**	**0.664**
Counties	N=30	-0.092	0.163	**0.281**	**0.301**	0.131	0.181
Public Districts	N=25-27	**0.330**	**0.856**	**0.855**	**0.759**	**0.655**	**0.532**
RCSSD	N=45-47	0.077	**0.288**	0.222	**0.278**	**0.259**	**0.283**
Urban-Rural							
Large Cities	N=4	**-0.630**	**0.971**	**0.959**	**0.923**	**0.715**	**0.831**
Other Cities	N=17-19	**0.482**	**0.871**	**0.882**	**0.828**	**0.628**	**0.555**
Total Cities	N=21-23	**0.458**	**0.846**	**0.807**	**0.745**	**0.559**	**0.439**
Towns & Villages	N=46-47	-0.221	0.120	-0.012	0.029	0.058	0.087
Total Urban	N=67-70	-0.058	0.214	0.104	0.155	0.131	0.117
Total Rural	N=69	-0.081	**0.731**	**0.777**	**0.713**	**0.660**	**0.626**

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

** Wealth = Adjusted Equalized Assessment per Resident Pupil for the years 1981 to 1985.

*** The additional measure of wealth for the year 1981 was average private household income.
Average private household income data were available for 110 school jurisdictions (17 Divisions, 30 Counties, 19 School Districts, 41 RCCSD's, 4 Large City, 17 Other City, 21 Total City, 41 Towns and Villages, 62 Total Urban and 48 Total Rural) where the census boundaries were coterminous with school jurisdictions.

Important correlations (>.250) are given in bold print.

for Large City school districts in 1981 and in 1982. Total educational funding to Other City school districts displayed a high wealth correlation in 1981 of .871, declining to

.555 in 1985.

Coefficients of correlation for average private household income and total education funding for 1981 are notable only for the Public Districts and the Other City school jurisdiction groupings. For both jurisdiction groupings the correlation coefficient for the income/wealth measure is substantially less than for the assessment/wealth measure. Overall, the lack of strong positive or negative income/wealth correlations would seem to demonstrate that the distribution of combined provincial and local funding was more fiscally neutral in terms of income than in terms of assessment.

Bigini coefficient. The fiscal equalization effects of provincial and local funding to school jurisdictions, as measured by the Bigini coefficient, are given by Table 4.13. When using Bigini coefficients as a measure of fiscal equalization, the values can only be interpreted in a relative sense. Positive Bigini coefficients indicate that wealthy school jurisdictions are receiving more per pupil funding than less wealthy jurisdictions, while negative coefficients point to a situation of improving fiscal equalization for less wealthy jurisdictions. Examining the data in Table 4.13, it appears that from 1981 to 1985, there was comparatively little year to year variation in the values of Bigini coefficients for most jurisdiction groupings. There are three exceptions to this observation. There is a relatively large increase in the value of the negative Bigini coefficient from 1981 to 1982 for funding to RCSSD's (-.544 to -.638); a smaller decrease in the negative Bigini coefficient for Counties in 1982 (-.165 to -.119); and an increase for Other Cities in 1985 (-.180 to -.232). Consistently positive Bigini coefficients for total funding are unique to School Divisions. Although not strongly positive, this trend points to a distribution of funding that favours more wealthy School Divisions. Provincial and local funding to Counties favoured less wealthy jurisdictions,

with the exception of funding for 1985. In comparison to rural Divisions and Counties, Bigini coefficients for funding to urban Public School Districts and especially to RCSSD's

Table 4.13

Fiscal Equalization Effects of Combined Provincial and Local Funding Given by the Bigini Coefficient

		1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	N=136-139	-0.388	-0.346	-0.349	-0.361	-0.363	-0.358
Jurisdiction Type							
Divisions	N=30	-0.248	0.148	0.177	0.190	0.167	0.189
Counties	N=30	-0.247	-0.165	-0.119	-0.100	-0.096	0.098
Public Districts	N=25-27	-0.283	-0.399	-0.391	-0.387	-0.399	-0.411
RCSSD	N=45-47	-0.546	-0.544	-0.638	-0.661	-0.646	-0.662
Urban-Rural							
Large Cities	N=4	-0.122	-0.186	-0.190	-0.177	-0.207	-0.198
Other Cities	N=17-19	-0.146	-0.161	-0.171	-0.159	-0.180	-0.232
Total Cities	N=21-23	-0.324	-0.437	-0.481	-0.481	-0.514	-0.531
Towns & Villages	N=46-47	-0.294	-0.170	-0.122	-0.167	-0.082	-0.060
Total Urban	N=67-70	-0.493	-0.629	-0.667	-0.650	-0.647	-0.655
Total Rural	N=69	-0.211	0.103	0.139	0.141	0.129	0.140

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

** Wealth = Adjusted Equalized Assessment per Resident Pupil for the years 1981 to 1985

*** The additional measure of wealth for the year 1981 was average private household income.
Average private household income data were available for 110 school jurisdictions (17 Divisions, 30 Counties, 19 School Districts, 41 RCCSD's, 4 Large City, 17 Other City, 21 Total City, 41 Towns and Villages, 62 Total Urban and 48 Total Rural) where the census boundaries were coterminous with school jurisdictions.

are strongly negative which indicates that per pupil funding patterns were more favourable to less wealthy jurisdictions within these groupings. From the overall Urban Rural perspective, positive Bigini coefficients for funding to Total Rural jurisdictions indicate a slightly increasing tendency (1981= .103 to 1985= .140) to favour more

wealthy jurisdictions. Strongly negative Bigini coefficients for funding to the Total Urban grouping (1981= -.629 to 1985= -.655) demonstrates that less wealthy urban school jurisdictions received relatively more provincial and local funding.

In terms of the alternate wealth measure -- average private household income -- provincial and local funding to school jurisdictions for 1981 was more favourable to less wealthy jurisdictions in the Total Rural grouping. That is indicated by a negative Bigini coefficient (-.211), as opposed to the positive value associated with assessment (.103). For Total Urban school jurisdictions, the income/ wealth measure provides a slightly lower negative Bigini coefficient (-.493) for total funding than the assessment measure (-.629). The comparison suggests that, for both urban and rural jurisdictions, the distribution of provincial and local funding produced similar results when employing either of the two wealth measures.

Coefficient of variation. Coefficients of variation for combined provincial and local educational funding to Alberta school jurisdictions are given in Table 4.14. A consistent level of variation of 10.5 percent above or below the mean was found for all jurisdictions for the five years of the study. There is very little change in the coefficients of variation from year to year for any jurisdiction grouping. On a yearly basis, total funding for Divisions and for Counties shows the least variation, at less than 6.0 percent and 8.0 percent respectively. Public Districts and RCSSD's, display the highest variation in total educational funding , averaging 33.0 percent and 30.0 percent respectively, over the period of the study.

Examining the Urban-Rural groupings, there is a higher variation in the level of provincial and local funding for Total Urban jurisdictions. The major factor in this variation appears to be the four Large City jurisdictions (33.5 percent). This is evident

from the relatively small variation in funding indicated for the Other City (9.0 percent) and Towns and Villages (5.0 percent) groupings which make up the remainder of the

Table 4.14

Coefficients of Variation for Combined Provincial and Local Funding

		1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	0.104	0.105	0.105	0.105	0.104
Jurisdiction Type						
Divisions	N=30	0.056	0.056	0.058	0.059	0.058
Counties	N=30	0.077	0.078	0.078	0.078	0.079
Public Districts	N=25-27	0.335	0.336	0.334	0.329	0.326
RCSSD	N=45-47	0.289	0.282	0.274	0.269	0.267
Urban-Rural						
Large Cities	N=4	0.334	0.335	0.335	0.336	0.335
Other Cities	N=17-19	0.100	0.097	0.096	0.090	0.088
Total Cities	N=21-23	0.237	0.236	0.234	0.231	0.229
Towns & Villages	N=46-47	0.056	0.055	0.050	0.048	0.047
Total Urban	N=67-70	0.214	0.214	0.211	0.208	0.206
Total Rural	N=69	0.034	0.034	0.034	0.034	0.034

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

Total Urban category. Coefficients of variation for provincial and local funding to the various jurisdiction groupings were complementary to the findings for fiscal equalization identified through the application of Bigini coefficients. Specifically, those jurisdictions with relatively high negative Bigini coefficients for total funding, such as Public Districts and RCSSD's, were also found to have high coefficients of variation for provincial and local funding. Negative Bigini coefficients indicate that less wealthy jurisdictions were receiving more per pupil funding than more wealthy jurisdictions. The relatively high coefficients of variation confirm that there was a wide variation in funding that could be a result of directing higher levels of per pupil funding to less

wealthy jurisdictions.

Distribution of Combined Provincial and Local Funding: Findings

The findings related to the distribution of combined provincial and local funding to Alberta school jurisdictions were, as would be expected, a combination of the findings from Sub-problem 1.1 (provincial funding) and Sub-problem 1.2 (local funding). The increase in total educational funding from 1981 to 1985 (40.6 percent) was greater than the increase in the Alberta Education Price Index (27.8 percent). During the same period, the proportion of the provincial contribution to education funding declined by 2 percent. For all jurisdictions, positive wealth correlations indicate that wealthier jurisdictions were receiving relatively more per pupil provincial and local funding than were less wealthy jurisdictions. School Divisions received more per pupil funding than Counties, and Public School Districts received more funding than RCSSD's. Overall, urban jurisdictions received slightly more funding than rural jurisdictions. School Divisions were the only grouping where wealthy jurisdictions received relatively more funding. In all other jurisdiction groupings, less wealthy school jurisdictions benefited to a greater (Public School Districts, RCSSD's) or to a lesser (Counties, Towns and Villages) extent. Overall, less wealthy jurisdictions in urban areas received relatively more provincial and local funding than less wealthy jurisdictions in rural areas. The income/wealth measure indicates a distribution of total funding to school jurisdictions similar to the assessment/wealth measure, with a tendency for funding to less wealthy rural jurisdictions to be more favourable in terms of income than in terms of assessment.

PROBLEM 2

What were the fiscal equalization effects of the Alberta Education Equity Grant introduced in 1985?

This section contains an analysis of the distribution of the aggregated fiscal equalization grants (1981 to 1984) and the 1985 Equity Grant. The distribution of grants for 1981 to 1985 is first analyzed in terms of mills of tax relief in sub-problem 2.1. In sub-problem 2.2 the analysis of grants distribution for 1981 to 1985 employs the four statistical measures used in the analysis of fiscal equalization effects in problem 1. Finally, in sub-problem 2.3, the four statistical measures are used once again in analyzing the potential impact of the 1985 Equity Grant formula. This is accomplished by comparing the fiscal equalization effects of combined provincial and local funding, incorporating the hypothetical Equity Grant, (without the save-harmless constraints) to school funding with both the actual Equity Grant and with no Equity Grant. Before proceeding with the analysis of Problem 2, the proportion of school funding which is represented by equalization funding should be established.

Aggregated Fiscal Equalization Grants and the Equity Grant: Proportion of School Funding

It is worthwhile to place the magnitude of the aggregated equalization grants and the 1985 Equity Grant into perspective. The 1984 equalization grants represented just 3.43 percent of total provincial funding and 2.32 percent of combined provincial and local funding to all school jurisdictions. In 1985, the Equity Grant amounted to a slightly larger proportion of total provincial (3.56 percent) and combined provincial and local funding (2.41 percent). To clarify further the size and growth of provincial equalization

funding to Alberta school jurisdictions from 1981 to 1985, the funding amounts are given in Table 4.15. They are displayed in total dollars, in terms of dollars per resident

Table 4.15

Equalization Funding to Alberta School Jurisdictions: 1981-1985

	Funding	Per Resident Pupil	Funding Increase	Price Index Increase
	$ 31,472,768.00	$ 76.99		
	35,687,040.00	86.63	12.5%	15.6%
1983:	36,299,952.00	89.06	2.8%	4.2%
1984:	39,449,328.00	93.61	5.1%	2.7%
1985:	44,533,872.00	105.84	13.1%	3.3%

Funding = aggregated fiscal equalization grants (1981-84) and the 1985 Equity Grant

pupil, and in comparison to increases in the Alberta Education Price Index (Statistics Canada, 1986). Aggregated fiscal equalization grants did not keep pace with increases in the education price index from 1981 to 1984. In 1985, with the introduction of the new Equity Grant, an increase in equalization funding over the previous year (13.1 percent), which was well beyond the level of inflation (3.3 percent), signalled a stronger commitment to fiscal equalization on the part of Alberta Education.

Mills of Tax Relief: Analysis

Expressing equalization funding in terms of mills of tax relief provides a basis for comparing the range of assistance received by school jurisdictions within each jurisdiction grouping, for each of the five years of the study. In addition, longitudinal observations are made using data for the period 1975 to 1980 from a study by Jefferson (1982:89-98). The fourth sub-problem of the study is as follows:

Sub-problem 1: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in terms of mills of tax relief per school jurisdiction?

Tables 4.16 to 4.20 give the distribution of aggregated fiscal equalization grants and the 1985 Equity Grant to Alberta school jurisdictions for the period 1981 to 1985 in terms of mills of tax relief. The term "equalization grants" is used to refer collectively to the 1981-84 fiscal equalization grants and to the 1985 Equity Grant.

1981. Table 4.16 gives the distribution of aggregated fiscal equalization grants for 1981. All but two jurisdictions, one Public School District and one RCSSD, received provincial support, with 80 percent of all jurisdictions receiving 15 mills or less. For purposes of comparison, 15 mills of tax relief was established as the point beyond which extraordinary provincial support was being offered to less wealthy school jurisdictions. The 15 mill convention was also used by Jefferson (1982:89-98). The jurisdiction grouping that benefited most from fiscal equalization grants was RCSSD's. Almost half of RCSSD's received more than 15 mills of assistance, as compared to 6.7 percent for School Divisions, 3.3 percent for Counties and 4.0 percent for Public School Districts. Eight RCSSD's, or 17.7 percent, received more than 40 mills of support. From the Urban-Rural perspective, Towns and Villages were the recipients of the highest level of support; 43.5 percent received more than 15 mills, as compared to no support at that level for Large Cities and Other Cities and 7.2 percent for the Total Rural jurisdiction grouping. It would appear that RCSSD's situated in Towns or Villages received the highest level of tax relief from provincial fiscal equalization grants in 1981.

1982. Table 4.17 gives the distribution of aggregated fiscal equalization grants for 1982. One new RCSSD was added to the 1982 jurisdiction data. As in 1981, 99 percent

Table 4.16

Tax Relief to School Jurisdictions Provided by Fiscal Equalization Grants for 1981

Mills	0	.01-5.00	5.01-10.00	10.01-15.00	15.01-20.00	20.01-25.00	25.01-30.00	30.01-35.00	35.01-40.00	40.01 >	Total	%
Jurisdiction Type												
Divisions	0	18	5	5	0	0	0	1	0	1	30	23.1%
Counties	0	17	8	4	0	1	0	0	0	0	30	23.1%
Public Districts	1	14	6	3	0	0	0	0	1	0	25	19.2%
RCSSD	1	7	5	10	6	4	3	0	1	8	45	34.5%
Total	2	56	24	22	6	5	3	1	2	9	130	
(%)	1.5%	43.1%	18.5%	16.9%	4.6%	3.8%	2.3%	0.8%	1.5%	6.9%		
Urban-Rural												
Large Cities	1	3	0	0	0	0	0	0	0	0	4	2.9%
Other Cities	0	10	3	2	2	0	0	0	0	0	17	12.5%
Towns & Villages	1	4	10	11	5	3	3	0	2	7	46	33.9%
Total Rural	0	39	14	11	0	2	0	1	0	2	69	50.8%
Total	2	56	27	24	7	5	3	1	2	9	136	
(%)	1.5%	41.2%	19.9%	17.6%	5.1%	3.7%	2.2%	0.7%	1.5%	6.6%		

Tax relief in mills = aggregated fiscal equalization grants/adjusted equalized assessment /1000)

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants.

