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**An economic analysis of school-age child care in Tennessee**

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AN ECONOMIC ANALYSIS OF SCHOOL-AGE  
CHILD CARE IN TENNESSEE

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AN ECONOMIC ANALYSIS OF SCHOOL-AGE  
CHILD CARE IN TENNESSEE

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## ABSTRACT

### AN ECONOMIC ANALYSIS OF SCHOOL-AGE CHILD CARE IN TENNESSEE

By Green Anden Adetayo Ekadi

The objectives of this study were twofold. First, it analyzed the welfare effects of the school-administered school-age program in Tennessee based on the model of the Extended School Program (ESP) of the Murfreesboro City School System. Second, it attempted to determine whether there was any significant statistical difference between the mean weekly revenues of the for-profit and the not-for-profit school-age child care models and also between their mean weekly enrollments. We assumed that both groups of school-age child care produced products of comparable quality and that mean weekly revenues could serve as a proxy for mean weekly profits.

Two hypotheses were formulated. Hypothesis 1 used the method of cost-benefit analysis to test for the financial and economic feasibility of the school-administered school-age child care (SSACC) model. The null hypothesis was that the stream of costs associated with running the ESP-SSACC model programs exceeded the benefits stream. A cost-benefit ratio  $(C/B) = 1.00$  was assumed to maximize the total contributions made by the program to the project entity, the community and the state. Hypotheses 2 used the technique of

Green Anden Adetayo Ekadi

a t-statistic for the difference of two mean values and a one-way analysis of variance (ANOVA) to test for any statistical difference between the mean weekly revenues and the mean weekly enrollments of the two groups. All the hypotheses were tested at the  $\alpha = .01$  level of significance. In the case of hypothesis 1, the null hypothesis was rejected in favor of the alternative hypothesis that the stream of costs was less than the stream of benefits. The cost-benefit ratio (C/B) of each of the sampled SSACC centers was less than 1.00 and the overall C/B of all twenty sampled SSACC centers was also less than 1.00. In the case of hypothesis 2, the test results did not detect any significant statistical difference between the mean weekly revenues of the for-profit and the not-for-profit school-age programs, but did find a statistical difference between their weekly mean enrollments.

Several conclusions were drawn by the study. Among them were that:

1. The success of the SSACC Extended School Program model appeared to depend on its linkage to the city school system which absorbed most of the fixed costs of the program and the support of powerful constituents in the respective local communities where these programs exist.

2. If the SSACC programs themselves had to absorb the fixed costs, their financial and economic feasibility might result in lack of accessibility to all income groups.

3. If the SSACC programs could continue to be financially independent from the public budget well into the future, it could guarantee the SSACC model as the 21st Century model for early childhood intervention.

4. Strong exogenous factors exist to guarantee each model SACC some market presence in addition to the market share guaranteed by the differentiated nature of each model's products.

5. While there appeared to be no significant statistical difference between the average weekly revenues of the for-profit and the not-for-profit school-age programs, their mean weekly enrollments appeared to be significantly different. The explanation for the statistical difference in enrollment could be that revenue is a weighted variable while enrollment is not. The effects of lower enrollments in the private programs were offset by higher fee schedules while the effect of higher enrollments in the ESP-SSACC programs were also offset by lower fee schedules, thus, minimizing any wide dispersions in revenue. There were, therefore, wider variations in the enrollment data than in revenue and this may have accounted for the differences in the enrollments among the various programs;

6. There was no evidence that increases in ESP-SSACC enrollments were obtained at the expense of the for-profit or the other not-for-profit SACC models; strong exogenous factors such as church affiliations, family traditions, and

Green Anden Adetayo Ekadi

membership in the YMCA/YWCA exist to guarantee each SACC model group some market presence, thus confirming the strength of the mixed system of auspices.

7. While the school-age child care market appeared to be a monopolistically competitive model, it tended to exhibit properties closer to a competitive market model than to a monopoly; a two-year price constancy appeared to make the short-run demand curve perfectly elastic, quite contrary to a monopolistically competitive market model and the Herfindahl index tests appeared to confirm the relative competitiveness of each school-age child care model.

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To my wife, Kambii Yvonne, and my children, thank you for your patience, love and support. You gave to me so I could give back to you. And now I can finally say to you,

here it is. Thank you!

Finally and most importantly, to the Almighty God who made it all possible, I give my eternal gratitude. Let me use this to the good of others. And so, in the words of the Prophet Isaiah, I pray "here am I, send me."

## DEDICATION

This study is dedicated to my beautiful and loving wife, Kambii Yvonne, to my wonderful children, Margaret, Amechi, Ayodele, Ebiere Kambii, Andena and Ebiye Nyemade, and to the memory of my parents, my brother William, and my sister Ekoere Beatrice, as well as to all those who, against all odds, dare to succeed.

TABLE OF CONTENTS

	PAGE
ACKNOWLEDGMENTS . . . . .	ii
DEDICATIONS . . . . .	v
LIST OF TABLES . . . . .	x
LIST OF ILLUSTRATIONS . . . . .	xii
 CHAPTER	
1. INTRODUCTION . . . . .	1
The Problem . . . . .	4
Significance And Objectives of Study . . . . .	5
Hypotheses . . . . .	7
Data And Methodology . . . . .	8
Scope And Limitations Of The Study . . . . .	11
Organization Of The Study . . . . .	13
Definitions . . . . .	14
The School-Age Child Care Initiative (SACCI)	16
The Administrative Models For The Delivery Of School-Age Child Care . . . . .	16
The Role Of The State Department Of Education . . . . .	18
The Murfreesboro Extended School Program (ESP) . . . . .	19
Objectives Of The ESP Program . . . . .	20
A Summary Of The Problem . . . . .	22
2. REVIEW OF SELECTED LITERATURE . . . . .	24

CHAPTER	PAGE
The Supply Of Care Facilities In The United States . . . . .	26
Factors Driving The Demand For School-Age Child Care . . . . .	31
The Phenomenon Of The Working Mother . . . . .	31
Horizontal Socialization Of School-Age Children . . . . .	34
The Feminization Of Poverty . . . . .	42
School-Age Child Care in Tennessee . . . . .	43
Working Mothers . . . . .	47
Single-Parent Working Mothers . . . . .	50
3. ECONOMIC DIMENSIONS OF SCHOOL-AGE CHILD CARE .	54
Administrative Types and Structures Of School-Age Child Care . . . . .	55
Quality Of School-Age Care . . . . .	56
Parental Involvement . . . . .	58
School-Age Care And Market Structure . . . . .	65
Supply Models Of School-Age Child Care . . . . .	66
The Not-For-Profit Models . . . . .	67
The Quantity-Quality Maximizing Child Care Organization . . . . .	67
The Role Of Subsidy Or Grant . . . . .	70
The Executive Benefits-Maximizing Model . . . . .	71
The Relevance Of Cost-Benefit Analysis To A School Age Child Care Study . . . . .	73
The Formal Framework For Cost-Benefit Analysis . . . . .	79
The Determination of V . . . . .	80
The Role Of Shadow Prices . . . . .	82

CHAPTER	PAGE
"With" And "Without" Project Analysis . .	84
4. COSTS, BENEFITS AND THE COST-BENEFIT FRAMEWORK . . . . .	86
The Cost-Benefit Analysis Of School- Administered School-Age Child Care In Tennessee . . . . .	86
Costs . . . . .	86
Sectoral Cost Differentials . . . . .	89
Benefits . . . . .	90
Alternative Method Of Calculating Benefits .	93
When Market Prices Do Not Reflect Social Value . . . . .	94
Methodology for Calculating Costs and Benefits . . . . .	95
The Cost-Benefit Ratio . . . . .	97
Data Base For Calculating The Cost-Benefit Ratio . . . . .	100
5. RESULTS AND INTERPRETATIONS OF HYPOTHESIS TESTING . . . . .	103
Hypothesis 1 . . . . .	103
Results . . . . .	105
Hypothesis 2 . . . . .	110
Frequency Analysis . . . . .	127
6. SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS . .	136
Summary . . . . .	136
Conclusions . . . . .	139
Policy Implications . . . . .	143
APPENDICES . . . . .	149

	PAGE
A. Hypothesis 1: List of School-Administered SACC Programs Used . . . . .	150
B. For-Profit School-Age Child Care Programs Used for Hypothesis 2 . . . . .	151
C. List of School-Age Child Care Programs Used for Hypothesis 2 . . . . .	153
D. List of YMCA/YWCA School-Age Child Care Programs Used for Hypothesis 2 . . . . .	155
E. List of Parent/Board School-Age Child Care Programs Used for Hypothesis 2 . . . . .	158
F. Questionnaire . . . . .	161
BIBLIOGRAPHY . . . . .	165

LIST OF TABLES

TABLE	PAGE
1. Labor Force Participation Rates of Women by Age 1983 and 1986, Annual Averages . . . . .	46
2. U.S. Labor Force Participation Rates of Wives, Husband Present, by Age of Own Youngest Child: 1970 to 1987--As of March for Civilian Noninstitutional Population, 16 Years Old and Over . . . . .	48
3. U.S. Labor Force Participation Rates of Wives, Husband Present, by Age of Youngest Child and Race, March Figures, 1975 to 1986 . . . . .	49
4. Families Maintained by Women, March 1985 . . . . .	52
5. Growth in Families Maintained by Women, 1970, 1980, and 1985 . . . . .	53
6. Hypothesis 1: Weekly Data for Cost-Benefit Analysis---SSACC Model Only . . . . .	106
7. Computations for Hypothesis 2: Using Revenue Data of For-Profit and Non-Profit SACC Programs . . . . .	114
8. Computations for Hypothesis 2 Using Only Enrollment Data of the For-Profit SACC and the Not-For Profits SACC Programs . . . . .	117
9. Hypothesis 2: A One-way ANOVA for For-Profit SACC ( $\bar{X}_1$ ) vs ( $\bar{X}_2$ ) Non-Profit SACC Mean Weekly Revenues . . . . .	119
10. Hypothesis 2: A One-way ANOVA for $\bar{X}_1$ vs $\bar{X}_2$ vs $\bar{X}_3$ vs $\bar{X}_4$ (A Comparison of Mean Weekly Revenues of the For- Profit and Not-For-Profit Program) . . . . .	121
11. Hypothesis 2: A One-way ANOVA for $\bar{X}_1$ vs $\bar{X}_2$ vs $\bar{X}_3$ vs $\bar{X}_4$ (A Comparisons of For-Profit Enrollments with Each of the Non-Profit Enrollments . . . . .	122
12. The Completely Randomized Design: Average Weekly Revenue of the Four SACC Models Sampled . . . . .	134

TABLE

PAGE

13. Hypothesis 2: Testing Only SACC Enrollment the Completely Randomized Design, Using Only Average Annual Enrollment of Each of the SACC Models Sampled . . . . .	135
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LIST OF ILLUSTRATIONS

FIGURE	PAGE
1. Chart of school-age child care models . . . . .	15

## CHAPTER 1

### INTRODUCTION

One of the major dilemmas facing American working families relates to how best to care for their school-age children once parents decide to enter the labor force. A report from the Tennessee Department of Human Services illustrates three examples of the school-age child care dilemma.

. . . During the first week of school in September, an eight-year old boy comes home after school and waits for his mother's 5:30 arrival, but he's bored, lonely and sometimes scared. His mother finds herself at a loss trying to be both a good parent and a good employee. She knows other parents must be facing similar circumstances.

An elementary school principal receives a dozen calls from frantic parents. They ask what they are to do. When their children leave day care to begin kindergarten, the children's day ends at noon, but parents must still work until 5:30 PM. The principal does not think the school district should necessarily take on the problem, but wonders if anyone else will.

Social workers at the local mental health agency notice the effects of stress on today's families. They want to help out others interested in providing proper supervision for children and peace of mind for their parents . . . No single institution in our society has taken on the responsibility of caring for school-age children during the hours and days when school is closed and parents are at work.<sup>1</sup>

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<sup>1</sup>Tennessee Department of Human Services, "Getting Started: A Step-by-Step Guide to Organizing a School-Age Child Care Program in Your Community" (Technical Assistance Paper No. 1, December 1989), 1.

The concept of an extended school program (ESP) was born out of the attempts to resolve this dilemma. In the hearings before the House Small Business Committee in Washington, D.C. in 1989, officials of the Murfreesboro City School System proposed the concept of an extended school program ". . . The IDEA is this: let the school-house where the child is already in a safe, educational environment for six and one-half hours per day, 180 days per year, take care of and continue to educate the child while the parent(s) is in the American work place . . ."²

The Extended School Program (ESP) was started in 1985 as a pilot program and became fully operational in 1986 by the Murfreesboro City School System (MCSS). It is administered by the local educational agency (the Murfreesboro City Schools System) and so falls under the school-age child care model generally known as the School-Administered School-Age Child Care model (SSACC). The distinguishing features of this model are:

1. It is licensed and approved by the State Department of Education which also provides some oversight.
2. The before-school phase lasts from 6:00 A.M. to 8:00 A.M. and the after-school phase, from 3:00 P.M. to 6:00 P.M. Both the before- and after-school phases are technically not school periods even though the children may

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²Murfreesboro Tennessee Extended School Program, Testimony (Washington, DC: House Small Business Committee, 5 June 1988), 1-2.

elect to do their school homework and other activities related to their normal school work during these periods.

3. The program is located in existing school buildings where the normal school is held. It uses the same school administrators and staff as well as facilities which results in the full capacity utilization of public school resources, both human and material.

4. Its establishment was the result of community/state effort, revealing how the municipal and state governments can collaborate with the local community for a common objective.

5. Despite its public sector nature, no public sector funds are required to run it; the program is run entirely with fees paid by parents. There is no subsidy of any kind, yet the fees are very affordable to even poor parents.

One of the main opportunities the Extended School Program offers the nation is a change in philosophy from what has been described as "those 'cast-in-stone' hours" of the traditional 180-day school year which the nation has observed so religiously throughout the 20th Century to a year-round program which allows for only a very short break. The self-supporting nature of the program and the full capacity utilization of school facilities which have been traditionally underutilized have attracted the attention of education experts throughout the nation as well as the press.

The role of the State and local governments is limited to providing oversight, licensing, consultation and various forms of technical assistance in start-up and implementation of school-administered school-age child care programs in areas where none exists. The financial independence of any such program becomes a matter of curiosity in terms of the feasibility and sustainability of such an arrangement. This is why a cost-benefit analysis becomes an interesting exercise for the school-age care model.

#### The Problem

The most immediate problem posed by the phenomenon of the working mother is how to provide before- and after-school care for school-age children. Families from the largest metropolitan areas to small rural settings now face this problem. For school-age children, the need goes beyond providing adult supervision, guidance and nurturing care. Parents of school-age children must solve the problem (commonly referred to as "the three o'clock syndrome") of how to care for school-age children between three o'clock when the traditional school day ends and six o'clock when most parents return home from work. Additionally, the children in this age group (5-13 years) need relationships and friendships outside their homes as well as skills not provided by the traditional school curriculum. The purpose of adult supervision in a school-age care setting, then,

becomes one of helping these children in mid-childhood to explore how much they can do on their own. They need additional opportunities for physical activities and other forms of recreation, skill-building, and leisure.

There is also the so-called "latch-key" problem involving about 65,000-90,000 school-age children throughout the state who are locked in at home (mostly single-parent homes) by working parents who can not afford child care expenses.<sup>3</sup> These children miss out on the vital growth opportunities provided by the school-age child care.

A statement by the State Department of Education explains the problem very clearly:

It is not uncommon to hear of families "camping out" on the steps of child care facilities to register their children for openings in quality school-age child care programs. What is happening to those children with no child care opportunities? Some are fortunate in having a friend or relative to assume responsibility for their non-school hours. The greatest majority are "latch-key" children. While the children wait, their parents are suffering as well. The parents' productivity decreases as their concentration is broken by constant concern for the welfare of their children.<sup>4</sup>

#### Significance And Objectives of Study

This program merits serious economic analysis because no economic study has ever been done of the school-administered school-age child care programs in the state of

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<sup>3</sup>Tennessee Department of Education, "School-Age Child Care in Tennessee: A Time to Grow" (1990), 1.

<sup>4</sup>Ibid., 3.

Tennessee. According to the Director of the ESP of the Murfreesboro City School System (MCSS), no cost-benefit study was done prior to the establishment of the program despite a pilot phase of the program. The program was, thus, established on the basis of an overwhelming evidence of need.

In some areas where an ESP-type program was established, significant objections were raised by for-profit school-age care centers to the establishment of the program because of the threat it might pose to for-profit private school-age child care centers. For example, for-profit school-age programs in Smyrna, Tennessee (ten miles away from Murfreesboro), protested vigorously against the establishment of the ESP in Murfreesboro because of the serious competition for-profit programs would face from the non-profit ESP centers.<sup>5</sup>

First, the study explores the welfare effects of the ESP. It establishes a basis for exploring the question of acrimony between for-profit and non-profit school-age programs. It argues that there can be acrimony among for-profit school-age centers because they are identical in terms of their products, organizational structure and objective functions. Not-for-profit school-age programs, however, are different from for-profit programs in terms of structure, objective functions, and products. The study

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<sup>5</sup>Daily News Journal (Murfreesboro, TN) 4 April 1990.

seeks to explore the following objectives:

1. Analyze the welfare effects of school-administered school-age child care in the State of Tennessee using the model of the Extended School Program (ESP) of the Murfreesboro City Schools. The study derives the cost-benefit ratio of the school-administered school-age child care of which the ESP is a part. The feasibility of the program is explored on the basis of the cost-benefit ratio.

2. Explore the nature of the market structure for not-for profit school-age programs. The welfare effects will be analyzed against the background of this market structure. The theoretical criteria for allocative efficiency in this market structure will be discussed and used to determine the welfare effects.

3. Test whether there is a significant statistical difference between the mean weekly revenue as well as the mean weekly enrollments of the for-profit and not-for-profit school-age child care models assuming that both groups produce services of comparable quality and that average weekly revenues serve as a proxy for average weekly profits.

#### Hypotheses

Two hypotheses were tested:

Hypothesis 1: The costs associated with the ESP model of school-age child care delivery exceed the benefits from

the program. A non-profit organization whose objective is to maximize quality output (or service) must, at least, break even.

Decision Rule: Accept  $H_0$  if  $C/B > 1.00$ ; reject  $H_0$ , otherwise.

Hypothesis 2: There is no significant statistical difference between the mean weekly revenues and the mean weekly enrollments of the for-profit and the not-for-profit school-age child care programs assuming that both models of school-age child care produce products of comparable quality and using mean weekly revenues as a proxy for mean weekly profits per unit.

Decision Rule: Accept  $H_0$  if  $t$  calculated is within critical  $t_{(\alpha, df)} = \pm$  table value; for the ANOVA test, accept  $H_0$  if computed  $F <$  table  $F_{\alpha, (df1, df2)}$ .

### Data And Methodology

Most of the data for this study are secondary data. However, a survey was mailed out to about twenty-five randomly selected school-administered school-age child care centers, twenty-five randomly selected parent-formed and administered school-age child care centers, twenty-five randomly selected for-profit care centers, and twenty-five randomly selected YMCA/YWCA school-age child care centers throughout the state. The survey and a Department of Human Services (DHS) random listing of some school-age child care

programs throughout the state provided the data base for testing the hypotheses.

Of the twenty-five school-age child care centers from each group, only twenty were used to determine the cost-benefit ratio and construct the t-test and the analysis of variance for the second hypothesis. A total of eighty school-age child care centers provided data for testing the hypothesis for this study across the state. The structures of the school-age child-care programs appear to be identical within each model group. The questions on the survey provided information on the definitions of school-age, not-for-profit, before-and after school programs, the licensing authority, the kind of services offered that conform to the administrative models they represent, enrollment, the cost of the program, and the components of costs.

The methodology adopted for the first null hypothesis was that of cost-benefit analysis (CBA). The study made a normative statement that predicted the feasibility of the school-administered not-for-profit school-age child care model using the ESP arrangement, based on a "with" project and "without" project comparison of its costs and benefits over the one year period from 1991/92. The cost-benefit ratio is generally defined as:

$$C/B = \sum C (1 + r)^{-t} / \sum B (1 + r)^{-t}$$

where C is cost, B is benefit, r is the interest rate (the

rate of discount). Thus,  $\Sigma C(1 + r)^{-t}$  is the discounted cost stream while  $\Sigma B(1 + r)^{-t}$  is the discounted stream of benefits over time period  $t$  which was one year.

However, this study defines cost benefit ratio in terms of the net incremental flows due to a new project.

Therefore, the cost benefit ratio is defined here as:

$$C/B = \Sigma C / (P_x \Delta X - P_y \Delta Y) \text{"with"} - \Sigma C / (P_x \Delta X - P_y \Delta Y) \text{"without"}$$

where  $X$  and  $Y$  are the product to be produced by the new project and the product "given up" by the economy, respectively. Thus,  $P_y \Delta Y$  is the opportunity cost of producing  $\Delta X$  and  $P_x \Delta X - P_y \Delta Y$  is the net incremental benefit from the new project.

If every item of costs and benefits can be quantified, then, the cost-benefit ratio can be expressed as a single number (a proper fraction if costs are less than benefits, an improper fraction if costs are greater than benefits, and 1 if both costs and benefits are equal). If, however, costs and benefits can not all be quantified, the cost-benefit analysis assumes a more qualitative nature.

According to David Stern (1991),

. . . economic analysis of education addresses two main questions. First, does the monetary value of benefits produced by expenditures on education equal or exceed the cost of those expenditures? Secondly, are schools and other educational efforts producing as much learning as possible, given their current budgets?<sup>6</sup>

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<sup>6</sup>David Stern, "Efficiency in Human Services: The Case of Education . . . Assessing Cost-Effectiveness of Computer-Based Technology in Public Elementary and Secondary Schools" (Office of Technology Assessment, U.S. Congress, 1987), 83.

The first question is the concern of this study while the second has to do with cost-effectiveness analysis and will not be dealt with in this study. Therefore, a significant amount of quantification is needed if the monetary values of benefits are to be appropriately determined as to allow for the reduction of the cost-benefit ratio into a single fraction.

For the second null hypothesis, a t-test for the difference of two means was conducted. A one-way ANOVA was also conducted to confirm the findings of the t-test. The choice of revenue over enrollment as the test variable was because revenue comprises both price (fee) and quantity (enrollment) and so represents some form of weighted index of performance. However, a t-test was also conducted using only enrollment data for both groups (the for-profit SACC group and the not-for-profit group). Profit was not considered a test instrument partly because it is not an objective of the not-for-profit agencies and partly because cost data were not available from the for-profit and the Parent/Board programs, in particular. Historical data on fees and enrollments did not exist even at the Department of Human Services until 1989.

#### Scope And Limitations Of The Study

This study was essentially an economic appraisal of school-age child care in Tennessee using the ESP's school-

administered program as the model. It is not a full project analysis involving all five stages (known as project cycles): project identification, project preparation and analysis, project appraisal, project implementation, and finally, project evaluation.<sup>7</sup> The identification stage simply involves finding a project such as a school-administered school-age child care project. Project appraisal involves preparing a project document detailing the nature of the project, and using the data collected to predict the project feasibility. Cost-benefit analysis is only one predictor of feasibility.

The model has, however, been implemented but it has not been replicated all over Tennessee. In many counties, it is still in the formative stages. The biggest constraint faced by this study was data availability. Many of the agencies had not started to keep their records in ways that lend themselves to time-series analysis. This was, perhaps, because child care issues became important only recently. The DHS started keeping records on fees and enrollments only since 1989 but does not keep records on cost. Most of the SACC centers themselves keep records of current year's costs.

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<sup>7</sup>J. Price Gittinger, An Economic Analysis of Agricultural Projects, 2d ed., EDI Series in Economic Development (Baltimore and London: Johns Hopkins University Press, 1982), 21-26.

