INFORMATION TO USERS

While the most advanced technology has been used to photograph and reproduce this manuscript, the quality of the reproduction is heavily dependent upon the quality of the material submitted. For example:

- Manuscript pages may have indistinct print. In such cases, the best available copy has been filmed.
- Manuscripts may not always be complete. In such cases, a note will indicate that it is not possible to obtain missing pages.
- Copyrighted material may have been removed from the manuscript. In such cases, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, and charts) are photographed by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is also filmed as one exposure and is available, for an additional charge, as a standard 35mm slide or as a 17"x 23" black and white photographic print.

Most photographs reproduce acceptably on positive microfilm or microfiche but lack the clarity on xerographic copies made from the microfilm. For an additional charge, 35mm slides of 6"x 9" black and white photographic prints are available for any photographs or illustrations that cannot be reproduced satisfactorily by xerography.

Toolson, Richard Burns

THE TAX INCENTIVE EFFECT OF THE CHARITABLE CONTRIBUTION DEDUCTION

Arizona State University PH.D. 1986

THE TAX INCENTIVE EFFECT OF THE CHARITABLE CONTRIBUTION DEDUCTION

by

Richard B. Toolson

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

ARIZONA STATE UNIVERSITY

December 1986

THE TAX INCENTIVE EFFECT OF THE CHARITABLE CONTRIBUTION DEDUCTION

by

Richard B. Toolson

has been approved

November 1986

APPROVED:

_____, Chairperson

_____

_____

_____

_____

Supervisory Committee

ACCEPTED:

_____
Dean, College of Business

_____
Dean, Graduate College

ABSTRACT

This study used a behavioral experiment to examine the tax incentive effect of the charitable contribution deduction. Previous studies, which have examined this issue by conducting correlational studies, have not permitted strong tests of causal hypotheses. This study tested (1) whether the level of charitable giving is the same regardless of whether the charitable contribution is deductible or nondeductible; (2) whether the level of charitable giving is the same across tax brackets; (3) whether the elasticity of giving has an absolute value greater than or equal to one; and (4) whether the charitable deduction has a different effect on religious than on secular contributions.

The experimental task consisted of asking 167 subjects to make budgeting decisions, including a budgeting decision with respect to charitable contributions, based on an assumed income level of $32,000. Subjects also completed a post test questionnaire. Included in the questionnaire was a request for the subjects to allocate their budgetary allotment to charitable contributions between secular and religious contributions. Two factors, marginal tax rate and deductibility, were each manipulated at two levels, by

randomly distributing four versions of the research instrument.

A fixed effects analysis of variance (ANCOVA) was applied to test whether the level of charitable giving is higher when charitable giving is tax deductible and whether taxpayer's level of giving is higher under higher marginal tax brackets. The results of the ANCOVA model indicated that deductibility and marginal tax rate do influence the level of giving.

A regression model was used to estimate the elasticity of giving. The absolute value for the elasticity of giving was estimated to be greater than one, suggesting that the charitable contribution deduction is relatively efficient.

A ratio was calculated for each subject's allocation of contributions between religious and secular contributions. A t-test and the Kruskal-Wallis test were utilized to determine if there was a difference between the ratios of the deductible and nondeductible groups. These tests indicated that there wasn't a difference between the groups. The conclusion was that the charitable contribution deduction did not have a different effect on religious contributions than on secular contributions.

ACKNOWLEDGMENTS

To the members of my dissertation committee, Dr. Robert W. Wyndelts (chair), Dr. Philip M.J. Reckers, Dr. Steven E. Kaplan, Dr. Charles W. Christian, Dr. Keith A. Shriver, I wish to express my sincere gratitude for their assistance and direction throughout the course of this dissertation. Although the results, of course, are my responsibility, they are more proudly presented due to the efforts of my committee.

Thanks are also expressed to Dr. J. Hal Reneau and Dr. Douglas A. Johnson, who served as the doctoral program coordinators during my tenure at Arizona State University. They both provided magnanimously of their time in helping me throughout the doctoral program.

Finally, I wish to gratefully acknowledge the financial assistance provided to me by the Deloitte Haskins and Sells Foundation during my last two years of residency.

DEDICATION

This dissertation is dedicated to my mother, Helen Toolson (1921-1986) and my wife, Jacquelin Toolson. Both have made countless sacrifices on my behalf.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

The Revenue Act of 1917 initially allowed charitable contributions to be deducted in computing taxable income [Seidman, 1938]. Legislative discussion prior to the enactment of the this act clarified that the purpose of the deduction was to influence taxpayers to make contributions to charity [Congressional Record, 1917, p. 6728]. The United States Supreme Court has reiterated that the intention of Congress in allowing the charitable contribution deduction was to encourage charitable giving [Helvering vs. Bliss, 293 US 144 (1934)]. The federal government arguably benefits from encouraging charitable giving. Charitable institutions may be viewed as providing goods and services to the public which might otherwise have to be provided through government expenditures [Lawrence and Saghafi, p. 569, 1984].

Whenever any tax law is enacted, an implicit assumption exists that the law will achieve its intended behavioral effect. Most tax laws nevertheless are enacted without adequate research to determine whether the intended behavioral effect will be achieved [Crumbley, 1973, p. 759]. In the case of the charitable contribution deduction, the tax law implicitly assumes that the amount

given to charity will increase as a result of the favorable tax treatment.

Statement of the Problem

Prudent tax policy should require periodic reappraisal of whether existing law is achieving its intended purpose. In the case of the charitable contribution deduction, empirical evidence may be generated to help assess the assumption that the amount given to charity will increase as a result of favorable tax treatment. If increased giving is not affected by the deduction, there may be cause for repeal of this provision of the tax law.

The primary purpose of this study is to determine if the charitable contribution deduction is currently achieving its intended purpose, i.e., to act as an incentive to encourage charitable giving. An experiment is performed in which the tax variable is explicitly manipulated in order to assess whether the charitable contribution tax deduction influences the level of charitable contributions.

In order to better understand the causal relation between the charitable contribution deduction and the level of charitable contributions, the following section presents the theoretical framework for the charitable contribution deduction. This section explains: (1) why taxes influence the effective price of charitable contributions; (2) how

the consumer maximizes his utility with respect to his choice between charitable contributions and other goods and services; and (3) how the degree of responsiveness of charitable contributions to price changes determines the elasticity of demand for charitable contributions.

Theoretical Framework for the Charitable Contribution Deduction

Price of Charitable Contributions

An individual who receives a tax deduction for charitable contributions reduces his tax liability by the amount of his marginal tax rate times the amount of his donation. The complement of the marginal tax rate times the amount of the donation [(1-marginal tax rate) X donation] would thus determine his net cost of giving or "price" of giving relative to nondeductible consumer purchases. For example, a 30% marginal tax bracket taxpayer, who donates a dollar to charity, would have a price of giving of $.70 [(1-30%) X $1]. An incentive theoretically exists, therefore, because the tax deductibility of charitable giving lowers its effective price.

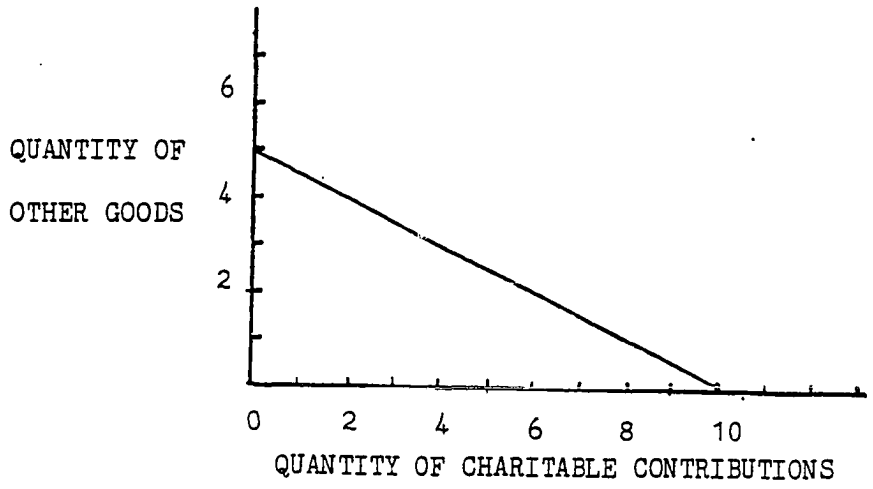
Budget Line and Utility Curves for Charitable Contributions

Charitable contributions may be viewed as a consumer good which competes for the consumer dollar along with

other expenditure categories such as food, housing, clothing, and medical care. The consumer's choice between charitable contributions and other purchases may be graphically displayed by a budget line in Figure 1.

FIGURE 1

The Budget Line



The consumer, constrained by a budget, can buy up to 10 units of charitable contributions or up to 5 units of other goods or any combination of the two such as 8 units of charitable contributions and 1 unit of other goods or 4 units of charitable contributions and 3 units of other goods. A consumer can also buy any combination of charitable contributions and other goods below the budget line, in which case he is not spending all of his budget.

Although the figure only shows physical quantities of charitable contributions and other goods, prices and the budget can be represented indirectly by the physical quantities as follows:

$$\text{Quantity of Other Goods} = \text{Budget/Price of Other Goods}$$

$$\text{Quantity of Charitable Contributions} = \text{Budget/Price of Charitable Contributions}$$

The slope of the budget line is therefore equal to:

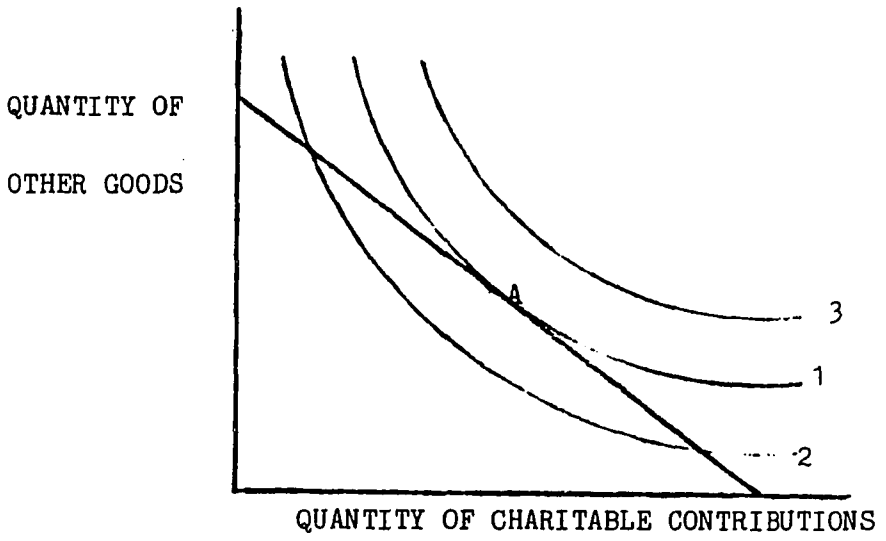
$$\text{Slope} = \frac{\text{Quantity of Other Goods}}{\text{Quantity of Charitable Contributions}} =$$

$$\frac{\text{Budget}}{\text{Price of Other Goods}} \cdot \frac{}{} \cdot \frac{\text{Budget}}{\text{Price of Charitable Contributions}}$$

The combination of the charitable contributions and other goods that the consumer chooses to purchase may be illustrated by indifference curves. (See Figure 2.)

FIGURE 2

Indifference Curves



The curves (2,1,3) are bent so that they are relatively steep at the top and relatively flat at the bottom. This signifies that the consumer is willing to give up less and less of other goods for a given amount of charitable contributions (or less and less charitable contributions for a given amount of other goods). The diminishing demand for a good relative to other goods as more of that good are obtained is an example of the law of diminishing marginal utility. This law recognizes that the psychological ability to appreciate a good diminishes as new units are successively received.

Any location along an indifference curve yields an equal amount of utility. Any curve that lies to the right

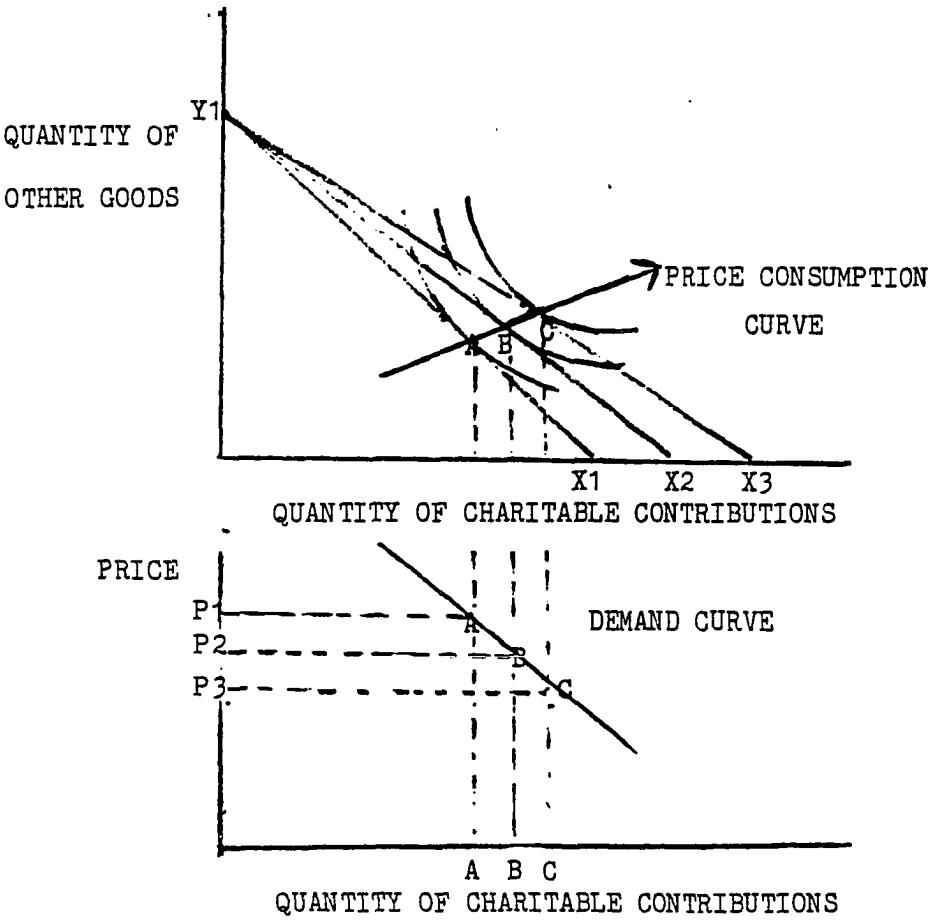
of another yields more utility. Hence, curve 1 yields more utility than curve 2; curve 3 yields more utility than curves 1 and 2. The consumer is said to be in equilibrium at point A since he is on the highest obtainable indifference curve given the constraints of his limited budget and the prices he has to pay.

Elasticity of Demand for Charitable Contributions

A combination of indifference curves and budget lines may be used to graphically illustrate an "elastic" versus an "inelastic" demand for charitable giving. Elasticity of demand, in general, measures the percentage change in quantity demanded of a commodity as a result of a percentage change in the price of that commodity. The elasticity of demand for charitable giving measures the percentage change in the level of giving as a result of the percentage change in the price of charitable giving. Figure 3 illustrates how, as a result of changes in the price of charitable giving, an elastic demand for charitable giving is derived. Figure 4 illustrates the derivation of an inelastic demand for charitable contributions as a result of price changes. (Changes in price might be due, for example, to an increase in marginal tax rates or taxpayers obtaining the ability to deduct their contributions.)