Table 4.17

Tax Relief to School Jurisdictions Provided by Fiscal Equalization Grants for 1982

Mills	0	.01-5.00	5.01-10.00	10.01-15.00	15.01-20.00	20.01-25.00	25.01-30.00	30.01-35.00	35.01-40.00	40.01->	Total	%
Jurisdiction Type												
Divisions	0	19	6	3	1	0	1	0	0	0	**30**	**22.9%**
Counties	0	18	7	3	1	1	0	0	0	0	**30**	**22.9%**
Public Districts	1	14	7	0	2	0	0	0	0	1	**25**	**19.1%**
RCSSD	1	6	7	11	4	4	0	3	2	8	**46**	**35.1%**
Total	2	57	27	17	8	5	1	3	2	9	131	
%	0.5%	43.5%	20.6%	13.0%	6.1%	3.8%	0.8%	2.3%	1.5%	6.9%		
Urban-Rural												
Large Cities	1	3	0	0	0	0	0	0	0	0	**4**	**2.9%**
Other Cities	0	9	5	3	1	0	0	0	0	0	**18**	**13.1%**
Towns & Villages	1	4	10	7	6	5		3	2	8	**46**	**33.6%**
Total Rural	0	41	15	8	2	1	1	0	0	1	**69**	**50.4%**
Total	2	57	30	18	9	6	1	3	2	9	137	
%	1.5%	41.6%	21.9%	13.1%	6.6%	4.4%	0.7%	2.2%	1.5%	6.6%		

Tax relief in mills = aggregated fiscal equalization grants/adjusted equalized assessment /1000)

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants.

Table 4.18

Tax Relief to School Jurisdictions Provided by Fiscal Equalization Grants for 1983

Mills	0	.01-5.00	5.01-10.00	10.01-15.00	15.01-20.00	20.01-25.00	25.01-30.00	30.01-35.00	35.01-40.00	40.01->	Total	%
Jurisdiction Type												
Divisions	0	18	6	4	1	0	1	0	0	0	30	22.6%
Counties	0	21	5	3	1	0	0	0	0	0	30	22.6%
Public Districts	2	17	3	2	1	0	0	0	0	1	26	19.5%
RCSSD	0	8	11	7	3	3	7	2	1	5	47	35.3%
Total	2	64	25	16	6	3	8	2	1	6	133	
%	1.5%	48.1%	18.8%	12.0%	4.5%	2.3%	6.0%	1.5%	0.8%	4.5%		
Urban-Rural												
Large Cities	2	2	0	0	0	0	0	0	0	0	4	2.9%
Other Cities	0	10	3	4	1	0	0	0	0	0	18	12.9%
Towns & Villages	0	8	11	6	5	3	7	2	1	5	48	34.5%
Total Rural	0	44	13	8	2	0	1	0	0	1	69	49.6%
Total	2	64	27	18	8	3	8	2	1	6	139	
%	1.4%	46.0%	19.4%	12.9%	5.8%	2.2%	5.8%	1.4%	0.7%	4.3%		

Tax relief in mills = aggregated fiscal equalization grants/adjusted equalized assessment /1000)

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants

Table 4.19

Tax Relief to School Jurisdictions Provided by Fiscal Equalization Grants for 1984

Mills	0	.01-5.00	5.01-10.00	10.01-15.00	15.01-20.00	20.01-25.00	25.01-30.00	30.01-35.00	35.01-40.00	40.01->	Total	%
Jurisdiction Type												
Divisions	0	20	5	3	0	1	1	0	0	0	30	22.4%
Counties	0	21	4	2	3	0	0	0	0	0	30	22.4%
Public Districts	1	16	5	3	1	0	0	0	0	1	27	20.1%
RCSSD	0	9	8	6	7	6	4	2	1	4	47	35.1%
Total	1	66	22	14	11	7	5	2	1	5	134	
%	0.7%	49.3%	16.4%	10.4%	8.2%	5.2%	3.7%	1.5%	0.7%	3.7%		
Urban-Rural												
Large Cities	1	3	0	0	0	0	0	0	0	0	4	2.9%
Other Cities	0	11	3	3	1	1	0	0	0	0	19	13.7%
Towns & Villages	0	6	9	8	8	5	4	2	1	4	47	33.8%
Total Rural	0	46	11	6	3	1	1	0	0	1	69	49.6%
Total	1	66	23	17	12	7	5	2	1	5	139	
%	0.7%	47.5%	16.5%	12.2%	8.6%	5.0%	3.6%	1.4%	0.7%	3.6%		

Tax relief in mills = aggregated fiscal equalization grants/adjusted equalized assessment /1000)

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants.

Table 4.20

Tax Relief to School Jurisdictions Provided by the Equity Grant for 1985

Mills	0	.01-5.00	5.01-10.00	10.01-15.00	15.01-20.00	20.01-25.00	25.01-30.00	30.01-35.00	35.01-40.00	40.01->	Total	%
Jurisdiction Type												
Divisions	0	19	1	5	2	1	1	0	1	0	30	22.4%
Counties	0	18	7	1	3	1	0	0	0	0	30	22.4%
Public Districts	2	13	5	4	2	0	0	0	0	1	27	20.1%
RCSSD	0	7	8	8	5	8	4	1	0	6	47	35.1%
Total	2	57	21	18	12	10	5	1	1	7	134	
%	1.5%	42.5%	15.7%	13.4%	9.0%	7.5%	3.7%	0.7%	0.7%	5.2%		
Urban-Rural												
Large Cities	2	2	0	0	0	0	0	0	0	0	4	2.9%
Other Cities	0	7	6	2	2	1	1	0	0	0	19	13.7%
Towns & Villages	0	6	7	10	6	8	3	1	0	6	47	33.8%
Total Rural	0	43	12	5	5	1	1	1	0	1	69	49.6%
Total	2	58	25	17	13	10	5	2	0	7	139	
%	1.4%	41.7%	18.0%	12.2%	9.4%	7.2%	3.6%	1.4%	0.0%	5.0%		

Tax relief in mills = Equity Grant/adjusted equalized assessment /1000)

1985 Equity Grant = Fiscal Capacity + Sparsity + Distance

of jurisdictions in 1982 received fiscal equalization grants. Overall, the number of jurisdictions which received more than 15 mills of tax relief increased slightly from 19.9 percent in 1981 to 22.0 percent in 1982. The distribution pattern for grants was largely unchanged from 1981. The exception was an increase in the number of Counties (1981=3.3 percent, 1982=6.6 percent) and Public School Districts (1981=3.0 percent, 1982=12.0 percent) that received more than 15 mills of tax relief.

1983. Table 4.18 gives the distribution of aggregated fiscal equalization grants for 1983. In 1983 one Public School District and one RCSSD were added to the jurisdiction data. In 1983, the number of jurisdictions receiving more than 15 mills in tax relief declined slightly to 20.2 percent as compared to 22.0 percent in 1982. Public School Districts receiving more than 15 mills of support declined from 12.0 percent in 1982 to 7.7 percent in 1983, while Counties receiving extraordinary grants decreased to the 1981 level of 3.3 percent. In 1983, one additional Large City school district received at least 5 mills of tax relief.

1984. Table 4.19 gives the distribution of aggregated fiscal equalization grants for 1984. In 1984 one Public School District was added to the jurisdiction data. For 1984, 22.9 percent of school jurisdictions received more than 15 mills in provincial support, increasing from 20.2 percent in 1983. The jurisdiction groupings which experienced increased tax relief beyond 15 mills were Counties (1983=3.3 percent, 1984=10.0 percent), RCSSD's (1983=44.7 percent, 1984=51.1 percent), Other Cities (1983=5.5 percent, 1984=10.5 percent), Towns and Villages (1983=47.9 percent, 1984=51.1 percent) and Total Rural (1983=5.8 percent, 1984=8.7 percent).

In examining the differences in the distribution of fiscal equalization grants from 1981 to 1984, some trends were observed. The number of jurisdictions receiving

support at the 0 to 5 mills level increased from 43.1 percent in 1981 to 49.3 percent in 1984. There were notable decreases at the 10 to 15 mills level (1981=16.9 percent, 1984=10.4 percent) and the 40 mills and over level (1981=6.9 percent, 1984=3.7 percent). Overall, the number of jurisdictions receiving tax relief at 15 mills and beyond increased from 20.0 percent in 1981 to 23.0 percent in 1984.

1985. Table 4.20 gives the distribution of the Equity grant for 1985. As the basis upon which the new Equity Grant was distributed was quite different from that of the previous fiscal equalization grants, some substantial differences were expected. These differences would, of course, be moderated by the 20 percent - 80 percent save-harmless provision in the 1985 formula. Tax relief provided by the Equity Grant beyond the 15 mill level was extended to 26.6 percent of jurisdictions from 22.9 percent in 1984. The increase in provincial support went to the Total Rural and Other Cities groupings. In the Total Rural grouping 13.0 percent received assistance beyond the 15 mill level in 1985, as compared to 8.7 percent in 1984, while in the Other Cities category, the increase was from 10.5 percent in 1984 to 21.0 percent in 1985. Fiscal equalization funding to the RCSSD grouping remained largely unchanged in 1985, the exception was an increase from four RCSSD's in 1984 to six in 1985, that received 40 mills or more in tax relief.

1975-1980. Data from a study by Jefferson (1982:89-98) revealed that the proportion of school jurisdictions receiving fiscal equalization grants in the period 1975 to 1980 grew slightly from 87 percent in 1975 to 90 percent in 1980. The study also indicated a gradual decrease in the numbers of school jurisdictions receiving 15 mills or more of tax relief, from 37 percent in 1975 to 25 percent in 1980. From 1975 to 1980 RCSSD's consistently benefited the most while School Divisions, Counties

and Public School Districts benefited the least from fiscal equalization funding.

Mills of Tax Relief: Findings

Examining fiscal equalization funding, expressed in terms of mills of tax relief, for the period 1975 to 1985, revealed some notable trends. There was a trend to extending equalization funding to almost all jurisdictions. All but two Large City school jurisdictions (99 percent) received tax relief from provincial equalization grants from 1981 to 1985. However, from 1975 to 1980, participation in equalization funding ranged from a low of 87.4 percent in 1976 when 20 jurisdictions received no additional funding to a high of 90.6 percent in 1978 when 15 jurisdictions did not receive equalization funding. There was a trend to decreased equalization funding beyond the 15 mill level. The number of school jurisdictions receiving more than 15 mills of tax relief declined in an irregular manner (1976 = 25 percent, 1978 = 34 percent, 1980 = 25 percent) from a high of 37 percent in 1975, to a low of 20 percent in 1983. There was an increase to 27 percent for the 1985 Equity Grant. From 1975 to 1985 RCSSD's consistently received the strongest provincial support beyond the 15 mill level . In comparison to the equalization grants of previous years, the 1985 Equity Grant provided slightly more assistance beyond the 15 mill level to all jurisdictions and improved tax relief to Other Cities, School Divisions and Counties.

Distribution of Aggregated Fiscal Equalization Grants and the Equity Grant: Analysis

This section of the study examines the fiscal equalization effects of aggregated fiscal equalization grants and the 1985 Equity Grant for the period 1981 to 1985. The analysis employs adjusted equalized assessment per pupil as the measure of wealth and, for purposes of comparison, average private household income as a wealth measure for

the year 1981. The related study sub-problem is stated as follows:

Sub-problem 2.2: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

The fiscal equalization effects of aggregated fiscal equalization grants and the Equity Grant, indicated by weighted per pupil dollar inputs, the correlation coefficient, the Bigini coefficient and the coefficient of variation are given in Tables 4.21 to 4.24.

Weighted per pupil dollar inputs. The distribution of fiscal equalization grants and the Equity Grant is given in terms of weighted per pupil dollar inputs in Table 4.21. Over the five-year period of the study, with the exception of 1985, equalization grants, expressed as weighted per pupil dollar inputs, did not keep pace with increases in educational costs in Alberta. Using 1981 as the base year (100), the increases in equalization grants to all jurisdictions from 1981 to 1985, when compared to the Education Price Index were as follows:

	1981-82	1982-83	1983-84	1984-85
Equalization Grants:	112.5	115.7	121.6	137.5
Education Price Index:	115.6	120.4	123.7	127.8

The 1985 Equity Grant marked a substantial departure from the equalization grant funding of previous years. The Equity Grant boosted the increase in the level of provincial equalization support to 9.7 percent above the increase in the Education Price Index. In reviewing the jurisdiction types, School Divisions, Counties and RCSSD's received equalization grants which were well above the value for all jurisdictions,

referred to here as the average, for each year of the study. In 1981, School Divisions and Counties received equalization grants which were, respectively, 71.6 percent and 22.7 percent above average. By 1984, this advantage had risen to 85.3 percent and to 31.4 percent. In 1985, the Equity Grant received by School Divisions was 86.1 percent and for Counties, 35.7 percent above the level for all jurisdictions. RCSSD's also enjoyed an

Table 4.21

Aggregated Fiscal Equalizations Grants and the Equity Grant: Weighted Per Pupil Dollar Inputs

		1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	76.99	86.63	89.06	93.61	105.84
Jurisdiction Type						
Divisions	N=30	132.09	155.61	168.44	173.47	196.95
Counties	N=30	94.50	113.70	110.95	123.04	143.67
Public Districts	N=25-27	26.94	25.24	28.70	35.03	41.09
RCSSD	N=45-47	119.98	130.60	122.67	116.87	122.43
Urban-Rural						
Large Cities	N=4	21.94	15.84	12.63	10.61	10.47
Other Cities	N=17-19	95.24	113.85	125.34	138.17	165.35
Total Cities	N=21-23	37.11	36.24	36.97	38.99	45.26
Towns & Villages	N=46-47	244.54	295.90	307.74	343.99	355.66
Total Urban	N=67-70	50.51	53.11	56.05	59.43	66.10
Total Rural	N=69	118.89	140.97	142.58	151.39	174.33

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants.

1985 Equity Grant = Fiscal Capacity + Sparsity + Distance

Weighted Per-Pupil Dollar Inputs = Σ Resident Pupils x Funding/Resident Pupils

advantage in equalization grants for the period 1981 to 1985. However, including the two Large City RCSSD's, which received relatively little equalization grant support, in

the RCSSD group funding data, served to dilute the impact of the values given for equalization funding to RCSSD's. The Towns and Villages grouping, in which 72 percent of the jurisdictions were RCSSD's and, which excluded the two Large City RCSSD's, gives a more accurate measure of the impact of equalization funding on RCSSD's. Towns and Villages received by far the most equalization funding in terms of weighted per pupil dollars at 217.6 percent above the 1981 average, growing to 267.5 percent above in 1984; and declining somewhat to 236.0 percent above the level of equalization grant funding for all jurisdictions in 1985.

Equalization funding for Public Districts was at only 35.0 percent of the level for all jurisdictions in 1981, increasing slightly to 37.4 percent in 1984 and again to 38.8 percent in 1985. Similar to the impact of the Large City RCSSD's on funding data for the RCSSD group, the weighted per pupil dollar data for Public Districts was strongly influenced by the two Large City Public Districts, which for most years of the study, received no equalization funding. Excluding the student populations of the two Large City Public Districts from the Public Districts data would have substantially increased the overall level of equalization grants in terms of weighted per pupil dollar inputs to Public Districts.

From an Urban-Rural perspective, the Total Rural grouping received much higher equalization grants in terms of weighted per pupil dollar inputs, than did the Total Urban grouping by a factor of three to one. Excluding the four Large City Districts from the data would [illegible] smaller gap in the levels of provincial support between the Rural and Urban groupings.

Correlations. Coefficients of correlation between equalization grants to school jurisdictions and jurisdiction wealth, measured by adjusted equalized

assessment per pupil and by average private household income are given in Table 4.22. Important correlation coefficients (>.250) are indicated in bold print. For All Jurisdictions, correlation coefficients are not significant for the years 1981 to 1984. There is a modest negative correlation of -.235 for the year of the new Equity Grant - 1985.

Table 4.22

Relationship of Jurisdiction Wealth to Aggregated Fiscal Equalization Grants and the Equity Grant Given by the Correlation Coefficient

	1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	**-0.333**	0.098	-0.122	-0.013	-0.145	**-0.235**
Jurisdiction Type						
Divisions	**-0.535**	0.062	-0.043	-0.112	-0.083	-0.066
Counties	**-0.426**	**-0.765**	**-0.688**	**-0.541**	**-0.483**	**-0.591**
Public Districts	-0.166	**0.676**	**0.399**	**0.484**	0.174	-0.122
RCSSD	**-0.432**	**-0.479**	**-0.489**	**-0.615**	**-0.500**	**-0.658**
Urban-Rural						
Large Cities	**0.584**	**-0.895**	**-0.939**	**-0.884**	**-0.796**	**-0.633**
Other Cities	-0.093	**-0.624**	**-0.670**	**-0.761**	**-0.778**	**-0.762**
Total Cities	-0.109	**-0.663**	**-0.737**	**-0.814**	**-0.821**	**-0.812**
Towns & Villages	**-0.468**	**-0.456**	**-0.381**	**-0.416**	**-0.370**	**-0.546**
Total Urban	**-0.445**	**-0.546**	**-0.452**	**-0.474**	**-0.466**	**-0.620**
Total Rural	**-0.279**	**0.465**	0.175	**0.318**	0.060	-0.105

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants

1985 Equity Grant = Fiscal Capacity + Sparsity + Distance

** The measure of wealth is adjusted equalized assessment per pupil for the years 1981 to 1985.

*** The additional measure of wealth used for the year 1981 is average private household income.

Important correlations (>.250) are given in bold print.