### Organization Of The Study

Chapter 1 introduces the dilemma that faces working mothers in the U.S. labor market and in local communities in terms of how best to address the school-age child care problem. It also defines the problem as well as the parameters of the study. Chapter 2 presents a review of selected literature on child care in general and school-age child care in Tennessee, in particular. Chapter 3 explores the economic dimensions of school-age child care. It examines the market structures for both for-profit and not-for-profit school age child care. The rules of allocative efficiency for the for-profit and not-for profit models are discussed and two different supply models of the not-for-profit child care industry are presented.

The study explains the role that quality and the administrative structure of a not-for-profit child care organizations play in modeling the care organization under the assumption of informational symmetry and offers the role that parental involvement plays in this effort. Finally, it examines the relevance of cost benefit analysis to the school-administered school-age child care problem. Chapter 4 discusses the difficulties of identifying and quantifying costs and benefits in addition to exploring the components of school-age child care delivery cost. Chapter 5 presents the cost-benefit analysis (CBA), the t-test, and the ANOVA tests and interprets the results of the tests while Chapter

6 presents the summary, conclusions, and the policy implications of the study.

#### Definitions

School-Age Child Care (SACC): A child care arrangement primarily for children aged 5-13 years of age, but which also accepts children up to 18 years of age. It is organized to provide custodial care as well as activities that cater to the physical, intellectual and social growth and development of this group of children who would ordinarily be "home alone," or go to relatives after their normal school day while their parents are at work.

Before-and After-School Care: Another name for school-age child care programs which cater to children before and after the regular school day, (before 8:00 A.M. or after 3:00 P.M. to 6:00 P.M.).

School-Administered School-Age Child Care (SSACC): A model of school-age child care that is administered and run by the local public school system. It uses the local public school buildings, facilities and the public school system administrators. It is licensed by the State Department of Education (DOE) instead of the State Department of Human Services (DHS) which licenses the other school-age programs. The Extended School Program of the Murfreesboro City School System is an example of a school-administered school-age program.

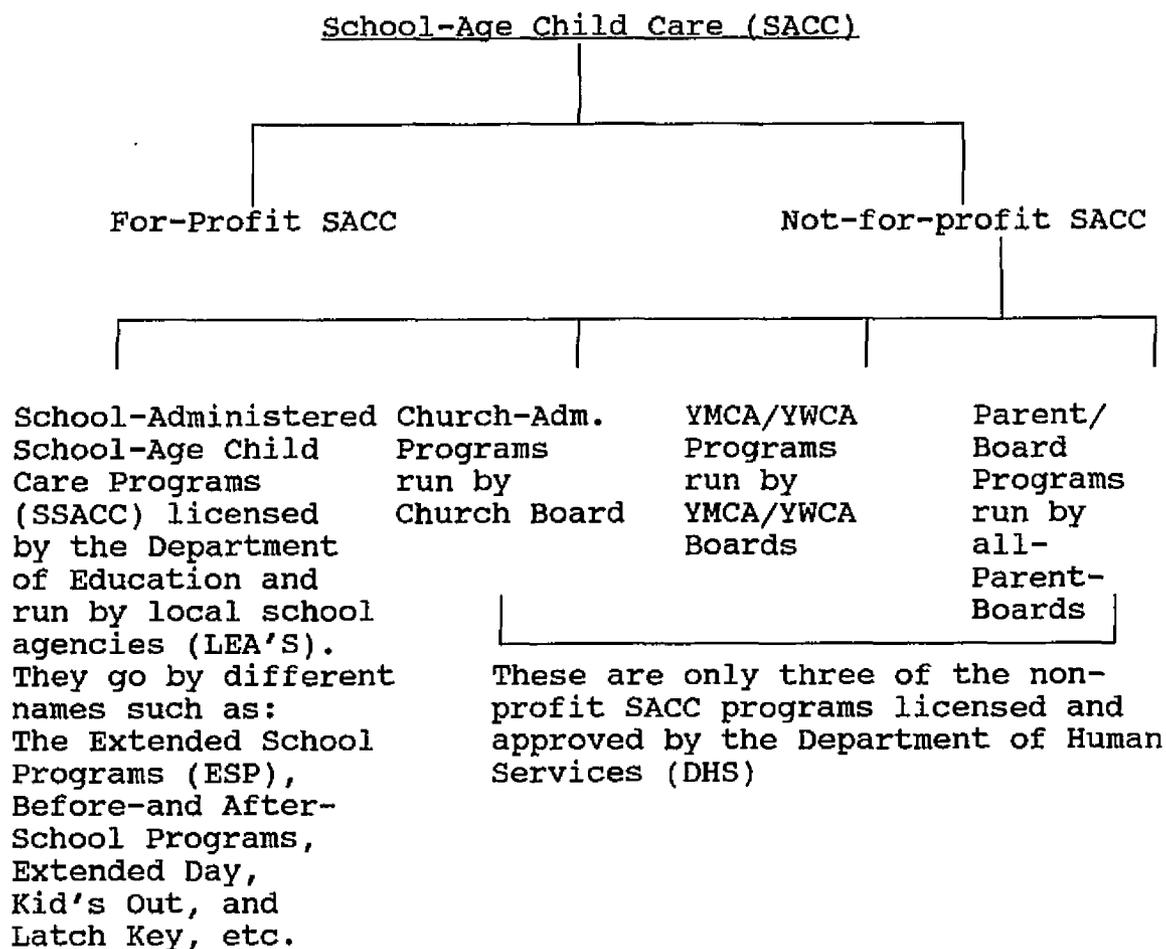


Figure 1. Chart of school-age child care models

### The School-Age Child Care Initiative (SACCI)

Based on the Murfreesboro ESP program, Governor McWherter launched his School-Age Child Care Initiative (SACCI) along with the General Assembly of the State Legislature in 1987. The goals of the School-Age Child Care Initiative are "to focus the communities' attentions to the needs of children beyond normal school hours and to encourage development of flexible programs that utilize the individual strengths and resources of the community."<sup>8</sup>

### The Administrative Models For The Delivery Of School-Age Child Care

Before the joint Executive-Legislative Initiative in 1987, there were licensed slots for only 7.3 percent of the school-age children in Tennessee. School-age child-care is still not available in many parts of the State. The Governor's Initiative created three administrative models for delivering school-age child care in Tennessee:<sup>9</sup>

1. The Parent-Formed-and-Incorporated model is a not-for-profit facility with an all-parent board having the power to hire and fire staff and teachers, develop program content, and meet all other administrative responsibilities.

2. Not-for-Profit independent community agencies like the YMCA/YWCA which contract with the local educational

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<sup>8</sup>Tennessee Department of Education, "School-Age Child Care in Tennessee" (1990), 3.

<sup>9</sup>Ibid., 1-2.

agency (LEA) to run a school-age child care program within a school facility.

Both models (1) and (2) are licensed/approved by the Department of Human Services (DHS) and they work closely with the principal of the school whose space is being shared.

3. The third model is the school-administered program which is licensed/approved by the State Department of Education with the administrative format determined by the local educational agency (LEA). For some of these school administered child care programs, a staff designated by the LEA coordinates the program and staff hiring in each school. For others, however, the LEA uses extended contract personnel to administer the program in each school.

For all three models, the same regulations govern licensing and approval. Thus, both the Department of Human Services and the Department of Education enforce the same licensing approval regulations. All the three models charge fees to cover program costs. Each school district is, nevertheless, free to select a model and a name for its program as well as a format and design.<sup>10</sup> The Department of Education allows flexibility not only in name and model selection but also in program format and design, even though the objectives of the SACC program are identical throughout the state. Thus, in Murfreesboro, the school-age program is

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<sup>10</sup>Ibid., 2.

called the Extended School Program (ESP).

The Role Of The State Department Of Education

An office of School-Age Child Care exists at the Tennessee Department of Education in Nashville, Tennessee, to provide each school system within the state individualized consultation on child care planning and programming, regulate school-administered school-age child care according to the mandates of the law, and seek alternative modes of raising funds for the school administered school-age child care program throughout the state by identifying various sources of funds.

The Department has also been assisting the various school systems in the state to achieve the goals of the SACCI through the following additional channels:

1. The Extended Contract Program which urges school systems to assess the needs of their students on a continuing basis and determine whether there is a need for school-age child care. Through such needs assessment, many school systems have concluded that the demand for before- and after-school-age child care is far greater than anticipated by simply observing an increasing number of unsupervised children who show up every day in school.

2. The Governor's A+ Award For Community Excellence in Education. Under this program, communities and school systems which wish to compete in the Governors A+ Award must

either provide a school-age child care program, or show that the school age child care needs of the communities or school systems are being met by other suppliers or providers. They must also show that students, as well as their families, can be helped through a referral system.

3. The Administration's Initiative to Ensure School Success for At-Risk Students. This is only one of fifteen elements of a multi-phase plan for educational success in Tennessee. The strategy is to create a system of early intervention to prevent at risk students from dropping out. The school-age child care program is seen as one very useful form of early intervention for the at-risk students. Increased opportunities at the before- and after-school phases provide such students with new learning opportunities.

#### The Murfreesboro Extended School Program (ESP)

The ESP of the Murfreesboro City School System was the precursor of the School age Child Care Initiative of Governor McWherter and the State Legislature. In 1985, Murfreesboro City Schools started an extended school project on a pilot basis to test the feasibility of keeping children ages 5-12 years (K-6) in school beyond the traditional six and half hours. If successful, the State was expected to promote its adaption to other school districts within the State. Children from kindergarten through the sixth grade

(K-6) would then remain in school till 6:00 P.M. throughout the year, except for five week days in a calendar year when the school would be closed. The additional four hours would not represent an extension of the traditional school day, but would be devoted to supplying differentiated child care services comprising custodial care and an enriched and flexible curriculum of developmental activities that would aid their growth. On January 2, 1986, the program became fully operational in Murfreesboro.

#### Objectives Of The ESP Program

Several educational and developmental objectives were sought by the program.<sup>11</sup> The educational objectives included:

1. Providing increased learning time for school-age children in the city-school system and providing more guidance on a one-on-one basis with trusting adults.
2. Ensuring that the children complete their home work assignments under close supervision of staff and teachers before they go home.
3. Providing more time for parents and their children when they finally get home.
4. Providing remedial and tutorial services to children needing such services in their school work.

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<sup>11</sup>Murfreesboro City School System, ESP Policy Manual (1989), 1-6.

5. Providing an enriched and flexible curriculum to allow for additional learning experiences in the arts and the humanities which are not usually provided by the traditional curriculum, perhaps, because of the time constraint imposed by the regular school day.

The non-educational objectives include the provision of an environment for the safety and health of the children as well as effective use of school facilities that are believed to be underutilized by the traditional six-and-half hour day, 180-day school year.

As a result of the appeal of these objectives, the school-administered school-age child care programs in Tennessee had increased to 110 by 1989, serving 6,736 children in the state.<sup>12</sup> There were also 156 YMCA/YWCA and parent-board administered programs in Tennessee's public schools serving 8,156 children throughout the state, and one Parks and Recreation Department administered program in a public school serving 120 children. The number of school-age child care programs administered by the different models was 267 and the total number of school age children being served was 15,012. In 1990, fifty public school systems and non-profit organizations applied for grants to expand or open twenty school-administered school-age programs, eight YMCA/YWCA programs and four programs run by

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<sup>12</sup>Tennessee Department of Education, "School-Age Child Care in Tennessee" (1990), 4.

the Upper Cumberland Human Resources Agency, all housed in public schools.<sup>13</sup>

#### A Summary Of The Problem

In all parts of the United States, including Tennessee, an increasing number of mothers are entering the work force. This population cohort comprises both single mothers (as single heads of households) and married mothers with husbands present. This phenomenon is driven by several factors, including the household demand for additional income. Whatever the reason, the working mother is now a fact of industrial life in the United States. The most immediate problem posed by the entry of mothers into the labor force is how to provide before-and after-school child care for the children of these working mothers. Families in both metropolitan and rural areas of the U.S. now face this problem.

The most basic need concerns adult supervision, the provision of guidance and nurturing care for the children of working mothers. For school-age children, the need goes beyond this. Parents of school-age children must solve the problem commonly referred to as the "latch-key" problem, the practice by poor single mothers of locking their children at home while they go to work because they can neither afford child care expenses nor have they access to family care.

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<sup>13</sup>Ibid.

The Tennessee Department of Education estimates that between 65,000 and 90,000 school-age children throughout the state are "latch-key" or "home alone" children. These children miss out on the vital growth opportunities provided by school-age child care. There is also the so-called "three o'clock syndrome," that is, the belief by employers that the productivity of mothers with school-age children drops between three o'clock when the traditional school day closes, and six o'clock when most parents return home from work because they constantly worry about how their children will be cared for during those hours.

The school-age children need relationships and friendships outside their homes and need skills not provided by the traditional school curriculum. Adult supervision is provided to help these children in mid-childhood to explore how much they can do on their own. They also need additional opportunities for physical activities and other forms of recreation, skill building and leisure, all of which are provided by peer interaction outside their homes under an organized after-school group care program.

## CHAPTER 2

### REVIEW OF SELECTED LITERATURE

Child care arrangements in the United States vary according to age group. Three main groups of children consume child care services. These are: infants and toddlers or prekindergarten children, usually between 0 and 2 years of age; preschool or kindergarten children between 3 and 5 years of age; and school-age children 5 to 13 years of age.<sup>14</sup> The focus of this study is on the school-age group.

The fastest growing form of care for the school-age group is before-and after-school day care arrangements. It is, however, not the dominant form of care.<sup>15</sup> Out-of home care is considered extremely important for them because their developmental growth almost mandates social interaction with children in their age-group outside their home environment. This is considered important to the acquisition of certain physical, learning, artistic and athletic skills that the home environment alone may not be able to adequately provide.<sup>16</sup> This is also the age-group

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<sup>14</sup>Alfred J. Kahn and Sheila B. Kamerman, Child Care: Facing The Hard Choices (Dover, Massachusetts: Auburn House Publishing Company, 1987), 8.

<sup>15</sup>Ibid., 9.

<sup>16</sup>Murfreesboro City School System, ESP Research and Program Plan (1988), 3.

most exposed to the so-called "latch-key" problem.<sup>17</sup>

Finally, the activity gap from three o'clock when the traditional school day closes and six o'clock when most parents return home from work appears most severe with this group of children. The productivity of working mothers decreases because their work concentration is disturbed by constant concern for the welfare of their children.<sup>18</sup>

The need to cater to their total development means that this three-hour gap in time must be available to child care planners so that they can fit in activities that will benefit both the children, their parents and the community at large, rather than allow the children to use it in ways that may prove costly to them, their families, and the entire society. There has always been a need to fill that gap but the need has become more urgent because of recent increases in juvenile delinquency and the growing focus on the family unit as the appropriate focal point from which to tackle the problem.

Of all school-age children in the U.S., 58 percent are cared for by a parent or relative before, or after school, 3 percent are cared for by arranged sitters, 8 percent by day care centers, 21 percent are in structured programs such as

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<sup>17</sup>Tennessee Department of Education, "School-Age Child Care in Tennessee" (1990), 4.

<sup>18</sup>Ibid., 1.

sports and lessons and the rest care for themselves.<sup>19</sup> It has been estimated that by 1995, about 23.5 million school-age children will have mothers in the labor force, that is three out of four children aged 5 to 13 years of age.<sup>20</sup> For this age-group, child care is a joint product since it caters to the simultaneous delivery of pure custodial care and developmental skills considered necessary for positive modes of behavior that minimize the private and social costs of juvenile delinquency.<sup>21</sup> Thus, the family's desire to seek the optimum development of their children through horizontal socialization is one of the factors that drives the consumption decision for out-of-home care for this cohort.<sup>22</sup>

#### The Supply Of Care Facilities In The United States

Hofferth and Phillips (1991) report that a tremendous increase in the number of children less than six years old

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<sup>19</sup>Sandra L. Hofferth, A. Brayfield, S. Deich, and P. Holcomb, The National Child Care, 1990 (Washington, DC: Urban Institute) reported in "Child Care Policy Research," Journal of Social Issues 47, no. 2 (1991): 3.

<sup>20</sup>Sandra L. Hofferth and Deborah A. Phillips, "Child Care in the U.S., 1970-1995," Journal of Social Issues 47, no. 2 (1991): 3.

<sup>21</sup>Philip K. Robins and Robert G. Spiegelman, "An Econometric Model of the Demand for Child Care," Economic Inquiry, XVI (January 1978): 85.

<sup>22</sup>B. Fayissa and T. Fessehatzion, "Child Care Services in the Labor Force Participation and Income Distribution of Working Mothers in the U.S.," International Journal of Social Economics 17, no. 4 (1990): 49-56.

with mothers in the labor force continues to take place. Between 1970 and 1990, mothers with children less than six years of age in the labor force increased significantly, almost doubling from 29 percent in 1970 to 54 percent in 1990.<sup>23</sup> As the labor force participation of mothers has increased over the years, a corresponding growth in the supply of care facilities has also taken place. The National Association for the Education of Young Children (NAEYC) reports that by 1985, there were 229,000 licensed child-care programs in the U.S. comprising 61,000 child care centers, and 168,000 day care homes. There were also group homes.<sup>24</sup> By 1990, over 6.1 million licensed home and center slots were reported, caring for all children 13 years of age or less in the U.S.<sup>25</sup> Center care has grown the fastest, growing by 234 percent between 1977 and 1985 alone.<sup>26</sup>

According to Robins (1988), the proliferation of center care has been largely due to the participation of many employers in providing or sponsoring care facilities as a

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<sup>23</sup>Hofferth and Phillips, "Child Care in the U.S., 1970-1995" (1991), 3.

<sup>24</sup>Philip K. Robins, Federal Financing of Child Care: Alternative Approaches and Economic Implications (Coral Gable, Florida: University of Miami, Department of Economics, 1988), 8.

<sup>25</sup>E. Kisker, Sandra L. Hofferth, and D.A. Phillips, A Profile of Child Care Settings: Early Education and Care in 1990 (Princeton, NJ: Mathematical Policy Research), 87.

<sup>26</sup>Robins, Federal Financing of Child Care: Alternative Approaches and Economic Implications (1988), 8.

direct result of increased female labor force participation. This move is, of course, purely economic because the marginal productivity of the female work force must be a concern to many employers with a high component of mothers of children thirteen years of age or less, in its employment. Lydenburg (1986) reports that about 2,500 companies provided child care assistance of one sort or another to their employees, a small fraction (about 6 percent) when compared to about 44,000 companies with 100 employees or more operating in the U.S.<sup>27</sup>

The use of licensed center care has increased at the expense of in-home care since 1965. Robins (1988) estimates that between 1965 and 1985, the number of children needing care and registering in out-of-home care centers increased from between 10 percent and 15 percent in 1965 to between 30 and 35 percent in 1985. He suggests that the reasons for the increase in licensed, institutionalized child care as well as the corresponding decrease in in-home care relate to several interacting forces most of which are economic in nature.<sup>28</sup>

One factor relates to a change in the relative price of child care, defined in terms of the price of

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<sup>27</sup>Steven D. Lydenburg, "Child Care Update: Business Takes First Steps," Newsletter (New York: Council on Economic Priorities (CEP) Publication, 1986), 13.

<sup>28</sup>Robins, Federal Financing of Child Care: Alternative Approaches and Economic Implications (1988), 9.

institutionalized child care and in-home child care that is, the ratio of the price of institutionalized child care to the price of in-home child care ( $P_{\text{center}}/P_{\text{home}}$ ). Robins cites a 1987 survey data by Hofferth as showing constancy in the price of institutionalized center care ( $P_{\text{center}}$ ) in real dollar terms while the price of in-home care increased. An increase in  $P_{\text{home}}$ , holding  $P_{\text{center}}$  constant, means that the  $P_{\text{center}}/P_{\text{home}}$  ratio falls, resulting in an increase in the demand for institutionalized center care.

Burud et al. (1984) suggest that an increase in the labor force participation of women has been reducing the supply of in-home providers and, thus, causing the price of in-home care to rise.<sup>29</sup> Another reason for the drop in the price (cost) of institutionalized care is the increase in the supply subsidies for center care providers. This causes the demand for center care to rise. Similar increases in demand-based subsidies have had the same effect of reducing the price of child care to consumers of center care and increasing the demand for center care. Demand-based subsidies such as the Child Care Tax Credit of 1976 which was subsequently liberalized by the Bush administration, are believed to increase the demand for institutionalized child

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<sup>29</sup>Sandra L. Burud, Pamela R. Aschbacher, and Jacquelyn McCroskey, Employer Supported Child Care: Investing in Human Resources (Boston: Auburn House Publishing Co., 1984), 14.

care.<sup>30</sup>

In recent years, the wages of women workers have been rising, not only revealing their preference for outside employment activities over motherhood and "mothering," but also enhancing their ability to pay for institutionalized care. Thus, increases in female wage income are expected to increase child-care consumption.<sup>31</sup>

There are also noneconomic reasons why the demand for institutionalized care is out-pacing the demand for in-home care. The joint product nature of school-age child care means that the children enjoy not only pure custodial care, but acquire developmental skills in sports, the arts, and other recreational activities that in-home care may be unable to provide.

Parents may also believe that the probability of child abuse, either physically or sexually or both, may be lower in institutionalized care centers where the presence of other teachers and staff members may serve as a deterrence; the privacy of in-home care may not provide such a deterrence. Accountability in care centers may, thus, generally be higher than in homes.

There is also professionalism usually associated with

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<sup>30</sup>Philip K. Robins and R. G. Spiegelman, "The Economics of Child Care and Public Policy," Children and Youth Services Review 1 (1979): 55-74.

<sup>31</sup>E. Lehrer and G. Kawasaki, "Child Care Arrangements and Fertility: An Analysis of Two-Earner Households," Demography 22 (1985): 499-514.

institutionalized center care with trained care givers, up-to-date care knowledge, and facilities (recreational, artistic and athletic, etc.).

#### Factors Driving The Demand For School-Age Child Care

There are three main factors which drive developments in the child care industry, including the school-age component. These are:

1. The phenomenon of the working mother.
2. The need for horizontal or peer socialization outside the home environment and its related recreational and psychological benefits.
3. The re-escalation of poverty (particularly since 1980), and what Kagan (1991) refers to as "the feminization of poverty."<sup>32</sup>

#### The Phenomenon Of The Working Mother

Henriques and Vaillancourt (1988) hold the view that the demand for day care is usually a derived demand because the decision by a family to consume child care services outside the home is derived from the mother's decision to seek an outside activity.<sup>33</sup> The demand for organized child

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<sup>32</sup>Sandra L. Kagan, "Examining Profit and Non-Profit Care: An Odyssey of Quality and Auspices," Journal of Social Issues 47, no. 2 (1991): 87.

<sup>33</sup>Irene Henriques and Francois Vaillancourt, "The Demand for Child Care Services in Canada," Applied Economics, 20 (1988): 385.

care outside the home environment is a derived demand not only because of the demand for an outside employment by the mother, but also because of other benefits associated with organized child care outside a home setting. They agree that child care services are a joint product because services are also demanded for their educational and developmental values for children.<sup>34</sup>

It is true that the principal outside activity for the mother has become the supply of her labor services for a wage consideration. In industrial societies, the decision by the mother to seek outside employment induces a simultaneous decision to demand day care services. This demand for day care may not necessarily be for organized center care. In cases where family help or day care services are available, they may be explored first before the center care. The simultaneity of both decisions is conditional upon whether the family is an extended or of a purely conjugal nature. In most third world countries, the extended nature of the family unit enables non-market care arrangements to be made so that automatic decisions about consuming child care services outside the family setting are postponed either temporarily or indefinitely. In industrial societies where extended family help is not the norm, once mothers have decided to use child care services outside the family setting, the decision to choose a model of child care

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<sup>34</sup>Ibid.

that they consider most suitable for their children depends on whether they are working full-time or part-time and also on the age of the child.<sup>35</sup>

Whether the outside activity of the mother is wage employment or charitable work, the decision by the mother to engage in it drives the decision to use organized child care services. According to a Roper Organization poll of 3,000 women in 1989 on why women choose to work, 3 percent of married women cited their desire for self-support while 68 percent of single mothers cited the same reason. Other reasons given were family support, extra income, and an interesting activity.<sup>36</sup> Five percent of both groups of women (married and single) either gave other reasons or said they did not know. About 83 percent of married women and about 93 percent of single women gave reasons related to income-constrained utility maximization. Only 12 percent of married women and 2 percent of single women cited a utility maximization objective not related to income.<sup>37</sup>

Clearly, the major catalyst driving developments in the school-age child care industry is the participation of mothers (both married and unmarried) in the labor force in the U.S. Between 1970 and 1986, the labor force participation rate of women rose from 43 percent to 55

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<sup>35</sup>Ibid., 385-386.