FIGURE 3

Demand Curve-Elastic



In the upper part of Figure 3, the budget line shifts to the right by a distance proportionate to the fall in price. The amount OX1 is the quantity of charitable contributions that could be bought at the initial price if the entire budget were spent on charitable contributions. With a fall in price of charitable contributions, the

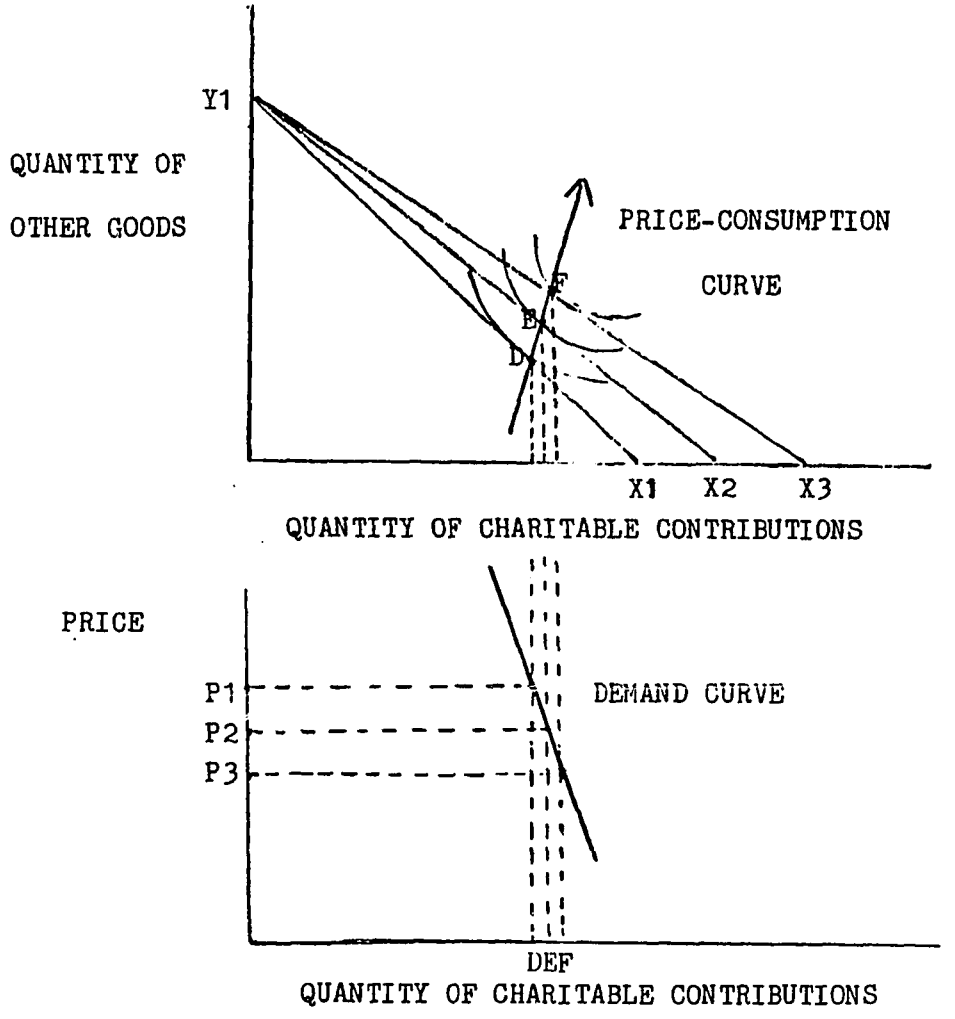
consumer could buy more with his budget, i.e., the amount OX2. This fall in price establishes a new budget line-Y1X2. The consumer arrives at a new equilibrium point B by selecting a point on the new budget line that is tangent to an indifference curve. Another drop in price establishes a new budget line, Y1X3, and the consumer reaches a new equilibrium at point C.

The price-consumption curve shows the quantities of charitable contributions the consumer buys at each price. From this curve, a consumer's demand curve can be constructed (lower part of Figure 3). The three prices and three quantities, A,B,and C, give three points on the demand curve.

Figure 4 presents the effects of price changes when the demand for charitable contributions is relatively inelastic. The indifference curves do not shift as much to the right as they did in Figure 3 because there is less increase in demand for charitable contributions as a result of the same price decreases.

FIGURE 4

Demand Curve-Inelastic



From the price-consumption curve,a consumer's demand curve can be constructed (lower part of Figure 4). The three prices and three quantities, D,E, and F, give three points on the demand curve. The demand curve is steeper than in Figure 3, signifying that charitable contributions are less responsive to price changes.

In Figure 3, the consumer's demand curve for charitable giving is more elastic than the demand curve in Figure 4. Accordingly, the decreases in the price of charitable giving have evoked a greater increase in charitable giving in Figure 3 than in Figure 4. The elasticity of demand formula for charitable giving might be stated as follows:

$$\text{Elasticity Coefficient} = \frac{\text{Percentage Change in Charitable Contributions}}{\text{Percentage Change in the Price of Charitable Giving}}$$

The price of charitable giving is a function of the taxpayer's marginal tax rate. The higher the taxpayer's marginal tax rate, the lower the price of the charitable contributions. This may be illustrated as follows: A dollar of a nondeductible consumer good costs $1. If one, in a marginal tax bracket of 20%, were to donate $1 to a charitable institution, it would cost $.80 on an after-tax basis relative to a dollar of a consumer good since the taxpayer would save $.20 in taxes for having donated $1 to a charitable institution. Thus, in this case, the effective after-tax price of a $1 donation to a charitable institution would be $.80. The percentage that price changes due to the deductibility of charitable contributions would be -20% (.80-1.00/1.00).

If a taxpayer in a 20% marginal tax bracket gives 30%

more in charitable donations as a result of being able to offset the charitable contribution against his taxable income, his elasticity coefficient of giving is calculated to be 1.5. (absolute value).

$$\frac{\text{Percentage Change in Charitable Contributions}}{\text{Percentage Change in Price of Charitable Giving}} =$$

$$= \frac{30\%}{(.80-1.00/1.00)} = -1.5$$

An elasticity of giving with an absolute value in excess of one implies relative efficiency because this would mean that a $1 loss of revenue to the Treasury has evoked $1.50 in additional charitable contributions. An elasticity of giving with an absolute value of less than one would imply relative inefficiency because this would be interpreted to mean that $1 of tax revenue foregone by the Treasury evokes less than $1 of additional charitable contributions.

In addition to a discussion of the charitable contribution deduction from a theoretical perspective, a brief discussion of the deduction from a legal frame of reference would also facilitate a better understanding of the deduction. The following section briefly discusses the charitable contribution deduction from a legal perspective. A more complete discussion is provided in Appendix B.

Legal Framework for the Charitable Contribution Deduction

The Internal Revenue Code of 1954 (IRC) [1985] details the specific tax treatment afforded charitable contributions. Section 170 of the IRC [1985] explains the rules governing individual charitable giving, which is the focus of this study. To be deductible, contributions must be made to a qualified donee [Sec. 170(c) of the IRC (1985)]. Property donated to a charity normally entitles the donor to deduct its fair market value [Sec. 170(a)]. Taxpayers who do not itemize have been able to at least partially deduct their charitable contributions [Sec. 170(i)]. (For a complete discussion of tax laws governing charitable contributions for individuals, see Appendix B.)

Tax Reform Act of 1986

Under the recently enacted Tax Reform Act of 1986, the price of giving would increase for two reasons. First, fewer taxpayers would find it advantageous to itemize and the charitable contribution deduction would be limited to taxpayers who itemize.[1] It has been estimated that as a result of this act there will be one-third fewer taxpayers who itemize (S. Rep. No. 99-313, 99th Congress, 2nd Session [1986], p. 4). Second, there would be an across-the-board reduction in marginal tax rates. The current 14 tax brackets (15 for singles) would be compressed into just

two: 15% and 28% (Joint Conference Committee Report 99-841, 99th Congress, 2nd Session [1986], p. II-4). These rates would apply at higher levels of taxable income than the current rates.[2]

This chapter has explained why, from a policy standpoint, it is important to determine whether the charitable contribution deduction does influence the level of charitable giving. The charitable contribution deduction has also been explained from both a theoretical and legal perspective. The remaining section of this chapter presents a brief overview of the rest of this study.

Overview of the Study

In this study an experiment was used to test whether the charitable contribution deduction significantly influences the level of charitable giving. Previous studies, which have examined this issue by conducting correlational studies, have not permitted strong tests of causal hypotheses.

For this experiment, the task consisted of asking subjects to make budgeting decisions, including a budgeting decision with respect to charitable contributions, based on an assumed income level. Two factors, marginal tax rate and deductibility, were each manipulated at two levels, by randomly distributing four versions of the research

instrument.

A fixed effects analysis of covariance (ANCOVA) was applied to test whether the level of charitable giving is higher when charitable giving is tax deductible and to test whether taxpayer's level of charitable giving is higher under higher marginal tax brackets. The results of the ANCOVA model indicated that deductibility and marginal tax rate do influence the level of giving.

A regression model was used to estimate the elasticity of giving. The absolute value for the elasticity of giving was estimated to be greater than one, suggesting that the charitable contribution deduction is relatively efficient.

This study is divided as follows: Chapter II reviews previous charitable contribution deduction studies. This chapter will also examine behavioral studies that have examined other tax incentive variables using the experimental method.

Chapter III examines the research design and data collection methods employed in this study. In Chapter IV, the data is analyzed and the results presented. The final chapter, Chapter V, summarizes the results of the study and comments on their policy implications. Limitations of the study are noted and suggestions are offered for future research.

CHAPTER II

BACKGROUND OF THE STUDY

Prior Research-Economists[3]

The preponderance of the empirical work examining the tax incentive effect on charitable contributions has been done by economists. A common link of their empirical research is an econometric model which specifies that the demand for charitable contributions is inversely related to the price of the contribution and positively related to the taxpayer's income (for an example of the model, see Feldstein [1975]). The model can be written as follows:

$$\text{Log } C = b_0 + b_1 \text{Log } Y + b_2 \text{Log } P$$

C=Demand for charitable contributions

Y=Income[4]

P=Price (1-marginal tax bracket)

The regression coefficients b_1 and b_2 are the income elasticity and price elasticity, respectively, of giving. The coefficient b_1 attempts to measure the income effect on charitable contributions. The coefficient b_2 attempts to measure the tax incentive effect on charitable contributions.

Historical data collected from tax returns indicate that, in the aggregate, as taxable income increases, charitable donations increase [Internal Revenue Service,

1983]. A basic problem of using data from tax returns to determine the tax incentive effect is determining how much of the increase in charitable donations is due to a price (incentive) effect and how much is due to an increase in income. In order to make this determination, the incentive effect must be statistically separated from the income effect.

Taussig [1967] was the first economist to attempt to measure the incentive effect of the charitable contribution. He obtained the requisite data from an Internal Revenue Service publication, Statistics of Income, 1962, Individual Income Tax Returns. This semiannual source of data is an aggregated cross section of individual tax returns from the year 1962. This source contains selected items found on the Form 1040, including charitable contributions for taxpayers who itemize their deductions. The amount of the charitable contribution was compared for five income classes (determined from 1040 adjusted gross income).

Taussig, using this data and the economic model previously described, attempted a statistical separation of the price and income effects. At income levels below $100,000, the coefficient b_2 was not found to be significantly different from zero. That is, the price effect was not found to significantly influence the demand

for charitable giving.

Taussig questioned the reliability of the estimates because of serious measurement problems. He identified the most serious problem as the lack of independent variation in the marginal tax rate variable. He explained that there was obviously a strong correlation between income level and the marginal tax rate since the marginal tax rate was determined by taxable income. The only source of independent variation in the marginal tax rate of the taxpayer was due to the utilization of different tax schedules (single, head of household, joint) [p.8]. When the independent variables are highly correlated, the true regression coefficients tend to lose their meaning [Neter and Wasserman, 1974, p.344].

Taussig, in summarizing his discussion of the regression analysis, concludes that the findings of no incentive effect among income classes of less than $100,000 are suggestive but of weak reliability. In light of the lack of reliability of his results, no specific price elasticity is estimated:

> To calculate any numerical estimate of the total incentive effect would be misleading in view of the low degree of confidence that can be placed on the regression results [p.9].

Subsequent to Taussig, Schwartz [1970] employed the same econometric model but used time series numbers instead of cross sectional numbers. He used the same data source

employed by Taussig, the U.S. Office of Internal Revenue's Statistics of Income, Personal Returns. He examined the data from 1929 through 1966, with the exception of 1951 and all odd-numbered years after 1954, for three income levels. Schwartz's results suggest some incentive effect but a relatively inefficient one since at all income levels price elasticity was less than one.[5]

Schwartz observes that both analyses (his and Taussig's) are faced with the problem of separating price and income effects. He concludes, however, that this problem is less severe in his study because tax rates have changed over time in a manner not perfectly correlated with income, permitting more independent variation between the income and price variables.

Subsequent to Schwartz, Feldstein and several collaborators used the same economic model in a series of attempts to determine the incentive effect. Feldstein [1975a], again using summaries of tax returns published by the Internal Revenue Service, used a time series approach similar to that used by Schwartz for 17 income classes for the even years from 1948 to 1968. As with the prior two studies, only those taxpayers with itemized returns were included in the sample.

Feldstein use two definitions of income in predicting charitable contributions. As one alternative, income was defined as taxable income plus charitable contributions

minus the tax that would have been paid if no contributions were made. For this definition, an overall price elasticity of -2.044 was obtained. Under the other alternative, income was simply defined as adjusted gross income minus taxes. This definition resulted in an overall price elasticity of -1.238. Thus, in contrast to the results obtained by Taussig and Schwartz, Feldstein's results suggest a strong incentive effect.

Feldstein cautions, however, that "the current parameter estimates are clearly preliminary and may be subject to serious error."[p. 94] In addition to the collinearity problem, he discusses another limitation of using an econometric model to determine the incentive effect:

> Demographic characteristics, educational background, religious affiliation and other factors that influence charitable giving may be correlated with the income and price variables in a way that biases the estimates of the structural parameters. [p.99]

Feldstein [1975b] attempted to use disaggregated contribution data to assess which categories of charitable contributions are the most sensitive to the tax incentive. In order to make an estimate, disaggregated contribution data was obtained from data released by the Internal Revenue Service in 1962. This disaggregated data was grouped into five categories: religious, educational, hospitals, health and social welfare organizations, and a

residual group.[6] In order to reduce the problem of a functional relationship between income and price, adjusted gross income was used as the income variable instead of taxable income. Religious organizations showed the lowest price elasticity, suggesting that this category is the least sensitive to any tax incentive influence.[7]

Feldstein and Clotfelter [1976] expanded on the quantity of independent variables. They did this by developing an economic model from a national survey of the income, assets, and savings of 2,164 households conducted by the Board of Governors of the Federal Reserve System [Projector & Weiss, 1966]. In addition to including an income and price-of-giving variable, the model included variables to measure net worth and age. The survey did not specifically ask for the individual's marginal tax rate, taxable income, or whether the taxpayer itemized his deductions. This information was estimated from other information contained in the survey. A price elasticity of -1.55 was obtained.

Feldstein and Taylor [1976] used special Treasury tax files for 1962 and 1970, which provided large samples of individual tax returns. Tax rates were reduced in 1974, creating some independent variation between the price of charitable giving and income (income was defined as adjusted gross income minus the tax that would have been paid if no charitable contribution were made) for the years

1962 and 1970. A time series analysis was run, comparing these two years, and a price elasticity of -1.540 was obtained.

Feldstein and Boskin [1977] used another source of survey data to test the sensitivity of charitable contributions to the tax incentive among middle and low income households (those with incomes under $30,000) who itemize. The data for the study were collected by the 1974 National Study of Philanthropy, a special household survey conducted by the Survey Research Center of the University of Michigan [Morgan et al., 1975]. The relevant marginal rate was estimated for each taxpayer on the basis of his reported total income, the number of his dependents, marital status, and an estimate of the amount of noncharitable deductions based on the I.R.S. averages for homeowners and others by income class. A price elasticity of -2.54 was obtained.

Dye [1976], also using survey data collected by the 1974 National Study of Philanthropy, attempted to distinguish between a "price" effect and an "itemization" effect. He defined the price effect as an examination of price sensitivity among taxpayers who itemize. The itemization effect exists, Dye conjectured, not because of sensitivity to incremental differences in marginal tax brackets but because taxpayers are simply aware that

charitable contributions are deductible for those who itemize and not deductible for those who do not itemize.

In order to test an itemization versus a pure price effect, it was necessary to use survey data since tax return data does not provide charitable contribution information on taxpayers who do not itemize.

First, Dye tested for a pure price effect by including, as a sub-sample, only those taxpayers who itemize. The price elasticity estimate was found to be insignificantly different from zero (.09). Next, he combined this subsample with a sample of taxpayers who did not itemize. When nonitemizers were included, a price elasticity of -1.95 was obtained. The implications of Dye's results seem to be that taxpayers might not be sensitive to small incremental differences in price but do respond to a coarser deductibility versus nondeductibility dichotimization.

Finally, Dye attempted to estimate the elasticity of religious versus secular contributions. However, he concludes that various measurement problems make it impossible even to make a qualitative statement about the price elasticities of religious versus secular contributions.

Reece [1979] employed a maximum likelihood Tobit technique, instead of the least squares technique, to estimate the sensitivity of various categories of

charitable contributions to the tax incentive[8]. The data source consisted of a subset of the 1972-73 Bureau of Labor Statistics Consumer Expenditure Survey. This data consists of surveys of the incomes, expenditures, and personal characteristics for a large sample of households.[9] Taxpayer marginal tax rates were estimated by examining households' personal expenditures. Income was estimated by averaging current and previous years' family income before taxes plus net return from home ownership. Ag of the household head was also included in the economic model.

Reece's results, in contrast to the earlier results obtained by Feldstein [1975b], indicate that religious organizations are relatively tax sensitive whereas other categories of charitable contributions (educational institutions, hospitals, and health and welfare organizations) are not tax sensitive.[10]

Clotfelter [1980], using Treasury tax files, again examined the giving behavior of low and middle-income taxpayers who itemize. Cross-sectional data for 1972 were used to estimate price elasticity. Included in the model, in addition to price and income, was age, marital status, and number of dependents. The same variables were subsequently used to develop time series models for 1968-70, 1970-72, and 1972-73. Clotfelter obtained a strong incentive effect (elasticity of -1.401) using a cross

sectional approach and no incentive effect using a time series approach.[11]

Clotfelter discusses another inherent limitation of the econometric model approach in analyzing the incentive effect:

> The literature in social psychology on altruism and charitable giving suggests that there are a host of personal and community characteristics that affect charitable behavior. . . . Unfortunately, the data employed in econometric studies of charitable giving typically are not rich enough to capture these important determinants of individual giving. . . . . As is well known, if the omitted variables-this "individual effect"-are correlated with included variables, the coefficients of such included variables are likely to be biased [p.322].