Wealth correlations for equalization funding to School Divisions and Counties show

strongly divergent characteristics. Unlike Counties, where equalization grants are associated with moderate to strong negative wealth correlations (1981= -.776, 1985= -.591), equalization grants to School Divisions are not strongly associated with property wealth for any year of the study. In 1981 however, there is a moderately strong negative correlation (-.535) between equalization assistance and the income/ wealth measure for School Divisions. The population may not be representative however. as only 17 of 30 School Divisions are included in the income/wealth data.

Correlation coefficients for Public School Districts and RCSSD's also display opposite trends. Wealth correlations are not strong for Public School Districts for 1984 and 1985 but are moderate to strong and positive for 1981 (.676), 1982 (.399), and 1983 (.484). This finding indicates that wealthy Public School Districts were receiving more equalization grant assistance than less wealthy districts from 1981 to 1983. RCSSD's are favoured with increasingly negative wealth correlations for all five years of the study (1981= -.479, 1985= -.658), signifying increasing government assistance to less wealthy RCSSD's. The income/wealth correlation for 1981 is not significant for Public School Districts but for RCSSD's it is moderately negative (-.432) and very similar to the assessment/wealth correlation (-.479)

From the Urban-Rural perspective, the effects of fiscal equalization funding were more favourable to urban than to rural jurisdiction groupings. For instance, equalization grants to the Total Cities grouping resulted in strong negative wealth correlations, rising from -.663 in 1981 to -.821 in 1984 and falling slightly to -.812 in 1985. Provincial equalization assistance to Towns and Villages also display moderate to strong negative wealth correlations (1981= -.456, 1985= -.546) and very similar results for the income (-.468) and the assessment/ wealth (-.456)

measures in 1981. In contrast, the Total Rural grouping consistently showed positive wealth correlations from 1981 to 1984 with a weak positive correlation for 1985. Overall, correlation coefficients indicate that equalization grants to urban jurisdictions favoured less wealthy jurisdictions more so than grants to rural jurisdictions.

For 1981, correlation coefficients for equalization grants to school jurisdictions in terms of the income/wealth measure are all negative. This indicates that equalization funding benefits jurisdictions that are less wealthy in relation to income. In comparison to the assessment/wealth measure, correlation coefficients for equalization funding, in terms of income/wealth, vary depending on the jurisdiction type. For instance, in the case of Counties (income = -.426, assessment = -.766), equalization funding in terms of income is not as favourable to less wealthy jurisdictions as in terms of property. For Towns and Villages (income = -.468, assessment = -.456) the correlation coefficients, using the two measures, are virtually the same.

Correlation coefficients clearly indicate the impact of the new Equity Grant for 1985. A marked increase in negative wealth correlations, pointing to improved funding to less wealthy jurisdictions, is apparent for Counties (1984 = -.483, 1985= -.591), RCSSD's (1984 = -.500, 1985= -.658) and for Towns and Villages (1984= -.370, 1985= -.546). Correlation coefficients revealed no increased fiscal equalization impact made by the 1985 Equity Grant for School Divisions, Public Districts or the City groupings.

Bigini coefficients. The fiscal equalization effects of the 1981 to 1984 fiscal equalization grants and the 1985 Equity Grant, as measured by the Bigini coefficient, are given in Table 4.23. In using Bigini coefficients as a measure of fiscal equalization, the values can only be interpreted in a relative sense. Positive Bigini coefficients

indicate that wealthy school jurisdictions are receiving more per pupil funding than less wealthy jurisdictions, while negative coefficients point to a situation of improving fiscal equalization for less wealthy jurisdictions. As would be expected, Bigini coefficients between equalization grants and jurisdiction wealth are negative for all jurisdiction

Table 4.23

Effects of Aggregated Provincial Fiscal Equalization Grants and the 1985 Equity Grant Given by the Bigini Coefficient

	1981 ***	1981 **	1982 **	1983 **	1984 **	1985 **
All Jurisdictions	-0.536	-0.591	-0.658	-0.645	-0.639	-0.670
Jurisdiction Type						
Divisions	-0.375	-0.186	-0.172	-0.198	-0.249	-0.282
Counties	-0.382	-0.452	-0.421	-0.385	-0.375	-0.414
Public Districts	-0.367	-0.491	-0.543	-0.494	-0.524	-0.656
RCSSD	-0.660	-0.718	-0.823	-0.843	-0.804	-0.820
Urban-Rural						
Large Cities	-0.388	-0.797	-0.846	-0.852	-0.840	-0.861
Other Cities	-0.302	-0.551	-0.556	-0.563	-0.579	-0.591
Total Cities	-0.409	-0.797	-0.844	-0.855	-0.883	-0.892
Towns & Villages	-0.394	-0.365	-0.362	-0.405	-0.254	-0.264
Total Urban	-0.662	-0.848	-0.878	-0.880	-0.858	-0.865
Total Rural	-0.300	-0.256	-0.272	-0.272	-0.289	-0.342

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants

1985 Equity Grant = Fiscal Capacity + Sparsity + Distance

** The measure of wealth is adjusted equalized assessment per pupil for the years 1981 to 1985.

*** The additional measure of wealth used for the year 1981 is average private household income.

groupings, for all five years of the study. There is a gradual increase in the value of the Bigini coefficient for all jurisdictions from -.536 in 1981 to -.670 in 1985. The

extent to which less wealthy jurisdictions received additional per pupil funding varied considerably among jurisdiction types. Bigini coefficients for Counties (1981= -.452, 1985= -.414) are consistently at a higher negative value than those for School Divisions (1981= -.186, 1985= -.282). Over the five-year period of the study however, Bigini coefficients for Counties are gradually declining, while for School Divisions, they are increasing. Although Bigini coefficients for Public School Districts (1981= -.491, 1985= -.656) and for RCSSD's (1981= -.718, 1985= -.820) are negative, for RCSSD's they are much more strongly negative, indicating a higher concentration of equalization grants to less wealthy RCSSD's.

From the Urban-Rural perspective, equalization funding provided more assistance to urban than to rural jurisdictions. Bigini coefficients for Large Cities, represented by the two RCSSD's, (the two Public Districts did not receive equalization grants for most years of the study) are strongly negative (1981= -.797, 1985= -.861) and for Other Cities, somewhat less negative (1981= -.551, 1985= -.591). Bigini coefficients for Towns and Villages are moderately negative and declining over the period of the study (1981= -.365, 1985= -.264). Overall, Bigini coefficients for equalization grants to urban jurisdictions are much more strongly negative than for rural jurisdictions. This indicates that more, less wealthy jurisdictions, received addition provincial assistance in urban areas than in rural areas.

Examining the average private household income measure of wealth for 1981, Bigini coefficients yield results for the income/wealth measure which are somewhat less favourable to relatively disadvantaged jurisdictions than does the assessment/wealth measure. The one exception to this observation is equalization grants to School Divisions. In this case it appears that the income-related Bigini coefficient (-.375) reflects much

more favourably on the distribution of provincial grants than does the assessment-related measure (.186). Once again, the findings for School Divisions are in question because data for only 17 of 30 Divisions were available. The 1985 Equity Grant yielded uniformly positive fiscal equalization results. This is indicated by increased negative Bigini coefficients for all jurisdiction groupings from 1984 to 1985. School jurisdictions which were comparatively less wealthy presumably benefited throughout the province.

Coefficient of variation. Coefficients of variation for equalization funding to Alberta school jurisdictions are given in Table 4.24. The values of the coefficients are

Table 4.24

Coefficients of Variation for Aggregated Provincial Equalization Grants and the 1985 Equity Grant

		1981	1982	1983	1984	1985
All Jurisdictions	N=136-139	0.026	0.020	0.017	0.014	0.015
Jurisdiction Type						
Divisions	N=30	0.048	0.049	0.049	0.050	0.052
Counties	N=30	0.041	0.040	0.041	0.042	0.045
Public Districts	N=25-27	0.103	0.037	0.036	0.038	0.039
RCSSD	N=45-47	0.204	0.166	0.138	0.113	0.115
Urban-Rural						
Large Cities	N=4	0.283	0.318	0.325	0.293	0.324
Other Cities	N=17-19	0.098	0.102	0.100	0.096	0.094
Total Cities	N=21-23	0.121	0.102	0.084	0.065	0.063
Towns & Villages	N=46-47	0.043	0.041	0.042	0.042	0.046
Total Urban	N=67-70	0.080	0.063	0.050	0.039	0.039
Total Rural	N=69	0.020	0.020	0.021	0.021	0.022

Fiscal Equalization Grants = Supplementary Requisition Equalization Grants, Private School Opening Grants, Small Jurisdiction Grants, Small School Assistance Grants, Declining Enrolment Grants, Location Allowances, Incremental Grants, and Corporate Assessment Grants.

1985 Equity Grant = Fiscal Capacity + Sparsity + Distance

very low for funding to all jurisdictions for the period of the study, with a range of between .026 in 1981 to .015 in 1985, or less than a 3.0 percent variation from the mean. For School Divisions, Counties and Public School Districts, coefficients of variation for equalization funding indicate a less than 5 percent variation from the mean and very little deviation from year to year from 1981 to 1985. Equalization funding to RCSSD's shows a decline in variation from .204 in 1981 to .115 in 1985. Coefficients of variation for provincial support to Large City Districts are relatively high and ranged from .283 in 1981 to .324 in 1985. The variation in funding to Other Cities is approximately 10 percent for the five years of the study. Equalization funding to the Towns and Villages grouping does not vary beyond 5 percent from 1981 to 1985. The 1985 Equity Grant is associated with a slight increase in the coefficients of variation for all jurisdiction groupings except Other Cities.

Distribution of Aggregated Fiscal Equalization Grants and the Equity Grant: Findings

A number of trends are apparent in examining the distribution of the 1981 to 1984 aggregated fiscal equalization grants and the 1985 Equity Grant. Fiscal equalization grants to Alberta school jurisdictions for the period 1981 to 1984 lagged behind increases in the Alberta Education Price Index. However, the increase in the 1985 Equity Grant over the 1984 equalization grants exceeded the increase in the Price Index by almost 10 percent. These figures support the claim on the part of Alberta Education that more emphasis would be placed on fiscal equalization funding in 1985. In terms of weighted per pupil dollar inputs, RCSSD's in Towns and Villages received by far the highest level of per pupil equalization funding over the five years of the study. From the Urban-Rural perspective, rural jurisdiction groupings received much higher

equalization grants than did urban groupings. Assessment/wealth correlations for equalization funding are strongly negative for Counties, RCSSD's, Other Cities, and Towns and Villages, for all years of the study. Wealth correlations are positive for Public Districts, for some years and not significant for School Divisions and Large Cities, for all years of the study. Negative Bigini coefficients indicate positive fiscal equalization effects for funding for all jurisdiction groupings, for all years of the study. Bigini coefficients are more strongly negative for Total Urban than for Total Rural jurisdictions. Coefficients of variation for equalization funding are highest for RCSSD's, Large Cities and Other Cities. Applying the income/wealth measure to the distribution of equalization funding for 1981 indicates that the positive fiscal equalization effects of the grants is somewhat less in terms of income than in terms of the assessment/wealth measure. In comparison to the 1984 aggregated fiscal equalization grants, the 1985 Equity Grant produced improved fiscal equalization effects for all jurisdiction groupings in terms of the Bigini coefficient. The exception to this finding is the Total Cities grouping. For Total Cities, the income/wealth correlations were slightly less negative in 1985. The 1985 Equity Grant yielded uniformly positive fiscal equalization results.

Potential Distribution of the 1985 Equity Grant: Analysis

This section of the study examines the potential fiscal equalization effects of the 1985 Equity Grant using adjusted equalized assessment per pupil as the measure of wealth. The related study sub-problem is stated as follows:

Sub-problem 2.3: What was the potential distribution of the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil?

Tables 4.25 to 4.28 provide measures of the fiscal equalization effects of the 1985 Equity Grant utilizing weighted per pupil dollar inputs, the correlation coefficient, the Bigini coefficient and the coefficient of variation. The Equity Grant allocations were subject to the save-harmless limitations of no less than 80 percent and no more than 120 percent of the value of the aggregated fiscal equalization grants for the previous year, 1984 . The analysis was conducted by deriving the amount of the potential per resident pupil 1985 Equity Grant for each jurisdiction by adding the values of the fiscal capacity, sparsity and distance components of the Equity Grant formula and ignoring the 80 percent - 120 percent save-harmless provision. The amount of the potential or "formula" Equity Grant which, for a number of the more wealthy jurisdictions, was a negative value, was then added to the per pupil provincial and local funding, also referred to as total funding, for each jurisdiction grouping. The resulting values, given in column C ("Formula Equity Grant"), of Tables 4.25 to 4.28, represent the true impact of the Equity Grant without the save-harmless provision. Potential per pupil provincial and local funding for each jurisdiction grouping, utilizing the Equity Grant formula, was then compared to two other values. The first value was per pupil funding received by jurisdictions in 1985, with the save-harmless provision in place, given in column B ("Equity Grant"). The second value was total per pupil funding minus the Equity Grant, given in column A ("Without Equity Grant").

Weighted per pupil dollar inputs. The distribution of provincial and local funding to Alberta school jurisdictions without the Equity Grant, with the actual Equity Grant and with the formula Equity Grant, is given in terms of weighted per pupil dollar inputs in Table 4.25. Due to save-harmless provisions, School Divisions and Public School Districts received, respectively, 2.7 percent and 3.4 percent more, and Counties,

0.6 percent less, total funding than the formula Equity Grant would have provided. In the Urban-Rural groupings, Large Cities received 3.3 percent more and Other Cities, 0.1 percent less, than formula local and provincial funding. RCSSD's and the Towns and Villages grouping received funding which was virtually the same as the potential support from the formula Equity Grant. It is interesting to note that the actual 1985 per pupil provincial and local funding of $4260.72 per pupil for all jurisdictions was 1.8 percent more than the $4187.08 per pupil which would have been received if the formula Equity Grant would have been in place.

