THE ROLE OF INCOME IN THE PERCEIVED QUALITY OF LIFE OF THE RURAL POPULACE

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CHAPTER I

INTRODUCTION

Economics has been defined as

> . . . the study of how men and society end up choosing, with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities and distribute them for consumption, now or in the future, among various people and groups in society (27, p. 3).

Since commodities--goods and services--are produced to meet the demands of the society, economics is ultimately concerned with the satisfaction, well-being, or utility which is derived from the consumption of these commodities. At least since the time of Bentham, the concept of utility and diminishing marginal utility has been present in the body of economic thought (24, p. 150). Cardinal measurement of utility is beyond the scope of economic analysis because like beauty it is in the eye of the beholder. However, a need exists for a proxy measure. An index of perceived quality of life could serve as such a measure.

The acquisition and maintenance of some minimum standard of living or quality of life is central to the social welfare goals of society in the United States. This proposition is illustrated by actions of the Federal government, state governments in, for example, alternative plans to reduce unemployment and/or to raise income of low income individuals.

Income maintenance programs, food stamps, and welfare payments are put forth as methods of improving the economic situation of the individual. These programs are based upon the observation that quality of life varies across the economy and the implicit or explicit assumption that the level of consumption, income, or economic opportunity plays a role in the individual quality of life. There is strong theoretical and empirical evidence that income plays a role in individual quality of life. There is also strong theoretical evidence that, at least after the attainment of some level of income or consumption, additional factors enter into individual appraisal of quality of life and additional increments in income add less to quality of life. Progressive income taxes may be one official expression of such evidence. As indicated by Stuby (35), there has long been an interest in research into the quality of life of the rural population. Much of the early work focused upon farmers, but more recent work includes rural nonfarm people as well.

The Problem

A large number of public policies entail redistribution of income and other equity issues, and many policies are also designed to deal with economic efficiency. The implicit assumption of many of these public policies and economic theory is that a dollar provides the same satisfaction to whomever gains it and provides the same sacrifice to whomever loses a dollar. Such assumptions seem untenable--the challenge is to derive an alternative that provides a means of evaluating public policies proposed as a means of promoting changes in the socioeconomic environment.

Central to the question of individual quality of life is the issue of what to measure. There are two basic approaches to the measurement of quality of life. First, quality of life may be viewed as the product of the economic growth and development within a given area. The quality of life for a given region then becomes a function of the income and institutional infrastructure of the region. Personal income, the number of classrooms, hospitals, fire engines, etc., become the social indicators of quality of life. This approach relies upon secondary data which are readily available. The criteria and factors included are derived from the researcher's value judgments and available data. There is no input from the individuals who may or may not experience the "quality of life" measured, particularly if costs are included. Second, quality of life may be approached through the individual's interaction with his socio-economic environment. Since the individual's perception of reality is the "reality" upon which he organizes his behavior, perceived quality of life should provide a useful datum for public policy. Use of individual quality of life requires detailed primary demographic and attitudinal data. Given the availability of the required data, this approach potentially yields a basic measure for the application of public policy and for the departure point of future research. To efficiently achieve the goal of improving the quality of life which the individual perceives, policy makers may use this measure in the implementation of the relevant policies.

The concept of social or psychological well-being has in the past been used in conjunction with subjective measures of socio-psychological adjustment or dysfunction. Prior research has investigated the relationship between measures of socio-economic status and social indicators, but the precise relationship of income to the measures considered is not reported. The income-social indicator linkage is shown in some cases, but the cross-sectional nature of the data used and the results presented precluded an adequate evaluation of the effects of a change in income upon the socio-psychological variable under investigation.

The Rural Income Maintenance Experiment collected a broad range of attitudinal and demographic data from the control and experimental participants in the program. These data will be used to derive a measure of individual quality of life based upon individual perceptions of quality of life. The measure of quality of life may then be used to test the presumption of economics that income contributes to quality of life. This will provide basic research into the issue of how level and distribution of income contribute to quality of life, and the results will have application to public policy.

Objectives

The primary objectives of this study are to construct a measure of individual perceived quality of life and to explore some of the relationships within the derived framework. Specifically, the objectives of the study are:

1. To identify, within previously developed scales of social well-being, factors which may be used to derive indices of well-being.
2. To aggregate the indices of well-being into an index of perceived quality of life (QLI).
3. To develop and quantify a model in which the quality of life index is the dependent variable and theoretically appropriate independent variables are examined for their ability to explain the observed variation in the QLI.

4. To use the QLI model to examine the role of income and income composition in the individual quality of life of the rural population, with emphasis on low income households.

CHAPTER II

SOCIAL INDICATORS OF WELL-BEING

Since the development of a social indicator scale for anomie by Srole (32) which evinced a relationship between the indicator and socioeconomic level, social scientists have attempted to measure the differences in response values which are associated with income and individual well-being. This research has focused upon certain socio-psychological measures which have been taken as indicative of the individual's perception of his well being.

The existence of a relationship between attitudinal scales and income has been established, but the individual measures have not been combined to determine if they may be utilized as an aggregate measure of the quality of life which the individual perceives that he experiences. Utilizing factor analysis, this study will analyze some components of previously developed scales to determine if factors may be identified which account for the variation in the observed values of the responses. The formulation of the factor analysis will be discussed in Chapter III. The resulting factors will be used to develop a quality of life index (QLI), and the QLI will be integrated into a regression model. If the analysis fails to reject the hypothesis that there is a relationship between income and QLI, the model and its relationships will be utilized to derive quantitative relationships between income and QLI and to test various hypotheses pertaining to the interaction between quality of life and selected independent variables.

Prior Research

Some measures of well being developed by previous research appear relevant to an evaluation of individual quality of life. These measures are self-esteem, anomie, and life satisfaction.

Self-esteem

Crain and Weisman (10) reported a positive relationship between self-esteem and income. Their measure of self-esteem required that the individual feel that there was nothing wrong with himself, and in addition that he feel that he is better than the average person. This type of measure potentially includes a degree of competitiveness. Since it seems reasonable to assume that more competitive persons will seek out and compete for the best jobs available to them, the empirical relationship found by Crain and Weisman may be due in part or totally to the relationship between competitiveness and income. Although the structure of the survey instrument used by Crain and Weisman includes more than a concept of self-esteem or a favorable opinion of himself by the individual, it does establish a significant relationship between income and what the individual respondents in the study regarded as self-esteem.