Critique of Econometric Literature

The use of passive-observational data in the econometric studies have presented problems to the researchers in their efforts to establish a correlation between the level of giving and the price of giving. Cooke and Campbell [1979] explain that correlational studies are concerned with discovering whether certain variables covary with others, regardless of whether any of the variables is manipulated (p. 295). Two problems in establishing a correlation have already been discussed. There is a potential collinearity problem between the income and price variable,[12] and omitted variables in the model might be correlated with the included variables, biasing any numerical estimate of the incentive effect.

Other problems are also mentioned throughout the studies. An ideal measure of economic income cannot be obtained from tax return data because of such complications as nontaxable income, accrued capital gains, and paper losses. Tax return data is restricted to taxpayers who itemize, which eliminates consideration of the behavior of those who do not itemize.

Estimating the price of giving has presented some unique problems. It is not possible to accurately reflect the price of appreciated assets given as contributions. This is because the price of appreciated property given as a contribution usually depends not only on an individual's marginal tax rate but also on the fraction of the asset's value that is accrued capital gain (see Appendix B of this study for a discussion of the tax treatment of appreciated assets donated to charity).

Price itself may be a function of the amount of charitable giving since deductions, including charitable contributions, are subtracted from the taxpayer's income in determining the taxpayer's marginal tax rate. The taxpayer's marginal tax rate is used to compute the price of giving. If subtracting charitable contributions from income results in a lower price of giving than would have been the case had charitable contributions not been subtracted from income, it becomes problematic how to treat charitable contributions in computing price. This problem

is particularly worrisome among taxpayers who would not have found it advantageous to itemize if they had made no contributions because of the significant disparity in price of contributions as a result of itemizing versus not itemizing.

The researchers have taken certain measures in order to reduce the severity of some of the problems. In order to avoid having an exact functional relationship between price and income, time-series data have been utilized (see Schwartz [1970], Feldstein [1975a]). Because of changes in tax rates over time, time-series data allow the observation of some variation in price independent of income. The use of survey data (Feldstein and Clotfelter [1976], Feldstein and Boskin [1977], Dye [1976]) allows inclusion in the model of taxpayers who do not itemize. Survey data also allows the model to include other explanatory variables that might help to reduce the possibility of the omitted variable bias. (An additional inherent problem with using survey data is that the marginal tax rate needs to be estimated from other information provided from the survey.)

In spite of the problems confronting these researchers, these studies generally suggest that there is a significant correlation between charitable giving and price of giving.

The research effort to examine the tax incentive

effect of the charitable contribution deduction has primarily involved the use of passive-observational data in econometric models as discussed in the previous section. In addition to this area of research, however, survey research on charitable contributions has included questions on the tax incentive effect of the charitable contribution deduction. The following section discusses these surveys.

Survey Research

An extensive survey of philanthropy was undertaken by the Survey Research Center of the Institute for Social Research at the University of Michigan (Morgan et all, 1979). The survey, in addition to demographic questions, asked questions to assess subjects' attitudes and practice toward charitable giving. Included in the survey were questions to assess the influence tax policy has on giving.

The survey asked whether deductibility encourages people to give more (p. 178). Only at incomes above $50,000 (1973 dollars) did a majority say they would give less if charitable contributions were not deductible. At incomes over $200,000, a majority said they would give a lot less. At a middle class income level, $10,000-$20,000 (1973 dollars), only 13% said they would give less.

Families who have given $100 or more in 1973 were asked why they altered their giving habits in the past and what might cause them to change their giving habits in the

future (p. 179). Of the thousands of interviews that were conducted, in only 12 instances were taxes spontaneously mentioned as a reason for changing donative behavior. Tax considerations did not seem to be salient in the minds of the vast majority of respondents in changing the level of mix of their contributions.

A charitable organization named Save the Children Federation commissioned a market research firm, the Daniel Yankelovich Company (1971), to ascertain why people give. The purpose of the study was to enable the charitable organization to develop an appropriate strategy for soliciting donations. The market research company reported that the reasons why people at least say they give can be lumped into three basic categories: 1) The majority, about 60%, said they give out of a sense of moral obligation. 2) About 35% said they give because of the personal satisfaction derived from helping others. 3) About 2% said they give in order to assuage the guilt they would otherwise have if they didn't give. Taxes were not mentioned as a basic reason for charitable giving.

An attitudinal survey by Robert H. Lewis, executive director emeritus of the Fresh Air Fund of New York, identified 110 different reasons for giving. The Lewis survey classified the reasons given into a subjective or "internal factors' category and an objective or "external factors" category. The reasons given, ranked by descending

order of recorded frequency of mention, in the subjective category were: sense of responsibility, compassion, personal identification, self-interest, religious influence, guilt feelings, the need to be needed, and the substitution of giving for active participation in good works.

Grouped in the objective category in descending order of mention were the mission and performance of the charitable organization, one's personal relationship to it, the organization's approach to prospective donors (i.e., its use of pressure), and finally, the tax benefits to be derived from the donation.

Critique of the Survey Data

The survey data seem to suggest that tax considerations are not salient in the minds of most respondents in explaining why people give to charity. It is debatable, however, if data obtained from directly questioning subjects elicits candid responses. Subjects may be reluctant to admit that charitable giving may be significantly altered by monetary considerations. The credibility of this source of evidence needs, therefore, to be discounted considerably.

The research efforts of accountants devoted to this area of research have been virtually nonexistent. They have, however, using the experimental method, made limited

efforts to examine whether other tax incentives were achieving their behavioral objectives. The following section discusses the only study I was able to identify in which an accountant has examined the tax incentive effect of the charitable contribution deduction. This section also discusses two studies in which accountants, using the experimental method, have examined the tax incentive effect of other tax preferences

Prior Research-Accountants[13]

Although lacking in the application of the experimental method, a dissertation by an accountant [Strefeler, 1977] has dealt with individual charitable giving. This dissertation addressed the prospective impact the Tax Reform Act of 1969 would have on in-kind donations. The Tax Reform Act of 1969 reduced the allowable deduction for ordinary income property from fair market value of the property to its basis. To determine what effect this act might have on in-kind donations, a mail survey was sent to artists, art museums, government archives, and university libraries. Although there was no manipulation of variables or statistical analysis, the author concluded that the survey information suggested that in-kind donations may have been reduced due to the 1969 Act.

A limited number of accounting dissertations have employed an experimental approach to test for the existence

of a tax incentive. White [1981] compared the preferences of employees for taxable fringe benefits versus their preferences for nontaxable fringe benefits. He did this by asking one randomly selected group of subjects to allocate compensation between taxable cash and nontaxable fringe benefits. Another group allocated their compensation between taxable cash and the same fringe benefits, but this group was told to assume that the fringe benefits were taxable. The fringe benefits examined were health insurance, life insurance, educational, legal, and retirement benefits.

White's results seem to indicate that not all fringe benefits are influenced by tax considerations. Subjects did prefer more retirement, legal, and educational benefits under the assumption of nontaxability, but they did not prefer any more health insurance or life insurance under the assumption of nontaxability.

O'Neil [1980] designed an experiment to test if the targeted jobs credit acted as an incentive to increase the hiring of certain targeted groups of employees. To make this determination, employers were asked to evaluate the attributes of hypothetical job applicants and decide whether or not to hire the applicants. The employment model presented to employers consisted of seven general employment attributes such as work-related experience,

appearance, level of education, and number of jobs in the last three years. The hypothetical applicants were also presented as pertaining to one of five employment groups targeted for the tax credit such as economically disadvantaged Vietnam veterans, economically disadvantaged youth, or recipients of public assistance. The targeted jobs tax credit was introduced as an additional variable in the employment model.

The employer was asked to make employment decisions using a six point rating scale which ranged from definitely do not hire (-3) to definitely would hire (+3). In only 7% of the decisions did the targeted jobs tax credit result in an employment decision in which an employer hired an otherwise unacceptable applicant. The conclusion of the study is that the targeted jobs credit has very little impact on the employment decision process.

Critique of Accounting Literature

Attempts to experimentally test for whether a tax incentive variable is achieving its intended behavioral affect have been limited. Of the two studies that have been identified, one (O'Neil) examined whether a tax credit would increase the demand for targeted groups of employees and the other (White) examined whether the demand for income equivalents is increased as a result of their nontaxable treatment. The former study suggested that the

tax credit (targeted jobs credit) was ineffective in increasing hiring whereas the latter study suggested that the demand for certain income equivalents (retirement, educational, and legal benefits) did increase if they were treated as nontaxable.

Thus, it would probably be erroneous to make a blanket judgement that all tax incentive variables are either effective or ineffective in achieving their intended behavioral objectives. It is necessary to examine each tax incentive variable separately before any conclusion can be reached about a particular tax variable's effectiveness.

This chapter has discussed studies that have used passive-observational data in econometric models to examine the charitable contribution deduction's influence on charitable giving. Survey research that has included questions on the tax incentive effect has been reviewed. This chapter has also described two studies that have used the experimental method to examine the tax incentive effect of other tax preferences. The final section of this chapter discusses studies that have examined the correlation between specified demographic variables and charitable giving.

Prior Research-Demographic Variables

Of secondary concern in this study will be the identification of demographic variables that correlate with

the level of charitable giving. Research that has examined the impact of various demographic variables on giving will therefore be briefly examined.

A number of authors ([Morgan et al. [1979], Feldstein and Boskin [1977], Feldstein and Taylor [1976]) have found that older subjects have a greater propensity to give than younger subjects. Morgan et al. [1979] found this to be the case even after holding income constant across age groups.[14] There are several possible explanations for the correlation between age and charitable giving: One interpretation is that succeeding generations are simply less altruistic than older generations. Another is that the relative proximity of eternal judgment motivates the aged. Finally, fewer economic responsibilities and more assets of older people may explain their more generous philanthropic habits.

Prior research supports the conclusion that those who are more engaged in religious activity are more inclined to make charitable contributions. Religious activity was a characteristic more prevalent among blood donors than nondonors [Burnett, 1981]. Those who said they went more than once a week to church were currently giving 1.39 of the average for their income groups [Morgan et al., 1979]. Regardless of religious affiliation, those who attended church in the seven days preceding the survey were more likely than nonattenders to believe they were taking

concrete actions on behalf of others [Langford and Langford, 1974]. Two reasons come to mind to explain why charitable giving might be positively correlated with religious activity: Those who are religiously active would be more inclined to financially support their own religious organization. Religious organizations often teach altruism, and these teachings might translate into increased giving to secular organizations.

Some support is found to conclude that a married status is positively related to charitable giving. Feldstein and Taylor [1976] found that charitable giving was positively related to a married status. Clotfelter [1980], although he did not find a statistically significant relationship between charitable giving and married, did observe that married subjects gave more to charity than single subjects.

Previous research on altruism is too inconsistent to support any conclusion about whether gender differences matterin explaining altruistic behavior. See (Burnett [1981]; Blumenfeld and Sartain [1974]; Zarbatany, Hartmann, Gelfand, and Vinciguerra [1985];and Morgan et al. [1979]) for a review of the results.

CHAPTER III

RESEARCH METHOD

This study utilized the experimental method to test for a causal link between the tax incentive variable and the level of charitable giving. Cooke and Campbell [1979] state that "the unique purpose of experiments is to provide stronger tests of causal hypotheses than is permitted by other forms of research, most of which were developed for other purposes [p. 84]." In contrast to studies which utilize the experimental method, correlational studies "by their nature are incapable of determining causal relationships on the effects of treatments" [Hersen and Barlow, 1983, p.19].

Cooke and Campbell [1979], who have held the experimental method to represent the "epitome of the meaning of causation", explain that the experimental method is characterized by the presence of control in order to rule out threats to valid causal inference. Control in the context of an experiment is primarily characterized by the use of random assignment to insure that every experimental unit has an equal chance to receive any one of the treatments. This random assignment of treatments helps "separate the effects attributable to a treatment from the effects attributable to irrelevancies that are correlated with a treatment" [Cooke and Campbell, 1979, p. 8]. For a

further discussion of how the experimental method permits tests of causal hypotheses, see Cooke and Campbell [1979], Asher [1976], and Abdel-khalik and Ajinka [1979]).

Research Questions

The present research examined four questions with respect to the tax incentive effect:

1) Is the level of charitable giving the same whether the charitable contribution is deductible or nondeductible?

2) Is the level of charitable giving the same across tax brackets?

3) Does the elasticity of giving - the responsiveness of giving as a result of changes in the price of giving- have an absolute value greater than or equal to one?

4) Does the charitable deduction have a different effect on religious than on secular contributions?

Although not a focal point in this study, but nevertheless of interest, was the identification of demographic variables that influence levels of charitable giving.

The following section discusses the specific experimental task employed to address the research questions.

Experimental Task

The experimental task consisted of completion of a research instrument consisting of three parts; (1) general

instructions; (2) a budgeting exercise; and (3) a post test questionnaire. This section discusses each of these parts of the research instrument. In addition, a pilot study, whose primary purpose was to identify any ambiguities contained in the research instrument, is also discussed. (See Appendix A for an example of the research instrument.)

General Instructions

The general instructions explained that the subjects were to make certain budget decisions based on a salary level of $32,000.[15] The decisions were to be predicated on the subjects' current marital status and any children they might have. It was further explained that many of the budget decisions involved making categorical expenditure choices, in which case the option to be selected would be the one that came the closest to what would have been chosen under unconstrained conditions.

Budgeting Exercise

The budgeting exercise itself included normal categories of expenditures such as housing, taxes, transportation, food, and clothing. Subjects were also asked, as part of the budgeting process, how much, if any, they would designate for charitable contributions.

It was recognized that it might be difficult for a subject to create a budget without access to financial

records. Therefore, to make the derivation of a budget less cumbersome for the subjects, the budgeting decisions were simplified by providing categorical expenditure choices for most of the budget categories. The category of charitable contributions, however, required an open-ended response. For two categories, amounts were actually provided. One of these categories was a miscellaneous category that was an aggregation of several relatively minor categories. Another category, social security, would not vary among subjects since it is fixed by law. One important category was taxes. Subjects were asked to a compute a tax liability from the budgetary information.

It was desirable for the categorical choices to be reasonable in light of the assumed income level of $32,000. In order to assure the reasonableness of the amounts, sources were consulted which provided information on average amounts of family expenditures for a number of categories (see Monthly Labor Review, 1982, p. 44; Bureau of Business and Economic Research, 1985).

In order to effectively manipulate the tax variables, four versions or treatments of the research instrument were developed as follows: (1) Charitable contributions were assumed to be tax deductible, and the maximum marginal tax rate was assumed to be 22%. (2) Charitable contributions were assumed to not be tax deductible, and the maximum marginal tax rate was assumed to be 22%. (3) Charitable

contributions were assumed to be tax deductible, and the maximum marginal tax rate was assumed to be 36%. (4) Charitable contributions were assumed to not be tax deductible, and the maximum marginal tax rate was assumed to be 36%.

In order to manipulate the marginal tax rates at the 22% and 36% levels, two different tax rate schedules were utilized (Table 1).

TABLE 1

Tax Rate Schedules

Tax Rate Schedule For 22% Level

If Taxable Income Is:	The Tax Liability Will Be:
$0-$18,000	17% of Taxable Income
Over $18,000	$3,060 + (22% X Amount Over $18,000)

Tax Rate Schedule For 36% Level

If Taxable Income Is:	The Tax Liability Will Be:
$0-$9,000	0
$9,000-$18,000	28% X Amount Over $9,000
Over $18,000	$2,520 + (36% X Amount Over $18,000)

The two tax rate schedules were intended to be "revenue neutral". That is, the two schedules were

intended, on balance, to yield approximately the same tax liability. Revenue neutrality across tax rate schedules eliminates the possibility of differences in charitable giving being partially explained by different tax liabilities.

Post Test Questionnaire

The final part of the research instrument required completion of a questionnaire. The questionnaire requested that subjects allocate their budgetary allotment to charitable contributions between secular and religious contributions as well as respond to selected demographic questions. In order to address the question of whether religious or secular contributions were more sensitive to the contribution deduction, it was necessary for charitable contributions to be allocated between religious and secular contributions.

Demographic information elicited from subjects included their age, gender, marital status, income, religion, and frequency of church attendance. In addition, subjects were asked about their years of tax filing experience, whether they had ever itemized, and the percentage of income they donated to charity last year. Demographic information was obtained from the subjects for three reasons: (1) to obtain a profile of subjects' income and tax filing experience; (2) to identify which

demographic variables are correlated with charitable giving; and (3) to permit covariance analysis.