Table 4.25

Combined Provincial and Local Funding for 1985: Weighted Per Pupil Dollar Inputs

		A. Without Equity Grant	B. Equity Grant (Save-Harmless)	C. Formula Equity Grant
All Jurisdictions	N=136-139	4154.88	4260.72	4187.08
Jurisdiction Type				
Divisions	N=30	4262.63	4459.58	4342.54
Counties	N=30	3926.95	4070.62	4095.65
Public Districts	N=25-27	4292.41	4333.50	4192.47
RCSSD	N=45-47	4024.46	4146.89	4153.91
Urban-Rural				
Large Cities	N=4	4276.32	4286.79	4151.46
Other Cities	N=17-19	4122.09	4287.44	4328.55
Total Cities	N=21-23	4227.71	4272.97	4177.28
Towns & Villages	N=46-47	3920.95	4276.61	4251.10
Total Urban	N=67-70	4207.06	4273.16	4182.18
Total Rural	N=69	4064.96	4239.29	4195.55

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

A. Provincial and local funding minus the Equity Grant
B. Provincial and local funding including the 1985 Equity Grant with the 20%-80% save-harmless provision
C. Provincial and local funding applying the Equity Grant formula without the save-harmless provision

Weighted Per-Pupil Dollar Inputs = Σ Resident Pupils x Funding/Resident Pupils

Correlation coefficients. Coefficients of correlation between combined provincial and local per pupil funding and adjusted equalized assessment per pupil, without the Equity Grant, with the actual Equity Grant and with the formula or potential Equity Grant, are given in Table 4.26. Important correlation coefficients (>.250) are indicated in bold print. The application of the formula Equity Grant, without the save-

Table 4.26

Relationship of Jurisdiction Wealth to Combined Provincial and Local Funding Given by the Correlation Coefficient

		A. Without Equity Grant	B. Equity Grant (Save-Harmless)	C. Formula Equity Grant
All Jurisdictions	N=136-139	**0.523**	**0.465**	**-0.548**
Jurisdiction Type				
Divisions	N=30	**0.689**	**0.664**	**-0.450**
Counties	N=30	**0.383**	0.181	**-0.523**
Public Districts	N=25-27	**0.502**	**0.532**	**-0.895**
RCSSD	N=45-47	**0.467**	**0.283**	0.240
Urban-Rural				
Large Cities	N=4	**0.907**	**0.831**	**0.554**
Other Cities	N=17-19	**0.693**	**0.555**	**0.380**
Total Cities	N=21-23	**0.631**	**0.439**	0.212
Towns & Villages	N=46-47	0.219	0.087	-0.188
Total Urban	N=67-70	**0.295**	0.117	-0.141
Total Rural	N=69	**0.645**	**0.626**	**-0.608**

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

A. Provincial and local funding minus the Equity Grant
B. Provincial and local funding including the 1985 Equity Grant with the 20%-80% save-harmless provision
C. Provincial and local funding applying the Equity Grant formula without the save-harmless provision

Important correlations (>.250) are given in bold print.

harmless provision, produces dramatic changes in wealth correlations for some

jurisdiction groupings. Correlation coefficients for School Divisions (.689), Counties (.383), Public School Districts (.502) and RCSSD's (.467) were positive for total funding without any form of Equity Grant. Applying the formula Equity Grant, however, produces moderate to strong negative wealth correlations for School Divisions (-.450), Counties (-.523), and Public School Districts (-.895) but no strong wealth correlations for RCSSD's. From the Urban-Rural perspective, no strong wealth correlations are apparent for potential Equity Grant funding for any urban grouping. For Total Rural jurisdictions however, the formula Equity Grant dramatically improves the wealth correlation from a strong positive value (.626) for the Equity Grant to a strong negative value (-.608) for the formula grant.

The equalization potential of the formula Equity Grant is apparent from the strong negative wealth correlation (-.548) for all jurisdictions. The effect of the 1985 save-harmless Equity Grant is to somewhat reduce the positive wealth correlations for school funding. For all jurisdictions, the correlation coefficient is reduced from .523, with no equalization funding to .465, with the save-harmless Equity Grant. The exception to this finding was total school funding to Public Districts where Equity Grant assistance produced a higher positive wealth correlation at .532 than the .502 correlation coefficient indicated for no Equity Grant.

Bigini coefficients. The fiscal equalization effects of provincial and local funding to school jurisdictions without the Equity Grant, with the actual Equity Grant and with the formula or potential Equity Grant, as measured by the Bigini coefficient, are given in Table 4.27. Using Bigini coefficients as a measure of fiscal equalization, the values can only be interpreted in a relative sense. Positive Bigini coefficients indicate that wealthy school jurisdictions are receiving relatively more per pupil funding than less

wealthy jurisdictions, while negative coefficients point to a situation of improving fiscal equalization for less wealthy jurisdictions.

Bigini coefficients indicate that the formula Equity Grant produces improved fiscal equalization effects, that is, coefficients which are more negative or less positive, for all school jurisdiction types. In comparing save-harmless Equity Grant funding to funding with the formula Equity Grant, Bigini coefficients for Counties (.098 to -.097),

Table 4.27

Equalization Effects of the 1985 Equity Grant Given by the Bigini Coefficient

		A. Without Equity Grant	B. Equity Grant (Save-Harmless)	C. Formula Equity Grant
All Jurisdictions	N=136-139	-0.339	-0.358	-0.415
Jurisdiction Type				
Divisions	N=30	0.210	0.189	0.084
Counties	N=30	0.089	0.098	-0.097
Public Districts	N=25-27	-0.402	-0.411	-0.559
RCSSD	N=45-47	-0.645	-0.662	-0.667
Urban-Rural				
Large Cities	N=4	-0.194	-0.198	-0.212
Other Cities	N=17-19	-0.211	-0.232	-0.246
Total Cities	N=21-23	-0.515	-0.531	-0.549
Towns & Villages	N=46-47	-0.048	-0.060	-0.068
Total Urban	N=67-70	-0.637	-0.655	-0.673
Total Rural	N=69	0.154	0.140	-0.083

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

A. Provincial and local funding minus the Equity Grant
B. Provincial and local funding including the 1985 Equity Grant with the 20%-80% save-harmless provision
C. Provincial and local funding applying the Equity Grant formula without the save-harmless provision

Public School Districts (-.411 to -.559) and RCSSD's (-.662 to -.667) are more

negative and, for School Divisions (.189 to .084), less positive, with the formula grant. The formula Equity Grant also provides more per pupil funding to less wealthy jurisdiction groupings in the Urban and Rural categories, as demonstrated by Bigini coefficients for Large Cities (-.198 to -.212), Other Cities (-.232 to -.246), Towns and Villages (-.060 to -.068) and Total Rural jurisdictions (.140 to -.083).

Bigini coefficients for the save-harmless Equity Grant also indicate positive fiscal equalization effects for all jurisdiction groupings with the exception of Counties, where provincial and local funding with the Equity Grant produces a more positive coefficient (.098) than funding without the additional assistance (.089). Wealthy County school systems apparently benefited more from the 1985 Equity grant than did less wealthy Counties.

Coefficient of variation. Coefficients of variation for provincial and local funding to school jurisdictions without the Equity Grant, with the actual Equity Grant and with the formula or potential Equity Grant, are given in Table 4.28. Coefficients of variation for formula Equity Grant funding indicate little variation in funding (less than 9 percent) to School Divisions, Counties, Towns and Villages, and Other Cities. Relatively high coefficients of variation for Public School Districts (.323) and RCSSD's (.267) are attributed to a wide variation in the level of educational funding to Large City jurisdictions. Overall there is very little difference in the coefficients of variation for provincial and local funding without the Equity Grant, with the save-harmless Equity Grant and with the formula Equity Grant.

Table 4.28

Coefficients of Variation for Combined Provincial and Local Funding for 1985

		A. Without Equity Grant	B. Equity Grant (Save-Harmless)	C. Formula Equity Grant
All Jurisdictions	N=136-139	0.107	0.104	0.102
Jurisdiction Type				
Divisions	N=30	0.060	0.058	0.059
Counties	N=30	0.081	0.079	0.080
Public Districts	N=25-27	0.329	0.326	0.323
RCSSD	N=45-47	0.272	0.267	0.267
Urban-Rural				
Large Cities	N=4	0.335	0.335	0.332
Other Cities	N=17-19	0.089	0.088	0.088
Total Cities	N=21-23	0.231	0.229	0.225
Towns & Villages	N=46-47	0.048	0.047	0.049
Total Urban	N=67-70	0.209	0.206	0.202
Total Rural	N=69	0.035	0.034	0.035

Provincial and Local Funding = SFPF + School Grants Regulations + Other Grants + Supplementary Requisition/Resident Pupils

A. Provincial and local funding minus the Equity Grant

B. Provincial and local funding including the 1985 Equity Grant with the 20%-80% save-harmless provision

C. Provincial and local funding applying the Equity Grant formula without the save-harmless provision

Potential Distribution of the 1985 Equity Grant: Findings

The strong fiscal equalization potential of the formula Equity Grant is clearly demonstrated by the analysis. Wealth correlations for equalization funding to all jurisdictions are moderately positive with the save-harmless Equity Grant but are reversed to moderately negative with the formula Equity Grant. Bigini coefficients for formula Equity Grant funding indicate improved fiscal equalization effects for all jurisdiction groupings without exception.

An interesting finding with respect to the formula Equity Grant is that less wealthy

jurisdictions in all groupings benefited to some degree from the formula grant but RCSSD's proved to benefit the least. It appears that, for RCSSD's, the formula or potential Equity Grant produces a fiscal equalization effect very similar to that of the save-harmless Equity Grant.

SUMMARY

Chapter 4 presented the analyses and findings of this study that was designed to determine the fiscal equalization effects of funding to Alberta school jurisdictions during the period 1981 to 1985. The analysis addressed two problems. The first was to assess the fiscal equalization effects of provincial and local funding of Alberta schools. The second was to determine the equalization effects of provincial fiscal equalization grants with particular attention to the 1985 Equity Grant.

The analysis of problem one revealed that provincial school funding was fiscally neutral while local funding was strongly and increasingly associated with school jurisdiction assessment/wealth over the period of the study. The analysis of problem two showed the strong fiscal equalization potential of the Equity Grant if applied to the funding of school jurisdictions without the restriction of the save-harmless provision.

CHAPTER 5

SUMMARY, CONCLUSIONS AND IMPLICATIONS

A summary of the study, including the purpose, the related literature, the research design, and the analyses and findings is given in this final chapter. Conclusions are presented based on the findings of the study and the chapter closes with a discussion of the implications which the study may present for theory, for further research and for practice in the funding of Alberta schools.

SUMMARY

Purpose of the Study

The primary purpose of the study was to determine to what extent the 1985 Equity Grant contributed to the improvement of the level of educational funding available to less wealthy Alberta school jurisdictions. In order to establish a basis for the analysis, the provincial and local school funding available to ten school jurisdiction categories was compared for the period 1981 to 1985.

Literature Review

The review of related literature provided a background to the various factors considered relevant to a study of the fiscal equalization effects of school funding in Alberta. The concept of equity, within the context of school finance, was first examined from a philosophical perspective and then placed within a conceptual framework which asked the questions equity for whom? equity of what? what equity principles? and how is equity measured? Child equity rather than taxpayer equity, and equity of inputs rather

than outputs were seen to be the concerns of most equity studies. Horizontal equity, vertical equity and equal opportunity were identified as the three principles governing the distribution of school funding. The concept "fiscal equalization" was seen to be most closely associated with the principle of vertical equity . Of the statistical measures of dispersion and relationship used in fiscal equalization studies, the coefficient of variation, the Gini coefficient, and Atkinson's index appeared to be the most significant measures of dispersion, while the correlation coefficient was the relational measure of choice. The literature revealed a large number of recent, equity-related school funding studies that have been conducted in the United States and, to a lesser extent, in Canada. Finally, recent school funding developments in Alberta were examined with attention to the introduction of the Alberta Education Equity Grant in 1985 and to the recent (1988) Alberta Education proposal to adopt non-residential tax revenue sharing as a means to improve equity in school funding across the province.

Research Design

The key elements of the study research design which are summarized here are the manner of grouping the school jurisdictions, the research problems and the statistical procedures utilized in conducting the study. For purposes of comparison, the jurisdictions were divided into ten categories based on urban-rural designation and on organizational type. Additionally, in order to establish a basis for the analysis, comparisons were made between the ten jurisdiction categories in terms of provincial, local and combined provincial and local school funding for the period 1981 to 1985.

The following two problem statements were used to define the purpose of the study:

Problem 1: What were the fiscal equalization effects of provincial and local funding of Alberta school jurisdictions for the period 1981 through 1985?

Problem 2: What were the fiscal equalization effects of the Alberta Education Equity Grant introduced in 1985?

Pursuing the first research question was meant to provide the longitudinal data necessary for assessing the fiscal equalization impact of the 1985 Equity Grant. Answering the second research question required a cross-sectional analysis of school funding for 1985.

The statistical measures employed in the analyses were measures of both dispersion and relationship. The measure used for the relationship between school funding and both property/wealth and income/wealth was the correlation coefficient. The measures of dispersion used were weighted per pupil dollar inputs, the Gini coefficient and the coefficient of variation.

Analysis and Findings

The analysis addressed the two problems stated above, as well as six sub-problems. The sub-problems are stated below, followed by a summary of the findings for problem one and for problem two .

Sub-problem 1.1: What was the distribution of provincial funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Sub-problem 1.2: What was the distribution of local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Sub-problem 1.3: What was the distribution of combined provincial and local funds to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Problem One: summary of the findings. What appear to be the most

significant fiscal equalization effects of provincial and local funding to Alberta school jurisdictions in the period 1981 to 1985 are summarized in point form as follows:

1. Combined provincial and local funding to school jurisdictions increased 12.8 percent more than the increase in the Education Price Index from 1981 to 1985. Local funding increased to a greater extent (15.4 percent) than provincial funding (7.4 percent).

2. Provincial school funding demonstrated fiscal neutrality, that is, it was not associated with assessment/wealth for any school jurisdiction grouping.

3. Local funding was strongly and increasingly associated with school jurisdiction assessment/wealth over the period of the study.

4. Combined provincial and local funding was positively associated with assessment/wealth for all jurisdictions, for all five years of the study.

5. With the exception of School Divisions, less wealthy school jurisdictions in all groupings realized a positive fiscal equalization effect from combined provincial and local funding from 1981 to 1985.

6. In terms of provincial funding, less wealthy urban jurisdictions tended to receive funding which produced superior fiscal equalization effects to those achieved by less wealthy rural jurisdictions.

7. In terms of local funding, wealthy rural jurisdictions and less wealthy urban jurisdictions contributed the highest per pupil funding over the period of the study

8. In 1981, provincial and local funding to rural jurisdictions produced superior fiscal equalization effects in terms of average private household income to those effects indicated for adjusted equalized assessment per pupil. For urban jurisdictions, the opposite situation prevailed. This finding is interpreted as a confirmation of the tendency

for rural tax payers to be less wealthy in terms of personal income as compared to property while urban taxpayers are more likely to be less wealthy in terms of property in comparison to personal income.

9. For all jurisdictions taken together, there was little difference found in the fiscal equalization effects of combined provincial and local funding in terms of the income/wealth measure in comparison to the property/wealth measure. This indicates that overall, the two measures have similar measurement characteristics. However, the income/wealth measure yields different results for urban and rural jurisdiction groups and could therefore be a valuable alternate means of distinguishing between urban and rural wealth for purposes of taxation.

10. The long-term increase in the proportion of local funding to education, is considered to be a growing force for fiscal disequalization due to the associated strong wealth correlations between local funding and jurisdiction wealth.

The findings resulting from the analysis conducted for problem one form the foundation for the analysis of problem two , which is the primary focus of this study. The sub-problems for problem two are as follows:

Sub-problem 2.1: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in terms of mills of tax relief per school jurisdiction?

Sub-problem 2.2: What was the distribution of aggregated fiscal equalization grants for the years 1981 through 1984, and the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil and to average private household income?

Sub-problem 2.3: What was the potential distribution of the 1985 Equity Grant to Alberta school jurisdictions in relation to adjusted equalized assessment per pupil?

Problem Two: summary of the findings. The basis of the analysis was to compare the hypothetical fiscal equalization impact of school funding with the formula Equity Grant to funding with the "save-harmless" Equity Grant and to funding with no Equity Grant. The fiscal equalization effects of Alberta Education equalization grant funding for the period 1981 to 1985 are summarized in point form as follows:

1. All jurisdictions, with the exception of two Large City districts (99 percent), received provincial equalization funding for each of the five years of the study. Jurisdiction participation in equalization grants increased to the 99 percent level from a low of 87 percent when 20 jurisdictions did not receive extra funding in 1976.

2. RCSSD's situated in Towns and Villages consistently received the highest level of per pupil equalization funding, in terms of mills of tax relief, during the period of the study.

3. Fiscal equalization grants to Alberta school jurisdictions for the period 1981 to 1984 lagged behind increases in the Alberta Education Price Index. However, the increase in the 1985 Equity Grant over the 1984 aggregated equalization grants exceeded the increase in the Price Index by almost 10 percent.

4. Fiscal equalization effects of provincial equalization funding, as indicated by the income/wealth measure, were similar to those of the assessment/wealth measure for most jurisdiction groupings. There was a tendency for equalization funding to benefit school jurisdictions that were less wealthy in terms of property than in terms of income.

5. Equalization funding produced consistently better fiscal equalization results for

urban as compared to rural jurisdictions.

6. The formula 1985 Equity Grant (without the save-harmless provision), would have produced improved fiscal equalization effects, in comparison to the save-harmless Equity Grant, for all jurisdictions groupings.

7. RCSSD's would have realized the least improvement in fiscal equalization effects from the formula 1985 Equity Grant. It appears that, for RCSSD's, the formula or potential Equity Grant produces a fiscal equalization effect very similar to that of the save-harmless Equity Grant.

The findings from the analysis of problem two are the most important aspect of this study. The former fiscal equalization grants and the Equity Grant are the only components of school funding which have exerted an influence for equalization of educational opportunity for Alberta elementary and secondary students.