Heiss and Owens (15) investigated self-esteem by relating individual self-evaluations to socio-economic groups. Their index of socio-economic status was based upon education, occupation, and total income, but they report their responses only for differences between high and low socio-economic groups. They found a significant difference between income groups, but little difference among racial groups. Although Heiss and Owens have concluded that a lack of self-esteem declines as income increases, the use of only two qualitative categories of income prevents a determination of rate of change in self-esteem relative to the change in income.

In an investigation of the effect of social position on self-esteem, Yancy, Rigsby, and McCarthy (40) reported that 16 percent of the variance observed in self-esteem could be associated with their variables. Although income per se was not one of their variables, work force participation and education were included. It seems reasonable to assume that these latter variables at least partially determine the level of individual and family income.

Although prior research supports the hypothesis that self-esteem is positively related to income, the studies have failed to consider various levels of income and the corresponding estimated value of the respondent's self-esteem. Such data would allow estimation of the rate of change in self-esteem as income is allowed to vary and other exogenous determinants of self-esteem are held constant or controlled within the analysis.

Anomie

Defined as the sense of self-to-others alienation which the individual feels, anomie has also been investigated to determine its correlation to the level of individual income.

Using an income range of less than \$1,000 to greater than \$9,999, McDill (20) reported a correlation of -0.49 between level of income and anomie. The results are not, however, presented in a form permitting calculation of the change in anomie as the level of income is varied.

Mier and Bell (21) concluded that "anomie results when individuals lack access to the means for the achievement of life goals." They found level of income to be one of the determinants of individual anomie scores. Their results indicate that the correlation is negative--lower levels of income tend to be associated with higher levels of personal anomie for the respondent. Aggregation of all respondents into only two groups in the final representation of results precluded an examination of the marginal trade-offs between anomie and income.

Holding educational level constant, Mizruchi (22) measured the relationship between anomie and income. He found that for educational levels below college there was no significant difference in the anomie scores for persons with income below $5,000 and persons with income above $5,000.

Additional research by Bell (2), Simpson and Miller (30), and Bullough (5) supported the hypothesis that there is a negative relationship between anomie and socio-economic indicators. Again, aggregation of the socio-economic groups precluded a detailed quantification of the relationship.

Bullough presented a mean powerlessness and anomie score as a function of income, but all income levels were aggregated into three ranges. Bullough's results revealed a problem occurring with socio-psychological indicators: the mean powerlessness and anomie score for each income level varied with place of residence. Although income may significantly determine perceived powerlessness and anomie, Bullough's results show that the relationship is more complex than a simple income-quality of life linkage.

Life Satisfaction

Studies have also established a positive relationship between income and the level of happiness or "life satisfaction" which the individual experiences.

Easterlin (12) reported that in all societies more money for the individual typically means more individual satisfaction, but that raising the incomes of all does not increase the happiness of all. Of the individuals surveyed only 25 percent of those with incomes under $3,000 indicated that they were happy and approximately 50 percent of those with incomes over $5,000 indicated that they were very happy. Easterlin concluded that welfare judgments by the individual may prevent rising national income from resulting in a rising level of national satisfaction. After his income has risen, rising expections may cause the individual to feel that he is not better off.

Bradburn and Caplovitz (4) reported the percentage of persons who said they were "very happy," "pretty happy," and "not too happy" as a function of the individual's level of income. For all income levels, more than 50 percent of the respondents are in the "pretty happy" category. Between the income ranges of $3,000-$3,900 and $7,000-$7,900, the "pretty happy" category varies within a range of only 5 percent and the "not too happy" category within a range of 6 percent. Bradburn and Caplovitz's results provided support for the supposition that small changes in the income level of low income people will not produce significant changes in the individual's reported level of happiness.

Current Status of Social Indicators of Well-Being

Prior studies have not generated information necessary to detail the relationship of income to socio-psychological indicators. The shortcomings of the previous studies fall into one or more of three categories. The first category consists of studies which fail to separate income from other variables which may contribute to socio-economic status. The second, related category is made up of studies which designate income as a determinant of socio-economic status, but fail to control for its possible correlation with such independent variables as education and age. The third category comprises studies which lose most of their applicability due to aggregation of their findings in the final analysis.

Studies in categories one and two measure a general level of socio-economic status and socio-psychological indicators, but they fail to isolate the individual components of socio-economic status which contribute to changes in indicators under consideration. Studies in category three have collected and analyzed data which would have potentially allowed for a detailed consideration of the influence of income on the socio-psychological indicators to be studied, but after collection of the data, aggregation of the data into "high" and "low" income groups virtually eliminates their quantitative value.

All of the studies reviewed have found a positive correlation between indicators of socio-economic status and psychological well-being. Since this relationship has been established, this study will attempt to develop the analytic procedure and empirical framework necessary to measure the individual's perceived quality of life and to quantify its relationship to income.

Theoretical Framework for the Analysis of the Relationship Between Quality of Life and Level of Income

Quality of Life

Prior research indicates that the economic actions of the individual at a given level of income depend on the individual's socio-psychological profile (19). Assuming that the personality make-up of the individual interacts with the reality of his economic constraints and that the individual's economic constraints are inseparable from his personal disposition, one expects the pursuit of economic activities, goals, and desires, as restrained by the limits of income to lead to a succession of intrapersonal conflicts. A second thrust of this approach is that consideration of the social welfare of the population must include the relationship of personal well-being to income.

Based upon the results of prior research, it seems reasonable to assume that the intensity of personal difficulties as measured by the social indicators of well-being are not randomly distributed over the entire population (10, 12, 15, 20, 21, 40). Difficulties include failure to accomplish goals, feelings of failure, unhappiness, worry, alienation from others, alienation from society, etc. Although everyone may experience these difficulties, the duration and intensity of the difficulties encountered may be expected to vary for subsets of the population of the economy.

Given that the individual or family consumption unit has a reasonable knowledge of the income flow which it will command over a period of time, economic theory indicates that, during a given period of time, a rational consumption unit will consume that combination of goods and services which maximizes the satisfaction which may be derived from its income stream. The assumption that more is preferred to less is one of the basic assumptions of the theory of consumer choice, and since the income of the individual or consumption unit is limited over any time period, the perceived quality of life should be constrained by the individual's or consumption unit's income. Well-being is assumed to be enhanced by having more options--greater income increases the options for purchasing goods and services or accumulating wealth that contributes to power and prestige. It would follow that at least in part the quality of life which the individual perceives is a function of his income.