Pilot Study

A pilot study was conducted on an afternoon M.B.A. class (n=13) and an evening undergraduate cost accounting class (n=21) at Arizona State University. The pilot study was intended primarily to clarify the following issues: (1) Were the tax variables being effectively manipulated? (2) Would revenue neutrality be obtained across the two tax rate schedules? (3) Were there any parts of the research instrument that required additional clarification?

In order to determine whether the tax variables were being effectively manipulated, the subjects were asked in the post test questionnaire to indicate their assumed marginal tax rate and whether their version assumed charitable contributions to be deductible or not deductible. Ninety-four percent of the subjects (32 out of 34) were able to respond correctly to both questions. Based upon these results, it was concluded that the tax variables were being effectively manipulated.

Revenue neutrality across tax rate schedules was also examined. There was only a 5% ($215) difference in the mean tax liabilities between the 22% maximum marginal tax rate schedule group and the 36% maximum marginal tax rate schedule group. A Student's t test indicated that there was

not a significance difference between the means (t=.81, p=.42). It was concluded that the mean tax liabilities were sufficiently close to each other to eliminate the need to further adjust the schedules.

As a result of the pilot study, several minor modifications were made to the research instrument. For example, to the question asking the subjects' income level, an additional income category was added. The response to the query of what percent of income was donated to charity last year was changed from an open-ended one to one requiring a multiple choice response.

The previous section has discussed the research instrument that was utilized to address the research questions. The following section describes the subjects that were used in the experiment.

Subjects

Appropriate subjects for this study would be taxpayers with tax filing experience as well as an income level sufficient to have resulted in expenditure decisions similar to those contained in the budgeting exercise. Subjects who meet these criteria would be more likely to find it easier to role play as they complete the budgeting exercise. In as much as the exercise was somewhat quantitative in nature, it was also desirable for the subjects to have at least some quantitative aptitude.

Subjects chosen for the experiment were obtained from seven evening M.B.A. classes at Arizona State University. Typically, these students have full-time employment during the day and have had a number of years of tax filing experience. Because of restrictive admittance requirements to the M.B.A. program at A.S.U., these subjects would be expected to have significant quantitative ability.[16]

A total of 167 subjects participated in the experiment. The four versions of the research instrument were preordered and randomly distributed at the beginning of each class. Subjects were told that they were to complete a budgeting exercise which might provide them some insight into the relationship between budgeting decisions and taxes. They were assured that their responses would remain anonymous. A calculator was furnished to any subject who needed one.

Typically, subjects required 20 to 30 minutes to complete the research instrument. Few subjects completed the exercise in a period of less than 20 minutes. The length of time taken by the subjects to complete the exercise suggests the presence of experimental realism.

Table 3 presents demographic data on the subjects. Responses do not total to 167 because a few subjects failed to answer some or all of the demographic questions.

TABLE 2

Subject Demographic Data

Category	Frequency	Percentage
INCOME LEVEL (INCLUDING THAT OF SPOUSE, IF MARRIED)		
Less than $15,000	25	15%
$15,000 to $25,000	21	13%
$25,000 to $35,000	45	28%
$35,000 to $45,000	27	17%
More than $45,000	43	27%
	161	100%
YEARS FILED A TAX RETURN		
Less than 5 years	26	16%
5 to 9 years	59	37%
10 to 14 years	38	24%
More than 14 years	38	23%
	161	100%
EVER ITEMIZED?		
Yes	126	78%
No	36	22%
	162	100%
GENDER		
Male	118	72%
Female	46	28%
	164	100%
MARRIED		
Yes	83	51%
No	81	49%
	164	100%

TABLE 2 - (Continued)

Category	Frequency	Percentage
AGE		
Less than 25	33	20%
25 to 29	70	43%
30 to 35	34	21%
More than 35	25	16%
	162	100%
RELIGION		
Protestant	65	40%
Catholic	39	24%
Latter-Day Saints	4	2%
Jewish	9	6%
None	28	17%
Other	19	11%
	164	100%

In examining the table, it is apparent that the income level and tax filing experience of the subjects are sufficient to conclude that role-playing should not have been a problem for them.

The following section describes the variables that were employed to address the research questions.

Independent and Dependent Variables

To test for whether deductibility and/or the marginal tax rate influences the level of charitable giving, two factors were each manipulated at two levels. The two factors were marginal tax rate and deductibility, which

were each manipulated at two levels: 22% versus 36% and deductible versus not deductible, respectively. The dependent variable was the aggregate level of giving.

The 22% and 36% marginal tax rates are reflective of rates imposed on middle income taxpayers. For 1985, for married taxpayers filing jointly, taxable income over $21,020 but not over $25,600 was taxed at a 22% rate. Taxable income over $36,630 but not over $47,670 was taxed at a 33% tax rate. For 1985, for single taxpayers, taxable income over $12,900 but not over $15,000 was taxed at a 21% rate. Taxable income over $28,800 but not over $34,100 was taxed at a 36% rate (Internal Revenue Code [1985]).

Middle income taxpayers were chosen as the targeted subject group since they are responsible for the bulk of charitable donations [Bakal, 1979]. It has been estimated that two-thirds of all charitable donations are made by those with incomes of less than $50,000 [Kowalski, 1985].

The independent variable for the question of whether the elasticity of giving has an absolute value greater than or equal to one was the logarithm of the price of giving. The dependent variable was the logarithm of charitable contributions.

The complement of the assumed marginal tax rate determines the price of giving. The independent variable

of price, therefore, had three possible values: .78 (1.00-.22), .64 (1.00-.36), and 1.00 (1.00-0).

To compute elasticity, the assumption is made that elasticity is constant for all levels of price. This assumption is commonly made for elasticity models (see, for example, Feldstein [1975], Taussig [1967]). The constant elasticity assumption requires that the price and quantity variables be represented in a logarithmic form (Hirshleifer [1980]). A property of logarithms is that equal arithmetic steps of the logarithm represent equal percentage changes of the variable. The conversion of the price of giving and the level of giving to logarithmic form therefore allows the elasticity model to be interpreted to mean that a percentage change in quantity of charitable giving is a constant multiple of the percentage change in the price of giving.

The previous sections have described the experimental task, subjects, and independent and dependent variables that were used to address the research questions. The final section of this chapter formulates the research questions as hypotheses and describes the statistical procedures involved in testing the hypotheses.

Hypotheses and Hypotheses Testing

Hypotheses #1 and #2, stated in both the null and alternative forms, are as follows:

Hypothesis #1 (H1):

Ho: Taxpayers' level of charitable giving is not higher when charitable giving is tax deductible.

H1: Taxpayers' level of charitable giving is higher when charitable giving is tax deductible.

Hypothesis #2 (H2):

Ho: When charitable contributions are deductible, taxpayer's level of charitable giving is not higher under higher marginal tax brackets.

H1: When charitable contributions are deductible, taxpayers' level of charitable giving is higher under higher marginal tax brackets.

A fixed effects analysis of covariance was utilized to test these two hypotheses. With randomized designs, the experimental error may be quite large due to the heterogeneity of the subjects. An analysis of covariance is often an effective method of reducing the experimental error (Neter and Wasserman [1974]). Covariance analysis utilizes the relationship between the dependent variable and the concomitant variable (covariate) in order to reduce the experimental error (Neter and Wasserman, p. 686).

The charitable contribution observations mildly departed from the assumptions of normality and constancy of variance across treatments. (The distribution of the observations will be discussed in detail in the subsequent chapter.) To increase confidence in the results, an additional statistical procedure was applied to the results. Since there isn't a nonparametric test that

allows inclusion of covariates in the model, a ranks method was applied to the results.

Conover [1980], who recommends the ranks method as an addition to the parametric method to analyze an experiment when no nonparametric test exists, explains that the following steps are involved when using this procedure: (1) Rank the observations from all cells from smallest to largest, assigning the rank 1 to the smallest number, 2 to the next largest, and so on. Tied values are given averaged ranks; (2) Replace the raw data with the ranks and apply the analysis of covariance procedures directly on the ranks; (3) Compare the results of this method with the results obtained from applying the usual parametric analysis of covariance on the raw data; (4) If the parametric method and the analysis on ranks provide substantially identical results, the parametric analysis may be assumed to be valid. However, if the two procedures give substantially different results, the analysis on ranks is probably more accurate than the analysis on the data and should be preferred.

The two procedures are likely to give different results when there are observations that are unusually large compared with the bulk of the data or the distributions are very nonsymmetric. These aberrations in the data affect the analysis of the data by changing the level of significance and decreasing the power [Conover,

1980].

Conover [1980] explains that the ranks method is "robust," which means that the true level of significance is usually fairly close to the approximate level of significance regardless of the underlying population distribution. This procedure has also been found to be efficient(see Iman, 1974b and Conover and Iman, 1976). Efficiency means that given the same sample size, this test compared with other tests has the same power and level of significance. This rank transformation method has been used in experimental designs by Macdonald [1971], Scheirer, Ray, and Hare [1976], and Hamilton [1976].

The hypothesis for the question of whether the elasticity of giving is greater than or equal to one may be stated as follows:

Hypothesis #3 (H3):

Ho: The charitable contribution deduction will not result in an elasticity of giving with an absolute value greater than or equal to one.

H1: The charitable contribution deduction will result in an elasticity of giving with an absolute value greater than or equal to one.

The following regression model, expressed in logarithmic form, was used to estimate the elasticity of giving:

$$\text{Log } C = b_0 + b_1 \text{ Log } P$$

C=Demand for Charitable Giving

P=Price of Giving

Of the 167 charitable contribution observations, thirty-two consisted of a zero. It is not possible to express a zero as a logarithm (for a discussion of logarithms, see Kenner, Small, and Williams [1965]). In order to include the zero responses in the model, a transformation of the data was required. Ten dollars was added to all charitable contribution observations. This same transformation was adopted by Clotfelter [1980] and Boskin and Feldstein [1977]. These researchers justify adding ten dollars to all observations by observing that most people who report no giving actually did give a small amount that has since been forgotten or was regarded as too small to mention.

Religious contributions constitute more than half of total charitable giving. In 1984, of the 61.6 billion dollars given to charity, 35.6 billion was donated to religious organizations [U.S. News and World Report, p. 7]. It is possible that different motivations underlie the giving to religious organizations than the motivations that underlie the giving to secular organizations. For example, religious contributions may be motivated more out of a desire to support one's religious organization whereas

secular contributions may be more altruistically motivated.

The hypothesis to determine if the charitable contribution deduction has a different effect on religious contributions than on secular contributions is as follows:

Hypothesis #4 (H4):

Ho: The charitable deduction will not have a different effect on religious contributions than on secular contributions.

H1: The charitable deduction will have a different effect on religious contributions than on secular contributions.

In order to test this hypothesis, the following procedure was used: A ratio was calculated for each subject's allocation of contributions between religious and secular contributions by dividing religious contributions by total contributions. Charitable contribution observations of zero were eliminated from consideration because of the mathematical impossibility of dividing by zero in deriving the ratios. The elimination of these observations can also be justified on the basis that an allocation decision between religious and secular contributions are outside the range of experience of a nongiver.

The ratios for the deductible and nondeductible groups were separated from each other. Two statistical tests, the parametric Student's t test and the nonparametric Kruskal-Wallis test, were utilized to determine if there was a difference between the two groups.

CHAPTER IV

DATA ANALYSIS

This chapter presents the results of the data analysis. It is divided into four sections: (1) a comparison of the distribution of charitable contribution observations; (2) analysis of the aptness of the statistical model; (3) correlational analysis of the variables; and (4) statistical tests of the hypotheses.

Comparison of Charitable Contribution Observations

A comparison was made of the distribution of charitable contribution observations generated from this experiment with the distribution of charitable contribution observations obtained from filed tax returns. Charitable contribution observations from filed tax returns were obtained from the Arthur Young Research Tax Database (University of Michigan). The purpose of the comparison was to verify whether the distribution of observations obtained in an experimental setting were similar to the distribution of observations from filed tax returns.

One hundred sixty-seven cash charitable contribution observations, the same sample size as the experimental data, were obtained from the data base for taxpayers with reported incomes approximating $32,000 per year. The

$32,000 income level was selected to correspond with the assumed level of income in the budgeting exercise.[17] The observations were obtained from returns filed in 1980 for taxpayers living throughout the United States.

Figure 5 contains scatter plots of charitable contributions obtained from the experiment (Plot A) and from the tax data base (Plot B). For both plots, there is a lack of a uniform distribution across levels of charitable contributions; the observations are heavily concentrated at relatively modest amounts.

FIGURE 5

Scatter Plot of Charitable Contribution Observations

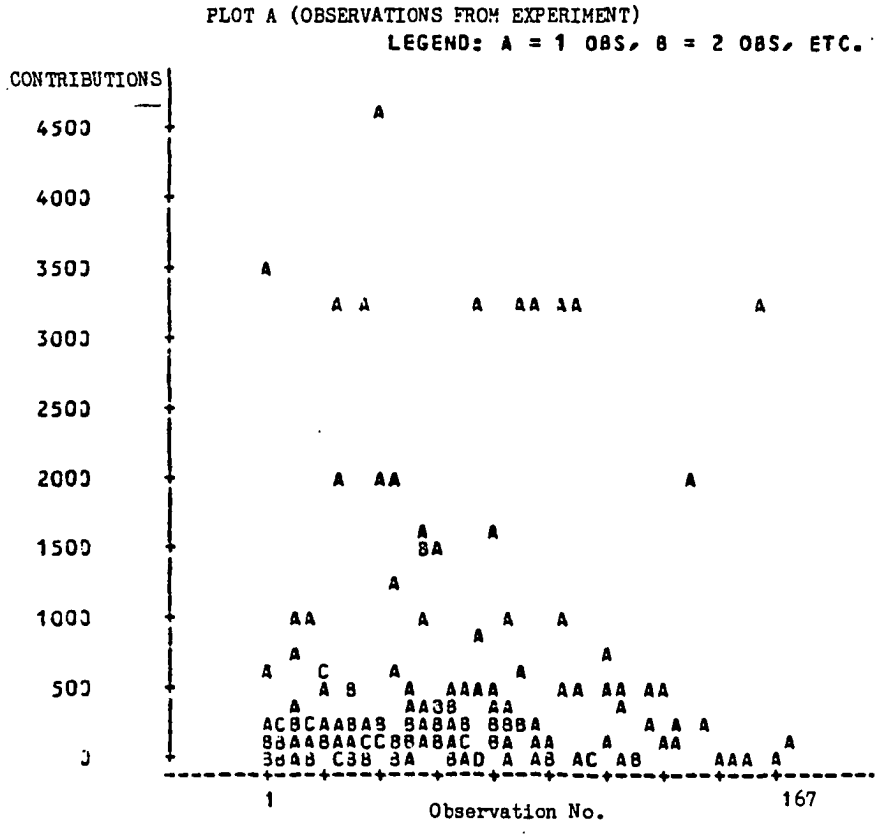


Figure 5 - (continued)

Scatter Plot of Charitable Contribution Deductions

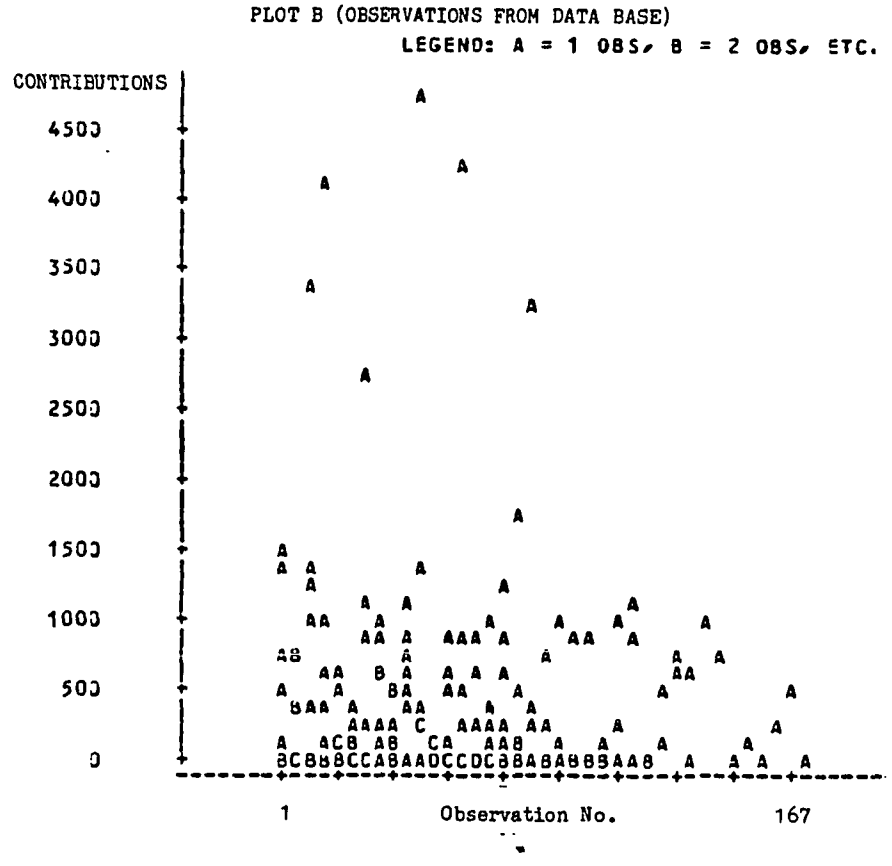


Table 3 presents several descriptive statistics comparing the distribution of these two sets of data:

TABLE 3

Comparison of Data Sets

Statistic	Observations of Contributions From Experiment	Observations of Contributions From Data Base
Mean	508	469
Standard Deviation	847	762
Standard Error of Mean	65.5	59.0
Minimum Value	0	0
Maximum Value	4660	4703

In addition to comparing the two sets of data by means of descriptive statistics, two tests of statistical inference were also performed on the data sets. The Student's t test was utilized to determine if there was a significant difference between the means of the two data sets, and the Kolmogorov-Smirnov goodness-of-fit test was employed to test each data set against a normal distribution. Based on a p value for the t test of .66 (t=.44), it was concluded that there was not a significant difference between the means of the two data sets.