CONCLUSIONS

This section discusses the conclusions related to the financing of Alberta schools arising from the analysis of study problems one and two.

Problem 1: Conclusions

The conclusions arising from the analysis of the fiscal equalization effects of provincial and local funding to Alberta school jurisdictions fall into three related areas. The areas are, first, the increase in school funding beyond the level of the Education Price Index, second, the increase in the local, in relation to the provincial contribution to school funding, and third, the potential use of an income/wealth measure.

Increasing overall school funding. From 1981 to 1985, the accumulated

increase in combined provincial and local school funding beyond the level of the Education Price Index was 12.8 percent. No doubt, a number of conclusions could be drawn from this fact, however, the conclusions discussed here are related to the reasons for increased funding and the potential long-term effects of this trend.

The overall increase in school funding may be attributed, in part, to a gradual expansion in educational program offerings in Alberta schools. In recent years there has been increasing pressure on schools to accommodate the perceived special needs of students (e.g. physically and mentally handicapped students, gifted students) and to attempt to ameliorate social problems (e.g. child abuse, AIDS education). A conclusion which may be drawn is that either Alberta Education or Alberta school jurisdictions (or both) are responsible for the expansion of educational programs to address societal pressures on school systems. It would likely be pointless to attribute increasing school funding to either school boards or to Alberta Education but the additional funds have come disproportionally from the local property tax. The increase beyond the level of the Education Price Index for local educational funding (15.4 percent) was substantially higher than the increase in provincial funding (7.4 percent) over the period of the study. This trend is reflected in the annual growth in the proportion of school funding which came from the local supplementary requisition. The proportion in 1985 was 30.6 percent which was a 2 percent increase over the 1981 level. This increase is part of a long-term trend beginning in 1961 when the local supplementary requisition was 5.4 percent of school funding (Alberta Education, 1987).

Should the long-term trend to an increasing proportion of local funding continue, two serious results (among others) may emerge. As property taxes increase there is the potential for a property taxpayer revolt in an aging society where increasingly fewer

householders have children in school. There is also a potential for revolt among non-residential property taxpayers as the annual tax bill climbs beyond the level of inflation. The other possible result of the long-term increase in the proportion of school funding drawn from the local tax base is the potential for school jurisdictions to diverge in program offerings. As the proportion of local school funding approaches and exceeds 50 percent, especially with the larger jurisdictions, it is likely that school boards will be increasingly reluctant to follow the dictates of Alberta Education. This situation may result in a lack of uniformity in program offerings and an even wider variation in student educational opportunity than already exists across the province. Within the context of this study however, the most serious consequence of increasing local school funding is the negative impact on fiscal equalization.

Increasing local school funding. The increasing proportion of school funding that is derived from the local supplementary requisition is the single, most significant force for fiscal disequalization for Alberta schools. While school funding from provincial sources is fiscally neutral, local school funding is positively associated with assessment/wealth for all five years of the study. Due to the influence of local fiscal appropriations, combined provincial and local funding is also positively associated with jurisdiction wealth. Should the proportion of local funding continue to increase from year to year, the gap between the resources committed to students in wealthy school jurisdictions and to those in less-wealthy jurisdictions will continue to grow. The Alberta Education proposal (Alberta Education, 1987) to pool and redistribute non-residential tax assessment, would be one means of halting this trend. This change in the school funding regimen would result in a drop in the proportion of local funding from 30.6 percent (1985) to approximately 22 percent (1988). The recommendation of the

1982 Ministers' Task Force on School Finance (Alberta Education, 1982) to increase the proportion of the provincial contribution to 85 percent of school funding is potentially an even more effective means of enhancing fiscal equalization. The additional funds required to achieve an 85 percent provincial share would presumably come from general revenues. The provincial income tax forms the largest component of provincial general revenues, therefore the contribution paid by taxpayers to school funding would be substantially based on personal income. The possibility of using personal income instead of property as a measure of wealth is a component of this study. The possibility of employing an income/wealth measure for the purpose of exacting a local education tax is discussed in the next section.

The income/wealth measure. The study revealed that using income as a measure of wealth would have the advantage of differentiating between taxpayers who are wealthy in terms of income but not in terms of property and vice versa. A possible fiscal equalization-related consequence of this finding could be to explore the possibility of using a combined income/wealth - assessment/wealth measure for determining local school taxes. This approach may result in a more equitable distribution of locally-derived funds in support of schools across the province. That is, jurisdictions that are, for example, less wealthy in terms of property but more wealthy in terms of income, may be able to derive more revenue from the personal income component of a local education tax formula. The conclusions arising from the analysis of problem two are discussed in the next section.

Problem 2: Conclusions

The conclusions drawn from the analysis of the fiscal equalization effects of provincial equalization funding to Alberta school jurisdictions are divided into three

related areas. The areas are, first, the fiscal equalization impact of equalization funding over the period of the study, second, the potential impact of the 1985 Equity Grant, and third, the limitations of the Equity Grant formula.

The impact of equalization funding. As would be expected, equalization funding for the period 1981 to 1985 showed positive fiscal equalization results for all jurisdiction groupings. Overall, fiscal equalization effects for urban jurisdictions were substantially superior to those of rural jurisdictions. RCSSD's, which are urban jurisdictions, consistently received the highest level of equalization assistance. The conclusion which may be drawn from this finding is that, given equal SFPF funding, RCSSD access to the local property tax base must be uniformly inferior to that of other types of school jurisdictions. Perhaps dealing with the problem of equal access to funding from the local supplementary requisition for RCSSD's should be another fiscal equalization option to explore. Consequences arising from the adoption of the new Equity Grant formula in 1985 is the focus of the next section.

The potential impact of the 1985 Equity Grant. The 1985 Equity Grant produced fiscal equalization results that were consistently superior to those of the aggregated equalization grants of previous years. The Equity Grant in its save-harmless form, however, did not alter the relative magnitude of the fiscal equalization effects achieved by jurisdiction groupings, that is, the situation of less wealthy jurisdictions did not substantially improve in relation to other jurisdictions. The potential fiscal equalization effects of the hypothetical or formula Equity Grant however, were a major improvement over those of the save-harmless Equity Grant. Full implementation would eliminate the Equity Grant for a large number of the more wealthy jurisdictions and produce a dramatic positive to negative turnaround in wealth correlations (Table 4.26).

The obvious conclusion to be drawn here is that the removal of the save-harmless provision of the Equity Grant would have an immediate positive influence on fiscal equalization. This step was proposed as Option 2 in the Alberta Education discussion paper *Equity in Education Funding* (Alberta Education, 1987). Option 2 was favoured by most school jurisdictions as implementation would require a substantial increase in Alberta Education funding, presumably from general revenues. The limitations of the Equity Grant formula are discussed in the next section.

Limitations of the Equity Grant formula. The Equity Grant formula is subject to some limitations with respect to reliably measuring the relative prices of providing educational services in school jurisdictions. The fiscal capacity component of the Equity Grant formula relies on specific data, that is, the equalized assessment, which provides a quantifiable means of comparing the wealth of school jurisdictions. The sparsity and distance components of the formula however, are based on criteria that are difficult or impossible to relate to the prices of education-related goods and services. The sparsity calculation is based on the assumption that jurisdictions with small student populations in relation to geographic area are required to operate small schools with low pupil-teacher ratios at a relatively high per pupil cost. The calculation of the sparsity grant, however, is not linked to empirical data that verifies the supposed increased per pupil costs for each of the sparsely-populated jurisdictions. The distance component of the formula also lacks an empirical basis. Although distance from a major population centre may be related to increased costs for transportation of supplies or for teacher isolation pay, there is currently no Alberta Education Price Index incorporating regional indices that would confirm this belief. A study published in 1981 (Peat, Marwick and Partners, 1981), meant to revise the Alberta Education Price Index, did

not identify significant regional variations in education-related prices. The study states that "overall results indicated practically no price variations between large and small areas, between city districts and other, and between regional zones (Peat, Marwick and Partners, 1981:151)." The conclusion which may be drawn from these observations is that the manner of calculating the sparsity and distance components of the Equity Grant formula is questionable due to the lack of empirical data related to educational prices across the province. The next section discusses the implications arising from the study.

IMPLICATIONS

This section presents the implications for financing Alberta schools arising from the analysis of study problems one and two. The implications are discussed from three perspectives: implications for theory, for further research and for practice.

Implications for Theory

The implications for theory discussed here are related to three areas; the use of a new statistical measure of dispersion, the use of an alternative measure of school jurisdiction wealth and an examination of the directions which may be taken in the further development of fiscal equalization research. The three areas are as follows:

1. The Bigini coefficient (Lows, 1984), adopted for this study, which compensates for deficiencies of the Gini coefficient, should provide a more accurate measure of dispersion if employed in future fiscal equalization studies.

2. Employing personal income or, in the case of this study, average private household income, as a measure of wealth has often been advocated in education finance literature. Unfortunately the income data available for this study were limited to the

census year 1981 and were not coterminous for some School Divisions. However, the viability of using personal income as an alternative measure of wealth to assessed valuation of property has been clearly demonstrated in this study.

3. This study, and most similar studies, adopt a conceptual framework which bases the analysis of fiscal equalization effects on education dollar inputs. In the past, few studies have pursued an analysis of educational outputs or outcomes in relation to fiscal equalization due to the difficulty of measuring these concepts. However, educational production function studies are likely to receive increased attention in the future. Benson (1978:188) states that "the studies attempt to relate the production of certain measurable and, presumably important educational outcomes to the consumption by school districts of certain defined school resources." This approach is perhaps more succinctly expressed by Ratsoy et al (1981:75) as follows: "an education production function is an attempt to relate the outcomes of education to the inputs." Linking the educational production function to fiscal equalization studies is the likely direction for further theoretical development in this area.

Implications for Further Research

The implications arising from this study for further research are stated here in the form of recommendations to those who wish to pursue research related to fiscal equalization in the funding of Alberta schools.

1. This study grouped school jursidictions by organizational type and by urban/rural designation. Further studies could group jurisdictions by student population size , by geographic location (i.e., north, central, south) or by student population density (sparsity).

2. In addition to the correlation coefficient, slopes and elasticities are two more

measures of relationship which could be employed in a fiscal equalization study.

3. To add an alternative dimension to the measures of dispersion used in this study, a normative measure of inequality such as the Atkinson index could be employed.

4. A further fiscal equalization study could focus on expenditures as an alternative resource input factor to revenues.

5. Despite the difficulties involved in measuring equality of educational outcomes, (Rossmiller, 1987), research should proceed in this area because outcomes are surely more significant to fiscal equalization than educational inputs.

6. Further research could proceed with the feasibility of using an income/wealth measure and/or a combined income/wealth - assessment/wealth measure for assessing local school taxes. Such research would require access to provincial income tax data on a yearly basis.

7. Further research could add the years 1986 and 1987 to the analysis of the fiscal equalization effects of the Equity Grant.

8. Assessing the fiscal equalization impact of the Alberta Department of Education proposal to adopt full non-residential tax revenue sharing would be a timely research topic.

Implications for Practice

The implications for practice arising from the study are discussed here in the form of recommendations for the development of a means of measuring the fiscal equalization effects of Alberta Department of Education funding. The Alberta Department of Education will hereafter be referred to by its' formal name, Alberta Education. The recommendations are made with the knowledge that the Equity Grant has not been subject to fiscal equalization analysis by Alberta Education. The recommendations are as follows:

1. Alberta Education should consider the possibility of adopting this study as a conceptual framework for evaluating the fiscal equalization effects of the Equity Grant. The expertise and resources exist at Alberta Education to subject existing financial data to well-proven statistical measures of equality on an annual basis. Resulting findings would either serve to lend credibility to the distribution of the Equity Grant in the eyes of the public (school boards) or provide the requisite information for modifying the Equity Grant formula.

2. Alberta Education should study the feasibility of reviving the concept of a regionalized Education Price Index (Peat, Marwick and Partners, 1981) in order to document regional educational cost differences. The development of such a data base was abandoned by Alberta Education due to perceived high costs. However, such information would seem to be essential as a basis for accurately determining the distance and sparsity components of the Equity Grant. Without such reliable data it would seem advisable to drop these two grants and retain only the fiscal capacity component. This step would serve to realize the grant simplification objective of the Alberta Education Management and Finance Plan, at least with respect to equalization funding.

3. Alberta Education should assess the value of conducting on-going research related to the impact of provincial and local funding on education. Ratsoy et al (1981:76) state that "a comprehensive and balanced program of research would ensure that policy making on education finance is adequately informed." For example, the recent Alberta Education discussion paper which presented five options for reforming school funding (Alberta Education, *Equity in Education Financing,* 1987) would appear to require a more rigorous analysis for fiscal equalization effects than is provided in the document. Furthermore, no analysis of fiscal equalization effects for the Equity Grant was

conducted by Alberta Education, which of course, provided the impetus for this study.

CONCLUDING COMMENT

A few remarks on the potential contribution of this study to the education finance literature concerned with fiscal equalization would seem to be in order. The study is very timely in light of current Alberta Education proposals to improve fiscal equalization contained in the discussion paper *Equity in Education Financing*. The study is conceptually a follow-up of a similar study by Jefferson (1982) but with the some notable differences. The number of school jurisdiction groupings is expanded to ten from five and an urban-rural dimension is added to the analysis. Adjusted equalized assessment is used as the assessment/wealth measure instead of equalized assessment. Weighted per pupil dollar inputs are added as a measure of horizontal equity. A new statistical measure of inequality is pioneered, the Bigini coefficient. The potential of using personal income as a measure of wealth within the context of education finance is explored. The most significant contribution of the study however, is that it is the first attempt to establish a conceptual framework for the analysis of the fiscal equalization effects of the Alberta Education Equity Grant.

References

Alberta Education

1987 Equity in Education Financing (discussion paper). Edmonton.

Alberta Education

1981 Financing K-12 Schooling in Alberta. Edmonton.

Alberta Education

1982 . Financing Schooling in Alberta: Report of the Minister's Task Force on School Finance. Edmonton.

Alberta Education

1984 Management Finance Plan: Information Package. Edmonton.

Alberta Education

1975 . The Minister's Advisory Committee on School Finance (1975 Report). Edmonton.

Alberta Education

1985 News Release No. 1, January 8, 1985.

Alberta Education

1985 Program Policy Manual, Third Edition. Edmonton.

Alberta Education

1984 School Grant Simplification and Deregulation: Report of the School Grant Simplification and Deregulation Project. Edmonton: Alberta Education.

Alexander, Kern

1982 "Concepts of equity." in Walter W. McMahon and Terry G. Geske (eds.), Financing Education: Overcoming Inefficiency and Inequality. Urbana: University of Illinois Press.

Alexander, Kern and Lee Shiver

1983 "Equalization among Florida school districts." Journal of Educational Finance 9 (Summer) : 53-62.

Atherton, Peter J.

1985 "Education finance in 1985: what's going on?" Education Finance in Alberta: Problems and Perspectives. Edmonton: The Alberta Teachers' Association: 46-52.

Augenblick, John and C. Kent McGuire

1983 "Changes in the equity of school finance systems in Oklahoma, Delaware and Alaska." Journal of Education Finance 8 (Spring): 436-448.

Benson, Charles S.

1978 The Economics of Public Education. Boston: Houghton Mifflin.

Berne, Robert and Leanna Stiefel

1979 "Concepts of equity and their relationship to state school finance plans." Journal of Education Finance 5 (Fall): 109-132.

Berne, Robert and Leanna Stiefel

1984 The Measurement of Equity in School Finance: Conceptual, Methodological and Empirical Dimensions. Baltimore: Johns Hopkins University Press.

Bezeau, L. M.

1977 "Equality of educational opportunity and inequality of per pupil expenditures." The Alberta Journal of Educational Research 23 (September): 218-225.

Bezeau, L. M.

1986 "Level and inequality of per pupil expenditure as a function of finance centralization." The Alberta Journal of Educational Research 32 (June): 80-90.

Bezeau, L. M.

1979 "Measures of inequality of per pupil expenditure: application to Ontario." Journal of Education Finance 5 (Fall): 133-148.

Bumbarger, C. S., D. M. Richards and J. E Seger

1982 Funding Basic Education in Alberta Final Report. Edmonton: The University of Alberta, Department of Educational Administration.

Caldwell, Brian

1981 "Alberta school finance developments, 1972 - 1980." Financing K-12 Schooling in Alberta. Edmonton: Alberta Education: 9:26.