Subindices of the QLI

This study assumes that the quality of life which the individual perceives may be measured by selected socio-pschological indicators of individual well-being. The questionnaires administered to the participants in the Rural Income Maintenance Experiment contained items which were the modifications of socio-psychological scales developed in prior investigations by social science researchers. Each of the individual measurement scales and their component items had been previously developed and tested as specific measures of their respective socio-psychological variable. For this study, various of the specific scales have been grouped into three subindices of the QLI. Since this analysis will focus upon the overall quality of life and its relationship to income, the specific scales have been amalgamated into subindices. These subindices should provide a more representative measure of total quality of life as perceived by the individual than would any of the individual component scales. The subindices will then be used to construct the QLI.

The specific items which comprise each subindex are presented in Tables 10-16. The quantitative integration of these items into a measure of quality of life is discussed in the next chapter.

Alienation

Various scales measured respondent alienation from others and alienation of control over the outcome of his future. This latter concept is included to capture negative socio-psychological reactions which might not be measured by simple self-to-others alienation.

The first component in this category is the traditional anomie scale as modified from McClosky and Scharr (19). While investigating the relationship of anomie to mental disturbances, Srole (32) found that anomie is inversely related to social and economic status independent of a mental disturbance factor. The study and resulting questionnaire by McClosky and Scharr was directed toward a broadening of the then existing sociological explanations of anomie. Their results indicate that anomie responses are powerfully governed by cognitive and personality factors. They found that anomie, defined as a sense of normlessness, results from impediments to interaction, communication, and learning, and it is a sign of impaired socialization.

Measured by a scale modified from Bradburn (3), the second component of this subindex is negative affect. The work from which the items were modified was an extension of the supposition that psychological well-being is a function of two independent dimensions: positive and negative affect (4). To measure the positive and negative affect in life satisfaction, people were asked how often they had had pleasant and unpleasant feelings or experiences. Bradburn assumed that individuals code all experiences in terms of positive or negative content, and he established the independence of positive and negative affect and that the individual's overall sense of well-being is dependent upon the balance of the two sets of forces. The scale items developed by Bradburn reflect a wide range of positive and negative experiences which would be common to a heterogenous population, but they do not include a complete set of all positive and negative states. The respondents can relate their coding of experiences in terms of the general positive and negative affect items presented to them. Table 11 contains the negative affect items integrated into the Alienation Subindex.

The third component of the Alienation Subindex is the powerlessness scale. Powerlessness was measured by items which had been modified from Stodtbeck (33), Coleman (8), and Rotter (26). Stodtbeck's work addressed the determination of the motivational aspects of achievement. Being an over-achiever was determined to be positively related to higher socio-economic status (33, p. 160). The questions taken from Stodtbeck's study measure the degree to which the individual feels that he has control over the outcome of his actions. A sense of control was found to be positively related to socio-economic status.

As part of an evaluation of the equality of educational opportunities for minority groups in public schools, Coleman (8) employed previously developed psychological measures of powerlessness. The Rural Income Maintenance Experiment incorporated a portion of the survey items which had been utilized by Coleman.

Rotter (26) developed a scale to measure the degree of internal versus external control which the individual perceives as influencing the outcome of events. The scale reflected the degree of control which the individual felt he had over his life--a measure of his powerlessness. Higher socio-economic groups were found to perceive more power over the outcome of their lives than were lower socio-economic groups. Based upon a national stratified sample of 1000 cases, Rotter indicated that there is a significant relationship between socio-economic class and internality.

The questions utilized for the powerlessness scale are given in Table 12.

Worry

The second subindex of the QLI consists of a psychological scale designed to measure worry. Worry in the survey was measured by items which had been modified from Bradburn and Caplovitz (4). They found that in terms of content, worry may be divided into two distinct areas: areas in which the individual has very little control over the outcome and areas in which the individual has a considerable degree of control over the outcome. These they termed "uncontrollable" and "controllable" worries respectively. It was found that uncontrollable worries were associated with higher socio-economic status, and controllable worries were associated with lower socio-economic status. Uncontrollable worries were those in the areas of "growing old," "death," and "health." Controllable worries were those in the areas of "getting ahead," "money," "work," "marriage," and "bringing up children." This analysis included questions for both areas of worry. This allows the worry index to function across all ranges of income. The worry scale is given in Table 13.

Self-Esteem

The third subindex of the QLI is self-esteem. The Self-Esteem Index is composed of three scales: self-satisfaction, positive affect, and life satisfaction.

Self-satisfaction was measured by a scale modified from a study by Rosenburg (25). As measured by the scale developed by Rosenburg, self-satisfaction indicates that the individual has a positive or negative attitude toward himself. As indicated by Rosenburg, this attitude has two quite distinct connotations: the connotation of the "looking-glass self"[1/] (18, p. 753) and the connotation of the self-concept[2/] (18, p. 755). Thus the "looking-glass self" could consider itself superior to others while the individual's self-concept could be inadequate when measured by the standards which the individual has set for himself. The individual could also consider the "looking-glass self" as average and be quite content with his self-concept. The

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[1/] A person's conception of himself based on the apparent attitudes of others toward him which he infers from their behavior.

[2/] A person's awareness and appraisal of his own interconnected attitudes and personal worth.

self-satisfaction measured by the Rosenburg scale is a measure of the individual's self-concept. High self-satisfaction indicates that the individual respects himself; and, while he may not consider himself better, he does not consider himself worse than others. Low self-satisfaction would indicate self-dissatisfaction and a lack of respect for the self-concept. The items of the self-satisfaction scale are presented in Table 14.

The second scale of the Self-Esteem Index measured positive affect. This scale consistes of positive items from the Bradburn study discussed in conjunction with the Alienation Index. The items in the positive affect scale are presented in Table 15.

The third scale of the Self-Esteem Index measured life satisfaction using items modified from Bradburn (3). Components of the life satisfaction scale are presented in Table 16.