<sup>36</sup>USA Today (22 June 1989), 3.

<sup>37</sup>Ibid.

percent. During the same period, the participation rate of mothers with children under 18 years of age rose from 42 percent in 1970 to 63 percent in 1986 and for married mothers, from 40 percent in 1970 to 61 percent in 1986.<sup>38</sup> Kahn and Kamerman (1987) estimate that over 70 percent of the mothers of school-age children are currently in the labor force. For married mothers with children under 6 years of age, the percentage in the labor force increased from 39 percent in 1970 to 54 percent in 1986; for mothers with children under 3 years, the percentage rose from 22 percent in 1970 to 51 percent in 1986. Since 1980, the participation rate of married mothers has increased by 13 percent.

For married mothers with children under 6 years the participation rate has increased from 45 percent to 54 percent since 1980. For married women with children under 3 years of age the participation rate rose from 41 percent to 51 percent during the 1980-1986 period.<sup>39</sup> As already stated in Chapter 1, Tennessee data mirror national statistics.

#### Horizontal Socialization Of School-Age Children

Current views held by child psychologists is that when

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<sup>38</sup>Kahn and Kamerman, Child Care: Facing the Hard Choices, (1987), 11.

<sup>39</sup>Ibid., 12.

school-age children socialize with their peers on a continuous basis in an organized child care environment, there are significant educational and developmental gains for them. Therefore, the demand for school-age child care becomes synonymous with the demand for these developmental and educational benefits. This is the basis for the argument by Henriques and Vaillancourt (1988) that the demand for school-age care is a derived demand. This was not always the view towards peer interaction among children in child care centers.

In the late 1960's and 1970's, expanded child care services were criticized on the grounds that they detached children from their home environment, exposed them to possible wrong influences outside the home, and tended to create a communal experience. In the 1950's, the fear was that child care caused abnormal withdrawal in children and created a state of unrelatedness between children and their home environments. These fears were based on studies using samples of children raised completely in institutional environments after World War II with absolutely no family interaction.<sup>40</sup> As long as women accepted their role as homemakers and showed no desire to seek outside employment, there was little incentive to challenge these kinds of studies. The emergence of feminism under the general Civil Rights Movement of the 1960's and its advocacy of the rights

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<sup>40</sup>Ibid., 14.

of women to full self expression, including out-of-the-home employment as an element of that full self-expression, produced the needed incentives for challenging the Bowlby-type studies.<sup>41</sup>

Another incentive cited by Kahn and Kamerman was the need to explore strategies for increasing opportunities for deprived children (i.e., minority children) under the general thrust of the Civil Rights Movement. The focus of the inquiry here was whether there were net welfare gains in interpersonal relationships outside their home environments, e.g., cognitive gains and long-term improvements in the life chances of deprived children as well as a reduction in the long-term costs to society of these children becoming troublesome adolescents.<sup>42</sup>

Other incentives at work that encouraged further research into the benefits of horizontal socialization included:

1. The reality of the two-income family and its influence on the decision of many families to let the mother seek outside employment.

2. The reduction in the family size in the U.S. and its effect on the number of people at home for the children to socialize with.

3. The mobility of the western family and its effect

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<sup>41</sup>Ibid., 15.

<sup>42</sup>Ibid., 15-17.

on the availability of extended family help and its interaction on a regular basis.

4. The effect of the combination of the small family size with the fact that many neighborhood children belonging to two-earner families are likely to be in day care facilities rather than playing in the neighborhood.

One way parents have responded to all these developments has been to demand more information about child care arrangements outside their home, including the costs and benefits of consuming such services. In return, many new studies have emerged producing results that completely refute the "institutionalism" fears generated by studies like John Bowlby's. These new studies have, instead, found that there are many welfare benefits associated with children socializing with their peers outside the home. Many parents learned for the first time that their children could begin learning in their preschool years and continue to the school-age years; that the children of school-age can acquire skills that the home environment may not be able to provide. Even when major learning advantages are not reported by these studies, there are other advantages of out-of-home care which convince young parents to demand such group care services.

The following findings are examples:<sup>43</sup>

1. It is quite possible for babies and young children

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<sup>43</sup>Ibid.

to form emotionally important relationships with people other than their parents without losing the intensity and kind of attachments they have with their parents, especially their mothers. As a result, the relationship with their caretakers in organized care facilities does not subtract from their parental attachments. This is particularly true of school-age children who are able to discern the difference even on their own.

2. No credible evidence exists to support the conclusion that good child care programs impair attachments to their parents or the intellectual development and general growth of children. Good programs are defined as those having small groups with trained care-givers and a high staff-to-children ratio.

3. Differences are observed between children who participate in group child care programs and those that do not. Those who participate tend to be more independent, more sociable, more competitive and aggressive with their peers. These observations may be perceived as appropriate or inappropriate depending on the observer's values, appropriate to cope with today's world or deviating from appropriate childhood behavior.

4. With respect to the effect on deprived children, there are findings that the cognitive development and socialization of children from deprived backgrounds is enhanced by participation in group child care programs.

When these children are exposed to quality programs where special efforts are made to help them catch up, the length and extent of exposure combined with the quality of the program, can produce observable improvements in cognitive development and socialization. Not all gains are sustained indefinitely, however, but such programs as Head Start, for example, have had and continue to have, long-term improvements on the delinquency problem and the school drop-out problem.<sup>44</sup>

Negative effects have also been reported. Organized child care programs, it is argued, expose children to common childhood diseases. Infants and toddlers are the most vulnerable and infectious hepatitis appears to be the most serious disease reported, but this is only in centers that do not conform to recommended standard public health requirements.<sup>45</sup> The school-age group is less vulnerable than the younger groups.

In sum, horizontal socialization, particularly among the school-age group in organized child care facilities, does lead to welfare gains for the child, the family, the schools and the community.

There is a wealth of evidence that positive differences between children in center care environments and children in home care settings favor the former group. Clarke-Stewart

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<sup>44</sup>Ibid., 16-17.

<sup>45</sup>Ibid., 17.

(1991), not only cites several pieces of evidence to support positive net gains from care centers, but also offers some of the factors causing these differences in favor of center care children. It is not clear, however, that the assessment she offers applies to school-age children since her study deals with the 2-4 year-old group.<sup>46</sup>

There are two important reasons why her analysis could apply to the school-age group. The first is that the younger children (the 5 to 10-year-old) in the school-age category could be positively influenced by their organized center care experiences particularly if they are previous participants in organized center care when they were less than five years old. In this case, they would bring their preexisting experiences from their previous consumption of organized center care. Secondly, every school-age child who has had previous center care experience has, in addition to a preexisting experience from his or her previous interaction with peers and trained care givers, another preexisting experience from home. Clarke-Stewart suggests that the combination of the two previous experiences contributes to the development of children. Other factors she cites for the differences between children with center care experiences and those with only home care experiences are:

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<sup>46</sup>K. A. Clarke-Stewart, "A Home is Not a School: The Effects of Child Care on Children's Development," Journal of Social Issues 47, no. 2 (1991): 105-123.

1. Differences in amount of attention and stimulation received by center care children.
2. Differences in kind of attention and stimulation from peers and experienced, trained care givers.
3. Stimulation from exposure to physical equipment and materials that encourages more frequent intellectual activities.
4. Stimulation from center care programs and curricula with their emphasis on rules, lessons, schedules and extensive educational instruction (schooling).
5. Differences in the quality of stimulation.

Lamb et al. (1988) actually cite the differences in the quality of child care, rather than type of child care, as the main reasons for the observed differences in the development of center care children and children in home care environments.<sup>47</sup> According to studies conducted in Sweden and England, Lamb et al. observed that preschoolers in poor quality center care were worse off in social skills than similarly grouped children in home settings, but found preschoolers in high quality care environments to be more advanced in social skills than pre-schoolers in home settings.<sup>48</sup>

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<sup>47</sup>M. E. Lamb, C. P. Hwang, A. Brovert, and F. L. Bookstein, "The Effects of Out-of-Home Care on the Development of Social Competence in Sweden: A Longitudinal Study," Early Childhood Research Quarterly 31 (1988): 379-402.

<sup>48</sup>Clark-Stewart, "A Home is Not a School" (1991), 116.

Clarke-Stewart's conclusion is that:

preschool children who have spent some time in center child care are, on the average, socially and intellectually advanced over their peers who have only been at home. This advanced development is likely to arise from a combination of factors, not a critical cause. Experiences at home, including those initiated or evoked by the child, may contribute to the advanced development of children whose parents have chosen to put them in centers. Even more important, the advanced development of children in centers is likely to be the result of lessons to foster social and intellectual skills, instructions in recognizing and following rules, opportunities to practice skills and follow rules with a variety of peers and non-parental adults, and encouragement of independence and self-direction by trained and non-authoritarian teachers. The experiences of children in centers are substantially different from those children who are likely to be at home with parents, baby-sitters or day care home providers. Home is where the heart is, but the head is influenced by more than home experiences. A home is not a school. Center environments differ qualitatively from home environments, and the differences in the kinds of experiences they offer are likely to have significant effects on the development of children growing up in them.<sup>49</sup>

These gains are believed to continue to the school-age years because of the lasting effects of pre-existing experiences on later years.

#### The Feminization Of Poverty

The nature of poverty since 1980 has led to what Kagan calls "the feminization of poverty." This is not to say that before 1980, women were faring better than men in terms of the number of people below the poverty line. It simply

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<sup>49</sup>Ibid., 118.

means that the situation for women has become much worse. There are more women heads of households now than ever before. For example, in 1980, within the state of Tennessee, the median family income with both husband and wife working and with children under 18 years of age, was \$21,316; for a similar family without a husband present, the median income was \$8,808. For all families with no husband present, the median income was \$8,620. Female households without husbands present accounted for 52 percent of all families in the labor force. White families without a husband present had a median income of \$9,764 while black female household had a median income of \$6,489.<sup>50</sup> The 1990 Census preliminary reports show that there are more families headed by single mothers than in 1980. Women have more work interruptions due to family reasons. More than 62 percent of all part-time workers are women and many of them (over 37 percent) work part-time for economic reasons.<sup>51</sup>

#### School-Age Child Care In Tennessee

In Tennessee, as in all parts of the United States, the phenomenon of the working mother is accelerating. The supply of labor from this population cohort comprising both single mothers (as heads of households) and married mothers

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<sup>50</sup>Tennessee Department of Employment Security, Research and Statistics Division, Labor Market Information Unit, Women in the Labor Force (1988), 40-41.

<sup>51</sup>Ibid., 17.

is now a permanent feature of the labor market. This phenomenon is a reflection of the desire of many households to push their budget line to the right. Whatever the reason, the working mother is now a fact of industrial life in Tennessee and the rest of the country. The data on school-age related problems in Tennessee mirror national statistics with respect to two-parent and single-parent families working outside the home. According to the 1980 U.S. Census, about 64 percent of Tennessee mothers with school-age children work outside their homes and about 71 percent of them work because of economic necessity.<sup>52</sup> The remaining 29 percent are assumed to be working partly to maximize their household utility function, partly because of current career-orientation of women and partly as a form of full self-expression as exhorted by the feminist movement in the United States. It has been estimated that by 1995, 75 percent of Tennessee's school-age children will have mothers working outside the home.<sup>53</sup>

The phenomenal rise in the number of working mothers in the state has been accompanied by significant changes in the nature and extent of their connection to the labor force. For example, the female demand for labor has shifted from its part-time nature to a full-time, career-oriented nature,

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<sup>52</sup>Tennessee Department of Education, "School-Age Child Care in Tennessee" (1990), 1.

<sup>53</sup>Ibid.

applying to all age groups, races and marital status. Some years ago the trend was for women preferring to work part-time and spending the rest of their lives at home taking care of their children and husbands. This is no longer the norm. For example, about 23 percent of all women employed in the state worked less than 35 hours a week in 1986.<sup>54</sup> About 63 percent of these part-time workers were volunteers while 37 percent were induced by economic considerations. By 1988, the number of part-time workers had dropped to about 11 percent, while about 82 percent were employed full-time.<sup>55</sup> Hours worked per week is an index of the intensity of a worker's connection to the labor force. Tennessee's labor force participation rates for the years 1980-1986 approximated the national rates (see Table 1). Women accounted for 70 percent of the increase in the State's civilian labor force. For the nation as a whole, women accounted for 60 percent of the total growth in the labor force over the same period.<sup>56</sup> Women in the 20 to 24-year and 25 to 34-year age group year had the highest participation rates (about 75 percent).<sup>57</sup>

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<sup>54</sup>Tennessee Department of Employment Security, Research and Statistics, Division Labor Market Information Unit, Women in the Labor Force (1988), 1.

<sup>55</sup>Ibid., 18.

<sup>56</sup>Ibid., 12.

<sup>57</sup>Ibid.

Table 1.--Labor Force Participation Rates of Women by Age 1983 and 1986, Annual Averages

	<u>United States</u>		<u>Tennessee</u>	
	1983	1986	1983	1986
Total, 16 and over	52.9	55.3	51.3	54.4
16 to 19	50.8	53.0	45.3	51.6
20 to 24	69.9	72.4	66.3	76.9
25 to 34	69.0	71.6	68.2	74.5
45 to 54	61.9	65.9	58.7	60.3
55 to 64	41.5	42.3	39.8	40.1
65 and over	7.8	7.4	7.4	8.9

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, January 1984 and January 1987.

### Working Mothers

The participation rates of married women with children, especially those with young children, have been on the rise since 1970 throughout the U.S., including Tennessee. Between 1970 and 1986, the participation rates of housewives with children of varying ages increased at varying rates (see Table 2). The fastest growth in the participation rates of these mothers took place between 1975 and 1980. The participation rates of mothers with school-age children (6-13 years) grew the second highest relative to the rate of participation of mothers with children 14-17 years of age. Considered together, therefore, mothers with school-age children 6-17 years experienced the highest participation rate in the U.S. labor force and this fast increase was sustained on a regular basis from 1970 to 1987.<sup>58</sup>

The rate for black mothers was even higher for the same period and for the same school-age group (see Table 3). In fact, the participation rate of black mothers increased the highest at almost all children's age groups. This underscores the point that the work effort, i.e., the demand for work induced by economic necessity, is greater for black mothers than for white mothers.<sup>59</sup> Black mothers have a long history of labor market participation due to the difficulties black men experience in the labor market.

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<sup>58</sup>Ibid., 20.

<sup>59</sup>Ibid., 20-21.

Table 2.--U.S. Labor Force Participation Rates of Wives, Husband Present, By Age of Own Youngest Child: 1970 to 1987--As of March for Civilian Noninstitutional Population, 16 Years Old and Over

(Based on Current Population Survey)

Presence and Age of Child	1970	1975	1980	1985	1986	1987
Wives, total	40.8%	44.5%	50.2%	54.3%	54.6%	55.8%
No children under 18	42.2%	44.0%	46.0%	48.2%	48.2%	48.4%
With children under 18	39.8%	44.9%	54.3%	61.0%	61.4%	63.8%
Under 6, total	30.3%	36.8%	45.3%	53.7%	53.9%	56.8%
Under 3	25.8%	32.6%	41.5%	50.7%	51.0%	54.2%
1 year or under	24.0%	30.8%	39.0%	49.4%	49.8%	-
2 years	30.5%	37.1%	48.1%	54.0%	54.3%	-
3 to 5 years	36.9%	42.2%	51.7%	58.6%	58.5%	61.0%
3 years	34.5%	41.2%	51.5%	55.1%	55.6%	-
4 years	39.4%	41.2%	51.4%	59.7%	56.7%	-
5 years	36.9%	44.4%	52.4%	62.1%	64.4%	-
6 to 13 years	47.0%	51.8%	62.6%	68.1%	68.0%	70.5%
14 to 17 years	54.8%	53.8%	60.5%	67.0%	69.5%	70.7%

Table 3.--U.S. Labor Force Participation Rates of Wives, Husband Present,  
By Age of Youngest Child and Race, March Figures, 1975 to 1986

(Based on Current Population Survey)

Percentage and Age of Child	White				Black			
	1975	1980	1985	1986	1975	1980	1985	1986
Wives total	43.7%	49.3%	53.4%	53.3%	54.5%	59.3%	64.2%	64.3%
No children under 18	43.5%	45.5%	47.5%	47.7%	57.5%	51.2%	56.1%	52.1%
With children under 18	43.9%	53.2%	60.0%	60.0%	58.8%	65.6%	71.5%	74.7%
Under 6, total	35.0%	43.5%	52.3%	52.3%	56.4%	63.4%	69.3%	70.8%
Under 3	30.9%	40.0%	49.8%	49.8%	52.2%	57.7%	65.7%	67.7%
1 year or under	29.2%	37.7%	48.6%	48.6%	50.0%	52.9%	63.7%	66.8%
2 years	35.1%	46.1%	52.7%	53.0%	56.4%	71.0%	69.9%	70.8%
3 to 5 years	40.3%	49.4%	56.6%	56.4%	61.7%	72.3%	73.8%	74.5%
3 years	39.0%	48.4%	52.7%	53.3%	62.7%	73.4%	72.3%	76.7%
4 years	38.7%	49.8%	58.4%	55.1%	64.9%	66.4%	70.6%	69.9%
5 years	43.8%	50.4%	59.9%	52.3%	56.3%	77.8%	79.1%	77.6%
6 to 13 years	50.8%	61.4%	67.7%	66.5%	64.9%	71.8%	73.5%	79.6%
14 to 17 years	53.6%	60.6%	66.3%	68.6%	51.0%	58.4%	74.1%	73.9%

Source: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1987.

The labor force participation rate for black mothers in Tennessee mirrors national trends in terms of huge gaps between black and white mothers (Table 3). For example, the participation rate for black married women in Tennessee was 60.5 percent compared to 49.6 percent for white married women in 1980. For black married women in the state with children under six years of age, the participation rate was 23.2 percent higher than for married white women with children of the same age group. The rate for black married women was, in fact, the highest in the nation in 1980, (6 percent higher than the national rate of 63.4 percent for black married women).<sup>60</sup>

#### Single-Parent Working Mothers

In 1980, the number of working women in Tennessee maintaining households with no husbands present was about 106,000, equivalent to about 59 percent participation rate in the state's labor force. The participation rate of households maintained by women with children between six and seventeen years of age was 76 percent.<sup>61</sup> Families maintained by women are also on the increase. Between 1980 and 1985, about 45 percent of the 3.2 million increase in US families was attributable to families maintained by women. More than three fifths of these women were in the labor

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<sup>60</sup>Ibid., 21.

<sup>61</sup>Ibid., 24.

force (see Tables 4 and 5). The median weekly earnings of families maintained by women was \$297 in 1985; for the same period the weekly median earnings by families maintained by men was \$400 and for married-couple families, \$522.<sup>62</sup>

There is also the problem of women with more than one job. A survey by the Bureau of Labor Statistics in 1985 revealed that the number of women with two jobs increased by 40 percent to 2.2. million between 1980 and 1985. Women below 45 years of age experienced a 5 percent increase in the number moonlighting for second jobs. Above 45 years, the number declined.

The entry of mothers into the labor force is a significant determinant of the demand for child care arrangements of all sorts for all children's age groups. As the ages of the children increase, however, the consumption preferences of parents begin to assume specific patterns consistent with the expected benefits sought by the consuming family. At the school-age level, parents are demanding much more than custodial care; they are demanding all the benefits that school-age child care can offer their children as they transit from mid-childhood to their teenage years and they are looking for care facilities that provide those life altering experiences.

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<sup>62</sup>U.S. Department of Labor, Women's Bureau, Facts on U.S. Working Women, Fact Sheet (No. 86-2, 1986).

Table 4.--Families Maintained by Women, March 1985

	Number of families maintained by women	Percent distribution	Labor participation rate of family head
Total*	10,524,000	100.0%	61.0%
White	7,257,000	69.0%	63.0%
Black	3,029,000	28.8%	56.3%
Hispanic	935,000	8.9%	48.8%

Source: U.S. Department of Labor, Women's Bureau, 20 Facts on Women Workers, Fact Sheet (No. 86-1, 1986).

\*Components will not add up to the total because Hispanics are included in both the white and black population groups.

Table 5.--Growth in Families Maintained by Women, 1970, 1980, and 1985  
(Numbers in Thousands)

	White		Black		Hispanic*	
	Number of families maintained by women	Percent of all families	Number of families maintained by women	Percent of all families	Number of families maintained by women	Percent of all families
1970	4,185	9.1%	1,349	28.3%	**	**
1980	6,302	11.6%	2,495	40.3%	637	21.8%
1985	7,257	13.2%	3,029	44.1%	935	23.4%

Source: U.S. Department of Labor, Women's Bureau, Facts on U.S. Working Women, Fact Sheet (No. 86-2, 1986).

\*Persons of Hispanic origin may be of any race.

\*\*No data available.

## CHAPTER 3

### ECONOMIC DIMENSIONS OF SCHOOL-AGE CHILD CARE

The previous chapter discussed the factors that drive the demand decision for school-age child care. The demand for school-age child care is a derived demand for all the benefits that school-age child care produces for households, including their school-age children. These benefits include the household's marginal utility for additional income from a mother's entry into the work force, the household's marginal utility for the child's cognitive, physical, intellectual and emotional development from horizontal or peer socialization, and the mother's marginal utility from volunteering for charity. Thus, the household's marginal utility from school-age child care consumption is a product of several marginal utilities.

When we look at the demand for SACC this way, we begin to understand the stream of benefits that the cost-benefit ratio represents. We also begin to understand the distribution of benefits within the household and by extension, the entire society. We are, thus, able to understand the school-age child care consumption decision as a household's utility maximization effort. The household's self-interest, thus, comprises the interest of the mother and the interests of the school-age child. This, perhaps,

explains why some utility maximization models of school-age child care include only the mother's income (as opposed to the entire household income) in the constraint function.

The supply models of school-age child care are influenced by four factors: the administrative types and structure of the firm, quality of care, parental involvement and the market structure of school-age child care.

#### Administrative Types And Structures Of School-Age Child Care

The supply decisions of school-age child care agencies differ according to their administrative structures. For-profit child care organizations are assumed to be constrained profit-maximizers/cost-minimizers, irrespective of administrative structure. That objective function governs their supply decisions. The supply decisions of non-profit SACC programs are more complicated. Two structures are discussed here--an executive control structure in which supply decisions are made by the executive or administrative staff with board approval, and a board-dominance model with supply decisions made by the board. The school-administered school-age care models have the executive control structure while the parent-formed and incorporated models use the board-dominance structure.