The Kolmogorov-Smirnov test statistics (D) for both sets of data indicate that neither set is normally distributed. For the data derived from the experiment, D

was equal to .3003; for the data obtained from the data base,D was equal to .2690. Based on a decision rule to reject the null hypothesis of normality if D was greater than .105 (D(.95,167)), the null hypothesis was rejected and the conclusion drawn that neither data set was normally distributed. Thus, the plots of the data sets, and both the descriptive statistics and the tests of statistical inference lend support to the conclusion that the two data sets are derived from the same population. If the data sets are from the same population, a stronger argument can be made that the budgeting exercise elicited realistic responses.

The appropriate application of a particular statistical model for the data at hand assumes that the data have certain characteristics. The following section provides an analysis of the aptness of the covariance model for the data derived from the experiment.

Analysis of the Aptness of the Statistical Model

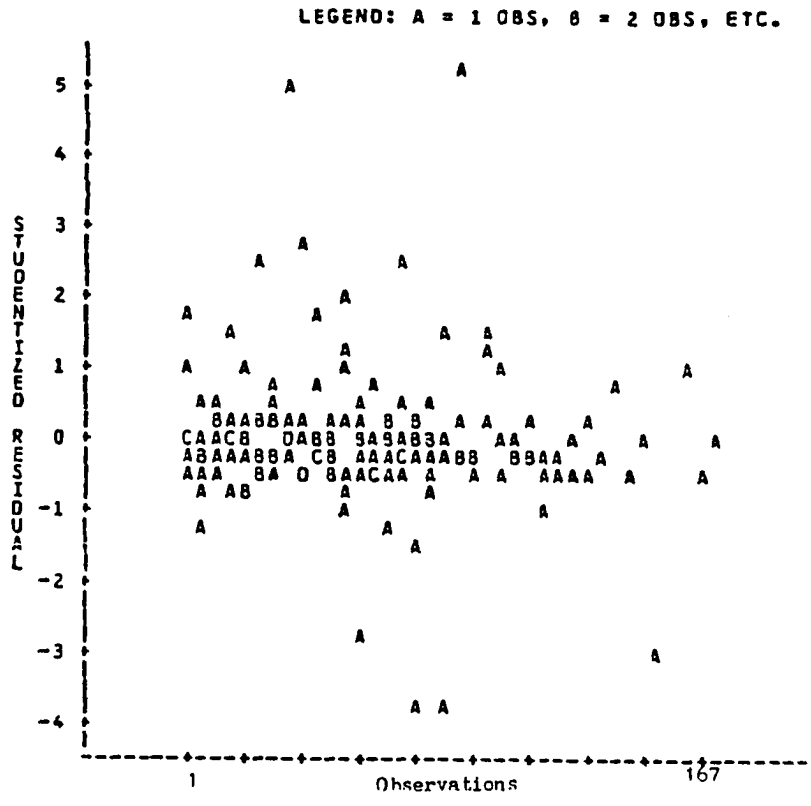
The analysis of a covariance model assumes that the error terms are normally distributed and their variances are constant across all treatments.

The normality assumption was monitored by plotting studentized residuals against observation number and using a Kolmogorov-Smirnov goodness-of-fit test to test the response variable, charitable contributions, for normality.

Figure 6 plots studentized residuals against observation number.

FIGURE 6

Studentized Residuals of ANCOVA Model



For a normal distribution, about 95% of the studentized residuals should fall between +2 and -2, and approximately the same number of residuals should fall above 0 as fall below 0 (Neter and Wasserman [1974]). Although about 95% of the residuals do fall between +2 and -2, considerably more residuals are below 0 than above 0.

As discussed previously in this chapter, In addition to this informal method of examining the normality assumption, the more formal Kolmogorov-Smirnov goodness-of-fit test was used to examine the distribution of the response variable observations against a normal distribution. Since D was equal to .3003 and the decision rule was to reject the null hypothesis of normality if D was greater than .105 (D(.95,167)), the null hypothesis was rejected and the conclusion drawn that the sample was not normally distributed.

The Hartley test was used to assess whether there was constant variance across the four treatments. The decision rule was to reject the null hypothesis of equal variances if H (the test statistic) was greater than 2.38 (H(.95,4,42). The test statistic, which is the quotient of the largest treatment variance and smallest treatment variance, was equal to 2.74. The hypothesis of equal variances was narrowly rejected and the conclusion drawn that not all treatment variances are equal to each other.

The test results indicate that the error terms mildly depart from the normality and constancy of variance assumptions. Fortunately, unless the departures from these two assumptions are severe, the F test and related analyses of the fixed effects ANCOVA model are robust, which is to say the level of significance and power of the test are little affected by these departures (Neter and

Wasserman [1974], pp. 513-514). In spite of the robustness of the F test against departures from these two assumptions, it would be reassuring to additionally employ an alternative statistical procedure to the data. Neter and Wasserman [1974] suggest two possible alternatives when the model does not fit the data at hand: (1) Transform the data; (2) Employ a nonparametric test on the data (p. 506).

Several transformations were performed on the charitable contribution observations: a square root transformation, a reciprocal transformation, a natural logarithmic transformation, and a base 10 logarithmic transformation. Using the Hartley test as a criterion, the transformations did correct for unequal variances across treatments[18]. Although the Kolmogorov-Smirnov test statistics for the transformed data indicated that they were more normally distributed than the raw data, the Kolmogorov-Smirnov test statistics for all transformations were still rejected at a level of significance of .05[19]. Moreover, the thirty-two observations of "0" were not amenable to transformation.

As an alternative to transforming the data, a nonparametric test statistic may be applied to the data. Unfortunately, there is not a nonparametric analogue to the analysis of covariance model. Conover [1980], however,

proposes that, in lieu of an equivalent nonparametric test, the observations from all cells should be ranked and an analysis of variance applied to the ranks. (See the previous chapter for a further discussion of this method). This procedure, as well as the parametric analysis of variance model, were used in analyzing the data.

Correlational Analysis of the Variables

A correlational analysis was made of charitable contributions to the following variables: age, gender, marital status, income, number of children, religion, frequency of church attendance, years filed a tax return, whether the taxpayer had ever itemized, and the amount of charitable contributions in the prior year. This analysis to identify variables correlated with charitable contributions had two objectives: (1) to address the secondary research question of which demographic variables correlate with the level of charitable giving and (2) to identify which variables, if any, should possibly be included as covariates in the ANCOVA model.

Table 4 provides a series of Pearson correlations of charitable contributions to the other aforementioned variables. Three statistics are provided for each pair of variables. The first statistic is the Pearson product moment correlation coefficient (r), which provides a quantitative measure of the strength of the linear

relationship between the two variables. The second statistic is a probability statistic (p value), which assesses the likelihood that the correlation coefficient is not significantly different from zero. The third statistic is the number of observations used to calculate the correlation.

TABLE 4

Pearson Correlation Matrix

Variables	Charitable Contributions		
	Correlation Coefficient	P Value	No. of Obs.
Number of Children	.0280	.7211	164
Age	.0370	.6395	162
Gender	-.1447	.0640	164
Marital Status	-.1665	.0331	164
Income	.0992	.2104	161
Religion	-.1277	.1032	164
Frequency of Church Attendance	-.4931	.0001	164
Years Filed Return	.0513	.5178	161
Ever Itemized?	-.0439	.5787	162
Contributions Last Year	.7432	.0001	163

Variables Which Correlate With Charitable Giving

Table 4 is used to address the secondary research question of which demographic variables correlate with the level of charitable giving. It should be noted that any correlation between two variables in no way infers a causal relationship. The only safe conclusion when a correlation is observed is that a linear trend may exist between the two variables.

Several informal hypotheses were made in Chapter II about the possible correlation of charitable contributions with four demographic variables. It was hypothesized that older subjects, those who attend church more often, and married subjects would have a greater propensity for charitable giving. It was also hypothesized that there would be no relationship between gender and charitable giving.

Contrary to expectations, age was not significantly correlated with charitable giving. It should be noted, however, that the sample as a whole was relatively young (mean=29.4 years, standard deviation=6.4 years). It is possible that if a greater proportion of the sample was older, a significant relationship would have been found between charitable giving and age.

Church attendance was strongly correlated with charitable contributions (p value=.0001), which is consistent with prior expectations. It is interesting to

note, however, that there is not a correlation between secular contributions and church attendance (p=.5983) but only religious contributions (p=.0001). Apparently church attendance, in and of itself, does not translate into increased giving to secular organizations.

Consistent with prior expectations, there was a positive correlation between charitable contributions and the status of married (p=.0331). Married subjects had a mean contribution level of $654; single subjects had a mean contribution level of $371.

It was hypothesized that there would not be any relationship between gender and charitable giving. If a level of significance of .05 is selected, the conclusion is that there is not a relationship. The p value, however, of .0640 (r=-.1449) is suggestive of a significant relationship. Males had a mean contribution level of $591, and females had a mean contribution level of $317.[20]

Covariance Analysis

Another purpose of the correlational analysis was to help identify which variables, if any, should be included as covariates. Covariance analysis utilizes the correlation between the response variable and an independent variable in order to reduce the experimental error and make the experiment a more powerful one for studying treatment effect (Neter and Wasserman, 1974).

Neter and Wasserman [1974] discuss two criteria for including a variable as a covariate in the model: (1) The variable has a relation to the dependent variable. Nothing is to be gained by including a covariate in the model if there isn't a correlation between the two variables. (2) The variable does not interact with the treatment variables. If there is an interaction, inclusion of a variable as a covariate in the model is not appropriate. The interaction results in the violation of a crucial ANCOVA assumption that all treatment regression lines have the same slope.

Table 4 identifies three variables that are significantly correlated with charitable contributions (level of significance=.05): marital status (MARRIED), church attendance (CHURCH), and contributions last year (CONTLY). A test for parallel slopes was made to determine if a significant interaction exists between these variables and the treatments. The test consists of examining whether the interaction variables (treatment(s) X covariate(s)) significantly reduce the error sums of squares. The formula for this test is as follows: (see Neter and Wasserman, 1979, pps. 702-703, for a detailed explanation of this test).

$$F = \frac{SSE(R) - SSE(F)}{DF_R - DF_F} \Big/ \frac{SSE(F)}{DF_F}$$

SSE(R) = the error sums of squares before the interaction terms are added to the model (reduced model)

SSE(F) = the error sums of squares after the interaction terms are added to the model (full model)

DF_R = degrees of freedom of the reduced model

DF_F = degrees of freedom of the full model

The test statistics for the three prospective covariates were as follows: MARRIED, F=.84; CONTLY, F=2.29; CHURCH, F=4.20. The region for rejecting the no interaction conclusion is 3.07 F(.95;2,158). Although MARRIED and CONTLY did not fall within the rejection region, CHURCH did fall within the rejection region. It was concluded that CHURCH significantly interacts with the treatments; this variable was eliminated from further consideration as a covariate.[21]

MARRIED and CONTLY were jointly included in the ANCOVA model. Although CONTLY was still highly significant in the model (F=186.83, p=.0001), MARRIED (F=.71, p=.4020) was not significant. MARRIED was eliminated from consideration as a covariate, leaving CONTLY as the only covariate to be included in the model.

Table 5 offers an explanation for why MARRIED was not significant in the ANCOVA model even though it was significantly correlated with the response variable.

Table 5 indicates that MARRIED is slightly more correlated with CONTLY (r=-.1716) than with the response variable, charitable contributions (r=-.1665). Neter and Wasserman [1974] explain that when multicollinearity is present, i.e., independent variables are correlated among themselves, "estimated regression coefficients individually may be statistically not significant even though a definite statistical relation exists between the dependent variable and the set of independent variables." (p. 341).

Table 5 also strengthens the decision to select CONTLY as a covariate. As one would intuitively expect, of the three variables considered for inclusion in the model, MARRIED, CHURCH, and CONTLY, CONTLY is the most highly correlated with the response variable (r=.7432). Moreover, the other two variables are essentially as correlated with CONTLY as they are with the response variable. As discussed in the previous paragraph, intercorrelation between independent variables weakens their individual effectiveness when they are jointly included in the model.

TABLE 5

Correlations of Covariates and Response Variable

Variables	Charitable Contributions		Contributions Last Year	
	r value	p value	r value	p value
Marital Status	-.1665	.0331	-.1716	.0290
Church Attendance	-.4931	.0001	-.4540	.0001
Contributions Last Year	.7432	.0001	1.000	.0000

The previous sections have established the desirability of applying an analysis of covariance to the ranks as well as the raw data and to including as a covariate in the ANCOVA model, contributions last year. The following section describes the results to the four tested hypotheses. For the first two hypotheses, which uses an ANCOVA model to analyze the data, ranks in addition to raw data is analyzed and contributions last year is included as a covariate.

Tests of Hypotheses

Hypotheses H1 and H2

Hypothesis H1 addresses whether the level of charitable giving is higher when charitable giving is tax deductible. Hypothesis H2 addresses whether taxpayers'

level of charitable giving is higher under higher marginal tax brackets. To test these hypotheses, an analysis of covariance was applied to both the raw data and to the ranks.[22]

Table 6 presents the results of the analysis of covariance model for both the raw data and the ranks. Included in the model were the two main effects; deductibility and marginal tax rates; an interaction of the main effects; and the covariate, contributions last year.

SAS, the statistical software package primarily used to analyze the data, prints by default F and p values based on both Type I and Type III sums of squares. The results that are presented in this study are F and p values based on Type III sums of squares, which yield lower F values and higher p values than Type I sums of squares.[23] (See footnotes for an explanation of the difference between Type I and Type III sums of squares.)

The cell means for the main effects are presented in Table 7. These means have been adjusted to make them comparable with respect to the covariate.

TABLE 6

ANCOVA Table for Deductibility and Marginal Tax Rate Variables

SOURCE	DF	F	P value
A. Results on Raw Data			
Marginal Tax Rate	1	6.46	.0120**
Deductible/Not Deductible	1	4.16	.0430**
Interaction	1	0.00	.9521
Contributions Last Year	1	199.26	.0001***
Error	158		
B. Results on Ranks[24]			
Marginal Tax Rate	1	3.64	.0583*
Deductible/Not Deductible	1	22.30	.0001***
Interaction	1	.50	.4817
Contributions Last Year	1	124.33	.0001***
Error	158		

* Significant at .10
** Significant at .05
*** Significant at .01

TABLE 7

Adjusted Cell Means for Deductibility and Marginal Tax Rate Variables

A. Raw Data Means	22% M.T.R.	36% M.T.R.	Overall
Deductible	$492.8 (n=42)	$711.1 (n=43)	$603.2 (n=85)
Not Deductible	$307.7 (n=39)	$536.8 (n=39)	$422.3 (n=78)
Overall	$403.6 (n=81)	$628.2 (n=82)	
B. Means of Ranks			
Deductible	89.4 (n=42)	103.9 (n=43)	96.7 (n=85)
Not Deductible	67.2 (n=39)	73.9 (n=39)	70.6 (n=78)
Overall	78.7 (n=81)	89.6 (n=82)	

The results of the ANCOVA model (Tables 6 and 7) indicate that the H1 null hypothesis (deductibility doesn't influence charitable giving) is rejected at the .05 level of significance for the raw data (p= .0430) and at the .01 level of significance for the ranks (p=.0001). The results of the ANCOVA model indicate that the H2 null hypothesis, charitable giving is not higher under higher marginal tax brackets, is rejected at the .05 level of significance for

the raw data (p=.0120) and at the .10 level of significance for the ranks (p=.0583).

The assumption of nondeductibility of charitable contributions for one of the two levels of the deductibility main effect means that the effective marginal tax rate with respect to charitable contributions is 0 for two of the cells. For these two cells, there has been no explicit manipulation of tax rates. An additional analysis was therefore made on the data in which the two "nondeductible" cells were excluded from the ANCOVA model, leaving marginal tax rate as the only main effect in the model. Table 8 presents the results of this analysis.