Derivation of the QLI

Based upon the results of prior research, the individual scale components of the Subindices enumerated in this chapter have been selected as theoretically relevant to the QLI. They will be refined by the use of factor analysis and integrated into the QLI as an aggregate measure of individual quality of life. The statistical analysis framework and the empirical development of the QLI are presented in the following chapter.

CHAPTER III

STATISTICAL FRAMEWORK FOR SOCIAL INDICATOR ANALYSIS

The initial step in the development of the quality of life index (QLI) is the analysis of the social indicator scales enumerated in Chapter II. The method of principal axis factor analysis is employed using the Statistical Analysis System (SAS) developed by the Statistics Department of North Carolina State University at Raleigh (28). The analysis is undertaken in two stages. First, the items of all scales are considered as one group of responses to evaluate the *a priori* grouping of the specific scales into the general Subindices of the QLI. Second, factor loadings for the specific items within the scales are derived and analyzed. Analysis of the factor loadings is undertaken to insure that the specific questions in this experiment load in a logical and consistent manner upon the factors which were selected as components for the analytical framework.

Origins of Factor Analysis

Factor Analysis has been used as a statistical tool by psychologists for many years. The method of principal axis was set forth by Karl Pearson in 1901 (14). In 1904 Charles Spearman published "General Intelligence, Objectively Determined and Measured" in the *American Journal of Psychology*. Spearman's two-factor theory was not always adequate for situations where batteries of measurement devices were used and as a result multiple factor analysis was developed (14).

The principal objective of factor analysis is to attain parisomy in the description of the observed data. In this application factor analysis may be viewed as an algorithm for finding subsets of a set of variables. The subsets derived are linear combinations of the set which maximize the the variance accounted for within the subsets and minimize the variance among the subsets. Any factors obtained through the use of factor analysis are not the complete fundamental set of factors due to the potential existence of other relevant measures not yet devised. Although a complete description of the data may not in theory be reached, it may be approached, and factor analysis does provide a simplification of a given data set. Viewed in this manner, factor analysis represents a straightforward manner of description in several dimensions of a number of observed variables.

Basic Statistics of Factor Analysis

The value of the X variables observed for the individuals in the sample may be represented by X_{ji} where j = 1, 2, ..., n variables and i = 1, 2, ..., N (observations) individuals. Any particular X_{ji} may be referred to as an observed value which is measured by an arbitrary unit from an arbitrary origin. For convenience, factor analysis fixes the arbitrary origin at the mean by defining x_{ji} as $X_{ji} - \overline{X}_j$. The sample variance[1/] may be defined as

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[1/] This is a biased estimate of sample variance, but multiplication by N/(N-1) would yield an unbiased estimate.

$$s_j^2 = \frac{1}{N} \sum_{i=k}^{N} x_{ji}^2 = \frac{1}{N} \sum_{i=1}^{N} (X_{ji} - \overline{X}_j)^2.$$

Taking the sample standard deviation s_j as the arbitrary unit of measurement, the standardized value of the j-th variable for the i-th individual is given by

$$z_{ji} = x_{ji}/s_j = \frac{1}{s_j}(X_{ji} - \overline{X}_j)$$

where the variance of z_j is unity.

The sample covariance for any two variables j and k is defined by

$$s_{jk} = \frac{1}{N} \sum_{i=1}^{N} x_{ji}x_{ki}$$

and the correlation coefficient is defined as

$$r_{jk} = \frac{s_{ji}}{s_j s_k} = \frac{1}{N} \sum_{i=1}^{N} z_{ji}z_{ki} = \sum_{i=1}^{N} x_{ji}x_{ki} \left(\sum_{i=1}^{N} x_{ji}^2 \sum_{i=1}^{N} x_{ki}^2 \right)^{\frac{1}{2}}$$

The calculation of the correlations among the variables which are to undergo analysis is usually the initial step in factor analysis.

The Factor Analysis Model

Operating within a simple linear framework, factor analysis represents the variable, z_j, the standardized variable in terms of hypothetical constructs or factors. Factor analysis may have two distinct objectives within the linear framework: (1) to extract the maximum variance and (2) to best reproduce the observed correlations. This analysis will utilize the method of principal axis which has as its objective the extraction of the maximum variance by each successive factor considered in the analysis (14).

The model is

$z_j = a_{j1}F_1 + \ldots + a_{jp}F_p + \ldots + a_{jm}F_m$ where $j = 1, 2, \ldots, n$

and where each of the n observed values is linearly described by n uncorrelated components $F_1, F_2, \ldots, F_n$. To reproduce the correlation among the variables, the number of components equals the number of variables (14). Since the principal axis method of analysis is utilized by this analysis, each factor results in the extraction of successively smaller amounts of variance. The extraction of one hundred percent of the variance would, in general, require the inclusion of more factors than this analysis utilized, and it would in some cases result in as many factors as there were variables (items) in the scale. Practical considerations limit, therefore, the number of factors to less than n because addition of successive factors usually accounts for only nominal variance long before the n-th factor is added.

The sum of squares of the factor coefficients yields the communality of a particular variable. The principal axis method involves the selection of the first-factor coefficient a_{ji} such that the contribution of that factor to the total communality is a maximum. This sum is given by

$$V_1 = a_{11}^2 + a_{21}^2 + \ldots + a_{n1}^2$$

where the coefficients a_{ji} are chosen such that V_1 is a maximum subject to the condition that

$$r_{jk} = \sum_{p=1}^{m} a_{jp}a_{kp}$$

where j, k = 1, 2, ..., n and r_{jk}, r_{jj} is the communality h_j^2 of the variable z.

QLI Component Index Construction

Based upon the results of the factor analysis of the full set of all of the items of all the scales, the <u>a priori</u> index structure grouping the specific scales into the three sub-indices of the quality of life index is retained. Three individual data sets were identified and used to drive the factor loadings necessary to calculate the quality of life index. This method of index construction is employed so that the analytic model can be tested upon subsets of the experimental population in addition to the entire data set. The three data sets utilized are: heads of household, spouse of head of household, and the combined set of heads of household and spouse referred to as data set ALL. The use of a large number of factors for each scale would produce little additional information, and as the number retained approaches the number of variables the value of the analysis itself would become trivial. For this reason the analysis uses the following criteria to determine the maximum number of factors retained: the eigenvalues associated with the retained factors are greater than or equal to one, or the addition of another factor would result in a grouping of the scale items into a less plausible configuration. Due to the second criteria, some factors with eigenvalues greater than one are excluded from the analysis. The results of the factor analysis are presented in Tables 17-23.