### Quality Of School-Age Care

All child care centers, including school-age care centers, claim quality as an objective. It is generally accepted that the quality of a child care program is a function of the activities supplied, the teacher or staff-child ratio, the qualifications (training and experience) of care-givers and support staff as well as related factors such as location (e.g., proximity to an input market), instructional facilities, and physical space available to the children. The State Department of Human Services does link quality programs to these factors too: ". . . They (children) need to be able to choose from a variety of interesting activities such as exercise, arts and crafts, and enrichment opportunities . . ." <sup>63</sup>

Kagan differentiates between teacher-child ratio and group size but agrees that both terms may be used interchangeably.<sup>64</sup> Teacher-child ratios simply refer to the arithmetic process of dividing the number of enrollees by the number of teachers in the entire program while group size or class size is the actual number of enrollees assigned to a teacher or care-giver. A teacher-child ratio ranging from 1:10 to 1:25 is believed to be one good indicator of quality. Not-for-profit care agencies have

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<sup>63</sup>Tennessee Department of Human Services, "Tennessee Facts About School-Child Care" (1990), 21.

<sup>64</sup>Kagan, "Examining Profit and Non-Profit Care: An Odyssey in Quality and Auspices" (1991): 94-95.

been found to have teacher-child ratios of between 1:10 to 1:15, compared to a ratio of about 1:25 for for-profit care programs. Some studies have reported a ratio of up to 1:21 in the not-for-profit industry. Kindercare Corporation says that a teacher-child ratio of 1:25 is the standard in the for-profit child care industry.<sup>65</sup>

Zaslow (1991) offers three approaches to defining quality:<sup>66</sup>

1. A global or summary measure which attempts to measure a child's experience. This approach deals with whether variations in day care quality have implications for children's daily experiences. Quality under this approach is ranked high or low (i.e., globally or summarily) by using summary scores on the Early Childhood Environmental Rating Scale (ECERS).

2. Quality can also be measured structurally using group size, teacher-child ratios and care-giver qualifications, space and equipment. Structural measures attempt to assess the socio-emotional development of children.

3. Interactive or experiential measures assess or measure the cognitive development of children.

The point about quality school-age child care is that

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<sup>65</sup>Ibid., 94

<sup>66</sup>Martha J. Zaslow, "Variations in Child Care Quality and the Implications for Children," Journal of Social Issues 47, no. 2 (1991): 127-128.

the pursuit of quality as an objective imposes higher costs on the model and reduces the level of output. Structural measures of quality, thus, appear to impose the highest costs since smaller ratios mean more care-givers and hence, more wage-related costs. When a school-age child care program produces quality as well as quantity, there is a trade-off between quality and quantity. "Indeed, a trade-off can occur between quality and quantity of care. One can obtain more quality, but at the expense of quantity of output."<sup>67</sup> Not-for-profit agencies can commit more resources to achieve quality because they are not faced with a cost-minimizing or profit-maximizing objective. This raises their cost of production while not necessarily increasing their revenue. The result is reduced levels of output along with quality improvements.

#### Parental Involvement

Since quality is considered in the supply decision there has to be a way to prove or disprove its existence in any organized child care setting. This study develops the argument that parental involvement in the affairs of the care center on a regular basis provides the best opportunity for verifying the claims of quality by any supplier.

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<sup>67</sup>Philip Jacobs, The Economics of Health and Medical Care, 3d ed. (Gaithersburg, Maryland: Aspen Publishers, Inc., 1991), 159.

The model for examining the role of parental involvement is developed from the theory of contract failure. The theory was developed around the notion of "trustworthiness" first by Nelson and Krashinsky in 1973. It was later advanced by Hansmann in 1980. It argues that in any contractual situation in which there is asymmetric information between the parties to the contract (the supplier and the consumer of the goods or services that are the subject of the contract) regarding the performance of the contract, the contract will fail.<sup>68</sup> For example, if the informational asymmetry is skewed in favor of the supplier, the consumer will be participating under a state of relative ignorance and so will be unable to evaluate the performance of the contract. The same would be true of the supplier if the consumer tried to "fool" the supplier with false information in the contract.

There is nothing new about informational asymmetry and its contribution to market failure. In the medical care industry, for example, the theory suggests that the relative ignorance of the consumer of medical care gives the supplier (the physician) an informational advantage. Whether the physician can act as a perfect agent to the patient depends on how he uses the informational advantage over the patient. The patient trusts the physician to provide her with all the

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<sup>68</sup>Kagan, "Examining Profit and Non-Profit Care: An Odyssey in Quality and Auspices" (1991), 92.

information at his disposal regarding the patient's health status, the kind of treatment necessary to reclaim her health status, the number of visits required to complete the treatment and the cost to the patient. If the physician gives all this information to the patient, then, he will be playing the role of a perfect agent to the patient because both now have equal information about the patient's health status. The physician can, however, act as an imperfect agent, keep the patient ignorant about her health status, and use the informational advantage to induce further consumption of medical services by the patient. This is the so-called theory of supplier-induced demand.<sup>69</sup> In other words, supplier-induced demand results from asymmetric information and is an example of contract failure.

In the case of organized child care, the supplier can make claims about the care center (claims about the quality of services and staff) which the child will be unable to verify even at the school-age level. According to Kagan, comparisons of contract performance between for-profit and not-for-profit agencies across industries appear to suggest higher performance by not-for-profit agencies. Thus, not-for-profit care agencies may be more trustworthy with claims of quality and contract failure is less likely to occur than in for-profit agencies. Not-for-profit care agencies also

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<sup>69</sup>Jacobs, The Economics of Health and Medical Care (1991), 210.

do not have to distribute profits to their board members. For-profit agencies are more likely to institute cost-minimizing measures that manifest themselves in lower teacher-child ratios and lower staff qualifications. This tends to reinforce the suspicion of lower quality and untrustworthiness. For-profit organizations have both motivation and legal sanctions to maximize profits (minimize costs) and this tends to disinvite the trust of consumers.<sup>70</sup>

This study offers the view that much more than the absence of the profit motive and its legal constraints are required to invite the trust of consumers for a non-profit organization. Trust of non-profit organizations does not bridge the information gap between a supplier and a consumer with respect to contract performance, and while trust may make it unnecessary to seek to close the gap, the informational asymmetry still exists. The purpose of the parental involvement model advanced here is to equalize access to the information set between the parties to a contract so that information becomes normally distributed. Once information is equalized, the consumer can then seek to maximize his or her objective function, which is the maximization of utility from the school-age child care consumption decision.

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<sup>70</sup>Kagan, "Examining Profit and Non-Profit Care: An Odyssey in Quality and Auspices" (1991), 92-93.

The basic assumption of this model is that the information set available to child care suppliers and child care consumers is skewed in favor of suppliers. Therefore, the consumer is informationally disadvantaged and so can not make an optimal child care consumption decision. As Kagan states,

. . . a parent can not directly evaluate the quality of services rendered to the child because the parent (though presumably knowledgeable) is not present; further, the child is not qualified to evaluate the services. Because the consumer has no way of evaluating the quality of services or of contract fulfillment, a condition of "contract failure" exists and an opportunity for exploitation ensues.<sup>71</sup>

The presumption here is that if a mother is physically present at the child care center in a defined and consistent manner, she can acquire the information to appropriately evaluate the supplier's claim of quality service. The parent is assumed to demand this information, rather than "trust" the care center because the acquisition of this information enables her to maximize her utility function with respect to all the arguments of that function.

For the purpose of this analysis, let us assume a two-commodity economy, child care (CC) and any other commodity, called F. The consumer's objective is to maximize her utility function defined as:

$$U = U(CC, F) \quad (1)$$

Subject to her wealth constraint  $W = P_{cc}CC + P_F F$ .

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<sup>71</sup>Ibid., 92.

We assume that she is seeking to maximize her household's self-interest as a consumer (defined as her desire for income and her child's educational and developmental well-being).

Her marginal utility (MU) from consuming CC is  $\partial U/\partial CC$  while her MU from consuming F is  $\partial U/\partial F$ . To maximize her objective function, a Lagrangean is specified as follows:  $Z = U(CC, F) + \lambda(W - P_{cc}CC - P_F F)$ . The marginal utilities per dollar are obtained as:

$$\lambda_{cc} = \frac{\partial U}{\partial CC} \left( \frac{1}{P_{cc}} \right); \quad \lambda_F = \frac{\partial U}{\partial F} \left( \frac{1}{P_F} \right) = 0.$$

Utility is maximized where  $\lambda_{cc} = \lambda_F$ , i.e.,

$$\frac{\partial U}{\partial CC} \left( \frac{1}{P_{cc}} \right) - \frac{\partial U}{\partial F} \left( \frac{1}{P_F} \right) = 0. \quad (2)$$

$$\text{where} \quad \frac{\partial U}{\partial CC} \left( \frac{1}{P_{cc}} \right) = \frac{MU_{cc}}{P_{cc}} \quad \text{and} \quad \frac{\partial U}{\partial F} \left( \frac{1}{P_F} \right) = \frac{MU_F}{P_F} \quad (3)$$

Thus, equation (3) is a measure of optimal expenditure of CC and F with W. For equation (3) to be satisfied, this consumer must have a perfect information set with respect to both commodities, i.e., the information set available to the supplier of each commodity must also be available to her. If the consumer is ignorant about any element of the information set, she may over-consume one of the commodities and under-consume the other, thus, causing equation (3) to fail. The failure of equation (3) represents contract or market failure.

Let the supplier's information set in any time period  $t$  on child care be

$$I_{st} = ( Q_{it} ) \quad i = 1, 2, 3, \dots, k \quad (4)$$

where the  $Q_i$  is a vector of child care quality elements such as teacher-child ratio, staff/child ratio, teacher and staff educational levels, etc., in time period  $t$ . The consumer's information set on child care quality in the same time period ( $I_{ct}$ ) must equal  $I_{st}$

$$\text{i.e., } I_{ct} = I_{st} = ( Q_{it} ) , i = 1, 2, \dots, k \quad (5)$$

Equation (5) guarantees the attainment of (3). If however, equation (5) is an inequality of the type  $I_{ct} < I_{st}$ , then, there is a skewness in favor of the supplier. Then, equation (3) can not be attained.<sup>72</sup> Once the consumer becomes informationally disadvantaged relative to the supplier it becomes impossible for her to maximize her school-age child care consumption decision.

Only the actual involvement of, at least, one parent in the affairs of the child care agency in a consistent way can minimize the informational variance. Thus, parental involvement is a form of information gathering and processing for the sole purpose of verifying the supplier's claim of quality and so becomes an element of quality itself.

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<sup>72</sup>Jacobs, The Economics of Health and Medical Care (1991), 211.

### School-Age Care And Market Structure

The market features of the school-age child care industry in Tennessee clearly resemble those of monopolistic competition. There were a total of 1,670 not-for-profit school-age child care programs throughout the state in 1990 serving over 39,000 school-age children; each school-age child care claims to be different from its competitors in terms of its product mix. Product differentiation is confirmed by these different product mixes, different teacher-child ratios, different locations, different reputations of the different programs, pedagogic methods, instructional facilities, recreational facilities, and the degree of parental involvement. Similarly, entry is relatively inexpensive, usually involving only a license from the government agency providing the regulatory oversight (the Department of Education and the Department of Human Services). Similarly, exit is free but is dictated by a shrinking budget instead of shrinking profits. Whenever the size of the budget can not support the organization's activities, exit can be expected unless there is a successful fund raising drive.

The most significant area of rivalry in child care is in product quality and in the multi-product nature of school-age child care. There is hardly any organized SACC program (for-profit or non-profit) which limits services to pure custodial care.

Competition also exists in the location of school-age child care centers. For example, the Murfreesboro ESP is only about a mile from Middle Tennessee State University which is the only university within a radius of 30 miles offering instruction in Early Childhood Education. Naturally, Middle Tennessee State University (MTSU) serves as a reservoir for the Extended School Program (ESP) to recruit care-givers with college training in Early Childhood Education. Similarly, the ESP provides these college students with internship opportunities which serve as a component of their training. Thus, locational proximity is mutually beneficial and may be cost effective to programs that are close to input markets.

Each SACC firm appears to be powerless, however, in terms of a dominant market share. The school-administered model, in particular, appears to exhibit a flat demand curve because for about two years, prices have been constant.

#### Supply Models Of School-Age Child Care

Supply models of non-profit organizations are more complicated than those of for-profit organizations. Two not-for-profit models discussed in this study have been used to analyze the supply behavior of not-for-profit hospitals and other not-for-profit health care organizations. They can also be applied to not-for-profit organizations in general. The basic differences with profit organizations

lie in the objective functions of both types of organizations and in the manner not-for-profit organizations treat profit. For-profit models are assumed to be constrained profit-maximizers or constrained cost-minimizers while the not-for-profit models are assumed to want to maximize quality output subject to cost constraints. Two supply models are discussed in this study. The executive benefits-maximizing model is relevant to the ESP-SSACC model because control is in the hands of an executive staff while the board dominance model is relevant to the Parent/Board model because this model is run by parents and the parent-dominated-and-appointed board.

#### The Not-For-Profit Models

##### The Quantity-Quality Maximizing Child Care Organization

The school-age child care product group and the child care industry in general are characterized by the presence of a large number of not-for-profit agencies due mainly to the existence of external demands, that is, demand on behalf of a third party consumer.<sup>73</sup> This means that a substantial amount of philanthropy or altruism exists to provide access to families that would not be able to afford child care consumption otherwise.

In order to ensure that the agency operates in a proper

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<sup>73</sup>Ibid., 159.

manner, a board of trustees may be appointed but with no financial remunerations either in the form of profit sharing or direct financial payment. They may also not be rewarded indirectly. For example, an accounting firm belonging to any of the members of the board of trustees may not be hired by the child care agency to handle any of the agency's businesses. The role of the board is not simply to set up policies for the agency but also to participate in the day-to-day running of the agency. This is, thus, a board or trustee dominance model.<sup>74</sup> A board or trustee dominance model assumes that all the supply decisions are made by the board of trustees. A behavioral model is then developed based on the objectives of the board of trustees.

The following assumptions are made about this model:

1. The board's objective is to maximize quality and output, given the agency's costs.
2. The budget of the school-age care program is based entirely on fee collections, i.e., there are no subsidies of any kind.
3. The board comprises members trained and experienced in early child development or related areas. This assumption is necessary because quality output is assumed to be a function of this factor.

Similar to the for-profit model, the problem here is one of constrained maximization. The basic difference,

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<sup>74</sup>Ibid., 160.

however, lies in what is being maximized. To obtain optimal solutions to a constrained equality, a Lagrangean function is specified as follows:<sup>75</sup>

$$\text{Maximize: } L = f(CC, F) + \lambda(C - R_{cc}CC - R_F F) \quad (6a)$$

where  $R_{cc}$  and  $R_F$  are input prices.

Let child care (CC) be  $X_1$ ,  $R_{cc} = R$ ,  $R_{cc} = R_1$ ,  $R_F = R_2$ , and the other product  $F$  be  $X_2$ , then the Lagrangean can be restated as:

$$\text{Maximize: } L = f(X_1, X_2) + \lambda(C - R_1 X_1 - R_2 X_2) \quad (7)$$

The optimal levels of  $X_1$  and  $X_2$  are obtained from solving the normal equations from the first-order or necessary conditions, assuming the second-order or sufficient conditions hold. The first-order or necessary conditions are:

$$L_{x_1} = f'(X_1, X_2) - \lambda R_1 = 0 \quad (7a)$$

$$L_{x_2} = f'(X_1, X_2) - \lambda R_2 = 0 \quad (7b)$$

$$L_\lambda = C - R_1 X_1 - R_2 X_2 = 0 \quad (7c)$$

Assuming the second-order or sufficient conditions are satisfied, i.e., if the relevant bordered Hessian determinant

$$H_B = \begin{vmatrix} L_{11} & L_{12} & -R_1 \\ L_{21} & L_{22} & -R_2 \\ -R_1 & -R_2 & 0 \end{vmatrix} > 0 \quad (8)$$

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<sup>75</sup>James M. Henderson and Richard E. Quandt, Micro-economic Theory, A Mathematical Approach, 3d ed. (New York: McGraw-Hill Book Co., 1980), 74.

then, the solution to (7a) - (7c) yields the optimal values  $(X_1^*, X_2^*)$  from this constrained quality output-maximization model. The quantities  $X_1^*$  and  $X_2^*$  will be less than the optimal values of a constrained cost-minimizing or profit-maximizing for-profit model. In other words, the quality-output maximizing firm will sacrifice some output for quality. This is because there is a greater resource commitment to producing quality. Therefore, the cost function of a constrained quality-output maximizing firm will be higher than that of a constrained cost-minimizing or profit-maximizing firm and it is this higher cost function that causes the reduced output levels  $X_1^*$  and  $X_2^*$ . The lower optimal values,  $X_1^*$  and  $X_2^*$ , are the trade off for quality. The lower level of  $X_2^*$  is because of the greater resource commitment to producing  $X_1^*$ . The quantities  $X_1^*$  and  $X_2^*$  will be produced at the point where  $TR = TC$ , i.e., the breakeven point. This is the allocative efficiency point for a quality-output maximizing firm. Thus, the supply curve will be all points at which price  $(P) \geq$  average total cost (ATC). The reason that  $TR = TC$  or  $P = ATC$  is the allocative efficiency condition is because all profits ( $TR > TC$ ) for a non-profit quality-output maximizing firm must be returned to zero.

#### The Role Of Subsidy Or Grant

A subsidy is any benefit received by a program that is

not a payment for services rendered. It is synonymous with a grant. A subsidy will not include any payment for an external demand made by the agency itself. For the purpose of this study, the assumption is that the subsidy granted to the program is a fixed amount. The fixed subsidy can then be treated analytically as an increase in revenue, or as a decrease in fixed cost. If treated as an increase in the program's revenue, total revenue (TR) and profits will be higher at every level of output by the amount of the fixed subsidy; if treated as a reduction in the fixed cost, there will be a downward shift in both the average fixed cost and average total cost curves.<sup>76</sup>

#### The Executive Benefits-Maximizing Model

This model examines the behavior of the Executive Director or Administrator under the assumption that he/she exerts a significant control over the resources of the organization. It also assumes that the Board of Trustees plays only a minimal role in the administration of the agency and that the Executive Director and her staff are the full-time administrators of the organization. The theory compares how the administrator would behave if the organization was for-profit with how she would behave if the organization was not-for-profit. It claims that the

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<sup>76</sup>Jacobs, The Economics of Health and Medical Care (1991), 155.

differences in behavior are due solely to the incentive structures of the two agencies (the for-profit and the not-for-profit), but that these differences lead to variations in the use of agency resources and in the products supplied.<sup>77</sup>

This theory is actually an extended demand model which states that the price and quantity demanded of any commodity X in any time period t are inversely related, *ceteris paribus*. The administrator can demand two types of benefits: monetary benefits in the form of a salary, and non-monetary or on-the-job benefits such as high-grade office furniture, cozy rugs, a well-panelled office. Given that resources are scarce, the administrator can not obtain everything she desires.<sup>78</sup> In a for-profit organization (with a cost-minimization and profit-maximization objective), the demand for greater monetary and non-monetary benefits results in greater resource commitments by the organization and hence a reduced profit stream. Thus, cost-minimization and profit-maximization objectives constrain the administrator's ability to provide these benefits at the level of a not-for profit organization. A not-for-profit organization can only convert profits into additional organizational resources since there is no profit-sharing. So, it is possible for this administrator to meet her demand

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<sup>77</sup>Ibid., 165-166.

<sup>78</sup>Ibid., 166.

for greater benefits.<sup>79</sup>

Certain inferences about not-for-profit organizations can be drawn from the above theory. These are:

1. Not-for-profit organizations do not have any incentives for cost-minimization simply because they have no profit-maximization objective. In other words, there is no incentive for cost efficiency.

2. They will commit more resources to get a job accomplished. Therefore, their charges may be higher; that is, the fees or prices they charge for their services may be higher, but the level of output may be lower.

#### The Relevance Of Cost-Benefit Analysis To A School-Age Child Care Study

As previously stated, the Extended School Program falls under the school-administered school-age care model. It is not-for-profit and was initially provided for by the local public budget. Beyond the initial stages, however, it has continued to be financially independent. It is, however, a public project and is treated as such in this study simply because it was established with public funds and the pilot project was publicly funded in addition to being located in a public elementary school (Hobgood Elementary).

One purpose of this study is to determine the cost-benefit ratio of the school-administered school-age child

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<sup>79</sup>Ibid.

care model in order to determine whether its feasibility can be sustained without the injection of public funds in the future. Cost-benefit analysis is relevant for this study because a decision was made by the public through the political process for transferring public resources away from certain public goods or services to school-age child care. This is a problem of public choice. This study seeks to test the economic feasibility of such public choice using cost-benefit analysis. Cost-benefit analysis is an accepted instrument for making public choice, despite its flaws.<sup>80</sup>

Cost-benefit analysis falls in the realm of normative economics and, thus, is a form of welfare economics. It involves making value judgements which are based on the Potential Pareto Superiority Criterion.<sup>81</sup> According to this criterion, a given state of nature ( $S_1$ ) is judged socially superior to another state of nature ( $S_2$ ) if those who benefit by choosing  $S_1$  over  $S_2$  could compensate those who choose  $S_2$  over  $S_1$  in such a way that the net effect of such compensation would not leave anyone worse off than they would be if they chose  $S_2$ .<sup>82</sup>

The Potential Pareto Superiority Criterion is different

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<sup>80</sup>Bradley Schiller, The Economy Today, 4th ed. (New York: Random House Publishers, 1989), 77-78.

<sup>81</sup>Peter G. Sassone and William A. Schaffer, Cost-Benefit Analysis, A Handbook (New York: Academic Press, 1978), 9-11.

<sup>82</sup>Ibid., 9.

from the Pareto Optimality Criterion. Under Pareto Optimality, economic state 1 ( $S_1$ ) may be judged socially superior to economic state 2 ( $S_2$ ) if, at least, one person individually judges  $S_1$  superior to  $S_2$ , but nobody judges  $S_2$  superior to  $S_1$ .<sup>83</sup> This does not mean that there is unanimity about the superiority of  $S_1$ ; it simply means that people can be indifferent about  $S_1$  and  $S_2$  as long as, at least, one person judges  $S_1$  superior to  $S_2$ . The advantage of the Potential Pareto Superiority Criterion over the Pareto Superiority Criterion as well as the unanimity criterion is that the Potential Pareto Superiority Criterion is always applicable. In comparing any two states of nature, people will always find one state superior to, or at least, equal to the other. It, however, has the disadvantage that the superiority of one state over another is based on a potential compensation, not an actual compensation of losers by gainers.<sup>84</sup> As a result, the Potential Pareto Superiority Criterion does not have the universal acceptance of the unanimity criterion and the Pareto Superiority Criterion.<sup>85</sup>

Cost-benefit analysis has both quantitative and qualitative aspects. It has been suggested that the quantitative aspect is based on the Potential Pareto

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<sup>83</sup>Ibid., 8.

<sup>84</sup>Ibid., 11.

<sup>85</sup>Ibid.

Superiority Criterion while the qualitative aspect represents an attempt to "circumvent the lack of universal acceptance to which the criterion is subject."<sup>86</sup> The value judgments inherent in the Potential Pareto Criterion amount to making the kind of economic choices in which the state or condition with the highest net benefit is always preferred to the one that does not offer society the same amount of net benefits. This is what cost-benefit analysis does for society and why it is a basis for choosing one public project over another.

Having determined that cost-benefit analysis is an appropriate decision criterion for selecting a public project such as school-administered school-age child care, one has to ensure that the expected benefits are consistent with the public-sector objective(s) underlying the supply of public funds. In the case of the SSACC, the public sector objectives are those of the state as well as the municipality in which the school district is situated. For the purpose of this research, the objectives of the municipality and the state coincide with respect to school-age child care, a situation created by the fact that the Extended School Program (ESP) of the Murfreesboro City School System was the precursor of the state SACC program.