TABLE 8

ANCOVA Table for Marginal Tax Rate Variable

SOURCE	DF	F	P value
A. Results on Raw Data			
Marginal Tax Rate	1	2.63	.1088
Contributions Last Year	1	103.85	.0001**
Error	82		
B. Results on Ranks			
Marginal Tax Rate	1	4.65	.0340*
Contributions Last Year	1	56.64	.0001**
Error	82		

* Significant at .05
** Significant at .01

The results of Table 8 generally support the rejection of the H2 null hypothesis, that charitable giving is not higher under higher marginal tax brackets. Although the p value for the raw data is only marginally significant (p=.1088), the p value for the ranks is significant at a level of .05 (p=.0340).

There is not a significant interaction between the main effects (p=.9571 for the raw data, p=.4817 for the ranks). The lack of a significant interaction means that there is not a significant difference between the mean responses for the two levels of the deductibility variable

at the 22% marginal tax rate level compared with the 36% marginal tax rate level. The failure to find a significant interaction was due at least in part because the mean response for the nondeductible factor at the 36% level was greater than at the 22% level. Random variation is certainly one plausible explanation for why the 36% marginal tax rate/not deductible cell possibly had a higher mean response than the 22% marginal tax rate/not deductible cell. Another possible explanation is that subjects were still somewhat influenced by higher marginal tax rates in spite of the nondeductibility assumption.

Hypothesis H3

H3 addresses whether the elasticity of giving is greater than or equal to the absolute value of one. To test this hypothesis, as discussed in the previous chapter, the following regression model was used to estimate the elasticity of giving:

$$\text{Log } C = b_0 + b_1 \text{ Log } P$$

C=Demand for Charitable Giving

P=Price of Giving

The model also includes, as an independent variable, contributions last year.

Table 9 presents the parameter estimates of the independent variables and their corresponding test statistics (t) for the null hypothesis that the parameter

estimates are equal to zero.

TABLE 9

Parameter Estimates of Regression Model

Variables	DF	Parameter Estimate	Standard Error	T For Ho: Parameter=0	P Value
Intercept	1	1.836	.070	25.904	.0001*
Log Price	1	-1.909	.585	-3.265	.0013*
Contribu-tions Last Year	1	.147	.018	8.100	.0001*

* Significant at .01

According to the Table 9 p values, all the parameter estimates, including the parameter estimate for the logarithm of price variable, are significantly different from zero at a level of significance of .01.

The parameter estimate for the variable logarithm of price is -1.909. This means that $1.909 of additional charitable contributions are induced by the deduction for every dollar of tax revenue foregone. The test statistic (t), to test whether the elasticity of giving is greater than one, is computed from the parameter estimate and the standard error as follows:

$$t = \frac{1.909 \text{ (parameter estimate)} - 1}{.585 \text{ (standard error)}} = 1.55$$

The p value for this test statistic is .061. The conclusion is that the null hypothesis, elasticity of giving is not greater than or equal to the absolute value of one, is rejected at a level of significance of .10.

Hypothesis H4

H4 addresses whether the charitable contribution deduction has a different effect on religious contributions than on secular contributions. To test this hypothesis, as discussed in the previous chapter, a ratio was calculated for each subject's allocation of contributions between religious and secular contributions, and the ratios for the deductible and nondeductible groups were separated from each other. Two statistical tests, the parametric Student's t test and the nonparametric Kruskal-Wallis test, were utilized to determine if there was a significant difference between the ratios of the deductible and nondeductible groups.

The results of both the t test and the Kruskal-Wallis test indicate that the null hypothesis of no difference between the deductible and nondeductible groups should be accepted. The p value for the t test is .457 (t=.757) and the p value for the Kruskal-Wallis test is .478 (H=.50).

The conclusion is that the charitable contribution deduction did not have a different effect on religious contributions than on secular contributions.

CHAPTER V

SUMMARY, POLICY IMPLICATIONS, LIMITATIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

This chapter summarizes this study's procedures for collecting and analyzing the data and the results of the data analysis. The policy implications of the results are discussed. In addition, the weaknesses and limitations of the study are noted. Finally, suggestions are made for potential extensions of the present research.

Procedures For Collecting and Analyzing the Data And Results of the Analysis

Charitable contribution information was obtained from a budgeting exercise in which 167 subjects made budgeting decisions based on an assumed income level of $32,000. The purpose of the exercise was to determine whether the charitable contribution deduction is acting as an incentive to encourage charitable giving. Along with a charitable contribution budgeting decision, subjects were asked to make budgeting decisions with respect to such categories as housing, taxes, transportation, food, and clothing. To make the derivation of the budget less cumbersome for the subjects, the budgeting decisions were simplified by providing categorical expenditure choices for most of the budget categories. The category of charitable contributions, however, required an open-ended response.

Two factors, marginal tax rate and deductibility, were each manipulated at two levels: 22% versus 36% and deductible versus not deductible, respectively. In order to manipulate the factors, four treatments of the research instrument were randomly distributed as follows: (1) Charitable contributions were assumed to be tax deductible, and the maximum marginal tax rate was assumed to be 22%. (2) Charitable contributions were assumed to not be tax deductible, and the maximum marginal tax rate was assumed to be 22%. (3) Charitable contributions were assumed to be tax deductible, and the maximum marginal tax rate was assumed to be 36%. (4) Charitable contributions were assumed to not be tax deductible, and the maximum marginal tax rate was assumed to be 36%.

After completing the budgeting exercise, subjects completed a questionnaire. Included in the questionnaire was a request for the subjects to allocate their budgetary allotment to charitable contributions between secular and religious contributions in order to determine whether religious or secular contributions were more sensitive to the contribution deduction. The questionnaire also elicited selected demographic questions for the primary purpose of identifying covariates to be included in the statistical models.

A fixed effects analysis of covariance (ANCOVA) was applied to test whether the level of charitable giving is

higher when charitable giving is tax deductible and to test whether taxpayers' level of charitable giving is higher under higher marginal tax brackets. The ANCOVA model, which included as a covariate the variable of contributions last year, was applied to both the raw data and the ranked data. The results of the ANCOVA model indicated that deductibility and marginal tax rate do influence the level of giving.

To further assess the influence of the tax variable on charitable giving, a test was made to determine if the elasticity of giving had an absolute value greater than or equal to one. A regression model was used to estimate the elasticity of giving. The dependent variable for this test was the logarithm of charitable contributions, and the independent variable was the logarithm of the price of giving. The three values for the price of giving (.78, .64, 1.00) were complements of the assumed marginal tax rates. The absolute value for the elasticity of giving was estimated to be 1.909. A t test indicated that the absolute value of the mean estimate was statistically greater than one.

A ratio was calculated for each subject's allocation of contributions between religious and secular contributions. The ratios for the deductible and nondeductible groups were separated from each other. The t

test and the Kruskal-Wallis test were utilized to determine if there was a difference between the ratios of the deductible and nondeductible groups. These tests indicated that there wasn't a difference between the groups. The conclusion was that the charitable contribution deduction did not have a different effect on religious contributions than on secular contributions.

Policy Implications and Contributions of the Study

This section discusses the policy implications of this study. The contributions of this study will also be included in the discussion.

The results of this study indicate that the quantity of charitable contributions demanded are sensitive to the price of giving. Both manipulations of the price of giving construct, the deductibility and marginal tax rate variables, were found to significantly influence the volume of charitable giving. The principal policy implication of these results is that the legislative objective of the deduction, to encourage charitable giving, is being achieved. The attainment of the deduction's intended objective lends support for the continuation of the deduction.

Higher education, health care, the arts, general community services, and religious organizations rely heavily for their continued viability on voluntary

contributions. Any federal government tax policies which negatively alters the level of revenue obtained by these organizations should be of concern to the federal government because some of the revenue shortfall may have to be assumed by the government. Since, as discussed in Chapter 1, the recently enacted Tax Reform Act of 1986 would increase the price of giving, the impact that this bill will have on charitable contributions should be of concern to the federal government. It should be noted, however, that this study makes no statement about what period of time would be required for the consumer to adjust his individual consumption patterns to reflect the increased price of giving as a result of this tax bill. The adjustment might be an immediate one or one that comes over a longer period of time.

The elasticity estimate of this study (-1.909) provides support for the elasticity estimates of the majority of the economic studies. Feldstein [1975a] under two different definitions of income estimated elasticity of giving to be -1.238 and -2.044. Feldstein and Clotfelter [1976] obtained an elasticity estimate of -1.55, and Feldstein and Taylor [1976] obtained an elasticity estimate of -1.54. Feldstein and Boskin [1977] estimated elasticity of giving to be -2.54. When Dye [1976] included nonitemizers in his model, he estimated elasticity to be -1.95. Clotfelter [1980] obtained an elasticity estimate of

-1.401 when he used cross sectional data.

Abdel-khalik and Ajinkya [1979] note that multiplicity of methods or "triangulation" is a desirable feature of research. "The extent to which triangulation produces similar results can be used as a measure of confidence in the findings and the validity of the underlying theory" (Abdel-khalik, 1979, p. 21). The use of both the experimental method approach of this study and the correlational approach employed by the economists to address the same research question is an example of triangulation. The general consistency of the results between the two methodologies adds confidence to the conclusion that there is a strong incentive effect with respect to the charitable contribution deduction.

The charitable contribution deduction was not found to have a different effect on religious contributions than on secular contributions. These results do not justify the advancement of an argument for a differential tax policy with respect to these two groups.

Finally, a research instrument designed as a budgeting exercise may be a viable method of testing for whether other tax incentives are achieving their intended behavioral objectives since this methodology seemed to be successful in several important respects. The budgeting exercise may be viewed as an applied counterpart to the

graphical use of budgetary constraint lines and indifference curves to determine the demand for charitable contributions as a result of price changes (see Chapter 1 for a graphical representation of how the demand for charitable contributions is determined). Thus, tenets of the economics discipline provide theoretical support for the use of a budgeting exercise to determine the effect of price changes on consumption patterns. The budgeting exercise presented a task that was both realistic and of personal interest to the subjects. The exercise allowed the tax variables to be manipulated with relative ease and the study's hypotheses to be concealed from the subjects. (Specific examples of other tax incentives that may be tested using this methodology will be discussed in the last section of this chapter.)

Limitations of the Study

This study has several limitations with respect to its research design and its generalizability beyond the participants in the study. These limitations are discussed in this section.

Discrete marginal tax rate levels were adopted in the research design. These rates were chosen because they are reflective of rates imposed on middle income taxpayers. Caution, however, should be exercised in generalizing these results to other tax rate levels, particularly to tax rate

levels considerably different than those chosen for this experiment.

The marginal tax rate levels of the study were expressly mentioned in the research instrument. In all likelihood, under current tax law, a significant portion of taxpayers would not know their precise marginal tax rate and some taxpayers would not even know their approximate marginal tax rate. Actually providing the marginal tax rates to the subjects may have unduly sensitized the subjects to the marginal tax rate main effect, increasing the likelihood of finding a significant difference across tax rates. Under the Tax Reform Act of 1986, however, since there will essentially be only two tax rates, 15% and 28%, it is much more likely that the taxpayer would be aware of his/her marginal tax rate.

Because the budgeting exercise was completed in the absence of supporting financial records, it was necessary to provide categorical expenditures choices for several major budget categories. The categorical choices may have biased the subjects' responses to the open-ended charitable contributions category. However, a comparison of the distribution of the charitable contribution observations from this experiment with charitable contribution observations from filed tax returns significantly reduces this concern. Moreover, randomization across treatments minimizes the likelihood that any response bias would

effect the results.

Hypothesis-guessing is always of concern in any experiment, including this one. Anticipating what the experimenter wants to learn from the research may influence the subjects' responses and bias the results. In order to minimize this concern for this experiment, however, a between-subjects design was used and the charitable contribution category was not presented to the subjects differently than the other budget exercise categories.

The targeted population of interest in this study was United States middle income taxpayers. Caution needs to be exercised in generalizing this study to the targeted population of interest. Subjects selected in this study were well-educated (all subjects had at least an undergraduate degree) and therefore probably had a higher level of tax sophistication than the targeted population of interest. If subjects possessed a higher level of tax sophistication, this may have influenced the results.

The distribution of the research instrument was restricted to subjects located in the Phoenix, Arizona metropolitan area. It is problematic, therefore, whether the study can be generalized to taxpayers located throughout the United States.

The previous sections of this chapter have summarized this study's procedures for collecting and analyzing the

data, discussed the policy implications and contributions of the study, and noted the limitations of the study. The final section suggests potential extensions of the present research.

Suggestions for Future Research

This study suggests two areas of future research: (1) Replications of this study should be made in order to strengthen the study's validity; (2) This same methodolcgy might be used to test whether other tax incentives are achieving their behavioral objectives.

Replications of this study would increase one's confidence in generalizing the results to the theoretical construct level (price of giving) and to the targeted population of interest (middle income taxpayers). The section of this chapter which discussed limitations to this study implicitly recommended that certain replications be made. For example, the study should be replicated across samples from other geographic areas and across samples with less formal education. Other studies should manipulate the treatments at other marginal tax rate levels. In view of the two rates of 15% and 28% that would exist under the newly enacted Tax Reform Act of 1986, a logical choice of tax rate levels for one study would be these two rates.

The same methodology of this study might also be used to determine whether individual tax incentives as well as

business tax incentives are achieving their intended behavioral objectives. A research instrument very similar to the one in this study might be used to test whether the deductibility of home mortgage interest and property taxes encourages the purchasing of housing. A business budget consisting of discretionary business purchases could be developed to test whether the Investment Tax Credit and/or accelerated depreciation methods encourage capital expenditures.[25]

The following example is illustrative of how a methodology similar to the one in this study might be used to test whether the Investment Tax Credit encourages the purchase of equipment.[26] Subjects would be presented with a case scenario of an individual firm and a budget. They would be asked to allocate that budget among such discretionary expenditures as plant, plant improvements, equipment, merit raises for employees, and advertising. One factor in the study might be manipulated by assuming the availability of the Investment Tax Credit for equipment purchases for one group but making no mention of its availability for another group. Another factor might be manipulated by varying across groups the amount of allowable tax credit. The dependent measure would be the amount of the budget allocated to equipment purchases.

ENDNOTES

[1] Fewer taxpayers would find it advantageous to itemize for two reasons: (1) The standard deduction would increase. For example, the standard deduction for married people filing jointly would increase from $3,670 in 1986 to $5,000. (2) Certain tax preferences, such as the state sales tax and consumer interest payments, formerly deductible if the taxpayer itemized, would no longer be deductible (Joint Conference Committee Report 99-841, 99th Congress, 2nd Session [1986])

[2] The following table compares the income tax brackets for 1986 for married couples with those under the Tax Reform Act of 1986. The table illustrates that marginal tax rates would be reduced under the tax bill.

Current Tax Rates Versus Rates Under the Tax Reform Bill For Married Filing Jointly

Income Bracket	Pay Base Tax Of	Plus This Percentage Of Amount Over Lower Bracket
Tax Reform Bill		
$ 0	$ 0	15%
29,750	4,463	28
Current Law		
$ 0	$ 0	0%
3,860	0	11
6,250	263	12
8,640	550	14
13,520	1,233	16
18,180	1,979	18
22,960	2,839	22
27,960	3,939	25
33,980	5,444	28
40,000	7,130	33
52,050	11,106	38
68,190	17,239	42
97,280	29,457	45
124,330	41,630	49
184,570	71,147	50

Source: Joint Conference Committee Report 99-841

[3] In order to determine prior research done by economists, the Journal of Economic Literature was searched from the year 1965 to the present. 1965 was selected as the year to begin the examination because this was the first year a separate tax category was established for this index. This year also marked the approximate time when empirical research began in taxation. All potentially pertinent articles located under the heading "Taxation" in this index were examined. The preponderance of tax articles written by economists are contained in the National Tax Journal. Therefore, to further insure that no relevant articles by economists were missed, all articles published in the National Tax Journal since 1965 were examined. References from the above sources were also examined for any additional pertinent books or articles.

[4] Income is not defined more precisely in the model because the definition of income varied across researchers.

[5] Schwartz divided itemized tax returns into three AGI groups-0 to $10,000, $10,000 to $100,000, and $100,000 and above. Thirty-one observations were available for each series. For the 0 to $10,000 category, Schwartz obtained a price elasticity of -.685. For the $10,000 to $100,000 income category, a price elasticity of -.757 was obtained, and for the income class above $100,000, he obtained a price elasticity of -.408.

[6] The Internal Revenue Service, to disaggregate the information, had to rely on taxpayer descriptions. Reliance on these descriptions could have resulted in rather imprecise classifications.

[7] Assuming unconstrained price and income elasticities, the following price elasticities were obtained: [p. 217, Table 3]

Type of Charity	Price Elasticity
Religious Organizations	-.49
Educational Institutions	-2.23
Hospitals	-2.44
Health & Welfare Organizations	-1.19
All Others	-2.63

[8] The Tobit model is based on the assumption that for

each household there exists an index I which is a linear function of the variables explaining the level of the dependent variable and a random error term [Reece, 1979, p. 147].