The component indices of the QLI are constructed in the following manner. The numerical scale of possible responses is arranged so that disagreement with the item is given a low value. As disagreement becomes less, the value received by the response becomes greater. The median score on the scale is given for "don't know," "no opinion," etc., and the highest score possible given for complete agreement with the item. The values assigned to each response, the mean response for each item, the standard error of the mean, and the standard deviation of the item response are shown in Tables 10-16. This assignment of values is followed for all items regardless of their positive or negative attitude content. This method is followed for two reasons. First, it allows consistent numbering throughout, thus minimizing errors in the comparison of items; and second, it is compatible with the construction of a QLI which increases or decreases as the individual's perception of his quality of life increases or decreases. After assigning response score values in the above manner, the individual's raw scores or responses to each item are standardized in the following manner.

$$R_{ji} = \frac{X_{ji} - \overline{X}_j}{s_j}$$

where R_{ji} = the standardized response,

X_{ji} = the actual observed response,

$\overline{X}_j$ = the mean response for the j-th item,

s_j = the standard deviation of the j-th item.

In the results of the factor analysis, items measuring negative attitudes load positively upon factors representing negative constructs. Internal consistency and clarity of interpretation require that scale components representing negative aspects of quality of life enter the QLI as negative quantities. Since all responses to the scale items are represented by positive values, the factor loadings for the negative factors are "reflected." Reflection is accomplished by changing the sign of the relevant factors. The resulting factor loadings then correspond to the original loadings measured from the opposite direction (9, p. 108-113). Thus, higher positive feelings result in higher values of the QLI.

The Alienation Index

The Alienation Index consists of three separate components. These components contain the items which are to estimate the estrangement of the individual from society and the control of his present and future.

The Alienation Index (A_i) is given by

$$A_i = An_i + NA_i + P_i$$

where An_i = anomie scale value for the i-th individual,

NA_i = negative affect scale value for the i-th individual,

P_i = powerlessness scale value for the i-th individual.

Anomie Scale

As may be seen in Table 10 the anomie scale consists of items designed to measure the degree of self-to-others alienation experienced by the individual. The scaling of the responses is such that disagreement with the items (low levels of anomie) results in a low score and agreement with the items (high levels of anomie) results in a high score. The value of the anomie scale is given by

$$An_i = E_1 (\sum_{j=1}^{n} a_{1j} R_{ij}).$$

R_{ij} is the standardized response of the i-th individual to the j-th item on the scale, a_{1j} represents the factor loadings from the factor analysis of the anomie scale items, and E_1 is the eigenvalue for the factor associated with the loadings a_{1j}.

Since anomie is a negative socio-psychological concept and the items were structured to measure anomie, the factor loadings (see Table 17) are reflected. Higher levels of anomie will then result in larger negative scores on the anomie scale. Constructed in this manner, the scale shows a lower QLI for higher levels of anomie perceived by the individual.

Negative Affect Scale

As may be seen in Table 11 the negative affect scale consists of items designed to measure negative feelings resulting from individual coding of unpleasant feelings or experiences. The scaling of the responses and the wording of the items are such that the reporting of frequent negative affect experiences results in a more negative scale value. The value of the scale is given by

$$NA_i = E_1 (\sum_{j=1}^{n} na_{1j} R_{ij}).$$

R_{ij} is the standardized response of the i-th individual to the j-th item on the scale, na_{1j} represents the factor loading from the factor analysis of the negative affect scale items, and E_1 is the eigenvalue for the factor associated with the loadings na_{1j}.

Since the negative affect is a negative socio-psychological concept, the factor loadings (see Table 18) are reflected so that a greater manifestation of negative affect will result in a lower QLI for the individual.

Powerlessness Scale

As the result of the analysis, the conceptual framework of the powerlessness scale is divided into two factors. Factor 1 consists of the items which delineate a lack of control and Factor 2 consists of items which depict a sense of control over one's life. Based upon the content of the items, Factor 1 and Factor 2 of the powerlessness scale may be thought of as negative and positive personal effectuation respectively. Given the method of principal axis, the results indicate that initially more variation in the responses is accounted for by negative effectuation than by positive effectuation, but as may be seen in Table 19, this relationship is not stable over time. The grouping of the items upon specific factors remains constant, but the relationship of the factors in quarter 2 has reversed itself in quarter 10. In quarter 10 the positive effectuation factor extracts more variation than does the negative effectuation factor. The value of the powerlessness scale is given by

$$P_i = E_1(\sum_{j=1}^{n} p_{1j}R_{ij}) + E_2(\sum_{j=1}^{n} p_{2j}R_{ij}) .$$

R_{ij} is the standardized response of the i-th individual to the j-th item on the scale, p_{1j} and p_{2j} are the factor loadings for Factor 1 and Factor 2 respectively from the factor analysis of the powerlessness scale, and E_1 and E_2 are the eigenvalues for the factors associated with the loadings p_{1j} and p_{2j} respectively.

Since the analysis results in a negative and a positive factor for the powerlessness scale, the factor loadings for negative effectuation (F1 for Q02 and F2 for Q10) are reflected to allow the integration of the two components into one score for the scale. Thus, agreement with the negative items will result in a lower score while disagreement will result in a higher score. Agreement with the positive items will result in a higher score while disagreement will result in a lower score. Higher scores on the powerlessness scale will show a perceived ability to control the outcome of one's life and will result in a higher QLI_i.

The Worry Index

Based upon the initial factor analysis which contained all items from all scales, the worry scale is included as a separate index. The worry items tended to load on a separate factor for all three data sets. The result is in keeping with the previous findings that worry does not vanish or diminish as one changes socio-economic groups, but the composition of the worry experienced does vary among socio-economic groups.

The worry scale is comprised of items structured to determine how frequently an individual worries about given areas of life. Frequent worries result in low scores and low levels of worry result in high scores as may be seen in the scaling of responses in Table 13. Given this type of scale, it is not necessary to reflect the factor loadings. The value of the worry scale is given by

$$W_i = E_1 (\sum_{j=1}^{n} w_{1j} R_{ij}).$$

R_{ij} is the standardized response of the i-th individual to the j-th item on the scale, w_{1j} is the factor loading from the factor analysis of the worry scale items, and E_1 is the eigenvalue for the factor associated with the loadings w_{1j}.