Anandarup Ray states that

. . . economic benefits and costs of a project can be

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<sup>86</sup>Ibid.

defined only by the effect of the project on some fundamental objectives of the economy. Given the choice of a fundamental objective, and the precise manner in which it is defined, one obtains a measuring rod, or a common yardstick to assess the various effects of a project. There is no analytic distinction between benefits and costs. Costs are simply the benefits foregone by not using the project resources in other ways. If the net impact is positive, or at least not negative, the indication is that the project resources cannot be used in better ways from the point of view of that objective.<sup>87</sup>

What is described above is the traditional approach to project analysis which simply reduces a complicated story into a single number, the cost-benefit ratio using the appropriate numeraire. This study, however, does not follow the traditional project cycle format of project identification, project preparation and analysis, project appraisal, project implementation and project evaluation.<sup>88</sup> The reasons for this are twofold. First, the ESP started about six years ago as the Murfreesboro City Schools' version of the SACC program of the State of Tennessee. Several school-administered SACC centers started a few years later. Thus, the programs are already at the implementation stage of the cycle. What is being attempted here is an appraisal of projects that are already several years in existence. More schools have joined the ESP model since Murfreesboro started it and many more may yet join. The ESP

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<sup>87</sup>Anandarup Ray, Cost-Benefit Analysis, Issues and Methodology (Baltimore: Published for the World Bank by Johns Hopkins University Press, 1984), 9.

<sup>88</sup>Gittinger, An Economic Analysis of Agricultural Projects (1982), 21.

may be looked upon as a project in its development period of the implementation stage of the cycle.

The second reason why the study does not follow the traditional project analysis approach is that it is not clear whether the ESP model can actually be described as a project in the real sense of the word. The nomenclature suggests that it is a program and currently there are hundreds of schools involved in the program. The question is whether to treat each school as a project or the program as a project since they are all in the same state school system. The latter approach is the one adopted because:

1. Information about each participating school exists at one central point--the administrative office of each city school system.

2. Each school district, at some point in the future, is expected to adopt a SACC along the ESP model when the resources exist. This study regards the state-wide initiative as a project.

If the ESP is a project, then each participating school in the district may be viewed as an enterprise in the same way as each crop in an agricultural project. Even though each enterprise account can be appraised under the general farm appraisal to determine the financial rate of return, the overall farm appraisal goes beyond the financial rate of return to undertake the economic rate of return. This is the effect of the agricultural project on the economy of the

region or the overall economy. The benefit-cost analysis should show both enterprise impact and the economic impact at the community and state levels since the objectives of the community and state with respect to school-age child care are identical.

#### The Formal Framework For Cost-Benefit Analysis

Consider that  $\theta$  is a certain state of nature showing the distribution of utility among the members of society. We can write the state of utility distribution as

$$\theta = \theta(U^1, U^2, \dots, U^j, \dots, U^N) \quad (9)$$

for a society of  $N$  members. Let  $\theta^0$  be the current state of nature and  $\theta^i$  be the alternative states of nature ( $i = 1, 2, \dots, N$ ). A properly conceived and implemented project can transform society from the status quo  $\theta^0$  to a desired  $\theta^i$ , the next alternative state. Let the value of the project to an individual  $j$  be  $V_j$ . The value of the project to individual  $j$  is the maximum amount he will be willing to pay to have the project implemented; this is the negative of the minimum amount he would be willing to accept as payment to keep as well off in  $\theta^0$  as in  $\theta^i$  when he is not in favor of seeing the project implemented. If  $V_j = 0$ , the project has no effect on  $j$ 's utility.<sup>89</sup> So, the value of a project to an entire community or state is the maximum payment every individual in the community (state) who favors the project

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<sup>89</sup>Ibid., 48.

and wants to see it implemented would be willing to make and is the negative of the minimum payment every individual in the community (state) who does not wish to have the project implemented would be willing to accept as payment in order to remain as well off under the status quo ( $\theta^0$ ) as in the alternative state ( $\theta^1$ ). No society will implement any project whose social value ( $V$ ) = 0.

So, the social value ( $V$ ) of any project can be described as

$$V = \sum_{j=1}^N V_j \quad j=1,2,\dots,N \quad (10)$$

for a society or community of  $N$  members. Equation (10) essentially states that the social value ( $V$ ) of a project is based on the willingness of individuals in the society to pay for the project. This is the basic principle governing the measurement in cost-benefit analysis.<sup>90</sup>

#### The Determination of $V$ <sup>91</sup>

$V$  is not determined by polling every member of society or by conducting surveys. Assume that a project has only two possible outcomes; to increase the production of the desired product,  $X$ , by  $\Delta X$ , and decrease the production of the undesired product  $Y$ , by  $\Delta Y$ . Assuming that these were the only two products in the economy and that the prices of

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<sup>90</sup>Ibid.

<sup>91</sup>Ibid., 47-49.

X and Y were  $P_x$  and  $P_y$ , respectively, then, the value of the project to individual j would be

$$V_j = P_x \Delta X_j - P_y \Delta Y_j \quad (11)$$

$\Delta X_j$  is the incremental change in the consumption of good X by individual j due to the project, while  $\Delta Y$  is the decrease in the consumption of good Y due to the transfer of resources away from Y to X by the project. Equation (11) is, thus, the project effect on individual j.

We can redefine  $\Delta X$  for all the N members of society as

$$\Delta X = \sum_{j=1}^N \Delta X_j \quad (12)$$

and  $\Delta Y$  similarly as

$$\Delta Y = \sum_{j=1}^N \Delta Y_j \quad (12')$$

The social value of the project as stated in equation (11) above is

$$V = \sum_{j=1}^N V_j$$

Equation (11) can be rewritten as

$$\begin{aligned} V &= \sum_{j=1}^N (P_x \Delta X_j - P_y \Delta Y_j) \\ &= P_x \sum_{j=1}^N \Delta X_j - P_y \sum_{j=1}^N \Delta Y_j \\ &= P_x \Delta X - P_y \Delta Y \end{aligned} \quad (13)$$

Equation (13) is a project appraisal result; it is proof of

project feasibility and, thus, establishes the basis for project implementation because it says that the benefits of project implementation to the society exceed the costs based on the definition of benefits as anything that contributes positively to project objectives (which are also society's objectives) and costs as anything that subtracts from project (and society's) objectives.

What equation (13) says is that the social value ( $V$ ) of a project is equal to the sum of the values of the project to the individual members of society ( $j = 1, 2, \dots, N$ ) and that the value of a project to an individual member of society is measured by the willingness to pay for the project. The market prices  $P_x$  and  $P_y$  are, thus, a measure of social value because they manifest individual willingness to pay, i.e., their revealed preferences for the project.

". . . If one of the effects of a project were a small increase or decrease in the number of units of a commodity available to an individual for consumption, that increase or decrease has a social value equal to the number of units involved times the market price."<sup>92</sup>

#### The Role Of Shadow Prices

The knowledge of the physical increments in  $X$  and  $Y$  as well as the market prices  $P_x$  and  $P_y$ , paints only one side of the cost-benefit picture--the growth picture. The

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<sup>92</sup>Ibid., 47.

distribution effects of a project must also be accounted for. Lynn Squire states that

. . . the financial analysis of a project identifies the money profit accruing to the project-operating entity, whereas social profit measures the effect of the project on the fundamental objectives of the economy . . . While market prices are used to value financial costs and benefits, economic costs and benefits are measured by shadow prices.<sup>93</sup>

Shadow prices play a role in completing the social valuation of projects more accurately because "market prices do not always reflect social value."<sup>94</sup> These prices also help to convert a financial rate of return into an economic rate of return because market prices may not be available or appropriate for doing so. Shadow prices, thus, reflect social values.<sup>95</sup>

When inputting prices, all prices may be affected--the imputed price of labor becomes the shadow wage rate; the imputed price of money is the shadow or social rate of interest; the imputed price of capital investment is the shadow price of investment and in the case of traded goods, the imputed price of the traded good is its shadow price (usually the border price in local currency) and for non-traded the shadow price is the domestic price in local

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<sup>93</sup>Lynn Squire, Economic Analysis of Projects (Baltimore, MD: Published for the World Bank by Johns Hopkins University Press, 1975), 16.

<sup>94</sup>Sassone and Schaffer, Cost-Benefit Analysis, A Handbook (1978), 50.

<sup>95</sup>Squire, Economic Analysis of Projects (1975), 16.

currency.<sup>96</sup>

### "With" And "Without" Project Analysis

We can also use equation (13) to explain the "with" and "without" project comparisons. A "with" and "without" project analysis is one other way of valuing project costs and benefits. This type of analysis compares the costs and benefits that are created by the project with what the situation would be without the project. This is not the same as a "before" project and "after" project comparison and equation (13) helps to clarify the difference. Before the project, the economy was still in the status quo ( $\theta^0$ ) and the alternative state ( $\theta^1$ ) did not exist yet; no resources were expended and so no net change occurred in production. "Without" the project, however, the economy may or may not still be in ( $\theta^0$ ) because changes may still occur in production that may be less than project-induced changes.

"Without" the project, a change in production can take place in two ways:<sup>97</sup>

1. Production may already be taking place, but at a much slower pace than with the project. In this case, the social value of marginal changes in production under the same assumptions made above to derive equation (13) will be

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<sup>96</sup>Ibid., 33.

<sup>97</sup>Gittinger, An Economic Analysis of Agricultural Projects (1982), 47.

less than it would be with the project. So, the objective of undertaking the project would be to accelerate the pace of production and enlarge the marginal changes in production. In other words  $V = P_x\Delta X - P_y\Delta Y$  is greater "with" project than "without" project. For example, without the school age child care program, child care services would still be available in Tennessee, but not at the level desired to cater to the growing number of children and the increased pace at which working mothers are entering the labor force. The value to the state, the parents and the local community, of additional child care facilities (such as the ESP) is definitely greater than it would be without the new services.

2. "Without" the project, marginal productivity can actually fall, leading to a drop in  $\Delta X$  and  $\Delta Y$  so that the situation actually worsens. There would, then, be a clear need for a project to raise the level of production. In this case, the value of production would be to stop the loss in production first and then, increase the level of production.<sup>98</sup>

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<sup>98</sup>Ibid., 48.

## CHAPTER 4

### COSTS, BENEFITS AND THE COST-BENEFIT FRAMEWORK

#### The Cost-Benefit Analysis Of School-Administered School-Age Child Care In Tennessee

##### Costs

It is very important that costs be appropriately identified and disaggregated so as to be able to determine which components should be included in the cost accounting. The four elements of cost associated with the production of school-age child care regardless of age-appropriateness are costs related to occupancy, personnel, program, and food. A study of child care costs by Culkin, Morris and Helburn (1991) decomposes child care costs into labor, facilities, food and program components.<sup>99</sup>

Occupancy costs comprise rent for property in use for the school-age child care function, property maintenance costs and utilities. For school-administered school-age programs like the ESP of Murfreesboro, occupancy costs are sunk costs. The school buildings housing these programs were built for purposes other than school-age child care activities and have historically been underutilized. These

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<sup>99</sup>Mary Culkin, John R. Morris, and Suzanne W. Helburn, "Quality and the True Cost of Child Care," Journal of Social Issues 47, no. 2 (1991): 75.

programs are putting into full use buildings that would otherwise be lying idle after the regular school day. Maintenance costs and utilities are sunk costs for the same reason. These costs would be incurred with or without the school-age activities. What this means is that such child care programs do not pay occupancy-related expenses as confirmed by the survey results.

Labor costs comprise salaries of the administrative staff, teachers and maintenance personnel. It is assumed here that the child care agency pays the salaries of the entire staff and that subsidies are zero. As can be expected, labor costs are likely to dominate all costs perhaps because quality is an issue in the production of school-age care. Structural measures of quality such as a high teacher-child ratio and higher educational qualifications by the administrative staff are factors that augment labor costs and make them dominant in the cost function. In the study by Culkin et al., labor costs accounted for 70 percent of total child care costs.<sup>100</sup> Coelen et al. (1979) confirm that ". . . of all the variables influencing expenditures, the most important (because of the labor intensiveness of the field) are staff-

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<sup>100</sup>Ibid., 74.

related expenses."<sup>101</sup>

The elements of program costs may vary from one school-age program to another, but it generally includes instructional supplies, equipment, office supplies, recreational facilities and anything else that is not a part of occupancy, labor and food costs. Program costs, though usually relatively minor, rank next to labor costs. Again in the study by Culkin et al, program costs account for 11 percent of the total cost of child care delivery, second only to labor costs. "Program and food costs are usually minor parts of costs."<sup>102</sup>

Food costs are generally the least cost elements of any child care program, especially for the older groups. Here again, the assumption is that all food costs are borne by the child care organization and that food subsidy is zero.

The important point about costs is that they be completely identified and decomposed so that those elements that do not enter the accounting process (such as sunk costs) are correctly isolated. As Kagan aptly observes, determining child care costs with precision is one of the most important things to accomplish. "Per child costs are

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<sup>101</sup>C. Coelen, F. Glantz, and D. Calore, Day Care Centers in the U.S.: A National Profile, 1976-1977 (Cambridge, MA: Abt Books, 1979), 44.

<sup>102</sup>Culkin et al., "Quality and the True Cost of Child Care" (1991), 75.

influenced by type of program, hours of service, geographic locale, cost contributions to in-kind goods and services and possibly, auspices."<sup>103</sup>

### Sectoral Cost Differentials

Some studies have suggested that unit cost differences exist between for-profit care organizations and non-profit organizations (Keyserling, 1972; Coelen et al., 1979). Salaries are cited as the main reason for the differences (Keyserling, 1972). It is generally believed that because for-profit organizations are cost-minimizers or profit maximizers, they tend to pay lower salaries to their staff and teachers on the average. For example, while over 20 percent of not-for-profit child care centers were reported to be paying salaries ranging from \$9,000 to \$20,000 per annum in the 1970s, only 4 percent of the professional staff of for-profit child care centers were paying salaries that high.<sup>104</sup> For non-professional staff, 39 percent of the not-for-profit care organizations were paying salaries of \$4,000 per annum compared to only 21 percent of the for-profit care

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<sup>103</sup>Kagan, "Examining Profit and Nonprofit Child Care: An Odyssey of Quality and Auspices" (1991), 97.

<sup>104</sup>M. D. Keyserling, "Windows on Day Care: A Report Based on Findings of the National Council of Jewish Women" (New York: National Council of Jewish Women, 1972), reported in Kagan, "Examining Profit and Nonprofit Child Care: An Odyssey of Quality and Auspices" (1991), 96-97.

organizations.<sup>105</sup> The 1990 report of the United States General Accounting Office also confirms sectoral cost differences in high quality programs. It reports that for-profit child care teachers' wages were 3 percent lower and that wages for aides were 7.2 percent lower than for non-profit centers even after taking into account educational and experiential differences among the staff.<sup>106</sup> Higher salaries transmit themselves into higher per child costs for not-for-profit care centers.

### Benefits

If the costs of producing school-age child care can be difficult to identify and quantify, benefits can be even more difficult. Far more difficult than identification is the problem of quantification. For the school-administered programs, an appropriate starting point for identifying benefits is the program documents. The Extended School Program, for instance, published a Research and Program Plan in 1988 and a revised Policy Manual in 1989 in which certain benefits were outlined.<sup>107</sup>

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<sup>105</sup>Kagan, "Examining Profit and Nonprofit Child Care: An Odyssey of Quality and Auspices" (1991), 97-98.

<sup>106</sup>U.S. General Accounting Office, "Early Childhood Education: What Are the Costs of High Quality Programs?" (Washington, DC, 1990), reported in Kagan, "Examining Profit and Nonprofit Child Care: An Odyssey of Quality and Auspices" (1991), 96-97.

<sup>107</sup>Murfreesboro City School System, ESP Policy Manual (1989), 1-6.

Survey results indicate that these benefits accurately represent the spectrum of benefits offered by the school-administered school-age programs throughout the State. In all cases, the child care product is a joint-product embodying pure custodial care with other developmental elements that the school-age child is exposed to. In other words, the school-age child care function produces multiple products.

The problem of identification and quantification arises from the multi-product nature of school-age child care. The problem is how to quantify all these multiple outcomes so as to allow for the calculation of a cost-benefit ratio. Quantification is essential because "only through quantification is the aggregation of effects and the analysis of trade-offs generally possible."<sup>108</sup>

Money is used as the numeraire in project valuation because of two fundamental principles:

1. The social value of any project is the sum total of the values individuals living in the community or society attach to the project.

2. The value an individual attaches to a project is measured by his or her "fully informed willingness to pay for the project. Thus, the market price which an individual pays for the output of a project is an acceptable indicator

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<sup>108</sup>Sassone and Schaffer, Cost-Benefit Analysis, A Handbook (1978), 45.

of the value that the individual attaches to the project so that when we speak of the value of a project to an individual in a cost-benefit analysis, that value is computed with specific reference to the consumer's own judgements as to the worth of a good."<sup>109</sup>

To accept the use of market price as a measure of the value of a project, however, is to validate the existing income distribution (or wealth distribution) in the community or society. This limits valuation only to the for-profit market. When altruism is considered the social value of a project becomes not just the sum total of the values individuals attach to the project as measured by the price they are willing to pay to consume the project output, but also by the price they are willing to pay to give access to those excluded by the existing income distribution. Assuming that the price they are willing to pay for their own consumption is equal to the price they are willing to pay for others to have access to the project's output, market price can serve as a measure of social value. It is important to assume complete altruism so that no one who desires the project's output is excluded from the consumption stream. This is the essence of the not-for-profit organization.

The existence of external demand creates the altruistic market. The valuation we place on a project is based on the

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<sup>109</sup>Ibid.

assumption that altruism and selfishness co-exist in the same market.<sup>110</sup> The proof of altruism in the child care industry is the existence in many child care programs of funds for scholarship either from the care center itself or from other sources.

#### Alternative Method Of Calculating Benefits

Recall that in Chapter 3, the social value of a project was stated as:

$$V = \sum_{j=1}^N P_x \Delta X_j - \sum_{j=1}^N P_y \Delta Y_j$$

$$V = P_x \sum_{j=1}^N \Delta X_j - P_y \sum_{j=1}^N \Delta Y_j = P_x \Delta X - P_y \Delta Y \quad (13')$$

(13') states that the social value of a project is the marginal benefits created by the project less the marginal costs. The marginal benefits are stated in terms of additional revenue generated by the project ( $P_x \Delta X$ ) while the additional costs are stated in terms of the additional revenues lost by giving up the production of  $Y$  by  $\Delta Y$ . Thus,  $P_y \Delta Y$  is the opportunity cost of producing revenue equal to  $P_x \Delta X$ . In other words, society gave up physical units of  $\Delta Y$  to obtain physical units of  $\Delta X$ . The market prices  $P_x$  and  $P_y$  convert the physical units into dollar values. Theoretically, the entire society is assumed to benefit from the

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<sup>110</sup>Ibid., 14.

marginal contribution of the project, including those excluded by the existing income distribution. Thus, the social consumption of  $\Delta X$  represents both the internal and external demands of the society and  $P_x$  is the price paid by the altruists for their consumption and the consumption of those excluded by the existing income distribution when the altruists wish to compensate others privately. Thus, (13') allows us to measure the benefits from a project by the net incremental contribution of the project to the consumption flow of the society or community in which the project resides.

#### When Market Prices Do Not Reflect Social Value

The above analysis is valid only when prices are a good measure of social value. There are cases, however, in which market prices are a poor measure of social value. In these instances, market prices show a bias and either overstate or understate social value. Generally speaking, when the price of a final good is exogenously determined either institutionally or through voluntary contracting (e.g., union negotiated wages), such a price cannot serve as an appropriate measure of the social value of the final good. Similarly when resources are under-employed or unemployed, their market prices do not reflect their social value.<sup>111</sup> The existence of a significant amount of consumer surplus in

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<sup>111</sup>Ibid., 64.

the market also implies a divergence between the market price and the social value of a good.

#### Methodology For Calculating Costs And Benefits

**Costs:** All cost information was obtained from survey data. All respondents were asked to provide their average yearly costs (or estimates) of occupancy, food, personnel and program costs along with yearly enrollment figures from 1988-1992. Most of them provided data for a year on enrollment. Thus, the per child cost figures used for the cost-benefit-analysis were based on the 1992 average. Total cost (equal to the yearly costs of food, personnel and program) was divided by the average number of enrollees for the year to obtain per school-age child cost for the year; then, the result was further divided by 52 weeks to obtain school-age unit cost per week. Occupancy costs and subsidies were zero. If any subsidy had been reported, the dollar value of the subsidy would have been treated as a grant in which case it would have been subtracted from total revenue or added back to total cost for that year so as to reflect the subsidy-free picture.

**Benefits:** As has already been stated, benefits may be difficult to quantify if: (1) there are multiple outcomes from a project; and (2) some of the outcomes simply cannot be quantified because of their very nature.

The method adopted by this study to avoid this problem

is to use the concept of "with" and "without" project analysis referred to in Chapter 3. This concept defines the stream of benefits as the difference between the stream of net benefits "with" the project and "without" the project. Using equation (13) in Chapter 3, the net benefits stream can be defined as

$$(P_x\Delta X - P_y\Delta Y) \text{ "with" project} - (P_x\Delta X - P_y\Delta Y) \text{ "without" project} \quad (14)$$

This is the same thing as saying that the benefits of the school-administered school-age child care program are measured by their value to all the members in various communities, provided that  $P_x$  and  $P_y$ , which are the market prices of X and Y, respectively are also acceptable measures of social value. If they are not, then, shadow pricing will become necessary and equation (8) will simply be the internal rate or return to the program. If there is a divergence between the market price and the social price (the shadow price), the market price is to be used to determine the internal rate of return (IRR) while the shadow or social price is to be applied to valuing the economic, or external rate of return (ERR), that is, the rate of return to the entire community or economy from the project.

Given the difficulty of constructing a shadow price for school-age child care, the market price (fee) may be the only way to evaluate the social value of these programs if it reflects the willingness of consumers to pay for the project. Sassone and Schaffer (1978) state that "when

market prices exist and reflect social value, there is patently no need for shadow prices."<sup>112</sup> It also states that if market price was not subject to any biases such as tax and other subsidies, price controls, union contracting, etc., market prices may reflect social value. Market prices can also be used for social valuation if the products already exist in the market. The fee schedules of the school-administered school-age child care can, therefore, be used for valuing their social worth because the school-age services already exist in the market. Besides, the fees, though unchanged for over two years were not institutionally set.

#### The Cost-Benefit Ratio

If  $P_x$  and  $P_y$  can be used for social valuation, then, because the product or service already exists on the market and its price is not contrived, the cost-benefit ratio can be calculated as:

$$C/B = \frac{\Sigma C}{(P_x \Delta X - P_y \Delta Y) \text{ "with" project}} - \frac{\Sigma C}{(P_x \Delta X - P_y \Delta Y) \text{ "without" project}} \quad (15)$$

where the denominator of (15) is the net incremental stream of benefits throughout the life of the project accruing from the project to the community.

The advantage of stating the cost-benefit ratio as in

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<sup>112</sup>Ibid., 51.

equation (15) is that we no longer have to look for a discounting factor. The disadvantage of equation (15) is that the annual net project contribution may actually be over-stated by not discounting.

A few statements can be made about equation (15):

1. Since the market prices  $P_x$  and  $P_y$  are acceptable measures of the social value of this project, equation (15) is the measure of the project's net contribution to the entire community.

2. If equation (15) is a proper fraction, then, this project contribution will be positive. This means that the stream of benefits from the project outweighs its stream of costs and so the community will benefit from its implementation. If, on the other hand, equation (15) is an improper fraction, the implementation will be questionable and will depend on the objective sought by the community as well as their willingness to achieve that objective despite cost considerations. Sometimes a project's cost stream may exceed its benefit stream, yet it may be accepted for implementation. Politically motivated projects are a good example but not necessarily the only examples for the above incident. Needs-based projects intended to address, say, an unemployment or a low-income housing problem are other examples. In these examples, there are no benefit-maximizing or cost-minimizing objectives even though people's welfare will be improved. So, cost-benefit

comparisons, though important, are sometimes only secondary.