[9] The data divides contributions into eight classifications as follows:

SUPPORT; Cash contributions for support of persons not in consumer unit.
GIFTS; Gifts of cash, bonds, or stocks to persons not in the consumer unit.
CHARITY; Contributions to charities, such as the United Fund, Red Cross, etc., which were not deducted from pay.
RELIGIOUS; Contributions to church and other religious organizations, excluding parochial school expenses.
EDUCATIONAL; Contributionstoeducational organizations.
POLITICAL; Political contributions.
DEDUCTED; Contributions to charities deducted from pay.
OTHER; Other.

Some of these classes of contributions are of a questionable philanthropic nature. For example, the SUPPORT category includes alimony payments.

[10] The price elasticity comparisons between Feldstein [1975b] and Reece were as follows:

Category	Feldstein	Reece
Religious Organizations	-.49	-1.598
Educational Organizations	-2.23	-.077
Hospitals	-2.24	-.402
Health and Welfare Organ.	-1.19	-.402

[11] The price elasticity using cross-sectional data was -1.401. A time series model resulted in the following results:

Time Period	Price Elasticity	Standard Error
1968-70	-.388	.269
1970-72	-.333	.304
1972-73	-.451	.265

[12] Neter and Wasserman [1974] conclude the following about independent correlated variables: "When independent variables are correlated, the regression coefficient of any independent variable depends on which other independent variables are included in the model. Thus, a regression

coefficient does not reflect any inherent effect of the particular independent variable on the dependent variable but only a marginal or partial effect, given whatever other correlated independent variables are included in the model." (p. 252)

[13] To identify any significant work done by accountants, two indexes were consulted: Index to Federal Tax Articles and Dissertation Abstracts International. The former index identifies tax articles written since 1974 that have appeared in legal and accounting journals. Dissertation Abstracts International presents synopses of doctoral dissertations written at major institutions, including all tax dissertations written by accounting doctoral candidates. To help identify the tax dissertations appearing in Dissertation Abstracts International, the article "Profile of Tax Dissertations in Accounting: 1967-1984" [Brighton and Michaelson, 1985] was consulted.

[14] Income of subjects varies significantly across age groups. If the level of contributions alsovarieswith income, income confounds the explanatory power of age on charitable giving. To control for this, Morgan et. al.[1979] held income constant and still found that charitable giving increased with age.

[15] The $32,000 salary was selected in order to provide enough income to support an intermediate budget for a family of four. The Department of Labor estimated that an urban average budget for a four-person costs $25,407 at the intermediate level as of the end of 1981 [Monthly Labor Review, 1982]. Urban four-person family budget data were since discontinued in compliance with federal budget reductions. To take into consideration increased living costs from the end of 1981 until when the research instrument was administered, the intermediate budget estimate was increased by the amount of the Consumer Price Index increases during this period.

[16] According to an estimate provided by the Graduate Programs Office in the College of Business at Arizona State University, those admitted to the M.B.A. program for Fall, 1985, ranked, on average, in the top 15% of those taking the Graduate Management Admission Test (GMAT).

[17] To derive "income" from the tax returns, the long term

capital gain exclusion was added to line 22, Form 1040 (Total Income).

[18] The decision rule for the Hartley test was to reject the null hypothesis of equal variances if the test statistic was greater than 2.38. The test statistics for the transformations were as follows: square root transformation-1.49, reciprocal transformation-2.25, natural and base 10 logarithmic transformation-1.61.

[19] The four transformations had the following Kolmogorov-Smirnov test statistics: square root transformation-.156; reciprocal transformation-.187; natural logarithmic transformation-.261; base 10 logarithmic transformation-.261. Given the decision rule to reject the null hypothesis of normality if the test statistic was greater than .105 (W(.95,167)), the hypothesis of normality was rejected for all four transformations.

[20] Males may have demonstrated a greater propensity for charitable giving because a greater proportion of males in this study compared with females were married. Of the 83 subjects who indicated they were married, 65 were males and only 18 were female.

[21] An additional test for parallel slopes was made for CHURCH when CONTLY, in addition to the treatment variables, were included in the model. The test statistic for CHURCH was 5.41; the region for rejecting the no interaction conclusion was 3.07 F(.95;2,155). This additional test supports the decision to not include CHURCH as a covariate in the model.

[22] For the ANCOVA model in which the response observations were converted to ranks, the covariate observations were also converted to ranks. Two justifications are offered for the conversion of covariate observations from raw to ranked data: (1) Conversion to ranked data further reduces the experimental error. The mean squared error for the model in which the covariate observations are converted to ranked data is 1238. The mean squared error for the model in which the covariate observations are raw data is 1559. As mentioned in Chapter IV, the purpose of covariance analysis is to reduce the experimental error and make the experiment a more powerful one for studying treatment effect. (2) Conversion of the covariate

observations to ranked data results in the response variable and the covariate having operationally identical measures. Cooke and Campbell [1979] recommend that these two variables have operationally identical measures in order to reduce the amount of measurement error.

[23] The SAS User's Guide: Statistics [1985] explains that Type I sums of squares represent the incremental reduction in the error sums of squares as variables are added to the model. Type III sums of squares, invariant to the order in which the variables are placed in the model, represent the reduction in the error sums of squares under the assumption that the other variables are already in the model. Hence, the F and p values corresponding to the Type III sums of squares would be more conservative than the F and p values corresponding to the Type I sums of squares.

[24] An additional test for parallel slopes was made for contributions last year when the model included ranked data instead of raw data with contributions last year as the covariate. The test statistic for contributions last year was 1.42; the rejection region for the no interaction conclusion was 3.07 F(.95;2,157). The test statistic was well within the acceptance region.

[25] The Tax Reform Act of 1986 would repeal the Investment Tax Credit retroactively for any property placed in service after December 31, 1985 [Joint Conference Committee Report 99-841, 99th Congress, 2nd Session [1986]) However, the credit has been eliminated and then reinstituted three times since the enactment of the income tax [Sommerfeld R., H. Anderson and H. Brock]. Senator Long, an influential member of the Senate Finance Committee, immediately after the Joint Conference Committee agreed on the provisions of the Tax Reform Act of 1986, stated "it is almost a cinch that if the economy turns down, there will be another effort to reinstate it" [Wall Street Journal, August 18, 1986, p. 10].

[26] In general, the availability of the Investment Tax Credit has been limited to tangible personalty (tangible property other than land, buildings, and permanent building components) [Section 38, IRC]. Thus, equipment purchases have traditionally been eligible for the Investment Tax Credit.

REFERENCES

Abdel-khalik, R. and B. Ajinka, Empirical Research in Accounting A Methodological Viewpoint (American Accounting Association, 1979).

American Economic Association, Journal of Economic Literature (AEA, 1965-Present).

Asher, H., Causal Modeling (Sage Publications, 1976).

Blumenfeld, W. and P. Sartain, "Predicting Alumni Financial Donations," Journal of Applied Psychology (August 1974), pp. 522-523.

Brighton, G.D. and R.H. Michaelson, "Profiles of Tax Dissertations in Accounting: 1967-84," Journal of the American Taxation Association (Spring 1985), pp. 76-91.

Bureau of Business and Economic Research,"Metropolitan Phoenix Consumer Price Index," (November 1985).

Burnett, J., "Psychographic and Demographic Characteristics of Blood Donors," Journal of Consumer Research (June 1981), pp. 62-66.

Clotfelter, C.T.,"Tax Incentives and Charitable Giving: Evidence from a Panel of Taxpayers," Journal of Public Economics (January 1980), pp. 319-340.

Cook, T. and D. Campbell, Quasi-Experimentation (Houghton Mifflin Company, 1979).

Conover, W., Practical Nonparametric Statistics (John Wiley and Sons, 1980).

_____ and R.L. Iman, "Rank Transformations as a Bridge Between Parametric and Nonparametric Statistics," The American Statistician (August 1981), pp. 124-133.

Crumbley, D., "Behavioral Implications of Taxation," Accounting Review (October 1973), pp. 759-762.

Daniel Yankelovich Company, "Save the Children Federation's Performance in the Charity Market," (Daniel Yankelovich Company, 1971).

Dye, R.F., "Personal Charitable Contributions: Tax Effects and Other Motives," doctoral dissertation (University of Michigan, 1976).

Feldstein, M., "The Income Tax and Charitable Contributions: Part I-Aggregate and Distributional Effects," National Tax Journal (March 1975) pp. 81-100.

_____, "The Income Tax and Charitable Contributions: Part II-The Impact on Religious, Educational and Other Organizations," National Tax Journal (June 1975), pp. 209-26

_____ and C. Clotfelter, "Tax Incentives and Charitable in the United States: A Microeconomic Analysis," Journal of Public Economics (January 1976), pp. 1-26.

_____ and A. Taylor, "The Income Tax and Charitable Contributions," Econometrica (November 1976), pp. 1201-22.

_____ and M. Boskin, "Effects of the Charitable Deduction on Contributions by Low Income and Middle Income Households: Evidence from the National Survey of Philanthropy," Review of Economics and Statistics (August 1977), pp. 351-354.

Goldstein, G., Index to Federal Tax Articles (Warren, Gorham, and Lamont, 1982).

Goldstein, G., Index to Federal Tax Articles (Warren, Gorham, and Lamont, 1983).

Hamilton, B.L., "A Monte Carlo Test of the Robustness of Parametric and Nonparametric Analysis of Covariance Against Unequal Regression Slopes," Journal of the American Statistical Association (December 1976), pp. 864-869.

Hersen, M. and D. Barlow, Single Case Experimental Designs (Pergamon Press, 1983).

Hirshleifer, J., Price Theory and Applications (Prentice Hall, 1980).

Hoffman, W., and L. Phillips, West's Federal Taxation: Individual Income Taxes (West Publishing Company, 1981).

Iman, R.L., "A Power Study of a Rank Transform for the Two-Way Classification Model When Interaction May be Present," The Canadian Journal of Statistics Section C: Applications (Vol 2, 1974), pp. 227-239.

Internal Revenue Service, Statistics of Income, Individual Income Tax Returns (U.S. Government Printing Office, 1929-1966, 1983).

Kenner, M.R., D.E. Small and G.N. Williams, Concepts of Modern Mathematics (American Book Company, 1965).

Kowalski, J., "Tax Reform Could Leave Arts Less to Bank On," Arizona Republic (July 14, 1985), p. f1.

Langford, B. and C. Langford, "Review of the Polls," Journal for the Scientific Study of Religion (June 1974), pp. 221-222.

Lawrence, D., and M. Saghafi, "The Flat-Rate Income Tax, Tax Burden, and Charitable Contributions," National Tax Journal (December 1984), pp. 569-574.

Macdonald, P., "The Analysis of a 2 to the N Power by Means of Ranks," Journal of the Royal Statistical Society (Series C) Applied Statistics (Vol. 20, 1971), pp. 259-275.

Monthly Labor Review, "Family Budgets," (July 1982).

Morgan, J., et. al., Results from Two National Surveys of Philanthropic Activity (University of Michigan, 1979).

Neter, J. and W. Wasserman, Applied Linear and Statistical Models (Richard D. Irwin, Inc., 1974).

O'Neil, C., "The Impact of the Targeted Jobs Credit on the Employment Decision Process," doctoral dissertation (University of Colorado, 1980).

Pechman, J., Federal Tax Policy, (Brookings Institution, 1971).

Projector, D.S. and G.S. Weiss, "Survey of Financial Characteristics of Consumers," (Board of Governors and the Federal Reserve System, 1966).

Reece, W., "Charitable Contributions: New Evidence on Household Behavior," American Economic Review (March 1979), pp. 142-51.

SAS User's Guide: Statistics (1985), (SAS Institute Inc., 1985).

Scheirer, C.J., W.S. Ray and N. Hare, "The Analysis of Ranked Data Derived from Completely Randomized Factorial

Designs," Biometrics (June 1976), pp. 429-434.

Schwartz, R.A., "Personal Philanthropic Contributions," Journal of Political Economy (Nov./Dec 1970), pp.1264-91.

Seidman, J.S., Legislative History of Federal Income Tax Laws (Prentice-Hall, Inc., 1938).

Sommerfeld, R., H. Anderson and H. Brock, An Introduction to Taxation (Harcourt Brace Jovanovich, Inc., 1982).

Strefeler, J.M., "The Impact of the Tax Reform Act of 1969 Upon Charitable Contributions of Ordinary Income Property," doctoral dissertation (University of Arizona, 1977).

Taussig, M., "Economic Aspects of the Personal Income Tax Treatment of Charitable Contributions," National Tax Journal (March 1967), pp. 1-19.

University Microfilms International, Dissertation Abstracts International A-Humanities and Social Sciences (University Microfilms International 1967-84).

U.S. News and World Report, "Charities Count Their Blessings" (May 27, 1985), p. 7.

Wall Street Journal, "In Turning to Deficit, Congress May Tinker With the Taxes Again" (August 18, 1986), p. 10.

Weidenbaum, M., "The Advantages of Credits on the Personal Income Tax," George Washington Law Review (March 1974), pp. 516-525.

White, Richard A., "Employees Preferences for Nontaxable Compensation: An Empirical Study," doctoral dissertation (Arizona State University, 1981).

Zarbatany, L., D. Hartmann, D. Gelgand, and P. Vinciguerra, "Gender Differences in Altruistic Reputation: Are They Artifactual?," Developmental Psychology (January 1985), pp. 97-101.

Government Documents

Congressional Record, 65th Congress, 1st Session (1917), (U.S. Government Printing Office, 1917).

Helvering vs. Bliss, 293 US 144, 14 AFTR 668.

Internal Revenue Code of 1954 (Prentice-Hall, 1985).

Joint Conference Committee Rep. No. 99-841, 99th Congress, 2nd Session (1986).

S. Rep. No. 1881, 87th Congress, 2nd Session (1962).

S. Rep. No. 94-36, 94th Congress, 1st Session (1975).

S. Rep. No. 99-313, 99th Congress, 2nd Session (1986).

United States Treasury Regulations (1985), (U.S. Government Printing Office, 1985).

U.S. Congress, House Committee on Ways and Means, 87th Congress, 1st Session (1961), Tax Message of President Kennedy.

APPENDIX A

SAMPLE RESEARCH INSTRUMENT

March 25, 1986

Dear Participant:

The exercise that you are being given is part of a study being conducted by Richard Toolson, a doctoral student at Arizona State University. The purpose of this study is to gain insight into the way in which tax laws impact personal budgeting decisions.

As you respond to the exercise, please keep in mind the following:

1. The exercise involves role playing; the financial information given may not actually fit your situation.

2. There are no right or wrong responses.

3. Your responses are anonymous.

The results of this study will be available upon request. Thank you for your help.

Sincerely,

Richard B. Toolson
Ph.D. Candidate
Arizona State University

DIRECTIONS

The following exercise involves making some basic budget decisions and requires the calculation of a personal income tax liability.

You are to assume that you currently earn $32,000 per year in salary, before any amount is taken out for income or social security taxes. This is the only source of compensation for you (and your family, if applicable).

It is the beginning of the year and your task is to make certain budget decisions based on this salary level of $32,000.

The budget decisions that you make should be predicated on your current marital status. If you are currently single, your decisions should be based on this status. If you are currently married, with or without children, your decisions should be based on this status. IN MAKING YOUR DECISIONS, YOU MAY WISH TO CONSIDER THE TAX EFFECTS OF SUCH DEDUCTIBLE ITEMS AS HOME MORTGAGE INTEREST AND AUTO LOAN INTEREST.

The budget decisions generally involve making categorical expenditure choices. Because of this limitation, the budget decisions may not be those you would make under unconstrained conditions. However, please select the option that comes the closest to what you would choose under unconstrained conditions.

Please use the information under the heading "Budget Information" to complete the budget ("Calculation of Annual Budget"). After completing the budget, please answer the brief questionnaire.

BUDGET INFORMATION

In deriving your budget, you are to assume that you currently have $20,000 in accessible savings in the bank (including $10,000 from the recent sale of your townhouse). Medical and dental needs are adequately taken care of by an employer-paid health insurance policy.

In making your budget decisions, you are to assume your taxable income is subject to the following rates:

If Taxable Income Is	The Tax Liability Will Be
$0- $18,000	17% of Taxable Income
Over $18,000	$3,060 + (22% X Amount Over $18,000)

ACCORDING TO THIS TAX RATE SCHEDULE, YOU ARE TO ASSUME THAT YOUR MARGINAL TAX RATE IS 22%.

1) Housing-You have recently sold your small townhouse, netting $10,000, and are in the process of looking for a detached single family house to purchase. You have narrowed your choices down to three possible options. For each of the three options, you are to assume that you can obtain a conventional mortgage financed over 30 years at an 10% interest rate. The downpayments will vary with the cost of the house. All three options are in equally desirable locations, i.e., they are all reasonably close to schools, work, shopping, and churches.