Carroll, Stephen, J.

1982 "The search for equity in school finance." Walter W. McMahon and Terry G. Geske, editors. Financing Education: Overcoming Inefficiency and Inequity. Urbana: University of Illinois Press: 237-267.

Cibulka, James G.

1986 "An examination of alternative poverty measures for the Wisconsin equalization aid formula." Journal of Education Finance 11 (Winter): 331-346.

Cohen, Matthew C.

1983 "Tax capacity, tax effort, and state funding of schools in Ohio." Journal of Education Finance 9 (Fall): 141-156.

Cohn, Elchanan

1979 The Economics of Education. Cambridge: Ballinger.

Council of Ministers of Education, Canada

1986 The Financing of Elementary and Secondary Education in Canada. Toronto: Council of Ministers of Education, Canada.

Cronk, Cynthia A. and Gary P. Johnson

1983 "An equity grant analysis of Pennsylvania's basic instruction subsidy program." Journal of Education Finance 8 (Spring): 502-510.

Delseach, Donal

1974 Fiscal Equalization of School System Revenues Under the Alberta Foundation Program, 1961-1971. Unpublished Doctoral Dissertation, The University of Alberta.

Duke, W. R.

1985 "The Alberta management and finance plan in education: impact on direction." Education Finance in Alberta: Problems and Perspectives. The Alberta Teachers' Association: Edmonton: 35-39.

Garms, Walter I.

1979 "Measuring the equity of school finance systems." Journal of Education Finance 4 (Spring): 415-435.

Garms, Walter I., James W. Guthrie and Lawrence C. Pierce

1978 School Finance: the Economics and Politics of Public Education. Englewood Cliffs, New Jersey: Prentice-Hall.

Goertz, Margaret E. and George Alan Hickrod

1983 "Evaluating the school finance reforms of the 1970's and 1980's: part 2." Journal of Education Finance 9 (Summer): 1-4.

Goertz, Margaret E.

1983 "School finance in New Jersey: a decade after Robinson and Cahill." Journal of Education Finance 8 (Spring): 475-489.

Gordon, W. R.

1985 "General principles of education finance." Education Finance in Alberta: Problems and Perspectives. The Alberta Teachers' Association: Edmonton: 1-5.

Greene, Kenneth V.

1979 "The equalization effects of district power equalization: a review of the economics literature." Journal of Education Finance 5 (Fall): 187-214.

Hickrod, G. Alan and Ben C. Hubbard

1978 "The 1973 school finance reform in Illinois: quo jure? quo vadis ?" Journal of Education Finance 4 (Spring): 412-431.

Hickrod, G. Alan, Philip Lake and Ben C. Hubbard

1981 "Percentage of state funds and equity in Illinois school finance." Journal of Education Finance 7 (Fall): 230-231.

Hickrod, G. Alan, Ramesh B. Chaudhari and Virginia Lundeen

1980 "Progress toward school finance equity goals in Indiana, Iowa and Illinois." Journal of Education Finance 6 (Fall): 176-200.

Hickrod, G. Alan, Ramesh B. Chaudhari and Ben C. Hubbard

1983 "The decline and fall of school finance reform in Illinois." Journal of Education Finance 9 (Summer): 17-38.

Hill, W. L. and H. King

1981 "Fiscal equalization among Alberta school systems." Financing K-12 Schooling in Alberta. Edmonton: Alberta Education: 127-146.

Hill, W. L. and Bruce Paige

1981 "Defining the local contribution to local school expenditures - a preliminary report." Financing K-12 Schooling in Alberta. Edmonton: Alberta Education: 123-125.

Hopeman, Alan

1985 "Education finance legislation in Minnesota in 1985." Journal of Education Finance 11 (Summer): 112-121.

Hornbostel, Victor O.

1985 "Percentage equalizing for financing Oklahoma's schools: a preferred approach." Journal of Education Finance 10 (Winter): 398-406.

Jefferson, Anne L.

1982 The Fiscal Equalization Effects of the Existing and Alternative Educational Finance Plans in Alberta. Unpublished Doctoral Dissertation: The University of Alberta.

Jefferson, Anne L.

1983 "Assessment of fiscal equity: how well have we done?" Journal of Education Finance 9 (Fall): 171-184.

Jefferson, Anne L.

1985 "Support of small school jurisdictions in Alberta." The Alberta Journal of Educational Research (March): 35 - 40.

Johns, Roe L.

1977 "Analytical tools in school finance reform." Journal of Education Finance 2 (Spring): 499-508.

Johns, Roe L., Edgar L. Morphet and Kern Alexander

1983 The Economics and Financing of Education. Englewood Cliffs, New Jersey: Prentice-Hall.

Johns, Roe L.

1975 "An index of extra costs of education due to sparcity of population." Journal of Education Finance 1 (Fall): 159-204.

Jones, Helene Boe and Richard G. Salmon

1985 "A seven year fiscal equalization analysis of the Virginia public school finance program." Journal of Education Finance 10 (Spring): 524-534.

Jordan, K. Forbis and McKeown, Mary P.

1980 "Equity in financing public elementary and secondary schools." School Finances Policies and Practices: The 1980's: A Decade of Conflict. Cambridge: Ballinger.

Kaiser, Harry M. and Glenn L. Nelson

1982 "Inequality and the Minnesota referendum levy." Journal of Education Finance 8 (Fall): 152-169.

King, Richard A.

1983 "Equalization in New Mexico school finance." Journal of Education Finance 9 (Summer): 63-78.

Krupey, Joyce E. and Alan Hopeman

1983 "Minnesota school finance equity, 1973-1982." Journal of Education Finance 8 (Spring): 490-501.

Lake, Philip

1983 "Expenditure equity in the schools of Atlantic Canada." Journal of Education Finance 8 (Spring): 449-460.

Lawton, Stephen B.

1981 "Political values and educational policy." What's So Canadian About Canadian Educational Administration? Richard G. Townsend and Stephen B. Lawton, editors. Toronto: Ontario Institute for Studies in Education.

Lawton, Stephen B.

1979 "Political values in educational finance in Canada and the United States." Journal of Education Finance 5 (Summer): 1-18.

Lawton, Stephen B.

1987 The Price of Quality: the Public Finance of Elementary and Secondary Education in Canada. Toronto: Canadian Education Association.

Lows, Raymond L.

1985 "Elements of inequality in Illinois school finance." Journal of Education Finance 11 (Summer): 40-55.

McMahon, Walter W.

1978 "A broader measure of wealth and tax effort for educational equality and tax equity." Journal of Education Finance 4 (Summer): 65-88.

MacPhail-Wilcox, Bettye

1985 "Fiscal equity for public schools in a nonreform state: North Carolina, 1975 to 1983." Journal of Education Finance 10 (Spring): 417-425.

Mark, Jonathan H. and Norman E. Carruthers

1982 "Alternative school finance philosophies: the case of equity in British Columbia." Journal of Education Finance 8 (Fall): 192-208.

Milne T. A.

1982 An Examination of the Equalizing Effects of the Alberta School Supplementary Requisition Equalization Grant. An unpublished Master's Thesis, University of Alberta.

Morgan, Edward

1985 "Obstacles to educational equity: state reform and local response in Massachusetts, 1978-1983." Journal of Education Finance 10 (Spring): 441-459.

Nichols, Glenn

1983 Enhancing Equity in Manitoba Schools. Winnipeg, Manitoba: Manitoba Education.

Nichols, Peter C. and Associates Ltd.

1981 "Taxation and assessment issues in educational finance." Financing K-12 Schooling in Alberta. Edmonton: Alberta Education.

Nwabuogu, Michael N.

1984 "On the meaning and application of equal educational opportunity: a review article." Journal of Education Finance 10 (Summer): 64-82.

Odden, Allan

1977 "Alternative measures of school district wealth." Journal of Education Finance 2 (Winter): 356-379.

Odden, Allan

1978 "Missouri's new school finance structure." Journal of Education Finance 3 (Spring): 465-475.

Odden, Allan

1982 "State and federal pressures to equity and efficiency in education financing." in Walter W. McMahon and Terry G. Geske (eds.), Financing Education: Overcoming Inefficiency and Inequality. Urbana: University of Illinois Press.

Peat, Marwick and Partners

1981 "Disaggregating and revising the Alberta education price index." Financing K-12 Schooling in Alberta. Edmonton: Alberta Education :147-166.

Phelps, James L, and Michael F, Addonzio

1983 "Michigan public school finance: the last ten years." Journal of Education Finance 9 (Summer): 5-16.

Ratsoy, Eugene et al

1981 "Situation reviews on financing education in Alberta." Financing K-12 Schooling in Alberta. Edmonton: Alberta Education :27:94.

Rawls, John

1977 A Theory of Justice. Cambridge: Harvard University Press

Richards, Donald M.

1986 Grants and School Board Expenditures in Alberta. Edmonton, Alberta: The Alberta Teachers' Association.

Rossmiller, Richard A.

1987 "Achieving equity and effectiveness in schooling." Journal of Education Finance 12 (Spring): 561-577.

Statistics Canada

1986 Education Statistics Bulletin 8 (September): 7-8.

Statistics Canada

1981 1981 Census of Canada: Population, occupied private dwellings, private households and economic families in private households: Selected social and economic characteristics: Alberta: 93-x-945.

Toenjes, Laurence A.

1986 "Two-stage resource equalization application to Illinois." Journal of Education Finance 11 (Winter):355-362.

Ward, Cynthia V. L.

1978 "State support for Rhode Island public school operations: an explanation and critique." Journal of Education Finance 4 (Spring): 502-514.

Ward, James Gordon

1987 An inquiry into the normative foundations of American public school finance." Journal of Education Finance 12 (Spring): 463-477.

Williams, Mary Frase

1983 "Smaller change: Maryland's progress toward school finance equity." Journal of Education Finance 9 (Summer): 97-115.

CURRICULUM VITAE

Raymond John Schmidt (Ray)

Place of Birth: Calgary, Alberta, Canada **Date of Birth:** January 2, 1947

Education

1988	Ph.D., Educational Administration, University of Alberta, Edmonton, Alberta, Canada
1974	M.A., Educational Curriculum and Instruction, Instructional Media (Thesis: Computer-Based Information Systems), University of Calgary, Calgary, Alberta, Canada
1973	Graduate Diploma, Educational Curriculum and Instruction, Instructional Media, University of Calgary
1970	B.Ed., Educational Curriculum and Instruction, Secondary Social Studies, University of Calgary
1968	B. A., Economics, History, University of Calgary

Experience

1979-88	Director, Instructional Services, Strathcona County Board of Education, Sherwood Park, Alberta, Canada
1975-79	Instructional Media Specialist (Secondary), Calgary Board of Education, Calgary, Alberta, Canada
1974-75	Teacher, Secondary Social Studies, Calgary Board of Education
1969-73	Teacher, Secondary Social Studies, County of Wheatland, Standard, Alberta

Awards

1988	The Alberta Teachers' Association Learning Resources Council (Greater Edmonton Regional) Award of Merit
1986	The Alberta Teachers' Association F. J. C. Seymour Doctoral Fellowship
1985	The Alberta Teachers' Association Learning Resources Council Certificate of Recognition
73-74	Government of Alberta Graduate Scholarship

APPENDICES

APPENDIX A

Appendix A

Listing of the 1981 Data for Each Operating Jurisdiction

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment	Average Family Income*
1010	BERRY CREEK	172	51525	13669300	51612384	na
1020	CARDSTON	2176	527802	37528816	39647952	23522
1030	CYPRESS	1134	130680	63075792	160220704	na
1040	TABER	2550	565176	51776496	59738672	28317
1050	ACADIA	565	115970	27887168	45462336	27131
1060	[illegible]ELAND	841	87288	28978864	39773888	na
1070	PEACE RIVER	2975	522097	60497456	84634144	22032
1080	YELLOWHEAD	5016	350889	144757568	201238080	na
1090	ROCKY MTN HOUSE	2831	42907	90179264	189080384	na
1100	NEUTRAL HILLS	557	78795	18071696	31504832	na
1110	STURGEON	4474	103834	139565776	156713808	29810
1120	WILLOW CREEK	2722	317899	64470496	70872960	28910
1130	PINCHER CREEK	1233	43171	55363584	62342656	24418
1140	STARLAND	572	109402	138500	162095	24153
1150	WAINWRIGHT	1498	120647	36403344	51022064	28854
1160	PROVOST	805	131120	24567488	34947728	23331
1170	WESTLOCK	2404	513900	42661456	49297568	21098
1180	FOOTHILLS	4688	150837	139127392	154993472	41154
1190	ROCKY VIEW	7067	21514	286728448	308138240	40250
1210	SPIRIT RIVER	1612	358555	29139184	43171296	30373
1220	HIGH PRAIRIE	3364	892120	50278608	70105472	na
1230	FAIRVIEW	1658	425651	29938128	38374112	27625
1240	LAC LA BICHE	2037	791415	22238208	26068560	na
1250	FORT VERMILION	2116	733399	24531840	63549792	na
1260	EAST SMOKY	1751	57694	73838416	149224320	na
1270	THREE HILLS	1600	178211	56766304	71209008	na
1280	NORTHLAND	1440	555582	46898432	87125648	na
1290	DRUMHELLER	1064	99336	30207776	30546928	na
1300	CROWSNEST PASS	1433	211000	30127648	31287296	22401
1310	MOUNT RUNDLE	590	25873	34215328	36008176	26076
2010	GRANDE PRAIRIE	[illegible]	640564	87487872	89762752	28416
2020	VULCAN	[illegible]	75873	44440192	47737808	27188

continued

Appendix A

Listing of the 1981 Data for Each Operating Jurisdiction

Jurisdiction Code	Name	Total Supplementary Requisition	E.P. and P.L. Tax	Net Supplementary Requisition	S.F.P.F.	School Grants Regulation	Other Grants
1010	BERRY CREEK	273386	200981	72405	412617	57678	0
1020	CARDSTON	983254	52554	930700	3937731	989037	34913
1030	CYPRESS	1675000	1015585	659415	2184609	314009	0
1040	TABER	1863954	248435	1615519	4521285	1122374	24968
1050	ACADIA	728311	281556	446755	1616076	206773	4983
1060	RANGELAND	752260	204171	548089	1772330	184692	0
1070	PEACE RIVER	2047234	583848	1463386	5376236	972646	86605
1080	YELLOWHEAD	4353820	1221966	3131854	9505501	1435827	0
1090	ROCKY MTN. HOUSE	1843264	964145	879119	5670466	424096	0
1100	NEUTRAL HILLS	530750	226303	304447	1178404	128601	0
1110	STURGEON	3713845	406379	3307466	8512882	1106752	29559
1120	WILLOW CREEK	2032755	183634	1849121	5049358	895973	29261
1130	PINCHER CREEK	1101842	123348	978494	2253391	233621	33664
1140	STARLAND	729074	106118	622896	1110223	198716	0
1150	WAINWRIGHT	1385145	396869	988276	2895742	394252	0
1160	PROVOST	1106274	328588	777686	1558464	207448	0
1170	WESTLOCK	1362872	183461	1179411	4560698	839342	0
1180	FOOTHILLS	3034368	310617	2723751	8055338	823465	294419
1190	ROCKY VIEW	5931153	412105	5519048	13316680	900778	85000
1210	SPIRIT RIVER	1299607	422416	877191	3267331	633150	0
1220	HIGH PRAIRIE	2054383	581010	1473373	6232980	2103257	0
1230	FAIRVIEW	792461	174211	618250	3186927	791453	49473
1240	LAC LA BICHE	600098	88175	511923	3941655	1664141	176576
1250	FORT VERMILION	1209910	742854	467056	4059504	2118790	14499
1260	EAST SMOKY	2497953	1261929	1236024	3747225	453702	16485
1270	THREE HILLS	1504307	305106	1199201	2980740	408231	162
1280	NORTHLAND	3027763	1397964	1629799	3040342	2013020	0
1290	DRUMHELLER	797900	8859	789041	2383182	572121	0
1300	CROWSNEST PASS	933957	34617	899340	2436574	469583	20886
1310	MOUNT RUNDLE	669768	33348	636420	1245905	116218	30000
2010	GRANDE PRAIRIE	1866116	47294	1818822	6302278	929356	0
2020	VULCAN	1360000	93946	1266054	2352928	178129	1214

continued

Appendix A (continued)