3. If a project can still be selected for implementation even when the cost-benefit ratio  $> 1$  or  $< 1$ , then, it is the project objective function that gives meaning to equation (15). Whether the cost-benefit ratio  $\leq 1$  depends on the objective function of the project and the nature of the institution responsible for the project.

For not-for-profit organizations, equation (15) should be interpreted in the context of the organization's objective function and the criteria for allocative efficiency consistent with the market structure under which the non-profit organization belongs. For non-profit school-administered school-age child care programs whose market structure is monopolistic competition, and whose objective is to maximize quality output, the condition for allocative efficiency is that  $P = ATC$  at an output level which will enable the organization to breakeven. Quality and quantity are simultaneously maximized at that output level at which price equals average total cost (ATC).

We can extend this to mean that the cost-benefit ratio for this non-profit care organization be equal to 1. Ideally, it should be  $< 1$ , but this organization can continue to absorb higher costs consistent with its quantity-quality maximization objective until the stream of costs equals the stream of benefits.

The point to be made about equation (15) is that it

does not have a one-dimensional interpretation. The two main factors that govern its interpretation are the organization's objective function and the allocative efficiency criterion of the market structure under which the organization operates.

#### Data Base For Calculating The Cost-Benefit Ratio

The data for calculating the cost-benefit ratio were acquired from a survey. Specific questions were asked soliciting information on:

1. Annual occupancy (if any), program, food and personnel costs for the five-year period from 1988 to 1992, or any portion thereof.
2. The date the school-administered school-age child care program was started; this is important for a "with" and "without" project analysis.
3. The fees charged.
4. Enrollment for any or all five years from 1988 to 1992; both (3) and (4) provide revenue information needed for the "with" and "without" project comparisons.
5. The program activities offered by each school-administered school-age program.
6. Supply-related subsidies, including volunteer work by anyone during any given year and the dollar value of such volunteer work.
7. Demand-related subsidies that could reduce the

price of child care paid by the consuming parent.

8. The administrative structure of each model.

Equation (15) is actually a comparison of two cost-benefit ratios, the cost-benefit ratio "with" the project and the cost-benefit ratio "without" the project. If there was no project before the new one was implemented, as was the case with SSACC model types, the value of  $\Sigma C / (P_x \Delta X - P_y \Delta Y)$  "without" project would be zero and the cost-benefit ratio of the new project would simply be  $\Sigma C / (P_x \Delta X - P_y \Delta Y)$  "with" project - 0. Then,

$$C/B = \Sigma C / (P_x \Delta X - P_y \Delta Y) \text{ "with" project} \quad (16)$$

If, however, there was an on-going project with a less than desired impact necessitating the establishment of a new project, the cost-benefit ratio "without" project would then be larger than "with" project since  $P_x \Delta X - P_x \Delta Y$  "without" project would be smaller than "with" project and  $C$  "without" project would probably be greater than  $P_x \Delta X - P_x \Delta Y$  "without" project. In other words, the denominator in the "without" project ratio would be smaller than the numerator while the denominator in the "with" project ratio would be larger than the numerator.

In the two-product example (X and Y), the relationship between  $C$  and  $P_y \Delta Y$  is important. The real cost of obtaining  $\Delta X$  is the amount of Y given up (i.e.,  $\Delta Y$ ). In calculating the cost-benefit ratio for this study, the average cost (AC) of school-age child care per week and average revenue (AR)

per week of school-age child care have been used. It has been assumed that the net total revenue per week is equivalent to the weekly fee multiplied by the number of school-age enrollees for the week. Per unit cost of school-age child care delivery is, thus, synonymous with the weekly average cost (AC). The project benefit per week is assumed to be the average revenue per week. Opportunity cost here is difficult to identify because the state or local county planning agencies can not actually tell which projects were sacrificed for the school-age programs all over the state since no prior project appraisals were done before the implementation of these various projects. However, the failure to impute opportunity cost has been more than offset by a rigid fee schedule which has not changed since 1992.

## CHAPTER 5

### RESULTS AND INTERPRETATIONS OF HYPOTHESIS TESTING

#### Hypothesis 1

The first hypothesis is that the costs of providing school-age child care services under the school-administered school-age child care model (SSACC) of which the Murfreesboro ESP is a part, exceed the benefits. The alternative hypothesis is that the benefits exceed the costs. Rejecting the null hypothesis would mean that the benefits stream of the SSACC program in the state of Tennessee exceeds the cost stream, thus, making the program worthwhile for each participating city school in all the counties and communities in which they are located as well as for the whole state.

Because many of the SSACC programs which were requested to participate in the survey did not respond, the study relied on results from ten counties, covering twenty school-administered SACC programs from eleven cities.

The cost-benefit comparisons were based on average cost per week ( $AC/WK = \frac{TC}{52 \text{ wks}} / \# \text{ of enrollees}$ ) and average

revenue per week ( $AR/WK = \frac{TR}{52 \text{ wks}} / \# \text{ of enrollees}$ ). The

reason for budgeting costs over a 52-week period is because

the staff works for 52 weeks. The average cost per week is the cost per week of supplying school-age child care in the ESP-SSACC model while the average revenue per week is the weekly fee per enrollee. Average weekly revenue is used as a proxy for average weekly profits because the ESP-SSACC model does not have a profit-maximizing objective. It does not calculate profits and does not consider operations in profit terms. Besides, all excess revenues are always reduced to zero through expenditures on quality improvements and scholarships. There are twenty observations and each observation represents a school-administered school-age child care program. All the information pertains to only before-and after-school-age day care centers, not family or group home centers. Only the full before-and after-school enrollees are considered. Those registered only partially (i.e., before-school only or after-school only) are not considered in the study.

The null and alternative hypotheses are as follows:

$$H_0 : C/B > 1.00$$

$$H_1 : C/B < 1.00$$

The decision rule is to accept  $H_0$  if the cost-benefit ratio of each of the school-administered school-age child care centers (SSACC centers)  $> 1.00$  and if the overall C/B of the 20 sample SSACC centers  $> 1.00$ . Alternatively, reject  $H_0$  if the cost-benefit ratio of each of the SSACC centers as well of all 20 sample SSACC centers  $< 1.00$ .

As already stated in Chapter 3, the implication for cost-benefit analysis of the allocative efficiency criterion ( $P = ATC$ ) of a quality-quantity maximizing non-profit organization in a monopolistically competitive market is that the cost-benefit ratio be, at the most, equal to 1.00. The requirement that a quality-quantity maximizing non-profit organization continue operation so long as it breaks even ( $TR = TC$ ) actually means that the cost-benefit ratio ( $C/B$ ) be equal to one but, theoretically, no greater than one.

#### Results

Table 6 indicates the cost-benefit ratios for each of the participating SSACC programs. The results show that for each participating SSACC program, the weekly per child cost of school-age child care delivery is less than the weekly benefit per child (as measured by the weekly fee per enrollee). These results confirm the viability of the school-administered school-age child care programs because the centers are generating more revenue per child than the cost per child. From the financial view point, they are good investments. Their cost-benefit ratios range from a low of 0.45 to a high of 0.78.

From the community and state points of view, the SSACC programs are also good investments. The overall cost-benefit ratio for all SSACC programs sampled is 0.59 which

Table 6.--Hypothesis 1: Weekly Data for Cost-Benefit Analysis---SSACC Model Only

Observations i	Weekly Fees/ Child (\$/Week/ Child) (AR)	Average Weekly Enroll- ment	Total Cost/ Week TC/Week= TC/52 Wks	Average Cost Per Week  (4)÷(3)	Cost- Benefit Ratio (C/B)  (5)÷(2)
(1)	(2)	(3)	(4)	(5)	(6)
1	18.00	97	1,358.00	14.00	.78
2	25.00	137	1,866.00	14.00	.56
3	20.00	98	2,377.00	13.00	.65
4	20.00	89	2,377.00	13.00	.65
5	22.50	24	2,337.00	15.00	.67
6	20.00	61	2,337.00	9.00	.45
7	26.00	142	1,471.00	10.00	.38
8	26.00	91	2,020.00	22.00	.85
9	26.00	150	1,373.00	9.00	.35
10	26.00	156	1,176.00	8.00	.31
11	26.00	314	2,667.00	8.00	.31
12	30.00	100	1,984.00	20.00	.67
13	30.00	55	1,091.00	20.00	.67
14	30.00	105	2,083.00	20.00	.67
15	30.00	125	2,480.00	20.00	.67
16	30.00	40	794.00	20.00	.67
17	34.00	70	1,636.00	23.00	.69
18	34.00	70	1,154.00	16.00	.48
19	25.00	30	438.00	15.00	.60
20	20.00	24	349.00	15.00	.75

Over-all C/B =  $(\sum AC/week)/(\sum AR/Week)$  or  $305.00/518.50 = 0.59$

Alternatively:

$C/B = \sum(C/B)_i/20$  for  $i=1,2,\dots,20 = 11.83/20 = 0.59$

means that the community and state benefit more from their establishment than it costs to establish them. This means that in the matter of school-age child care, state and community interests probably coincide so that the benefits accruing to the community also flow to the state. Typical benefits accruing to the community and the state include the following:<sup>113</sup>

1. A substantial increment in the use of school plants and other facilities believed to be under-utilized prior to the inception of the SSACC-ESP model programs. The measurement here is in terms of additional hours of consuming these facilities.

2. A substantial reduction of the so-called "latch-key" problem, i.e., a reduction in the number of school-age children who are left at home behind locked doors by parents who have to work but can not afford child care services. This measurement is in terms of the number of children who could not attend school-age child care programs but can now do so because of the establishment of school-administered school-age child care centers throughout the state. Some programs such as the Murfreesboro Extended School Program have experienced tremendous increases in enrollment averaging over 34 percent between 1988 and 1992.

3. The acquisition of certain skills in the arts

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<sup>113</sup>Murfreesboro Tennessee Extended School Program, Testimony (1988), 2-3.

(music, dance, etc.), the humanities, and sports skills previously lacking in these children, but which are now available in various forms. This measurement is in terms of the number of children who have registered and completed such training.

4. A sustained improvement in the grades attained by school-age children in their regular school work.

5. An increase in the amount of quality time available to parents and their children when they all get home in the evening and also on weekends.

6. An improvement in the way children relate to themselves, other children, and to adult authority.

7. To the extent that parents in the work-place will no longer be saddled with after-school related problems (such as leaving work to pick them up from school), school-related interventions in the work place have been reduced.

8. An increased opportunity for poor single women to enter the labor market and hopefully lift themselves out of the welfare cycle, perhaps even leading to a reduction in welfare payments.

9. A possible reduction in the teenage pregnancy problem.

10. An increased opportunity for parental involvement in the affairs of their children's schools as well as for community cooperation in project identification and implementation.

11. An engagement of the problem of "at-risk children" as well as getting children off the streets.

12. Savings in public transportation from school pupils who do not have to travel from their schools to their day care center anymore.

13. Training opportunities for aspiring early education teachers as well as creating new jobs in the local communities throughout the state.

It is assumed that these benefits are represented by the cost-benefit ratio of 0.59 and that the cost-benefit ratio represents the maximum benefits attainable by the program from the educational experiences of school-age children. This would be the case if the fees charged per child represented the appropriate measure of the social value of the SSACC program and if the appropriate opportunity costs were properly accounted for by the valuation procedure.

The cost-benefit ratio of 0.59 obtained for the SSACC model exceeds the minimum condition for allocative efficiency required of not-for-profit organizations whose objective function is constrained quality-quantity maximization. Recall that in Chapter 3, the minimum allocative efficiency criterion for a non-profit firm in a monopolistically competitive market with quality-output maximization as its objective was the equality of price and average total cost (ATC). This would require the firm to

only break-even. The implication for cost-benefit analysis is that a cost-benefit ratio of 1.00 was all that was required to satisfy the requirements of allocative efficiency by the non-profit firm or agency.

By yielding an overall cost-benefit ratio (CBR) of 0.59, the SSACC model has actually exceeded the minimum efficiency criterion of the market in which it operates. Thus, all the programs can continue to seek quality output by investing their excess revenues on quality factors such as smaller class sizes, more modern pedagogic facilities and techniques, better recreational facilities, or even more scholarships to expand the size of external consumption of school-age child care. Theoretically, a non-profit agency can continue to expend its excess revenue on these quality-augmenting factors until it breaks even.

#### Hypothesis 2

The null hypothesis being tested here is that there is no significant statistical difference between the weekly mean revenues of the for-profit and the not-for-profit school-age child care programs throughout the state assuming that both models of school-age child care supply services of comparable quality and that weekly average revenues can serve as proxy for the weekly average profits. Average revenue is used as a proxy for average weekly profits for the same reason given under the first hypothesis. Not-for-

profit SACC programs do not seek profits as an objective and their excess revenues are spent on scholarship and quality improvements. The test variable is the average revenue per week of each of the two groups of SACC programs (defined as the product of the weekly enrollment and the weekly fee/child).

The null and the alternative hypotheses are:

$$H_0: \bar{X}_1 - \bar{X}_2 = 0$$

$$H_1: \bar{X}_1 - \bar{X}_2 \neq 0$$

$\bar{X}_1$  = the for-profit SACC group weekly mean revenue

$\bar{X}_2$  = the not-for-profit group weekly mean revenue,

i.e., the mean weekly revenue of all the SSACC, the YMCA/YWCA and the Parent/Board groups.

A t-test for the difference between two mean values is conducted at the level of significance,  $\alpha = .01$ . The degrees of freedom ( $df$ ) =  $N_1 + N_2 - 2 = 78$ . Critical values were  $\pm t_{(\alpha/2, 78)} = \pm 2.650$ .

The decision rule was to accept  $H_0$  if  $-2.650 \leq t$  computed  $\leq 2.650$ .

$$N_1 = 20, \quad N_2 = 60$$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{(\bar{X}_1 - \bar{X}_2)}}$$

$$S_{(\bar{X}_1 - \bar{X}_2)} = \sqrt{\frac{(N_1 - 1) S_{X_1}^2 + (N_2 - 1) S_{X_2}^2}{N_1 + N_2 - 2}} \cdot \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}$$

$$S_{\bar{X}_1}^2 = \frac{\sum (X_{1i} - \bar{X}_1)^2}{(N_1 - 1)}; \quad S_{\bar{X}_2}^2 = \frac{\sum (X_{2i} - \bar{X}_2)^2}{(N_2 - 1)}$$

$$S_{\bar{X}_1}^2 = \frac{\sum (X_{1i} - \bar{X}_1)^2}{(N_1 - 1)} = \frac{\$29,469,279}{19} = 1,551,014$$

$$S_{\bar{X}_2}^2 = \frac{\sum (X_{2i} - \bar{X}_2)^2}{(N_2 - 1)} = \frac{\$15,706,215}{59} = 266,207$$

$$S_{(\bar{X}_1 - \bar{X}_5)} = \sqrt{\frac{(N_1 - 1) S_{\bar{X}_1}^2 + (N_5 - 1) S_{\bar{X}_5}^2}{N_1 + N_5 - 2}} \cdot \sqrt{\frac{1}{N_1} + \frac{1}{N_5}}$$

$$= \sqrt{\frac{19(1,551,014) + 59(266,207)}{20 + 60 - 2}} \cdot \sqrt{\frac{1}{20} + \frac{1}{60}}$$

$$= \sqrt{\frac{29,469,276 + 15,706,215}{80 - 2}} \cdot \sqrt{\frac{1}{15}}$$

$$= (761.03)(0.26) = 196.50$$

$$t = \frac{\bar{X}_1 - \bar{X}_5}{S_{(\bar{X}_1 - \bar{X}_5)}} = \frac{1310.35 - 1808.55}{196.50}$$

$$t = \frac{-498.20}{196.50} = -2.54$$

Since  $t = -2.54$ ,  $H_0$  is accepted. In other words, the hypothesis is accepted that there is no statistically significant difference between the weekly mean revenues of the for-profit and the not-for-profit school-age child care programs throughout the state assuming that both models of school-age child care supply services of comparable quality and also, that weekly average revenues can serve as proxy for the weekly average profits. By accepting the null hypothesis, the study is drawing the conclusion that even though the mean weekly revenues of the two groups may be quantitatively different, that difference has no statistical significance (see Table 7).

A similar test is conducted using only the enrollment data of the for-profit SACC programs and the three not-for-profit SACC groups. The null hypothesis is that there is no statistically significant difference between the mean weekly enrollments of the two groups. The test is also conducted at  $\alpha = .01$ . The calculations are shown below:

$$N_1 = 20, N_2 = 60$$

$$\bar{X}_1 = 39.75, \bar{X}_2 = 71.85$$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{(\bar{X}_1 - \bar{X}_2)}}$$

Table 7.--Computations for Hypothesis 2: Using Revenue Data of For-Profit and Non-Profit SACC Programs

(A t-test of the Difference of Two Mean Values)

Observations (i)	$X_1$	$X_2$	$X_{1i} - \bar{X}_1$	$(X_{1i} - \bar{X}_1)^2$	$X_{2i} - \bar{X}_2$	$(X_{2i} - \bar{X}_2)^2$
1	625.00	1,484.00	-685.35	469,705	-324.55	105,333
2	650.00	1,132.00	-660.35	436,062	-676.55	457,720
3	750.00	1,863.00	-560.35	313,992	54.45	2,965
4	1,026.00	2,043.00	-284.35	80,855	234.45	54,967
5	1,023.00	3,167.00	-287.35	82,570	1,358.45	1,845,386
6	468.00	1,975.00	-842.35	709,553	166.45	27,706
7	360.00	265.00	-950.35	903,165	-1,543.55	2,382,547
8	2,296.00	2,358.00	985.65	971,506	549.45	301,895
9	600.00	2,281.00	-710.35	504,597	472.45	223,209
10	234.00	2,323.00	-1076.35	1,158,529	514.45	264,659
11	3,395.00	1,260.00	2084.65	4,345,766	-548.55	300,907
12	1,628.00	580.00	317.65	100,902	-1,228.55	1,509,335
13	1,550.00	2,148.00	239.65	57,432	339.45	115,226
14	5,220.00	579.00	3909.65	15,285,363	-1,229.55	1,511,793
15	1,000.00	3,170.00	-310.35	96,317	1,361.45	1,853,546
16	2,480.00	3,151.00	1169.65	1,368,081	1,342.45	1,802,172
17	300.00	2,810.00	-1010.35	1,020,807	1,001.45	1,002,902
18	420.00	1,226.00	-890.35	792,723	-582.55	339,364
19	510.00	578.00	-800.35	640,560	-1,230.55	1,514,253
20	1,672.00	1,508.00	361.65	130,791	-300.55	90,330
	$X_1 = \$26,207.00/20$ \$1310.35		$X_2 = \$34,171.00/20$ \$1808.55			15,706,215

$$S_{(\bar{X}_1 - \bar{X}_2)}^2 = \sqrt{\frac{(N_1 - 1) S_{\bar{X}_1}^2 + (N_2 - 1) S_{\bar{X}_2}^2}{N_1 + N_2 - 2}} \cdot \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}$$

$$S_{\bar{X}_1}^2 = \frac{\sum (X_{1i} - \bar{X}_1)^2}{(N_1 - 1)}; \quad S_{\bar{X}_2}^2 = \frac{\sum (X_{2i} - \bar{X}_2)^2}{(N_2 - 1)}$$

$$S_{\bar{X}_1}^2 = \frac{\sum (X_{1i} - \bar{X}_1)^2}{(N_1 - 1)} = \frac{17,455.70}{19} = 918.72$$

$$S_{\bar{X}_2}^2 = \frac{\sum (X_{2i} - \bar{X}_2)^2}{(N_2 - 1)} = \frac{22,252.66}{59} = 377.16$$

$$S_{(\bar{X}_1 - \bar{X}_2)}^2 = \sqrt{\frac{(N_1 - 1) S_{\bar{X}_1}^2 + (N_2 - 1) S_{\bar{X}_2}^2}{N_1 + N_2 - 2}} \cdot \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}$$

$$= \sqrt{\frac{19(918.72) + 59(377.16)}{78}} \cdot \sqrt{\frac{1}{20} + \frac{1}{60}}$$

$$= \sqrt{\frac{17,455.70 + 22,252.66}{78}} \cdot \sqrt{\frac{1}{15}}$$

$$= (22.56) (.026) = 5.97$$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{(\bar{X}_1 - \bar{X}_2)}} = \frac{39.75 - 71.85}{5.97} = \frac{-32.10}{5.97}$$

$$t = -5.38$$

$$H_0: \bar{X}_1 - \bar{X}_2 = 0$$

$$H_1: \bar{X}_1 - \bar{X}_2 \neq 0$$

Decision rule: Accept  $H_0$  if t-computed is within  $\pm 2.650$  at  $\alpha/2 = .005$ . Degrees of freedom (df) =  $N_1 + N_2 - 2 = 78$

Since the t value is  $-5.38$ ,  $H_0$  is rejected. This means that there is a significant statistical difference between the enrollments of the for-profit and not-for-profit models of school-age child care in Tennessee (see Table 8).

To confirm the results of the t-test, a second set of experiments was conducted using the one-way analysis of variance (ANOVA) test. This second set of experiments comprised three sub-experiments, each using the one-way ANOVA technique. The null and alternative hypotheses were the same as in the t-tests using both the revenue and enrollment variables, all conducted at  $\alpha = .01$ .

$$H_0: \bar{X}_1 = \bar{X}_2 \quad \text{vs.} \quad H_1: \bar{X}_1 \neq \bar{X}_2$$

The first sub-experiment tested the null hypothesis that there was no statistical difference between the mean weekly revenues of the for-profit and not-for-profit SACC programs

Table 8.--Computations for Hypothesis 2 Using Only  
Enrollment Data of the For-Profit SACC and the  
Not-For Profits SACC Programs

(A t-test of the Difference of Two Mean Values)

Observations i	$X_1$	$X_2$	$X_{1i} - \bar{X}_1$	$(X_{1i} - \bar{X}_1)^2$	$X_{2i} - \bar{X}_2$	$(X_{2i} - \bar{X}_2)^2$
1	25	70	-14.75	217.56	-1.85	3.42
2	26	38	-13.75	189.06	-33.85	1,145.82
3	25	51	-14.75	217.56	-20.85	434.72
4	27	74	-12.75	162.56	2.15	4.62
5	31	111	-8.75	76.56	39.15	1,532.72
6	13	79	-26.75	715.56	7.15	51.12
7	24	152	-15.75	248.06	80.15	6,424.02
8	82	86	42.25	1,785.06	14.15	200.22
9	20	60	-19.75	390.06	-11.85	140.42
10	13	86	-26.75	715.56	14.15	200.22
11	97	51	57.25	3,277.56	-20.85	434.72
12	44	23	4.25	18.06	-48.85	2,386.32
13	50	97	10.25	105.06	25.15	632.52
14	116	27	76.25	5,814.06	-44.85	2,011.52
15	40	90	0.25	0.06	18.15	329.42
16	80	119	40.25	1,620.06	47.15	2,223.12
17	12	102	-27.75	770.06	30.15	909.02
18	15	39	-24.75	612.56	-32.85	1,079.12
19	17	30	-22.75	517.56	-41.85	1,751.42
20	38	53	-1.75	3.06	-18.85	355.32
Total	795	1437		17,455.70		22,252.66

$$\bar{X}_1 = 39.75 \quad \bar{X}_2 = 71.85$$

assuming qualitatively comparable products and assuming also that weekly average revenues can serve as proxy for weekly profits. The experiment was conducted at the significance level  $\alpha = .01$ . The decision rule was to accept  $H_0$  if calculated  $F < \text{table } F_{\alpha, (v_1, v_2)}$  where  $V_1 = \text{numerator degrees of freedom}$  and  $V_2 = \text{denominator degrees of freedom}$ . Since calculated  $F = 1.66$  and  $F_{.01(1,38)} = 7.36$ ,  $H_0$  was accepted. This means that the hypothesis that there was no significant statistical difference between mean weekly revenues of the for-profit and not-for-profit SACC programs was accepted (see Table 9).