The monthly payments would include not only principal and interest payments but also payments for property taxes and insurance. BASED ON THE ASSUMPTION THAT INTEREST AND PROPERTY TAXES BUT NOT PRINCIPAL AND INSURANCE WOULD BE DEDUCTIBLE, 90% OF THE MONTHLY HOUSE PAYMENT WOULD BE DEDUCTIBLE.

1) $70,000 purchase price, $5,000 down, 1200 square feet, 3 bedrooms, 2 baths, carport; $638/month ($7,656/yr.)

2) $80,000 purchase price, $10,000 down, 1600 square feet, 3 bedrooms, 2 baths, den or 4th bedroom, carport; $690/month ($8,280/yr.)

3) $90,000 purchase price, $15,000 down, 1900 square feet, 3 bedrooms, 2 baths, den or 4th bedroom, double garage; $742/month ($8,904/yr.)

2) Transportation-Your present and only vehicle is quite old and has lately been experiencing considerable mechanical difficulties. You are to choose between either

retaining your present vehicle or replacing it with a new one. If you retain your present vehicle you estimate that your repair bills for the year will be $1,000 whereas they will be negligible for the new car.

a) Car Purchase- In the event a new car is purchased, the old car and funds from savings will be used as the down payment. The amount of the down payment will increase as the purchase price increases. The remaining balance will be paid over 5 years at an annualized interest rate of 12%. YOU ARE TO ASSUME THAT 50% OF THE PAYMENT IS INTEREST AND TAX DEDUCTIBLE.

The new car will be chosen among the following options:

Purchase Price	Down Payment	Monthly Payment	Annual Payment
1) $8,000	$1,000	$154	$1,848
2) $10,000	$2,000	$177	$2,124
3) $12,000	$3,000	$199	$2,388
4) $15,000	$5,000	$221	$2,652

b) Repairs- $1,000 if retain old car, $0 if purchase a new car

c) Fuel-Please select one of the following options:
1)$500/year
2)$1000/year
3)$1500/year

Conditions that might warrant selection of a lower amount might include one driver and/or a conservative number of miles driven. Conditions that might warrant selection of a higher amount might be multiple drivers and/or liberal usage of the automobile.

d)Car insurance-Please select one of the following options:
1)$500/yr.
2)$1000/yr.
3)$1500/yr.

Conditions that might warrant selection of a lower amount might include a single driver, a good driving record, and/or retention of the old car. Conditions that might warrant selection of a higher amount include multiple drivers, a blemished driving record, and/or purchase of a relatively expensive car.

3)Charitable Contributions-Please select an annual expenditure level for charitable contributions.

IN DECIDING HOW MUCH YOU WOULD GIVE TO CHARITY, PLEASE ASSUME THAT CONTRIBUTIONS TO CHARITABLE INSTITUTIONS ARE NOT TAX DEDUCTIBLE.

4)Income Tax Liability-The income tax liability is to be computed by subtracting from income ($32,000), interest and property taxes on the home and any interest on a car loan in order to derive taxable income. The tax liability is then derived by multiplying taxable income by the appropriate tax rates. Please use the tax rates and Schedule A (see "Calculation of Annual Budget") to make this computation:

To Compute Tax Liability:

If Taxable Income Is:	The Tax Liability Will Be
$0 - $18,000	17% of Taxable Income
Over $18,000	$3,060 + (22% X Amount Over $18,000)

5)Utilities-Please select one of the following options:
a) $75/month ($900/yr.)
b) $125/month ($1,500/yr.)
c) $175/month ($2,100/yr.)

Conditions that might warrant selection of a lower amount include conservative usage and/or the selection of a housing option with fewer square feet. Conditions that might warrant selection of a larger amount include liberal usage and/or the selection of a house with relatively more square feet.

6)Food and Beverages-The amount allocated to this category would include the cost of food eaten at home, the cost of meals eaten away from home, and any liquor purchases.
a) $75/week ($3,900/yr.)
b) $125/week ($6,500/yr.)
c) $175/week ($9,100/yr.)

Conditions that might warrant selection at the lower end might include a small family, frugality when grocery shopping ("coupon clipping"), and/or rarely eating out. Conditions that might warrant selection of a larger amount might include a large family and/or frequently eating out at restaurants.

7)Clothing-Please allocate an amount to this category. Include any jewelry purchases.

8)Entertainment and Vacations-Please allocate an amount to this category. In addition to vacations, this category would include such items as reading materials, sporting goods, toys and hobbies, and admission fees to entertainment events.

9)Other-An amount, $2,000, has been allocated to this category to cover such miscellaneous items as personal care items (cosmetics, toiletries), personal care services (barber shop, beauty salon), furniture purchases, household operations (cleaning supplies, repairs, maintenance), and life insurance.

10)Social Security Tax-It will be assumed that the payment of social security tax is mandatory and is a flat 7% of gross salary. Based on a salary of $32,000, social security tax would be $2,450. This amount has already been entered into the budget.

CALCULATION OF ANNUAL BUDGET

ANNUAL BUDGET. $32,000

ANNUAL OUTLAYS

1) Housing. . . . . _____
(Options- $7,656, $8,280, $8,904)

2) Transportation
a) Purchase of new car. . . . . _____
(Options-$1,848, $2,124, $2,388, $2,652)

b) Repairs. . . . . _____
($1000 if retain old car, $0 otherwise)

c) Fuel. . . . . _____
(Options-$500, $1000, $1500)

d) Insurance. . . . . _____
(Options-$500, $1000, $1500)

3) Charitable Contributions. . . . . _____

4) Tax Liability (see Schedule A below). _____

5) Utilities. . . . . _____
(Options-$900, $1500, $2100)

6) Food and Beverages. . . . . _____
(Options-$3,900, $6,500, $9,100)

7) Clothing. . . . . _____

8) Entertainment and Vacations. . . . . _____

9) Other. $2,000

10) Social Security Tax. $2,345

Total Outlays (add lines 1-10) _____

Savings or (Dissavings) = $32,000 - Total Outlays _____

Schedule A-Computation of Tax Liability

Gross Income $32,000

Deduct:

a) Housing (Deduct Interest and Taxes on Housing)_____
   1) Interest and Taxes = $6,890 (total payments=$7,656)
   2) Interest and Taxes = $7,461 (total payments=$8,290)
   3) Interest and Taxes = $8,014 (total payments=$8,904)

b) Car Loan (Deduct Interest on Car Loan) _____
   1) Interest = $924 (total payments=$1,848)
   2) Interest = $1,062 (total payments=$2,124)
   3) Interest = $1,194 (total payments=$2,388)
   4) Interest = $1,326 (total payments=$2,652)

Total Deductions (lines a + b) _____

Taxable Income ($32,000 - Total Deductions) _____

Tax Liability (see tax rate schedule) _____

PLEASE DO THIS PART AFTER DOING THE BUDGET EXERCISE

GENERAL INFORMATION

1. Please refer to the amount of the budget you have allocated to charitable contributions and estimate how much of this amount you would allocate to religious organizations (churches) and how much to nonreligious organizations (such as educational institutions, health organizations, social services). Please continue to assume that charitable contributions are not tax deductible.

_____ Religious organizations

_____ Nonreligious organizations

_____ Total

2. What is your age? _____ Years

3. What is your gender? Female _____ Male _____

4. Are you married? Yes _____ No _____

5. No of children? _____

6. What is the highest academic degree you hold?
   B.S./B.A._____ M.S._____
   Other, please specify _____

7. What is your approximate annual level of income (include income of spouse if married)?
_____ less than $15,000
_____ $15,000 to $25,000
_____ $25,000 to $35,000
_____ $35,000 to $45,000
_____ More than $45,000

8. For approximately how many years have you filed a personal income tax return (including this year)? _____ Years

9. Have you ever itemized your deductions? ____ Yes ____No

10. What is your religion?
Protestant _____
Catholic _____
L.D.S. _____
Jewish _____
None _____
Other _____

11. About how often do you attend religious services?

_____ Once a week or more often
_____ 2-3 Times a Month
_____ Once a Month
_____ A Few Times a Year
_____ Never

12. To what extent do you think that whether charitable contributions are tax deductible influences the level of contributions you give to charity?

Not at all . . . . . To a Great Extent
1 2 3 4 5 6 7

13. Which of the following options most closely reflects how much you (and your spouse, if married) gave to charity last year? (For example, if you gave $200 last year to charity and your income was $25,000, the option to choose would be ".61% to .8% of income" since $200 is .8% of $25,000.)

_____ 0% of income
_____.01% to .2% of income
_____.21% to .4% of income
_____.41% to .6% of income
_____.61% to .8% of income
_____.81% to 1.0% of income
_____1.01% to 1.5% of income
_____1.51% to 2.0% of income
_____2.01% to 2.5% of income
_____2.51% to 3.0% of income
_____3.01% to 3.5% of income
_____3.51% to 4.0% of income
_____4.01% to 4.5% of income
_____4.51% to 5.0% of income
_____5.01% to 5.5% of income
_____5.51% to 6.0% of income
_____6.01% to 6.5% of income
_____6.51% to 7.0% of income
_____7.01% to 7.5% of income
_____7.51% to 8.0% of income
_____8.01% to 8.5% of income
_____8.51% to 9.0% of income
_____9.01% to 9.5% of income
_____9.51% to 10.0% of income

APPENDIX B

LEGAL FRAMEWORK FOR THE CHARITABLE CONTRIBUTION DEDUCTION

The Internal Revenue Code of 1954 (IRC) [1985] details the specific tax treatment afforded charitable contributions. Section 170 of the IRC [1985] explains the rules governing individuals and corporations and Sections 2055 and 642 of the IRC [1985] explain the rules for trusts and estates. Since this study focuses exclusively on charitable contributions made by individuals, only the tax rules governing individuals will be explained.

To be deductible, contributions must be made to a qualified donee [Sec. 170(c) of the IRC(1985)]. Examples of qualified donees are government units [Sec. 170 (c)(1) of the IRC(1985)] and a corporation, trust, or community chest, fund, or foundation organized and operated exclusively for religious, charitable, scientific, literary, or educational purposes or for the prevention of cruelty to children or animals [Sec. 170(c)(2) of the IRC(1985)]. Contributions may also be made to a veterans' organization [Sec.170(c)(3) of the IRC(1985)], a fraternal organization operating under the lodge system [Sec.170(c)(4) of the IRC(1985)], or a cemetery company [Sec.170(c)(5) of the IRC(1985)].

Property donated to a charity normally entitles the donor to deduct its fair market value. An important exception, however, to this involves ordinary income property [Sec. 170(e) of the IRC(1985)]. If property is

classified as ordinary income property, the charitable deduction is limited to the basis of the property in the hands of the donor [Sec. 170(e) of the IRC(1985)]. Ordinary income property is defined as property, which if sold, would result in the recognition of ordinary income to the donor (United States Treasury Regulation (Reg.) 1.170A-4(b)(1)[1985]). Examples of ordinary income property are inventory for sale in the taxpayer's trade or business, a capital asset held by the donor for less than the required holding period for long-term capital gain treatment, and property that results in the recognition of ordinary income due to the recapture of depreciation [Sec. 1.170A-4(b)(1) of the IRC(1985)].

Special rules apply to capital gain property[1] which is tangible personalty[2]. The taxpayer, to obtain a deduction for this type of property at its fair market value, must establish that the donee will put the property to a related use [3][Reg.1.170A-4(b)]. For example, if the taxpayer donates a piece of art to a museum and the art is retained as an addition to the museum, the related use requirement would be met. On the other hand, if the piece of art were donated to the Salvation Army, the related use requirement would not be met. If the related use requirement is not met, the charitable deduction is equal to the fair market value of the property reduced by 40% of the unrealized gain.

There are ceiling limitations to the amount of charitable contributions that can be deducted annually. Contribution deductions for contributions to public charities may not exceed 50% of an individual's adjusted gross income for the year [Sec. 170(b) of the IRC(1985)]. However, any capital asset or Section 1231 asset that would result in a long term capital gain if sold is subject to a 30% ceiling limitation [Sec.170(b)(1)(D) of the IRC(1985)]. Contributions to charities in excess of the ceiling limitations may be carried over to subsequent years for up to five years [Sec.170(d)(1) of the IRC(1985)].

Taxpayers who do not itemize may, nevertheless, at least partially deduct their charitable contributions [Sec. 170(i) of the IRC(1985). The following table details the limits imposed on deducting the charitable contribution if the taxpayer does not itemize:[4]

TABLE 10

Charitable Contribution Deduction Limits Imposed On Nonitemizers

Year	Percentage of Contributions Allowed	Max.Ded./Yr.
1982	25%	$25
1983	25%	25
1984	25%	150
1985	50%	No Limit
1986	100%	No Limit

FOOTNOTES

1) Capital gain property is property which if sold by the donor at its fair market value at the time of its contribution to the charitable contribution would have been treated as a long-term capital gain [Reg. 1.17A-4(b)(1)].

2) Tangible personalty is all tangible property that is not realty and intangible property such as stocks and bonds. [Hoffman W., and L. Phillips, 1981].

3) Related use means a use which is related to the purpose or function constituting the basis of the charitable organization's exemption under Section 501 [Reg. 1.170A-4(b)(3)(i)].

4) This subsection is scheduled to be phased out after 1986 [Section 170(i)(4) of the IRC(1985)].

APPENDIX C

EXAMPLES OF OTHER TAX PREFERENCES WHOSE OBJECTIVE IS TO INFLUENCE TAXPAYER BEHAVIOR

Influencing taxpayer behavior in order to achieve certain objectives is not unique to the charitable contribution deduction. This appendix discusses other tax provisions whose objective also is to influence taxpayer behavior.

The Investment Tax Credit is designed to encourage economic growth and full employment (S. Report No. 1881, 87th Cong., 2d Session [1962], p. 10). The Investment Tax Credit was passed by Congress in response to President John F. Kennedy's 1961 Tax Message to Congress in which he expressed the need for efficient plants and equipment in order for the United States to maintain its competitive advantage in the world marketplace [U.S. Congress, House Committee on Ways and Means, Tax Message of President Kennedy, April 20, 1961, 87th Congress, 1st Session, Vol. 1, p. 5].

Progressive tax rates coupled with the earned income credit achieve a measure of income redistribution (S. Rep. No. 94-36, 94th Congress, 1st Session [1975], p. 32; Pechman [1971, pp. 69,79]). The interest deduction on the personal residence may be viewed as an effort to increase social stability by encouraging home ownership [Weidenbaum, 1974, p. 519].

Provisions have been extended to selected industries such as the timber, oil and gas, and real estate industries

to encourage their specific development. With respect to timber, a timber owner can, under certain circumstances, treat the cutting of timber as a sale at fair market value [Section 631(a) of the IRC (1985)]. Timber owners also have the right to take depletion for the cutting of timber even though timber is replaceable and grows [Section 611(a) of the IRC(1985), Reg. 1.611-1(b)]. A third major benefit is the ability to amortize and take an investment credit for reforestation expenses [Section 48(a)(1)(F) of the IRC (1985), Reg. 1.48-1(P)(1)].

The oil and gas industry receives preferential tax treatment in several respects. The taxpayers involved in oil and gas exploration can elect to accelerate the deduction on the majority of his capital investment as intangible drilling and development costs [Section 263(c) of the IRC(1985) and Regulation 1.612-4]. Independent producers and royalty owners are entitled under certain conditions and subject to certain limitations to claim percentage depletion [Section 613(A) of the IRC (1985)].

Investors in real estate are entitled to depreciation deductions in excess of economic depreciation [Section 168] and are entitled to long-term capital gain rates when the property is sold [Section 1231 and 1221 of the IRC (1985)].

BIOGRAPHICAL SKETCH

Richard Burns Toolson was born in Salt Lake City, Utah on March 9, 1950. He received his elementary and secondary education in Las Vegas, Nevada and Ogden, Utah, graduating from Weber High School in Ogden in 1968. He enrolled at Brigham Young University in the Fall of 1968, and after attending for one semester, he served a two year mission in Argentina for the Church of Jesus Christ of Latter-Day Saints. He re-entered Brigham Young University in 1971 and in 1974 received a Bachelor of Arts in Economics with a minor in Spanish. In 1976, he received a Master of Business Administration from Brigham Young University. Upon completion of the MBA degree, he was employed from 1976 to 1978 in Philadelphia, Pennsylvania as a sales coordinator for Latin America for the FMC Corporation. In 1978, he relocated to Salt Lake City, Utah where he worked as a public accountant for a local CPA firm as well as for his own account. His CPA certificate was awarded by the state of Utah in March of 1981. From September, 1981 to August, 1982 he served as an instructor in accounting at Weber State College. In August 1982 he entered the doctoral program in business administration at Arizona State University and has held a graduate assistantship in the Department of Accounting during most of his residency at Arizona State. He is a member of the American Institute of Certified Public Accountants, the American Accounting Association, and the honor societies of Phi Kappa Phi and Beta Gamma Sigma. He is married and has two children.