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment	Average Family Income*
2030	PONOKA	2607	464056	64638496	70941264	23583
2040	NEWELL	1811	129412	47908480	82564912	25518
2050	WARNER	1754	403844	33292240	34560016	26450
2060	STETTLER	1189	134077	35762416	48987184	24994
2070	THORHILD	871	237330	16127040	20670832	19680
2080	FORTY MILE	1064	120703	32044416	37745376	32195
2090	BEAVER	1808	153753	42880368	55770096	21167
2100	WETASKIWIN	2303	255773	62178944	75746912	23057
2110	BARRHEAD	2196	594566	36706496	41966688	22023
2120	ATHABASCA	1957	253755	39962864	47862992	20415
2130	SMOKY LAKE	897	167175	23548848	26480688	17572
2140	LACOMBE	3682	241051	137649856	154952240	25358
2150	WHEATLAND	2149	133959	99389824	102617984	27846
2160	MOUNTAIN VIEW	4190	175099	125717872	154255392	23280
2170	PAINTEARTH	991	57240	31383008	63716864	29180
2180	ST. PAUL	1812	617253	25546544	27442496	22222
2190	STRATHCONA	12605	357058	568513792	586351360	37253
2200	TWO HILLS	1033	176688	27232256	31746768	17969
2210	CAMROSE	2147	354326	45392544	54653632	22756
2220	RED DEER	5046	325916	145339008	161020592	28236
2230	VERMILION RIVER	2415	406147	53057168	64415056	25826
2240	LEDUC	6429	229619	173307776	210190720	26402
2250	LETHBRIDGE	3259	768036	57984640	61183536	26448
2260	MINBURN	1812	120579	52354368	60889040	21291
2270	LAC STE. ANNE	3388	142468	93149184	115583520	22953
2280	FLAGSTAFF	1918	207689	44072496	59754768	29262
2290	LAMONT	1829	234719	40145488	43778352	19940
2300	PARKLAND	9875	104688	284621824	425184000	31002
3010	ST. ALBERT	2865	589640	74638416	74638400	36744
3020	EDMONTON	59240	0	3086683392	3086682880	27830
3030	CALGARY	77721	727740	3425052672	3425051904	30597
3040	LETHBRIDGE	7627	60148	272836608	272932608	24784
3050	MEDICINE HAT	5151	217156	178145440	179142976	23955
3060	BANFF	389	24594	56281296	56281280	na
3070	RED DEER	6531	421695	220147328	220147296	26579
3100	WETASKIWIN	1439	127409	48363104	48363088	23109
3110	STIRLING	224	96563	2675040	2754790	23593

continued

Appendix A (continued)

Jurisdiction Code	Name	Total Supplementary Requisition	E.P. and P.L. Tax	Net Supplementary Requisition	S.F.P.F.	School Grants Regulation	Other Grants
2030	PONOKA	2092810	185936	1906874	4958967	948089	0
2040	NEWELL	1689991	709370	980621	3232631	524228	0
2050	WARNER	1126000	41306	1084694	3200355	573130	159094
2060	STETTLER	981497	264969	716528	1960099	278215	0
2070	THORHILD	462307	101623	360684	1735146	404645	10062
2080	FORTY MILE	1121554	169397	952157	2277968	212404	16169
2090	BEAVER	1036418	239540	796878	3707443	500158	0
2100	WETASKIWIN	1379100	247028	1132072	4293797	527100	0
2110	BARRHEAD	1045496	131045	914451	4551971	1148969	22112
2120	ATHABASCA	1709611	282184	1427427	4300946	585327	20383
2130	SMOKY LAKE	659368	73003	586365	1809116	311875	0
2140	LACOMBE	2546523	284352	2262171	6327134	829947	0
2150	WHEATLAND	1661786	52277	1609509	3976412	372970	12429
2160	MOUNTAIN VIEW	2966942	548890	2418052	7400641	871087	11796
2170	PAINTEARTH	983430	499053	484377	1885156	175125	0
2180	ST. PAUL	731887	50565	681322	2790318	1121487	0
2190	STRATHCONA	11890282	361723	11528559	23688864	3272268	0
2200	TWO HILLS	921267	131008	790259	1996942	342452	0
2210	CAMROSE	1584094	268426	1315668	3844627	510348	0
2220	RED DEER	2906780	283088	2623692	8798275	906063	0
2230	VERMILION RIVER	1701080	299941	1401139	4274845	668723	0
2240	LEDUC	4839758	849251	3990507	11552637	1561230	0
2250	LETHBRIDGE	1868178	97676	1770502	5227104	1033847	0
2260	MINBURN	1686000	236323	1449677	3584146	713035	27302
2270	LAC STE. ANNE	1962334	380882	1581452	6417885	580052	0
2280	FLAGSTAFF	1407751	369456	1038295	3730974	333092	1294
2290	LAMONT	1296738	107608	1189130	3652209	524702	3662
2300	PARKLAND	7969411	2634621	5334790	18470480	1172054	0
3010	ST. ALBERT	1619830	0	1619830	4928020	1227372	0
3020	EDMONTON	67475008	0	67475008	105072848	21575696	0
3030	CALGARY	80208016	0	80208016	132145728	23089072	0
3040	LETHBRIDGE	6744370	2378	6741992	12747671	1476685	0
3050	MEDICINE HAT	4195860	23365	4172495	9621422	1139289	67500
3060	BANFF	806477	0	806477	639506	108856	0
3070	RED DEER	5582936	0	5582936	10989752	1731301	25000
3100	WETASKIWIN	987047	0	987047	3153683	798655	0
3110	STIRLING	74473	2156	72317	383647	144992	335

continued

Appendix A (continued)

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment	Average Family Income*
3130	CAMROSE	1614	76772	55278304	55278272	23276
3140	STETTLER	934	166888	26994528	27105216	25643
3150	EXSHAW	57	34399	11313980	16438938	na
3160	LEGAL	398	117982	7745210	8351857	28014
3200	BROOKS	1881	363042	46854496	48027632	28145
3220	ST. PAUL	652	99991	19274192	19335360	22710
3230	REDCLIFF	876	223053	16573940	16807952	24640
3240	GRANDE PRAIRIE	3309	435608	126698800	126698768	30232
3260	FORT MCMURRAY	4606	97300	301468160	344573696	36877
3280	JASPER	479	90590	31389328	31389312	na
3320	WATERTON PARK	19	9940	2742780	2742778	na
3340	GROVEDALE	195	53596	1979350	5746623	na
3350	DEVON	821	166265	22222624	22222608	30552
3430	SWAN HILLS	504	37038	27116864	50024944	31370
3450	GRANDE CACHE	1178	14865	30431776	63475184	30985
3460	LAKELAND	2204	620886	58369264	60767712	na
4010	CALGARY	23271	2952544	722141696	722141440	30597
4020	EDMONTON	25710	398593	1053569792	1053569280	27830
4030	LETHBRIDGE	1893	197755	61351248	61351232	24784
4040	WETASKIWIN	295	87792	5354640	5354638	23109
4050	VEGREVILLE	257	25889	11008640	11013843	22156
4060	RED DEER	1473	139383	39190048	39190032	26579
4070	PINCHER CREEK	235	93485	2970600	3198702	26810
4080	MEDICINE HAT	1801	284670	50898576	50955824	23955
4090	THERESETTA	67	54962	937460	1019156	na
4100	DRUMHELLER	245	67698	6346270	6380770	23004
4105	LAKELAND	1692	429969	31080304	31935424	na
4110	FORT VERMILION	162	86002	402650	1372270	na
4130	GRANDE PRAIRIE	1115	275805	33127936	33127920	30232
4135	STONY PLAIN	245	0	2033370	2033369	27486
4140	MCLENNAN	210	112970	1763410	1780805	20355
4150	WAINWRIGHT	254	76318	5121200	5198407	23858
4160	FORT MCMURRAY	2610	201310	142139568	166669552	36877
4170	FAIRVIEW	253	84093	5586050	5815133	23183
4180	SPIRIT RIVER	60	38688	762380	801078	23574
4190	MANNING	94	41191	1613480	1730814	21294
4210	PEACE RIVER	481	176982	11753500	11821197	27799

continued

Appendix A (continued)

Jurisdiction Code	Name	Total Supplementary Requisition	E.P. and P.L. Tax	Net Supplementary Requisition	S.F.P.F.	School Grants Regulation	Other Grants
3130	CAMROSE	1311760	0	1311760	3212826	596509	0
3140	STETTLER	836830	3418	833412	2249042	480765	0
3150	EXSHAW	134300	41869	92431	96640	73523	1881
3160	LEGAL	185885	13502	172383	679457	186440	0
3200	BROOKS	1400300	34205	1366095	3893079	703562	6589
3220	ST. PAUL	363800	1151	362649	1194940	250871	0
3230	REDCLIFF	480644	6692	473952	1215208	296302	180
3240	GRANDE PRAIRIE	3145000	0	3145000	6140476	1490066	0
3260	FORT MCMURRAY	10309540	152343	10157197	6867818	1369702	0
3280	JASPER	738467	0	738467	876461	172002	51227
3320	WATERTON PARK	9942	0	9942	26797	10133	3573
3340	GROVEDALE	88199	57820	30379	241910	80054	0
3350	DEVON	519913	0	519913	1896512	370372	0
3430	SWAN HILLS	561621	257185	304436	838718	151871	7566
3450	GRANDE CACHE	899808	468415	431393	2066275	268890	697
3460	LAKELAND	1751078	69114	1681964	4846514	1512540	18100
4010	CALGARY	16957376	0	16957376	41260784	7988070	63740
4020	EDMONTON	23137008	0	23137008	47040752	6687894	0
4030	LETHBRIDGE	1526173	0	1526173	3545611	360002	0
4040	WETASKIWIN	130000	0	130000	575271	145344	0
4050	VEGREVILLE	300392	142	300250	425755	78889	0
4060	RED DEER	999620	0	999620	2919639	344834	0
4070	PINCHER CREEK	78543	5601	72942	546822	121393	171
4080	MEDICINE HAT	1174841	1320	1173521	3328193	514006	20018
4090	THERESETTA	25000	2004	22996	198959	65682	144
4100	DRUMHELLER	140189	75	139431	391888	104936	0
4105	LAKELAND	932404	24967	907437	2068989	838377	33452
4110	FORT VERMILION	29204	20635	8569	175719	247781	0
4130	GRANDE PRAIRIE	822235	0	822235	2560732	512825	8662
4135	STONY PLAIN	47385	0	47385	0	0	0
4140	MCLENNAN	49446	483	48963	299833	252433	6000
4150	WAINWRIGHT	153172	2275	150897	371185	139425	240
4160	FORT MCMURRAY	5482569	806912	4675657	4240555	932131	6948
4170	FAIRVIEW	147863	5825	142038	607457	114951	11500
4180	SPIRIT RIVER	26062	1259	24803	448155	54411	0
4190	MANNING	42845	2905	39940	283200	63940	14961
4210	PEACE RIVER	291604	1670	289934	1234554	314074	33028

continued

Appendix A (continued)

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment	Average Family Income*
4240	KILLAM	69	27265	1119630	1515397	25488
4250	ASSUMPTION	61	47990	962400	970079	na
4260	SEXSMITH	124	76617	1866620	1877181	25504
4270	TABER	354	100827	8483800	8548745	25433
4280	HIGH PRAIRIE	209	89458	2811870	3003842	26072
4320	CAMROSE	552	191744	10870400	10870399	23276
4370	PROVOST	146	71942	3292500	5534787	22745
4390	BEAVERLODGE	114	61022	923950	924863	23545
4420	COALDALE	294	122743	3273170	3357276	23843
4480	PICTURE BUTTE	154	44984	2977840	3092378	25952
4500	BOW ISLAND	135	73141	2436210	3355371	24910
4520	VALLEYVIEW	178	75382	1684320	1723078	25699
4550	GRIMSHAW	141	57507	2299310	2365348	22904
4570	WHITECOURT	452	148208	9123610	9160031	28390
4580	PONOKA	83	23151	2830640	2853571	21786
4590	NAMPA	40	26224	477410	973054	17099
4600	VERMILION	183	97375	5952800	6003402	22745
4670	FORT SASKATCHEWAN	688	78164	39807632	39807616	32892
4680	SHERWOOD PARK	2546	876972	37982512	39151264	37253
4720	WESTLOCK	267	46955	8236570	8260918	22218
4730	DRAYTON VALLEY	245	81149	5508050	5553087	33119
4900	SPRUCE GROVE	387	112308	10434160	10434159	33740
4930	ROCKY MTN. HOUSE	171	44743	2244200	2347468	24421
4940	LEDUC	352	40498	8007610	8020636	30235
5010	BARONS	70	20428	2599960	2811907	16104
5030	FALHER	275	122358	6173470	6242220	19133
6010	THIBAULT	1082	222880	26540480	26902128	na
7010	GLEN AVON	365	68909	10691770	10699839	na
7020	ST. ALBERT	5045	1109140	99488416	99488400	36744
5020	LOUSANNA	48	16227	1089090	1313366	na
	Total	408767	31472768	---	---	---

* Data not available for every jurisdiction

Appendix A (continued)

Jurisdiction Code	Name	Supplementary Requisition	E.P. and P.L. Tax	Net Supplementary Requisition	S.F.P.F.	School Grants Regulation	Other Grants
4240	KILLAM	35828	9357	26471	60195	36333	0
4250	ASSUMPTION	25138	199	24939	130088	50633	0
4260	SEXSMITH	39815	224	39591	166880	113720	0
4270	TABER	253242	1924	251318	917165	179590	0
4280	HIGH PRAIRIE	72650	4643	68007	660060	252543	0
4320	CAMROSE	257756	0	257756	718154	259817	0
4370	PROVOST	108850	44098	64752	375806	111933	0
4390	BEAVERLODGE	19251	19	19232	175117	37906	0
4420	COALDALE	88375	2214	86161	402570	168915	0
4480	PICTURE BUTTE	80402	2978	77424	233879	101483	0
4500	BOW ISLAND	97274	26647	70627	289908	90781	0
4520	VALLEYVIEW	29475	663	28812	231619	130423	0
4550	GRIMSHAW	75574	2110	73464	323447	99809	0
4570	WHITECOURT	164225	653	163572	955534	218751	0
4580	PONOKA	82500	663	81837	121980	47018	0
4590	NAMPA	14518	7395	7123	75652	28276	0
4600	VERMILION	132509	1117	131392	521076	148578	243
4670	FORT SASKATCHEWAN	565000	0	565000	1338402	215080	0
4680	SHERWOOD PARK	1053635	31454	1022181	4454586	1348403	205213
4720	WESTLOCK	182179	537	181642	688860	111387	0
4730	DRAYTON VALLEY	97404	790	96614	576766	123478	19165
4900	SPRUCE GROVE	235684	0	235684	706925	172544	0
4930	ROCKY MTN. HOUSE	24414	1118	24296	374623	52929	0
4940	LEDUC	172380	280	172100	307463	67822	0
5010	BARONS	51237	3862	47375	132316	24167	0
5030	FALHER	227616	2507	225109	731205	348874	0
6010	THIBAULT	774569	10413	764156	2231053	348874	0
7010	GLEN AVON	206818	156	206662	661501	118638	0
7020	ST. ALBERT	2701061	0	2701061	8656867	1863559	23000
5020	LOUSANNA	22979	3924	19055	81851	18519	0
	Total	368400128	26012752	342387200	737853184	131006[illegible]06	1846088