The second sub-experiment using ANOVA has the same null hypothesis but tests the for-profit SACC mean weekly revenue against each of the not-for profit SACC model revenues, i.e.,

$$H_0: \bar{X}_1 = \bar{X}_2 = \bar{X}_3 = \bar{X}_4$$

$$H_1: \bar{X}_1 \neq \bar{X}_2 \neq \bar{X}_3 \neq \bar{X}_4$$

where  $\bar{X}_1 = \text{for-profit SACC mean weekly revenue}$

$\bar{X}_2 = \text{ESP-SSACC mean weekly revenue}$

$\bar{X}_3 = \text{YMCA/YWCA mean weekly revenue}$

$\bar{X}_4 = \text{Parent/Board mean weekly revenue}$

The decision rule was to accept  $H_0$  if calculated  $F < \text{table } F_{\alpha, (v_1, v_2)}$ . Since calculated  $F = 1.68$  and table  $F = 4.05$ ,  $H_0$  was accepted, i.e., there was no significant statistical difference between the mean weekly revenues of each of the four SACC models tested. The same assumptions of comparable

Table 9.--Hypothesis 2: A One-way ANOVA For-Profit SACC ( $\bar{X}_1$ ) vs ( $\bar{X}_2$ )  
 Non-Profit SACC Mean Weekly Revenues

Source of Variation	Sum of Squares (1)	Degrees of Freedom (2)	Mean Square (3)	Test Statistic	
				Computed F (4)	Table F (5)
Treatments	TSS= 3,105,040	$c - 1 = 1$ $(r-1)c = 38$	TMS = 1,772,420	F=1.49	$F_{.01(1,38)}=7.36$
Error	ESS= 45,175,494		EMS = 1,188,829		
Total	SS= 48,280,534	$rc-1 = 38$			

product quality and their mean weekly revenues serving as proxy for mean weekly profits were made. The result of this test is on Table 10.

The final sub-experiment tests whether there is a statistically significant difference between the mean weekly enrollments of the for-profit, the ESP-SSACC, the YMCA/YWCA and the Parent/Board school-age child care models, i.e.,

$$H_0: \bar{X}_1 = \bar{X}_2 = \bar{X}_3 = \bar{X}_4$$

$$H_1: \bar{X}_1 \neq \bar{X}_2 \neq \bar{X}_3 \neq \bar{X}_4$$

where:

$\bar{X}_1$  = the mean weekly enrollment of for-profit  
SACC model

$\bar{X}_2$  = the mean weekly enrollment of ESP-SSACC  
SACC model

$\bar{X}_3$  = the mean weekly enrollment of YMCA/YWCA  
SACC model

$\bar{X}_4$  = the mean weekly enrollment of Parent/Board  
SACC model

The decision rule is to accept  $H_0$  if calculated

$F < \text{table } F_{\alpha, (v_1, v_2)}$  at  $\alpha = .01$  where  $V_1 =$  numerator degrees of

freedom and  $V_2 =$  denominator degrees of freedom. The result is displayed on Table 11.

Since computed  $F > \text{table } F$ ,  $H_0$  is rejected in favor of  $H_1$ . This means that there is a statistically significant difference between the enrollments in for-profit and not-for-profit SACC programs. This result is a bit surprising

Table 10.--Hypothesis 2: A One-way ANOVA for  $\bar{X}_1$  vs  $\bar{X}_2$  vs  $\bar{X}_3$  vs  $\bar{X}_4$

(A Comparison of Mean Weekly Revenues of the For-Profit and Not-For-Profit Program)

Source of Variation	Sum of Squares (1)	Degrees of Freedom (2)	Mean Square (3) = (1) ÷ (2)	Test Statistic	
				Computed F (4)	Table F (5)
Treatments	TSS= 13,197,420	$c - 1 = 3$	TMS = 4,399,140	F = 1.68	F = 4.05
Error	ESS= 198,522,619	$(r-1)c = 76$	EMS = 2,612,139		
Total	SS= 211,720,039	$rc-1 = 79$			

Table 11.--Hypothesis 2: A One-way ANOVA for  $\bar{X}_1$  vs  $\bar{X}_2$  vs  $\bar{X}_3$  vs  $\bar{X}_4$

(A Comparison of For-Profit Enrollments with Each of the Non-Profit Enrollments)

Source of Variation	Sum of Squares  (1)	Degrees of Freedom  (2)	Mean Square  (3) = (1) ÷ (2)	Test Statistic $TMS/EMS = S_A^2/S_W^2$	
				Computed F (4)	Table F (5)
Treatments	TSS= 13,197,420	c - 1 = 3	TMS = 14,348.87	F = 5.09	F=4.05
Error	ESS= 198,522,039	(r-1)c = 76	EMS = 2,820.61		
Total	= 211,720,039	rc-1 = 79			

because apart from the public-sector ESP-SSACC models whose fee schedules are relatively low, the private not-for-profit models tend to charge fees comparable to the private for-profit models programs and so should have comparable enrollment. The test result seems to be implying that it is the sizeable enrollments in the ESP-SSACC programs that account for the statistical difference between the for-profit and not-for-profit models. Perhaps, it is the wide variations in the enrollment data that account for this result.

The ANOVA results confirm the findings of the t-tests with respect to both the revenue and enrollment variables, i.e., they confirm that there is no significant statistical difference among the mean weekly revenues of the for profit and each of the not-for profit school-age child care programs but that there is a significant statistical difference among their mean weekly enrollments (see Tables 9 through 11).

A few words of caution are, perhaps, appropriate here. First, Hypotheses 1 and 2 do not represent serious inferential tests. Hypothesis 1 is weakened by a lack of a test statistic. While the cost-benefit ratio can still be used, it probably does not have to be stated as a testable hypothesis without a test statistic.

Similarly, the use of average total cost per week and average weekly revenue in determining the cost-benefit ratio

needs. Average cost per week and weekly profit per unit (defined as  $P-ATC$ ) would have made better measures of the cost-benefit ratio. However, rigid prices appear to understate the size of  $P-ATC$  and this would have overstated the  $C/B$  (if measured as  $C/P-ATC$ ). There were no price increases at the ESP-SSACC programs for at least, two years, despite increases in enrollment. There is no suggestion here that prices were institutionally fixed. The public-sector, non-profit nature of these programs justifies the slow upward price movements as long as  $P-ATC$  is not less than zero. The allocative efficiency requirement that  $P-ATC=0$  means that  $P$  can be held as close to  $ATC$  as possible to allow for zero profits. If historical cost and revenue data had been available, the cost-benefit ratio could have been calculated as the ratio of marginal cost ( $MC$ ) to marginal revenue ( $MR$ ). In the absence of historical data, average revenue ( $AR$ ) has been used as a proxy for benefits and average total cost ( $ATC$ ) as a proxy for costs.

In the case of the second hypothesis, weekly  $AR$  was used as a proxy for weekly per unit profits ( $P-ATC$  per week). Again, rigid prices in the not-for-profit ESP-SSACC in particular, understated price and weekly average revenues while the failure to provide for opportunity costs for occupancy also understated total cost. Prices appear to be more severely understated than cost. This is because even if fixed occupancy costs were accounted for,  $ATC$  would have

fallen with increases in enrollments (output). The share of fixed costs charged to the school-age function would have been about 38 percent of fixed occupancy cost since the SACC function accounts for only 4-5 hours of the total 12-13 hours that the school facilities are currently in daily use. ATC would have fallen as enrollments increased. Since no price increases have taken place since 1992, it seemed proper not to include opportunity costs, in order to, at least, offset revenue lost by not increasing prices. Otherwise, costs would have been severely overstated while prices remained constant. Besides, since these buildings have been traditionally left idle before and after school, the study assumed zero opportunity cost for occupancy.

One of the findings of this study is that there are statistical differences in enrollment among for-profit and not-for-profit SACC programs. This study believes, however, that increases in enrollment in any SACC program are not at the expense of any other program. Three main reasons can be deduced for this assertion:

1. Even though all these school-age child care programs produce child care as their principal output (pure custodial care), their products are technically differentiated such that they engage in non-price competition (quality of care, etc). Differentiated products confer differentiated benefits to their consumers and because of differences in the tastes and preferences of

consumers, the various school-age programs appear to provide a wide spectrum of choice to satisfy the various consumers.

2. Tastes and preferences are usually constrained by the level of wealth available to a household. Different wealth levels confer different utility functions so that the marginal utility of any school-age child care model to a household becomes a function of the wealth constraint faced by the household. Households with higher levels of wealth will generally prefer to send their children to a different model of school-age care center than households with lower levels of wealth. Wealthier households will, generally, have a higher marginal utility for for-profit child care centers than families with lower wealth levels believing that for-profit school-age child care centers are qualitatively superior to the not-for-profit centers. To the relatively wealthier families, high fee schedules (prices) do not serve as a significant explanatory variable in their demand equation. Quality (prestige) may be what they want and their children will go to only certain types of day care.

3. Exogenous factors may also determine what school-age care center a household sends its child to. For example, the school a child attends may determine which child care center the child attends. Location, thus, becomes a significant factor. Some SACC programs provide transportation within certain defined limits and the

households within those spatial limits may wish to take advantage of the transportation services instead of having to transport their children to and from any other center.

Similarly, church affiliations, the mother's place of work, the influences of life-long friends, family traditions, etc., are all influences in the decision to choose a child care center. All these exogenous choice variables provide unlimited opportunities for growth to various child care centers.

A t-test for the difference between two mean values and ANOVA were chosen because they are suitable for comparing the mean values of any two groups. Because only one test variable (mean weekly revenue of the school-age child care programs) was involved, the ANOVA is one-way. ANOVA is a statistical technique specially designed to test whether the means of more than two quantitative populations are equal. "It can, however, also be used to test the equality of only two means which yields the same result as the normal-distribution, or t-distribution tests . . ."<sup>114</sup>

#### Frequency Analysis

An analysis of the survey sample reveals the following information:

1. Generally speaking, the Parent/Board model SACC

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<sup>114</sup>Heinz Kohler, Essentials of Statistics (Glenview, IL: Scott, Foresman and Company, 1988), 345.

programs attracted the highest mean enrollment (97) during 1988-1992, followed by the school-administered SACC model (72), the YMCA/YWCA model (44), and lastly, the for-profit model (40).

2. The fee schedules of the for-profit SACC programs appear to be the highest, averaging about \$30/week, followed by YMCA/YWCA model (\$28/week), the Parent/Board model (\$27/week) and lastly, the SSACC model, (about \$21/week). These fee schedules are for before-and after-school enrollees. Partial fees (for those who attend only the before- or the after-school phase) are not reflected in this study. Any discounts for enrolling two or more children are also not considered in the calculations because the policy is not uniform across all model groups.

3. The counties with the largest metropolitan areas appear to have the largest concentration of school-age care facilities, thus confirming the procyclical relationship between child care consumption and the household labor supply decision. The largest metropolitan areas like Memphis (Shelby County), Nashville (Davidson County), Chattanooga (Hamilton County) and Knoxville (Knox County) have the highest job concentrations in the state and the fact that these metropolitan areas also have the highest concentration of school-age child care facilities proves the phenomenon of the working mother as a catalyst in the school-age child care consumption decision. It also proves

the effect of a strong job base on the decision to establish a child care facility in a given location.

The listings by the Department of Human Services and the Department of Education show a significant expansion of school-administered school-age child care facilities in many counties already despite this model's short history. Most (over 90 percent) started only since 1988. There is also a significant presence of the YMCA/YWCA model and the Parent/Board model in many counties, but with greater concentration in Shelby, Knox, Hamilton, Davidson and Sullivan Counties.

It would, perhaps, be wrong to draw any permanent or even long-term conclusions from the survey data and the listings since they are subject to change. For example, 163 school-administered school-age child care centers from 36 counties throughout the state were involved in this study from the survey, the Department of Human Services, and the Department of Education listings. Eleven counties have only one SSACC program each; six counties have two SACC programs each, three counties have three SSACC programs each, four counties have four SSACC programs each, one county has five SSACC programs, two counties have six SSACC programs each, three counties have eight SSACC programs each, three more counties have seven SACC programs each, and each one of the remaining three counties has ten, eleven, and thirty-two SSACC programs, respectively.

Of the 183 YMCA/YWCA model, SACC programs from 18 counties analyzed for this study, 51 (29 percent) are located in Shelby County, 46 (27 percent) in Davidson County, 24 (14 percent) in Knox County, 11 (6 percent) and 10 (5 percent) in Sullivan and Hamilton Counties, respectively, while 41 (24 percent) are in the remaining 14 counties. In the case of the Parent/Board model, 80 SACC programs in 20 counties were used for this study. Of this number, 22 (28 percent) are located in Knox County, 15 (19 percent) in Davidson, 16 (20 percent) in Shelby and 9 (11 percent) in Sullivan. The remaining 18 are located in the other counties.

Not much conclusion can be drawn from these distributions because of the random nature of the sampling and listing, but a few guesses are, perhaps, appropriate.

First, it does appear that the school-administered SACC programs are more widely dispersed than any of the other models. Two factors may be responsible: One is the public nature of the SSACC programs which almost guarantees as much dispersion as possible regardless of low anticipated enrollment, perhaps, for equity reasons. The other reason is that there is a state-wide incentive for local school-systems to start their own SSACC programs. The Governor's A+ Award for Community Excellence in Education requires each community/school system in the State that wishes to compete for the award to set up, as one of the conditions for eligibility, a school-age child care program or show how the

community or school system is meeting its school-age needs; it must also show that a referral system exists for students and their families. The Department of Education is also using school-age child care as one of the components of the Administration's Initiative to ensure success in school for at-risk children.

Second, the YMCA/YWCA SACC model appears to be concentrated more in major metropolitan areas than it is in small rural areas. Along with the Parent/Board model, this model appears to be more responsive to areas with large populations, perhaps, fostered by the existence of industrial and other business activities. This may explain their increased enrollment levels despite their relatively higher fee schedules.

Third, the market power of each SACC model type can be estimated from the survey and listings using the Herfindahl index. The Herfindahl index is usually used to determine the degree of concentration of each firm in any market where power exists. The power of each model type can, thus, be determined using this index. A concentrated market is one that has a Herfindahl index equal to or greater than 1,800, the arbitrary cut-off point between a concentrated and a non-concentrated market. The United States Department of Justice uses this threshold to determine a concentrated market for the purpose of determining how a market structure

is altered by a pending merger.<sup>115</sup> The higher the index, the more concentrated is the market and the greater is the potential that a merger will alter the structure of the market.

A Herfindahl index is defined as<sup>116</sup>:

$$H = \sum (S_i/M)^2 \times 10,000$$

where H stands for the Herfindahl index, i.e., the degree of concentration;  $\sum$  is the sum of all firms in the market; M is the size of the total market.

Thus,  $S_i/M$  is the market share of the ith supplier.<sup>117</sup> Using the average weekly revenue of each of SSACC models, we can calculate the market power of the SACC suppliers as a group as well as the market power of the other not-for-profit suppliers (the YMCA/YWCA and the Parent/Board). We can also calculate the power of the for-profit group. For example, for the SSACC group:

$$H = \sum (S_i/M)^2 \times 10,000 = \left( \frac{1731.05}{6735.80} \right)^2 \times 10,000$$

$$= 660$$

For the YMCA/YWCA model

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<sup>115</sup>R. P. Wilder and Philip Jacobs, "Antitrust Considerations for Hospital Mergers: Market Definition and Market Concentration," Advances in Health Economics (1986), 245-262.

<sup>116</sup>Jacobs, The Economics of Health and Medical Care, (1991), 337.

<sup>117</sup>Ibid.

$$H = \left( \frac{1365.50}{6735.80} \right)^2 \times 10,000$$

$$= 411$$

For the Parent/Board model

$$H = \left( \frac{2328.90}{6735.80} \right)^2 \times 10,000$$

$$= 1,195$$

Finally, for the for-profit model,

$$H = \left( \frac{1310.35}{6735.80} \right)^2 \times 10,000 = 378$$

These indices suggest no concentration of power in the school-age child care market since in each case,  $H < 1,800$ . The results further support the view that no one model attracts enrollment away from the other models and the statistical difference in enrollments may be purely random. It does, however, appear that in relative terms, the Parent/Board and the SSACC models command the highest power (though imperceptible), followed by the YMCA/YWCA and the for-profit models, in that order. Not surprisingly, the Parent/Board and SSACC models have the highest community participation in the running of their programs. As a matter of fact, the Parent/Board is run entirely by parents and their established board and together, they have the right to hire and fire staff and create innovations that require no other approval but theirs since they operate these programs for their children. This Parent/Board dominance may create the kind of product uniqueness that grants a certain amount of market power to the supplier.

Table 12.--The Completely Randomized Design: Average Weekly Revenue of the Four SACC Models Sampled (\$/Week)

Treatment, j (Type of School-Age Child Care Program)		
Observations i	For Profit $X_1$	All Non-Profit SACC Mean $\bar{X}_2$
1	625.00	1,484.00
2	650.00	1,132.00
3	750.00	1,863.00
4	1,026.00	2,043.00
5	1,023.00	3,167.00
6	468.00	1,975.00
7	360.00	265.00
8	2,296.00	2,358.00
9	600.00	2,281.00
10	234.00	2,323.00
11	3,395.00	1,260.00
12	1,628.00	580.00
13	1,550.00	2,418.00
14	5,220.00	579.00
15	1,000.00	3,170.00
16	2,480.00	3,151.00
17	300.00	2,810.00
18	420.00	1,226.00
19	510.00	932.00
20	1,672.00	1,508.00

$$\bar{X}_1 = \frac{\$26,207.00}{20}$$

$$\bar{X}_2 = \frac{\$36,171.00}{20}$$

$$\bar{X}_1 = \$1,310.35$$

$$\bar{X}_2 = \$1,808.55$$

Source: Compiled from the DHS listing of SACC centers.

Table 13.--Hypothesis 2: Testing Only SACC Enrollment the Completely Randomized Design, Using Only Average Annual Enrollment of Each of the SACC Models Sampled

Treatment, j (Type of School-Age Child Care Program)					
Observations i	For-Profit (X <sub>1</sub> )	School-Administered (X <sub>2</sub> )	YMCA/ YWCA (X <sub>3</sub> )	Parent/ Board (X <sub>4</sub> )	All Non-Profit SACC's (X <sub>5</sub> )
1	25	50	49	110	70
2	26	23	66	25	114
3	25	30	41	82	153
4	27	50	75	98	223
5	31	93	50	190	333
6	13	92	3	142	237
7	24	22	8	425	455
8	82	12	76	170	258
9	20	22	43	116	181
10	13	68	150	40	258
11	97	26	26	80	52
12	44	24	27	18	69
13	50	48	68	175	291
14	116	30	18	32	80
15	40	142	24	103	269
16	80	314	26	17	357
17	12	216	49	41	306
18	15	8	60	49	117
19	17	53	24	13	90
20	38	122	12	25	159
Total	795	1,445	895	195	1,437

Source: Compiled from the DHS listing of SACC centers.

## CHAPTER 6

### SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

#### Summary

The objectives of the study were to:

1. Investigate the welfare effects of the school-administered school-age child care program in the State of Tennessee using the model of the Extended School Program (ESP) of the Murfreesboro City School System.

2. Test whether there was a significant statistical difference between the mean weekly revenues and enrollments of the for-profit and not-for profit school-age child care models in Tennessee assuming that both groups supplied services of comparable quality and that their weekly mean revenues could serve as proxy for mean weekly profits.

A number of assumptions were made to facilitate the study. These were:

1. That the objective of the for-profit school-age child care programs was to maximize profits subject to production costs while the objective of the not-for-profit school-age child care programs was to maximize the quality and quantity of school-age child care in the State, also subject to cost constraints.

2. Consistent with their objective function and the

criteria for allocative efficiency in a monopolistically competitive market, the welfare effects of the school-administered school-age child care program were assumed to be maximized if the cost-benefit ratio was equal to 1.00.

3. The closer the cost-benefit ratio was to 1.00, the less would be the welfare effects and the closer it was to zero the greater would be the welfare effects. The entire child care industry was characterized by monopolistic competition; yet, the school-age child care firms exhibited features that were closer to a competitive market model than to a monopoly model.

The methods used to test the second hypothesis were the t-test for the difference between two mean values and the one-way analysis of variance (ANOVA). The choice of the t-test for the difference of two means and the ANOVA was based on their suitability for making comparisons of group means. The unit of analysis for both methods were the mean weekly revenue of all the school-age child care groups as well as their enrollments. The assumption was that a comparison of group mean revenues and enrollments was an appropriate basis for detecting whether any model attracted business away from the others. The Department of Human Services listing provided data on enrollment, fees, city of location, county, age range of the children and contact persons for each school-age child care model in the State. The cost information came from the SACC programs themselves. Twenty

centers from about ten counties were used for the cost-benefit analysis, but because the school-administered SACC programs are all identically structured, information about any of the centers is almost a representative sample of the other centers.

For the second hypothesis, sixty randomly selected non-profit SACC programs from twenty counties and twenty for-profit SACC programs from fifteen counties were used. The three representative non-profit models used were the School-Administered Extended School Program SACC model ( $X_2$ ), the YMCA/YWCA SACC model ( $X_3$ ) and the Parent/Board SACC model ( $X_4$ ).

The results of the first hypothesis showed that the cost-benefit ratio of the school-administered (ESP) SACC model was less than 1.00 for each of the programs in the study, as well as for the entire twenty SSACC centers for the services meaning that the stream of benefits exceeded the stream of costs for the programs themselves, their respective communities, and for the State of Tennessee. In other words, it was both financially and economically feasible for each community to establish a school-administered school-age child care program along the structure initiated by the Murfreesboro Extended School Program in 1985.

The results of the second hypothesis showed that there was no statistical difference between the mean weekly

revenues of the for-profit and the not-for-profit programs, assuming that both groups produced services that were qualitatively comparable and that the mean weekly revenues could serve as proxy for average weekly profits. However, there was a significant statistical difference between the mean weekly enrollments of the for-profit and the not-for-profit groups. The ANOVA tests confirm the t-test results with respect to both the revenue and enrollment test variables.

#### Conclusions

The following conclusions can be drawn from the results of the tests conducted by this study:

1. Even though the ESP-SSACC model represents a model of self-reliance, it does seem that the factors that make it work well are the linkage with the city school system and the support of the local community, including the business community. The city-school system absorbs most of the fixed costs so that the cost of operating these programs appears to be dominated by variable costs such as labor and program costs. Most of the fixed costs are sunk costs; if these costs were to be absorbed by the programs themselves, the weekly fee regimes would have been higher, perhaps, reducing enrollment. This would have drastically altered the cost-benefit picture.

On the other hand, prices (weekly fees) have remained

rigid in their upward direction for over two years for the school-administered school-age programs. This should reduce the effect of failing to compute opportunity costs (fixed occupancy costs) for this model group.

2. Similarly, the support of local communities was almost guaranteed from the birth of the program because the ESP-SSACC model is actually a need-based program. It arose out of a need to address some serious problems such as the "latch-key" problem which in itself was the result of working poor, often single mothers entering the labor market. There was also the so-called "three o'clock syndrome," a reference to working mothers having to interrupt their work at three o'clock to pick up their children from school and the associated problem of not knowing what to do when the children had no where to go between 3:30 P.M. and 6:00 P.M. before their mothers returned from work. The effect of the above problem on the female work force and the working poor in general who could not afford the rapidly rising child care costs could not be ignored for too long. Then, there was the excess demand problem as evidenced by long lines of parents waiting to register their children in quality day care centers and not being guaranteed a space.