Lower levels of worry are assumed to be associated with a higher quality of life, and the scale construction is such that QLI is higher when the level of worry is lower.

The Self-Esteem Index

The Self-Esteem Index consists of three separate components. These components consist of items which estimate the positive feelings and personal regard which the individual has for himself and his life situation. The value of the Self-Esteem Index is given by

$$SE_i = SS_i + PA_i + LS_i$$

where SE_i = self-esteem scale for the i-th individual,

SS_i = self-satisfaction scale for the i-th individual,

PA_i = positive affect scale for the i-th individual,

LS_i = life satisfaction scale for the i-th individual.

The grouping of the individual components into a separate index is assumed to be a measure of positive components of the socio-psychological quality of life. The initial, simultaneous analysis of all items used in the construction of the QLI substantiated the composition of this index.

Self-Satisfaction Scale

The self-satisfaction scale is comprised of two components: a lack of or negative self respect (Factor 1) and a positive self respect (Factor 2). The value of the self-satisfaction scale is given by

$$SS_i = E_1(\sum_{j=1}^{n} ss_{1j}R_{ij}) + E_2(\sum_{j=1}^{n} ss_{2j}R_{ij}).$$

R_{ij} is the standardized response of the i-th individual to the j-th item on the scale, ss_{1j} and ss_{2j} represent the factor loadings for Factor 1 and Factor 2 respectively from the factor analysis of the self-satisfaction scale, and E_1 and E_2 are the eigenvalues for the factors associated with the loadings ss_{1j} and ss_{2j} respectively.

Self-satisfaction is assumed by this analysis to be a positive component of an individual's perceived quality of life. The factor loadings of Factor 1 are, therefore, reflected to allow the integration of Factor 1 and Factor 2 into a single measure of self-satisfaction. Agreement with the items that loaded heavily on Factor 1 will lower the QLI of the individual, and agreement with items that loaded heavily on Factor 2 will raise the QLI of the individual.

Positive Affect Scale

The positive affect scale is comprised entirely of items measuring positive aspects of the individual's life, so it is not necessary to reflect the factor loadings derived for this scale. The value of the positive affect scale is given by

$$PA_i = E_1(\sum_{j=1}^{n} pa_{1j}R_{ij}).$$

R_{ij} is the standardized response of the i-th individual to the j-th item on the scale, pa_{1j} is the factor loading from the factor analysis of the positive affect scale, and E_1 is the eigenvalue for the factor associated with the loadings pa_{1j}.

The analysis assumes that more frequent occurrences of the events covered in the positive affect scale are associated with a higher personal quality of life. Thus, higher scores on the positive affect scale result in a larger value for the QLI.

Life Satisfaction Scale

Unlike the other scales, the items in the life satisfaction scale are not comprised of positive or negative type items; rather, they allow the individual to rank his response along a discrete continuum. The value of the life satisfaction scale is given by

$$LS_i = E_1(\sum_{j=1}^{n} \ell s_{1j}R_{ij}) + E_2(\sum_{j=1}^{n} \ell s_{2j}R_{ij}).$$

R_{ij} is the standardized response of the i-th individual to the j-th item on the scale, ℓs_{1j} and ℓs_{2j} represent the factor loadings for Factor 1 and Factor 2 respectively from the factor analysis of the life satisfaction scale, and E_1 and E_2 are the eigenvalues for the factors associated with the loadings ℓs_{1j} and ℓs_{2j} respectively.

Factor 1 consists of life quality rank items indicating the individual's ranking of his past, present, and future life step. Factor 2 consists of current life situation items which indicate whether the individual would change his life or continue it as it currently is. Higher scores on the life satisfaction scale indicate that the individual feels he has, is, and will continue to experience a life condition which he ranks as high and which he would not change. A low score on the scale indicates that the individual feels that he has, is, and will continue to experience a life condition which he ranks as low and which he prefers to change.

Since satisfaction with one's life is assumed to be a positive aspect of perceived quality of life, it is not necessary to reflect the factor loadings of either Factor 1 or Factor 2. Higher scores on the life satisfaction scale result in higher scores on the QLI for the individual.

The Quality of Life Index

The quality of life perceived by the individual as represented by the QLI is assumed to be a linear function of the alienation, worry, and self-esteem which the individual experiences.

The quality of life index (QLI) is

$$QLI_i = A_i + W_i + SE_i$$

where $i = 1, 2, 3, \ldots, N$ (individuals),

A_i = the alienation index for the i-th individual,

W_i = the worry index for the i-th individual,

SE_i = the self-esteem index for the i-th individual.

CHAPTER IV

MODEL FOR ANALYTIC EVALUATIONS AND HYPOTHESES TO BE TESTED

The quality of life index (QLI) developed in Chapter III is the dependent variable in the analytic model used herein. The interrelationship between income and a sense of well-being is viewed by the analysis as a hypothesis rather than as an established relationship. "The extent to which income level affects the individual's sense of well-being depends upon his social environment, values, aspirations, and ideas about fairness and equity" (32, p. 3). The QLI is constructed to measure and integrate these variables into one aggregate index. Having developed the framework necessary to derive a potential measure of the individual's perceived quality of life, the analysis focuses upon a hypothetical framework for elements in the individual's socioeconomic environment which may serve as determinants of the perceived individual quality of life. The analysis will proceed in two stages. The first stage will determine the "best" functional relationship for the variables which have been selected as theoretically relevant to the model. The best functional relationship will be selected upon the basis of three criteria: R^2, significance of the coefficients, and the theoretical acceptability of the signs of the coefficients of the income variables. Having chosen a functional form, the second stage of the analysis will test hypotheses related to the variables in the model.

The Model

The theoretical, nuclear model used to analyze the relationship between the quality of life index and the proposed determinants of the QLI is judged to contain the following variables:

$$QLI_i = f(Y_i, ED_i, AGE_i, N_i, L_i, R_i, PERFARMY_i, NW_i, QTR, E_i)$$

where

QLI_i = the quality of life index for the i-th individual,
Y_i = income of the i-th family unit,
ED_i = educational level of the i-th individual,
AGE_i = age of the i-th individual,
N_i = number of individuals in the i-th family unit,
L_i = geographical location of the residence of the i-th family unit,
R_i = race of the i-th individual,
$PERFARMY_i$ = farm income total income composition term for the i-th family unit,
NW_i = net worth of the i-th family unit,
QTR = time variable,
E_i = error term for the i-th individual.