Appendix A

Listing of the 1982 Data for Each Operating Jurisdiction

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment
1010	BERRY CREEK	174	58185	17221344	45101232
1020	CARDSTON	2281	826918	46069296	48487888
1030	CYPRESS	1145	138121	75342096	152687200
1040	TABER	2558	697460	61499040	71801136
1050	ACADIA	571	151490	38002560	54097392
1060	RANGELAND	826	72613	36370400	53449488
1070	PEACE RIVER	2923	449839	73891184	111915952
1080	YELLOWHEAD	4772	333518	171092400	235734864
1090	ROCKY MTN. HOUSE	2890	93539	101551872	187427776
1100	NEUTRAL HILLS	573	85076	24182672	40702912
1110	STURGEON	3999	85892	134760688	151756976
1120	WILLOW CREEK	2742	498945	77777552	85012480
1130	PINCHER CREEK	1225	96819	61448560	68996672
1140	STARLAND	571	110403	25660336	29831728
1150	WAINWRIGHT	1450	137536	44896576	62584944
1160	PROVOST	790	116322	30604752	44908320
1170	WESTLOCK	2393	363546	53052336	61106576
1180	FOOTHILLS	4813	155148	172328624	190412688
1190	ROCKY VIEW	7391	2673	397760768	422988288
1210	SPIRIT RIVER	1517	392408	37766624	51701296
1220	HIGH PRAIRIE	3832	1023569	60965968	80237664
1230	FAIRVIEW	1622	430811	37800512	47967712
1240	LAC LA BICHE	2073	984652	28866944	34444048
1250	FORT VERMILION	2170	889541	36290976	61144192
1260	EAST SMOKY	1705	501731	84838320	179166480
1270	THREE HILLS	1598	482145	70152768	86442528
1280	NORTHLAND	1465	719862	51558128	92031296
1290	DRUMHELLER	1040	127503	33493504	33868400
1300	CROWSNEST PASS	1473	354386	34519216	35969792
1310	MOUNT RUNDLE	614	27180	47943024	50550240
2010	GRANDE PRAIRIE	3426	634364	108777424	113387008
2020	VULCAN	1163	187217	54411232	59372680

continued

Appendix A

Listing of the 1982 Data for Each Operating Jurisdiction

Jurisdiction Code	Name	Total Supplementary Requisition	E.P. and P.L. Tax	Net Supplementary Requisition	S.F.P.F.	School Grants Regulation	Other Grants
1010	BERRY CREEK	404701	250171	154530	457069	77379	0
1020	CARDSTON	1022739	51015	971724	4626733	1385392	18863
1030	CYPRESS	2276000	1152929	1123071	2407666	367659	770
1040	TABER	2330813	334428	1996385	4974184	1396399	1774
1050	ACADIA	1254084	373110	880974	1743266	255502	0
1060	RANGELAND	863796	276015	587781	1979900	188048	565
1070	PEACE RIVER	2568163	872564	1695599	6223829	957727	[illegible]5
1080	YELLOWHEAD	5912405	1621281	4291124	11016545	791782	0
1090	ROCKY MTN. HOUSE	2753071	1261406	1491665	6485521	567744	0
1100	NEUTRAL HILLS	755360	306581	448779	1349375	137450	0
1110	STURGEON	4099420	459123	3640297	[illegible]449	1314655	0
1120	WILLOW CREEK	2630900	223901	2406999	6026392	1218285	64055
1130	PINCHER CREEK	1431995	156658	1275337	2475800	341933	22924
1140	STARLAND	1031032	144170	886862	1296796	498427	0
1150	WAINWRIGHT	1708315	482821	1225494	3198706	545385	0
1160	PROVOST	1529625	487195	1042430	1788783	234431	0
1170	WESTLOCK	1499159	197599	1301560	5075457	1166500	4052
1180	FOOTHILLS	5721200	543362	5177838	9836612	989974	73978
1190	ROCKY VIEW	7073707	421889	6651818	15785168	1185297	69278
1210	SPIRIT RIVER	1869826	503961	1365865	3616617	727916	0
1220	HIGH PRAIRIE	3136089	753235	2382854	7235148	2516427	0
1230	FAIRVIEW	1360818	288438	1072380	3621409	961775	18196
1240	LAC LA BICHE	779407	126200	653207	4505217	2078991	8219
1250	FORT VERMILION	2251917	915335	1336582	4780816	2541588	26820
1260	EAST SMOKY	3127989	1646834	1481155	4302541	563951	98401
1270	THREE HILLS	1781882	335789	1446093	3489147	368353	377
1280	NORTHLAND	3328593	1463837	1864756	3731628	3406946	0
1290	DRUMHELLER	1083850	11998	1071852	2678117	576027	0
1300	CROWSNEST PASS	862981	34802	828179	2815588	809728	28556
1310	MOUNT RUNDLE	967622	49907	917715	1411925	184745	157840
2010	GRANDE PRAIRIE	2750800	111830	2638970	7348097	970474	0
2020	VULCAN	1620735	107320	1513415	2713627	298317	0

continued

Appendix A (continued)

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment
2030	PONOKA	2584	525892	77760640	84921328
2040	NEWELL	1806	135614	61799152	103815824
2050	WARNER	1720	646618	41279008	43838528
2060	STETTLER	1167	185078	44835488	60570912
2070	THORHILD	866	260206	19790592	24835808
2080	FORTY MILE	1085	165395	41387168	47881152
2090	BEAVER	1818	131230	57152576	72194688
2100	WETASKIWIN	2369	247568	77616160	93423920
2110	BARRHEAD	2224	781230	47154272	53364608
2120	ATHABASCA	1913	486624	51039328	60074816
2130	SMOKY LAKE	872	226984	29007888	31915504
2140	LACOMBE	3693	254566	157295088	176490288
2150	WHEATLAND	2071	140360	119025456	137128784
2160	MOUNTAIN VIEW	4181	130361	145674448	178274256
2170	PAINTEARTH	968	73822	46048336	81098896
2180	ST. PAUL	1805	786419	33230528	35652304
2190	STRATHCONA	12153	127079	550277888	566552576
2200	TWO HILLS	977	191012	35968768	41485488
2210	CAMROSE	2129	500234	60868080	71204384
2220	RED DEER	5094	273599	171051904	189405728
2230	VERMILION RIVER	2422	464566	69674048	83041568
2240	LEDUC	6509	218210	223387680	265677504
2250	LETHBRIDGE	3181	1151416	69928800	73941408
2260	MINBURN	1684	149877	64538176	74661424
2270	LAC STE. ANNE	3273	125285	116195200	144689520
2280	FLAGSTAFF	1850	215352	55615152	73801440
2290	LAMONT	1820	380360	52064784	56333488
2300	PARKLAND	9812	84187	305362432	474263808
3000	ST. ALBERT	3075	727640	78476336	78476320
3020	EDMONTON	61398	49586	3868734464	3868733952
3030	CALGARY	78065	0	4415827968	4415823872
3040	LETHBRIDGE	7730	188743	310572032	310670336
3050	MEDICINE HAT	5135	270457	208572144	209344272
3060	BANFF	373	45433	65962704	65962688
3070	RED DEER	6671	446414	264228528	264228448
3100	WETASKIWIN	772	105374	55060160	55060128
3110	STIRLING	242	132267	3180010	3267190

continued

Appendix A (continued)

Jurisdiction Code	Name	Total Supplementary Requisition	E.P. and P.L. Tax	Net Supplementary Requisition	S.F.P.F.	School Grants Regulation	Other Grants
2030	PONOKA	2438100	205585	2232515	5521790	1156168	0
2040	NEWELL	1936352	783687	1152665	3576217	472666	0
2050	WARNER	1333701	77869	1255832	3593916	856478	18532
2060	STETTLER	1291409	335489	955920	2357083	344644	0
2070	THORHILD	560615	113885	446730	1929999	500202	12718
2080	FORTY MILE	1284180	174170	1110010	2548491	363833	56056
2090	BEAVER	1247342	259890	987452	4088370	592940	5166
2100	WETASKIWIN	1946226	329311	1616915	4724509	620388	0
2110	BARRHEAD	1574973	183289	1391684	5295930	1573530	0
2120	ATHABASCA	2313436	347950	1965486	4677392	942992	26572
2130	SMOKY LAKE	1045544	95194	950350	1964824	396090	0
2140	LACOMBE	3524559	381337	3143222	7230876	926900	0
2150	WHEATLAND	2662919	351551	2311368	4516907	403086	107149
2160	MOUNTAIN VIEW	3363707	615099	2748608	8575181	950680	2421
2170	PAINTEARTH	1459324	630713	828611	2092674	224472	0
2180	ST. PAUL	920000	62494	857506	3493999	1449852	0
2190	STRATHCONA	13631649	391588	13240061	27441072	3582460	2941194
2200	TWO HILLS	1217182	161861	1055321	2099905	436682	0
2210	CAMROSE	1887000	273925	1613075	4338578	683707	0
2220	RED DEER	3934193	381233	3552960	10461545	966678	0
2230	VERMILION RIVER	2559300	411981	2147319	5306683	785209	0
2240	LEDUC	6352146	1011118	5341028	13330988	1825445	32503
2250	LETHBRIDGE	2164296	117451	2046845	5772883	1647888	0
2260	MINBURN	2207205	299273	1907932	4018105	753629	41508
2270	LAC STE. ANNE	2158567	425096	1733471	7341553	613529	29783
2280	FLAGSTAFF	1680446	414099	1266347	4102715	389984	4946
2290	LAMONT	1521999	115331	1406668	4176328	693469	7396
2300	PARKLAND	10382323	3697500	6684823	23028288	2784145	0
3010	ST. ALBERT	2142311	0	2142311	6274436	1564980	0
3020	EDMONTON	87443008	0	87443008	124815696	27789536	545839
3030	CALGARY	104648240	0	104648240	153110272	26663248	179528
3040	LETHBRIDGE	8095374	2568	8092806	14807278	2253374	0
3050	MEDICINE HAT	5142802	18970	5123832	11419421	1415535	30000
3060	BANFF	954209	0	954209	707537	206830	197479
3070	RED DEER	7052259	0	7052259	12900013	2176826	86381
3100	WETASKIWIN	1386315	0	1386315	3832831	932785	0
3110	STIRLING	98262	2622	95640	550729	195397	126

continued

Appendix A (continued)

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment
3130	CAMROSE	1682	162769	59086448	59086416
3140	STETTLER	940	183566	32182688	32317408
3150	EXSHAW	54	18445	12842450	17418272
3160	LEGAL	391	158161	9309820	10283768
3200	BROOKS	1915	416898	50771776	52604288
3220	ST. PAUL	629	126231	22955488	23045808
3230	REDCLIFF	863	316115	18883664	19198144
3240	GRANDE PRAIRIE	3315	355897	150928304	150928256
3260	FORT MCMURRAY	4523	749312	320567552	369240064
3280	JASPER	441	46746	42419568	42419552
3320	WATERTON PARK	14	6098	4133790	4133787
3340	GROVEDALE	203	48926	2817660	9280745
3350	DEVON	854	165062	24533344	24533328
3430	SWAN HILLS	512	54712	31156064	79613776
3450	GRANDE CACHE	1084	13325	33520496	61253984
3460	LAKELAND	2223	551277	70811840	74582928
4010	CALGARY	23322	2684420	885224192	885223680
4020	EDMONTON	25611	250994	1355374080	1355373568
4030	LETHBRIDGE	1922	187481	68248688	68248656
4040	WETASKIWIN	284	123325	6533140	6533139
4050	GRENVILLE	295	32805	13621323	13628462
4060	RED DEER	1724	294229	49149408	49149392
4070	PINCHER CREEK	223	131211	3505400	3817773
4080	MEDICINE HAT	1829	322643	58449248	58619072
4090	THERESETTA	61	70746	1105950	1204904
4100	DRUMHELLER	266	64515	6488910	6525277
4105	LAKELAND	1702	628503	43288144	44864960
4110	FORT VERMILION	167	120043	687080	1531004
4130	GRANDE PRAIRIE	1154	221093	42801648	42801632
4135	STONY PLAIN	119	136741	2936970	2936969
4140	MCLENNAN	192	171644	1999990	2016684
4150	WAINWRIGHT	268	192174	6031940	6134326
4155	EDSON	290	0	7166410	7578874
4160	FORT MCMURRAY	2944	287350	164809568	184697008
4170	FAIRVIEW	262	109417	6996990	7371432
4180	SPIRIT RIVER	54	46345	1068580	1127771
4190	MANNING	140	71936	1786230	2036212

continued

Appendix A (continued)

Jurisdiction Code	Name	Total Supplementary Requisition	E P and P L Tax	Net Supplementary Requisition	S F P F	School Grants Regulation	Other Grants
3130	CAMROSE	1502865	0	1502865	3656976	7002	
3140	STETTLER	1078296	4496	1073800	2492677	511359	
3150	EXSHAW	192636	50606	142030	193846	73090	
3160	LEGAL	223435	21161	202274	789686	256546	
3200	BROOKS	1600000	55738	1544262	4383528	1043463	
3220	ST. PAUL	422003	1654	420349	1406789	297656	0
3230	REDCLIFF	532912	8730	524182	1397717	392985	2698
3240	GRANDE PRAIRIE	3924000	0	3924000	7202373	1754324	38395
3260	FORT MCMURRAY	12822704	1690269	11132435	9236114	2624828	3884
3280	JASPER	780898	0	780898	918635	146166	57975
3320	WATERTON PARK	11035	0	11035	46773	6347	5315
3340	GROVEDALE	139643	97247	42396	321399	74618	0
3350	DEVON	689467	0	689467	2078542	391514	22392
3430	SWAN HILLS	561619	341835	219784	888246	186858	9485
3450	GRANDE CACHE	1319403	597376	722027	2343800	368872	50000
3460	LAKELAND	2124355	107413	2016942	5664832	1511915	27605
4010	CALGARY	20452048	0	20452048	48810784	9085162	126928
4020	EDMONTON	30409008	0	30409008	53924032	7885892	0
4030	LETHBRIDGE	1784978	0	1784978	3951579	440113	0
4040	WETASKIWIN	164766	0	164766	642125	201801	144
4050	VEGREVILLE	400646	210	400436	676973	97433	0
4060	RED DEER	1311997	0	1311997	3718365	647236	0
4070	PINCHER CREEK	95000	7773	87227	651231	178232	210
4080	MEDICINE HAT	1413653	4096	1409557	4002284	614506	15515
4090	THERESETTA	27750	2279	25471	210766	78686	363
4100	DRUMHELLER	180500	1006	179494	537342	133598	0
4105	LAKELAND	1168780	41078	1127702	2321929	1214600	4985
4110	FORT VERMILION	55317	30492	24825	193724	177987	0
4130	GRANDE PRAIRIE	1112415	0	1112415	2835600	603874	0
4135	STONY PLAIN	50391	0	50391	99417	141229	0
4140	MCLENNAN	66800	553	66247	313327	245142	6500
4150	WAINWRIGHT	165000	2754	162246	430200	171260	0
4155	EDSON	203608	11081	192527	0	16328	0
4160	FORT MCMURRAY	6572375	725482	5846893	6742760	1041304	0
4170	FAIRVIEW	206411	10485	195926	701056	154919	3290
4180	SPIRIT RIVER	27627	1597	26030	211309	66361	0
4190	MANNING	56492	6658	49834	311877	106402	0

continued

Appendix A (continued)

Jurisdiction Code	Name	Resident Pupils	Aggregated Equalization Grants	Equalized Assessment	Adjusted Equalized Assessment
4210	PEACE RIVER	510	164117	12510520	12634426
4240	KILLAM	58	34774	1282490	1618037
4250	ASSUMPTION	56	57939	1395250	1420761
4260	SEXSMITH	96	74274	3036790	3069163
4270	TABER	369	116837	10454640	10531685
4280	HIGH PRAIRIE	268	117485	3176210	3476237
4320	CAMROSE	540	205288	14923140	14923138
4370	PROVOST	139	50410	4121760	4185705
4390	BEAVERLODGE	103	101503	1358230	1368990
4420	COALDALE	275	156623	4247171	4360972
4480	PICTURE BUTTE	155	68335	3370820	3486597
4500	BOW ISLAND	106	74193	2821472	3010623
4520	VALLEYVIEW	163	139647	2175620	2241927
4550	GRIMSHAW	157	80420	2330480	2391032
4570	WHITECOURT	548	166007	11748840	11799686
4580	PONOKA	86	26541	3727020	3749997
4590	NAMPA	44	23193	514770	953897
4600	VERMILION	211	78062	7211321	7279272
4670	FORT SASKATCHEWAN	694	69508	50434416	50434400
4680	SHERWOOD PARK	2592	1073422	77712512	80005152
4720	WESTLOCK	257	53061	9005590	9034360
4730	DRAYTON VALLEY	271	109515	8036730	8036729
4900	SPRUCE GROVE	468	97000	13577610	13577607
4930	ROCKY MTN HOUSE	278	60190	3273050	3496106
4940	LEDUC	471	113737	10416160	10416158
5010	BARONS	103	28693	3466120	3826611
5020	LOUSANNA	48	24742	1256500	1507892
5030	FALHER	274	152952	7032170	7112385
6010	THIBAULT	1140	257376	30401408	30930912
7010	GLEN AVON	341	74982	12882810	12894505
7020	ST. ALBERT	5101	1522932	120468368	120468336
	Total	411952	35687040		