3. The results of the second hypothesis were mixed. The t-test results showed that even though there were quantitative differences among the various weekly mean

revenues, these differences were not statistically significant; yet, when enrollments were tested in the same way, the results revealed significant statistical differences among the four models. The reason for this could be that revenues are a weighted index of performance removing any wide variations in the data. The numerical extremes in the enrollment data were unweighted and this may have accounted for the rejection of the test because except for the ESP-SSACC and the Parent/Board models, there were really no significantly wide variations in enrollment from one model to the other. After six years in existence, the ESP-SSACC model programs have experienced significant increases in enrollment, though not in prices. The other programs, on the other hand, have registered lower enrollment but higher increases in price. The results of the tests appear to confirm these phenomena.

4. It is doubtful that increases in ESP-SSACC enrollments have occurred at the expense of the other SACC programs. Several reasons account for this conclusion. First, because each SACC industry is assumed to be characterized by monopolistic competition, their respective products are assumed to be differentiated, enabling each model to enjoy some element of "brand" loyalty. Secondly, each consuming household will choose a model type consistent with its marginal utility for that model. It is, therefore, assumed by the study that households with less wealth

constraints may have a higher marginal utility for the private for-profit programs and a lower marginal utility for the ESP model type. Households with lower income constraints may not believe the findings that not-for-profit programs provide more relatively qualitative services than the for-profit. Higher income households may assume that the ESP-SSACC programs are meant for low-income groups, and therefore, inferior. On the other hand, the households with greater wealth constraints may have a higher marginal utility for the SSACC (ESP) type and a lower marginal utility for the private models, *ceteris paribus*. Thirdly, despite strong endogenous factors that may predict a different consumer behavior, there are several exogenous factors which tend to solidify consumer preferences for one model type or the other. Family traditions, church membership, membership in the YMCA/YWCAs, Parent/Board influences on Parent/Board members' children and relatives, workplace influences, etc., are all exogenous influences on the model type consumption decision.

5. This study further concludes that a significant amount of parental involvement in the affairs of the school-age child care center on a continuous basis will improve the quality of consumption choice made by parents. Kagan (1991) confirms this.

6. The factors which have converged in the last few years to increase school-age child care consumption will

continue to be influential. More mothers will enter the workforce and will continue to do so on a permanent basis; new research findings continue to support the efficacy of early childhood intervention; poverty continues to be a relatively feminine preserve.

### Policy Implications

Kagan (1991) speaks to the issue of a "cross-sector acrimony" between for-profit and non-profit child care providers. The objective of any cohesive policy approach would, perhaps, be to minimize such disputes.

The contention between these two groups of suppliers seems to be about the scarce financial and human resources for expanding the child care market and about the children themselves. The concern, perhaps, is that the proliferation of auspices splinters both the resources and the market size. Under these circumstances, even the slightest involvement of government beyond merely supplying resources simply aggravates the problem of auspices in addition to crowding out scarce financial and human resources that could be more efficiently utilized by the private sector suppliers. Can the market tolerate such inefficiency?

Proponents of multi-vehicle system of auspices would, of course, point to the inequity of the exclusionary nature of the private market, including the child care market. Can society tolerate such inequity?

This problem of auspices lingers on because even among non-profit private suppliers, exclusion is a problem. This proves that the size of the altruistic market, i.e., the market for external demand, is still far smaller than the size of the selfish market.

The issue of auspices raised by Kagan reduces to what the right policy approach for child care delivery should be. Should it be privatized between for-profit and private non-profit auspices or should a multi-sector delivery approach involving the public sector as well as the traditional private sector auspices be used?

The hypotheses test results appear to show the following:

First, a public-sector involvement along the structural design of the ESP (school-administered school-age child-care) model can be feasible without public sector financial support beyond start-up costs. While enrollments may be higher at the ESP-SSACC programs differences in their revenues do not appear to be statistically significant. The Murfreesboro ESP Director's portrayal of the ESP model as a new approach to the twenty-first century American early childhood education is consistent with the multi-sector delivery approach. The cost-benefit ratio suggests that a statewide replication of the ESP system is feasible without crowding out the flow of investment funds for the private sector.

The pool of available children for school-age centers is not a zero-sum game. There is no evidence that the enrollment in one model type is obtained at the expense of the other model types. Therefore, the question of devolution of authority, responsibility, and investment resources exclusively to private sector auspices will not resolve the issue of equity raised by Kagan even if it is efficient; neither will concentration in a public-sector model of delivery resolve the issue of inefficiency, even if it is equitable.

The policy recommendations can be summarized as follows:

1. The traditional mixed-sector delivery system should continue to characterize policy. It does appear to be an "embedded tradition" in the American child care delivery system as it is in all levels of education.
2. The success of the ESP model should create a new policy ethos throughout the country in favor of this model of delivery. This is one of the reasons why the ESP Director and the Superintendent went to Washington, D.C. to testify before the House Small Business Committee in June 1988, and to announce to the nation that they had found a 21st Century answer to the problem of how best to care for school-age children whose mothers had decided to enter the American work force. The ESP model addresses the cross-sector acrimony (without eliminating it) as it relates to

both financial and human resource flows as well as competition for market share by suppliers. It is financially and economically feasible as supported by the cost-benefit analysis; it does not depend on the public budget for its funds and the fee regimes over the years have made it affordable to low-income families.

The business community has praised it as solving the problem of parents leaving their work to pick up their children at three o'clock, a threat to the productivity of labor. Finally, it has reduced the so-called "latch-key" problem in the areas in which it has been established in the last few years.

3. The success of the ESP model might make child care and early education issues a joint community, state and local government responsibility. Once it is demonstrated that local projects such as the ESP can succeed without government financial support and at the same time charge affordable fees for even poor and low-income families, the responsibility for policy-making in the area of child care and early childhood education could remain with state and local governments but with local community involvement.

There is room for all models of school-age center to grow. As Kagan puts it,

A funny thing happened on the way to the 1990's: American awoke to the importance of early childhood care and education. . . . American child care has been reactive and episodic, with each generation creating its own policies, inconsistently favoring different auspices. Mixed-sector sponsorship of child care,

vacillating between public and private, profit and non-profit auspices, is the entrenched, indelible legacy of our historic incoherent approach to children's policy.<sup>118</sup>

The attraction of the ESP school-administered school-age child care program is that it appears to answer questions beyond the 1990's and it will continue to be attractive as long as the three basic goals of the ESP-school-administered SACC model continue to be relevant: parental concern for the well-being of their children, concern by educational leaders and tax payers for the full capacity utilization of school plants and facilities, and concern by the business community leaders to reduce their employees' stress related to their children's safety after the regular school day.

The findings of this study are open to further investigation. Further research must address the question of the feasibility of the ESP-SSACC model using the profit variable instead of average revenue and what will happen if the centers have to bear the full burden of fixed costs. A before and after entry comparison of the profit stream of each model will better help to determine the effect of the entry of the ESP-SSACC model into the school-age child care industry. Such a measurement was not possible in this study because of data problems. The welfare affects posited by this study were based on the assumption that the financial

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<sup>118</sup>Kagan, "Examining Profit and Non-Profit Child Care: An Odyssey of Quality and Auspices" (1991), 92

structure of this child care model was maintained indefinitely. Future realignments of their financial structure may make these centers less attractive. Therefore, future SSACC programs must continue to locate in under-utilized public school buildings and use some public school staff and administrators to be able to offer attractive fee regimes.

## APPENDICES

## APPENDIX A

## Hypothesis 1: List of School-Administered SACC Programs Used

Name of SACC	City	County	Weekly Fee/Child (\$/Child/Week)	Total SACC Delivery Cost/Year
Anderson Co. Day Care Program	Clinton	Anderson	18	70,656
Bedford County ESP	Shelbyville	Bedford	25	97,053
Cole Community Education	Antioch	Davidson	20	123,598
Haywood Elementary	Antioch	Davidson	20	123,598
David Crockett Extended Day Program	Lawrenceburg	Lawrence	22	17,120
West Side Elementary	Elizabethon	Carter	20	28,781
Bellwood Elementary	Murfreesboro	Rutherford	26	76,000
Black Fox Elementary	Murfreesboro	Rutherford	26	103,000
Bradley Elementary	Murfreesboro	Rutherford	26	70,000
Hobgood Elementary	Murfreesboro	Rutherford	26	60,000
Northfield Elementary	Murfreesboro	Rutherford	26	136,000
Franklin Elementary	Franklin	Williamson	30	101,176
Johnson Elementary	Franklin	Williamson	30	55,647
Moore Elementary	Franklin	Williamson	30	106,235
Liberty Elementary	Franklin	Williamson	30	126,471
Franklin Middle	Franklin	Williamson	30	40,471
Howard Elementary	Gallatin	Sumner	34	85,000
Walton Ferry Elementary	Hendersonville	Sumner	34	60,000
East Cheatham	Ashland City	Sumner	25	22,776
Pleasantview Elementary	Pleasantview	Sumner	20	18,148

Source: Compiled from Department of Human Services listing and school-administered SACC programs. Costs were from survey results.

## APPENDIX B

## For-Profit School-Age Child Care Programs Used for Hypothesis 2

Name of Program	City/Town	County	Average Yearly Enrollment	Average Weekly Fee
South Cheatham Learning Center, Inc.	Pegram	Cheatham	25	\$ 25.00
Kiddie Corner II	Newport	Cocke	26	\$ 25.00
The Children's Corner-Kings Lane	Nashville	Davidson	25	\$ 30.00
Holly Tree Child Care Center #6	Nashville	Davidson	27	\$ 38.00
La Petite Academy	Goodlettsville	Davidson	31	\$ 33.00
Enrichment PreSchool's	Goodlettsville	Davidson	13	\$ 36.00
Medina Child Care Center	Medina	Gibson	24	\$ 15.00
Kandy Castle #3	Chattanooga	Hamilton	82	\$ 28.00
Brenda's Day Care-After School Only	Knoxville	Knox	20	\$ 30.00
New Prospect Day Care Center	Knoxville	Knox	13	\$ 18.00
Smithwood Learning Center	Knoxville	Knox	97	\$ 35.00

Name of Program	City/Town	County	Average Yearly Enrollment	Average Weekly Fee
Tate's Afternoon Edition	Knoxville	Knox	44	\$ 37.00
Cedar Springs Kool Kids After School	Knoxville	Knox	50	\$ 31.00
Friends At First After School Program	Jackson	Madison	116	\$ 45.00
Tender Loving Care Child Care Center	Columbia	Maury	40	\$ 25.00
Parker House Child Care Center	Smyrna	Rutherford	80	\$ 31.00
Golden Rule After School Care	Seymour	Sevier	12	\$ 25.00
Wells Station After-School Enrichment Program	Memphis	Shelby	15	\$ 28.00
Skyview Academy	Memphis	Shelby	17	\$ 30.00
Kinder Care Learning Center	Nashville	Davidson	38	\$ 44.00

Source: Tennessee Department of Human Services, Child Care Resource and Referral Service Unit "Statewide Listing of Department of Education Approved School-Age Programs" compiled especially for this study by the Child Care Resource and Referral Service Unit.

## APPENDIX C

## List of School-Age Child Care Programs Used for Hypothesis 2

School-Administered School-Age Child Care Programs (SSACC)				
Name of SSACC	City/Town	County	Average yearly enroll- ment	Average weekly fee
Willow Brook Elementary	Oak Ridge	Anderson	50	\$ 27.00
Southside Elementary	Shelby- ville	Bedford	23	\$ 20.00
East Cheatham Elementary	Ashland City	Cheatham	30	\$ 25.00
Westwood Elementary	Manchest- er	Coffee	50	\$ 20.00
Cole Elementary	Antioch	Davidson	93	\$ 20.00
Haywood Elementary	Nashville	Davidson	92	\$ 20.00
Fifth Consolidated School	Dyersburg	Dyer	22	\$ 4.00
DeBusk Extended School Program	Greene- ville	Greene	12	\$ 20.00
Calvin Donaldson Elementary	Chattanoo- ga	Hamilton	22	\$ 20.00
Soddy Elementary School	Soddy- Daisy	Hamilton	68	\$ 26.00
Jefferson Elementary	Jefferson City	Jefferson	26	\$ 25.00
David Crockett Elementary	Lawrence- burg	Lawrence	24	\$ 20.00

School-Administered School-Age Child Care Programs (SSACC)				
Name of SSACC	City/Town	County	Average yearly enroll- ment	Average weekly fee
Ralph Akins Elementary	Fayette- ville	Lincoln	48	\$ 17.00
Highland Park Elementary	Jackson	Madison	30	\$ 15.00
Bellwood Elementary	Murfrees- boro	Rutherford	142	\$ 26.00
Northfield Elementary	Murfrees- boro	Rutherford	314	\$ 26.00
Reeves-Roger Elementary	Murfrees- boro	Rutherford	216	\$ 26.00
Dibrell Elementary	McMinn- ville	Warren	8	\$ 26.00
Dresden Elementary R/A Program	Dresden	Weakley	53	\$ 20.00
Franklin Elementary	Franklin	Williamson	122	\$ 30.00

Source: Tennessee Department of Human Services, Child Care Resource and Referral Service Unit "Statewide Listing of Department of Education Approved School-Age Programs" compiled especially for this study by the Child Care Resource and Referral Service Unit.

## APPENDIX D

## List of YMCA/YWCA School-Age Child Care Programs Used for Hypothesis 2

YMCA-Administered School-Age Child Care Programs (SACC's)				
Name of Program	Town/City	County	Average Yearly Enrollment	Average Weekly Fee
Cleveland Family YMCA	Cleveland	Bradley	49	\$ 24.00
East Nashville YMCA	Nashville	Davidson	66	\$ 35.00
Northwest YMCA School-age Program	Nashville	Davidson	41	\$ 38.00
YMCA Extended Care-Glengary	Nashville	Davidson	75	\$ 35.00
YMCA Extended Care-Tulip Grove	Hermitage	Davidson	50	\$ 35.00
YMCA Fun Company-Gateway Elementary	Madison	Davidson	3	\$ 36.00
YMCA Fun County - Joelton School	Joelton	Davidson	8	\$ 35.00
YMCA B/A School Care East Brainard	Chattanooga	Hamilton	76	\$ 34.00

YMCA-Administered School-Age Child Care Programs (SACC's)				
Name of Program	Town/City	County	Average Yearly Enrollment	Average Weekly Fee
East Side YMCA After School Program	Knoxville	Knox	43	\$ 27.50
YMCA Athens/McMinn Family YMCA	Athens	McMinn	50	\$ 28.00
YMCA Fun Company JR Baxter Elementary	Columbia	Mauzy	26	25.00
YMCA Prime Time-Evans Elementary	Memphis	Shelby	27	\$ 30.00
YMCA-Chimney Rock After School Program	Cordova	Shelby	68	\$ 30.00
Greater Kingsport YMCA-Jefferson	Kingsport	Sullivan	18	\$ 27.00
YMCA Fun Company-Wessington Place Elementary	Hendersonville	Summner	24	\$ 30.00
YMCA Woodland Park Before & After-School Program	Hendersonville	Summner	24	\$ 30.00

YMCA-Administered School-Age Child Care Programs (SACC's)				
Name of Program	Town/City	County	Average Yearly Enrollment	Average Weekly Fee
School Program CA	Sparta	White	26	\$ 30.00
YMCA Extended Day Care Scales Elementary	Brentwood	Williamson	49	\$ 30.00
YMCA Fun Company Lakeview Elementary	Mt. Juliet	Wilson	60	\$ 31.00
YMCA-Rhea County	Dayton	Rhea	24	\$ 20.00
YMCA-Rode Greek After School Care Center	Erwin	Unicoi	12	\$ 20.00

Source: Tennessee Department of Human Services, Child Care Resource and Referral Service Unit.

## APPENDIX E

## List of Parent/Board School-Age Child Care Programs Used for Hypothesis 2

Parent /Board-Administered School-Age Child Care Programs				
Name of Program	City/Town	County	Average Yearly Enrollment	Average Weekly Fee
Wee Care Day Care Center	Camden	Benton	110	\$ 17.50
South Cheatham Learning Center	Pegram	Cheatham	25	\$ 25.50
Cumberland County Extended School Program	Crossville	Cumberland	82	\$ 40.00
Eakin Care Program	Nashville	Davidson	98	\$ 25.50
University School of Nashville After School Program	Nashville	Davidson	190	\$ 31.00
Kandy Kastle #3	Chattanooga	Hamilton	142	\$ 28.00
Boys & Girls Club-Cansler Unit	Knoxville	Knox	425	\$ 1.00
City View Baptist After School Center	Knoxville	Knox	170	\$ 25.00

Parent /Board-Administered School-Age Child Care Programs				
Name of Program	City/Town	County	Average Yearly Enrollment	Average Weekly Fee
Friends At First-After School Program	Jackson	Madison	116	\$ 45.00
Tender Loving Care Child Care Center	Columbia	Maury	40	\$ 25.00
Parker House Child Care Center	Smyrna	Rutherford	80	\$ 31.50
Golden Rule After School Care	Seymour	Sevier	18	\$ 25.00
Op-Act Inc.	Memphis	Shelby	175	\$ 25.00
Wesley Foundation After School Program	Memphis	Shelby	32	\$ 25.00
Baptist Memorial Hospital EM-NU Camp	Memphis	Shelby	103	\$ 49.50
Skyview Academy-Extended Care	Memphis	Shelby	17	\$ 30.00
Bristol Tennessee City Extended Day Program Avoca	Bristol	Sullivan	41	\$ 32.75

Parent /Board-Administered School-Age Child Care Programs				
Name of Program	City/Town	County	Average Yearly Enrollment	Average Weekly Fee
Haynes-field Tennessee City Extended Day Program Avoca	Bristol	Sullivan	49	\$ 32.75
The After School Center	Martin	Weakley	13	\$ 15.00
College Grove Church of Christ After Care	College Grove	Williamson	25	\$ 25.00

Source: Tennessee Department of Human Services, Child Care Resource and Referral Service Unit

## APPENDIX F

## Questionnaire

## SCHOOL-AGED CHILDREN ONLY

1. (a) Name of School-Aged Child Care Center \_\_\_\_\_  
 (b) Address \_\_\_\_\_ Tel. # \_\_\_\_\_  
 (c) County \_\_\_\_\_
2. Type of Program:
  - i. School-Administered \_\_\_\_\_
  - ii. Church-Administered \_\_\_\_\_
  - iii. YMCA-Administered \_\_\_\_\_
  - iv. For-Profit \_\_\_\_\_
3. Year Care Center Began Operations \_\_\_\_\_
4. Age Range of Enrollees:
 

Minimum Age \_\_\_\_\_ Maximum Age \_\_\_\_\_
5. Number of Enrollees per year for last five years:
 

1988 \_\_\_\_\_ 1989 \_\_\_\_\_ 1990 \_\_\_\_\_ 1991 \_\_\_\_\_ 1992 \_\_\_\_\_
6. Is this a before-school and/or after-school program?
 

before-school \_\_\_\_\_ after-school \_\_\_\_\_

before and after school \_\_\_\_\_
7. Number of students enrolled in the Before-School Program for last five years:
 

1988 \_\_\_\_\_ 1989 \_\_\_\_\_ 1990 \_\_\_\_\_ 1991 \_\_\_\_\_ 1992 \_\_\_\_\_
8. Number of students enrolled in (whichever applies):
  - (a) before-school program \_\_\_\_\_
  - (b) after-school program \_\_\_\_\_
  - (c) before and after-school program \_\_\_\_\_
9. Please list services offered the students (Use additional sheet if necessary).
 

Before-School (From \_\_\_\_\_ To \_\_\_\_\_)

  - i. Foreign Languages (French, Japanese, Spanish, German, etc.)
  - ii. Help with regular school homework
  - iii. Music (piano, voice, guitar, violin, drums, etc.)
  - iv. Sports (basketball, baseball, tennis, swimming,

-2-

- track and field, etc.)
- v. Math and Language Arts (reading, spelling)
- vi. Art (sketching, painting, coloring, etc.)
- vii. T.V. programs
- viii. Others (please specify)

After-School (From \_\_\_\_\_ To \_\_\_\_\_)

- i. Creative Expression (art, music, drama, etc.)
  - ii. Foreign Languages (French, Japanese, Spanish, German, etc.)
  - iii. Intellectual Development (science experiments, field trips, games of skill and concentration, help with regular school homework)
  - iv. Physical Development (cycling, dancing, ballgames, exercise mats and hiking)
  - v. Social Development (relating to adult authority models, developing responsibility for self and learning to respect the rights of others).
  - vi. Others (Please specify)
10. Qualification of Teachers, Staff, and Director:

Teachers: B.S. (No. & Major) \_\_\_\_\_  
 M.S. (No. & Major) \_\_\_\_\_  
 Other qualifica- \_\_\_\_\_  
 tions (including \_\_\_\_\_  
 years of experi- \_\_\_\_\_  
 ence--state \_\_\_\_\_  
 average years of \_\_\_\_\_  
 experience \_\_\_\_\_

Staff: No. with B.S. (Major) \_\_\_\_\_  
 No. with M.S. (Major) \_\_\_\_\_  
 Other qualifications \_\_\_\_\_  
 Average yrs. of \_\_\_\_\_  
 experience \_\_\_\_\_

Director B.S. \_\_\_\_\_ M.S. \_\_\_\_\_ Doctoral (State Type) \_\_\_\_\_  
 Years of experience on this and similar jobs. \_\_\_\_\_

11. Weekly fees per student: \_\_\_\_\_  
 before-school \_\_\_\_\_ after-school \_\_\_\_\_  
 before and after school \_\_\_\_\_

12. Average Income of Parents per year (Per Annum) \_\_\_\_\_

13. a. No. of students from single parent homes \_\_\_\_\_  
 b. No. from homes with both father and mother present \_\_\_\_\_

-3-

14. Cost of Operation:
- a) Program Cost/Yr. (books, supplies, etc.) \_\_\_\_\_
  - b) Teachers' Salaries (Avg./Yr) \_\_\_\_\_
  - c) Staff Salaries (Avg./Yr) \_\_\_\_\_
  - d) Food Costs/Yr. \_\_\_\_\_
  - e) Occupancy Cost (rent, utilities, etc.) \_\_\_\_\_  
(if no rent, please specify)
  - f) Others (specify) \_\_\_\_\_
15. Subsidies:
- To Supplier: Govt. \$/Yr. \_\_\_\_\_ Private Source(s) \$/Yr. \_\_\_\_\_  
 To Consumer: Govt. \$/Yr. \_\_\_\_\_ Private Source(s) \$/Yr. \_\_\_\_\_
- If tax subsidy state \$ amounts for 1990 and 1991.
- 1990 \_\_\_\_\_ 1991 \_\_\_\_\_
16. Annual profits (approximately)
- 1988 \_\_\_\_\_ 1989 \_\_\_\_\_ 1990 \_\_\_\_\_ 1991 \_\_\_\_\_  
 1992 (estimates) \_\_\_\_\_
17. In-Kind contributions: Equivalent amount in \$/Yr. \_\_\_\_\_
18. What percentage of parents are involved on a volunteer basis?
- \_\_\_\_\_
19. Other volunteers? \_\_\_\_\_
20. Student/Teacher Ratio \_\_\_\_\_
21. Student/Staff Ratio \_\_\_\_\_
22. Do you maintain a separate fee schedule for businesses and another for households (families)? If so, please separate fees for businesses, other non-profit organizations and individual families.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

-4-

23. List all the benefits your program offers the children and the community. (Please use the back page if necessary, but be precise).
24. Please check which of the following structures best describes your organization.
- a. Board of Trust Dominance (i.e., all decisions made by Board will be handed down to Administrative staff)
  - b. Executive Control (i.e., day-to-day affairs of agency in the hands of an executive staff with Board approval of major decisions, including budget).
  - c. Any other type of administrative structure (please specify) \_\_\_\_\_  
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