Theoretical Model Components

Economic theory and the results of prior research suggest the independent variables of the nuclear model.

Age

Katona (17) found that when compared with middle age and older people, a higher proportion of younger people in the United States feel they are better off than they were five years ago, and they expected to be better off in five years. For this reason the analysis includes age as one of the potential determinants of the QLI. Katona's findings also indicate that the frequency of expected gains was higher in younger than middle age respondents. The *a priori* judgment is, therefore, that the perceived quality of life will be inversely related to age, and the sign of the coefficient for this component in the model will be negative.

Education

Based upon the work of Heiss and Owens (15), one would expect the level of respondent educational attainment to influence the QLI. Yuchtman (41) also indicated that education is one of the variables most frequently used to determine socio-economic status. Although the QLI is not an alternative measure of socio-economic status, the analysis assumes that education could affect QLI in much the same manner, and it is *a priori* expected that education will have a positive coefficient in the QLI function. Education is, therefore, considered as a potentially appropriate independent variable for inclusion in the general QLI model.

Number of Individuals in the Family Unit

The size of the individual family unit appears to have theoretical validity for incorporation into the model on at least three premises. First, the size of the family may result in an actual physical crowding which may result in a decline in the perceived quality of life (31). Secondly, the size of family may interact with family income. Although personal tastes and preferences will ultimately determine the role of family size in the QLI, two distinct income-family size interactions are immediately discernable. For a given level of income a larger number in the family unit results in a lower dollar per family member with which to purchase goods and services which contribute to quality of life. In this way family size could be inversely related to QLI. For a given quality of life per family, adding one more person to the family requires additional income, but successive additions to the family require smaller additions to income because of economies of family size. For a given income per person, large families may, therefore, sometime be "happier" families. Third, the size of family may itself make a positive contribution to QLI. Particularly among farm families, additional children contribute to the family labor supply. Since the study sample was taken entirely from a rural population, the possibility exists for family size to exhibit this positive relationship to QLI. Sufficient justification exists for including family size as a variable in the QLI model, but no _a priori_ judgment is made concerning the expected sign of the coefficient. By allowing nonlinear forms and interactions with income and other variables, the analysis allows considerable flexibility in the functional relationship between QLI and number in family.

Location

Since the study sample consists of individuals from Iowa and North Carolina, it appears _a priori_ consistent to include a location variable. Iowa and North Carolina are geographically and culturally distinct from one another, and the influence of these differences would not potentially be measured by the other variables in the model. A location variable could also pick up differences in the cost of living between the two study areas and could possibly capture a relative poverty affect. This would occur when the low income individuals are significantly differentiated from the average of their economic environment and/or perceive their situation to differ significantly from their economic environmental mean.

Race

Yancy, Rigsby, and McCarthy (40) found that there were racial differences on self-evaluations, but that there was no systematic pattern for the affect of race. Heiss and Owens (15) found that self-evaluations by blacks and whites varied depending upon the trait involved, but differences were found. Tweeten and Lu (36) found race to be significant at the 0.10 level or better in the determination of political involvement, political anomie, racial progressiveness, and personal effectiveness. Based upon these findings, a race variable is initially judged to be appropriate for the model, but no *a priori* judgment is made concerning a positive or negative relationship with QLI.

Farm Income-Total Income Ratio

The analysis assumes that the possibility exists for income source to influence the QLI. Since the study sample was entirely rural, the variable PERFARMY is included as a potential measure of any variation in QLI which could be explained by the ratio of farm income to total income. Tweeten and Lu (36) found occupation to be a significant determinant of personal effectiveness. Since the data set used for the analysis is largely composed of blue-collar workers and farmers, the occupational effect is not expected to be of major importance except for farm and nonfarm differences which would be reflected in PERFARMY.

PERFARMY may also adjust for differences which may exist in the measures of farm and nonfarm income. This variable would capture the effects of systematic underreporting of income. Since underreporting is of potentially greater significance for self-employed individuals, the presence of farmers in the data sample requires that the analysis measure the differences which exist between farm and nonfarm income.

Net Worth

Economic theory postulates wealth as one of the determinants of consumer utility or satisfaction (2, p. 249-251). The mere possession of wealth as a source of security, prestige, and a fund for heirs is taken as a contributing factor in the individual's theoretical utility function. If the QLI is to be a proxy for individual utility then net worth (NW) must initially be considered a component of the general QLI model.

Time

A time variable is included to measure variation in QLI when all proposed variables are held constant and time is allowed to vary. Since no preprogram observations are available for the social indicator scales, this type of evaluation is of particular interest. Holding all variables constant except time (QTR), the analysis will be able to detect long run adjustments in QLI which are not explained by the other independent variables. Two sources of QLI adjustment which would be measured by QTR are changes associated with the initiation of the program and/or the program payments and trends or attitude fluctuations reflecting changes in the general mood of the nation.

Quarter 2 and quarter 10 are the same season, hence seasonal compounding does not occur; therefore, any variation explained by QTR would not represent a seasonal adjustment.

Income

If each consumption unit with the economy had access to unlimited income, the relevance of income to the proposed quality of life index would evanesce. The theory of consumer behavior assumes and reality demonstrates, however, that each consumption unit has some maximum amount of income that can be spent on goods and services per unit of time. Given this assumption, the family unit's problem becomes how to allocate the limited money income subject to the restriction that satisfaction is maximized.

Prior research on indicators has included income as a contributor to social well-being. Since this study focuses primarily upon the relationship between income and the QLI, a detailed examination of income will be undertaken. Alternative definitions of income will be considered within the structure of the general QLI model. Alternative definitions are considered to more precisely identify the influence of income upon QLI. Hypotheses have been formulated to evaluate the role of income in the QLI relationship, and the definition of income are put forth with their respective hypotheses.

The analysis assumes that QLI is most strongly influenced by recent income. The components of total income (Y) are, therefore, lagged one quarter. Given economic theory, the study initially assumes that the influence of income upon QLI will have a diminishing marginal affect.

This analysis assumes that the household income is the appropriate unit of analysis for income in the QLI model. Household income in this analysis is taken to be the income of the primary wage earners of the family unit--head of household and spouse--and will hereafter be referred to as income or family unit income. Total income (Y) is defined as the aggregation of three classes of income:

$$Y = Y_e + (Y_{tr} + Y_{pp})$$

where

Y = total income for the family unit,

Y_e = income of the family unit earned from labor or assets,

Y_{tr} = transfer payments to the family unit not associated with the Rural Income Maintenance Experiment,

Y_{pp} = transfer payments by the experimental family units in the Rural Income Maintenance Experiment.

Each of the three income classes is described in more detail in the following pages.

Earned Income (Y_e). For the purposes of this study, earned income was defined as all income received for goods and services produced by the individual family unit of income from resources controlled by the family where

$$Y_e = TP + NFI + NBI + R.$$

The variables on the right side are defined below.

Total pay for the past quarter (TP) consists of all wages which the individual received during the past quarter. Defined in this manner, TP includes not only wages from the individual's primary employment, but it also includes wages for any part time or seasonal work which occurred during the previous quarter. This insures that short term but potentially significant amounts of income are measured. Since the study sample was drawn from the rural population, the seasonal nature of agricultural employment dictates that wage income from seasonal employment be included in the definition of TP. When income is segmented into increasing and decreasing income, this comprehensive calculation of earned income will facilitate the detection of differences should they exist. TP is zero for individuals who had no period of employment during the previous quarter.

Net farm income (NFI) includes all reported net returns to farming activities conducted by the family unit during the previous quarter. For individuals who were not engaged in agricultural activities this component is zero. For individuals engaged in agricultural enterprises, the value of this component could be positive, negative, or zero depending upon the outcome of the activity.

Net business income (NBI) includes all returns to nonagricultural enterprises undertaken by the family unit during the previous quarter. For individuals with no business enterprise, this component is zero. For individuals engaged in business activities, this component of income is positive, negative, or zero depending upon the outcome of the activity during the past quarter.

Rent (R) consists of all income received by the family unit resulting from the rental of property during the past quarter.

<u>Transfer Income (Y_{tr})</u>. For the purpose of this study, Y_{tr} was defined as income not included in Y_e but exclusive of payments received due to participation in the Rural Income Maintenance Experiment. Y_{tr} is made up of income transfers to the family unit from public agencies, private agencies, or individuals not currently members of the family unit. Transfer payments is calculated in the following manner:

$$Y_{tr} = SSRI + VB + P + FS + FC + SP.$$

Social security and retirement income (SSRI) is all benefits accruing to the family unit under the provisions of the Federal Social Security program and income from any retirement program received by the respondent or other member of the family unit.

Veterans benefits income (VB) is all benefits received by the respondent or other family member and which are disbursed by the Veterans Administration.

Pension income (P) consists of all pension and annuity income received by the family unit during the past quarter which is not included in SSRI.

Food stamp income (FS) is the addition to total income resulting from the purchase and use of food stamps by the family unit. The value of FS is determined for the Iowa subset by subtracting the purchase price of food stamps purchased during the past quarter from the value of the groceries purchased with the stamps. This prevents the double counting which would occur if the value of the groceries purchased were added directly to income. For the North Carolina subset the value of FS is the value of free food received under the Federal commodity program.

Family care income (FC) consists of all money received by the family unit to be used for the care of some member of the family and which is furnished by a person not currently residing with the family unit.

Special payments income (SP) includes any of the following types of income--government assistance programs such as ADC, job training, life insurance death benefits, trust fund payments, scholarship or fellowship for attending school, prizes or awards over $100, and gifts from outside the family--received by the respondent or other member of the family unit.

Program Payment Income (Y_{pp}). Program payment income is the payment received by the experimental family units of the Rural Income Experiment as their income supplement from the program. This component was based upon income and varied according to the payment plan to which the individual family unit had been assigned, and the number of individuals in the family unit eligible to participate. The payments were also adjusted during the program to compensate for increases in the cost of living. Y_{pp} is calculated in the following manner:

$$Y_{pp} = g(PL) - Tx(Y_e)$$

where

g = the guarantee level as a percentage of the full guarantee,

PL = poverty level, full guarantee level,

Tx = the program tax rate on earned income.

The full guarantee levels (PL) are given in Table 1 and the combinations of guarantee level (g) and tax rate (Tx) with the distribution of participants for this study in each category are given in Table 2.

Guarantee level (g) is the precommencement, administratively determined percentage of the full guarantee level or poverty level which the experimental family units would receive if their earned income (Y_e) were zero. Due to the adjustment of the poverty level for family size, the payments received by individual family units within a guarantee level also varied. The tax rate (Tx) for the individual family unit was also administratively determined prior to the commencement of the program. Tax rate determines the rate at which earned income (Y_e) is deducted from the individual's guaranteed level of income.

Error

The error term includes the influence of differences which exist among the individuals in the study sample, sampling error, and random disturbances caused by the experimental process itself. This error is unaccounted for by the independent variables included in the analysis. The regression model used in this analysis assumes that the error is randomly distributed within the sample.

Hypotheses to be Tested

The analytic model allows an investigation of the relationship between QLI and various demographic characteristics of the sample population. Nonincome components of the model will be evaluated by significance level and size of their respective coefficients.

Table 1. Full Guarantee Levels.[1/]

Payment Status	8/69 - 8/70 Marginal Payment	 Total Payment	8/70 - 8/71 Marginal Payment	 Total Payment
	(Dollars per year)		(Dollars per year)	
Household Head	1,319	1,319	1,398	1,398
Spouse	844	2,163	895	2,293
First Dependent	739	2,902	783	3,076
Second Dependent	580	3,482	615	3,691
Third Dependent	422	3,904	447	4,138
Fourth Dependent	369	4,273	391	4,529
Fifth Dependent	317	4,590	336	4,865
Sixth Dependent	264	4,854	280	5,145
Seventh Dependent	211	5,065	224	5,369
Eighth Dependent	158	5,223	167	5,536
Additional Dependents	0	5,223	0	5,536
Other Adults	844	--	895	--
Detached Dependents	--	--	--	--

[1/] Rural Income Maintenance Experiment Final Report, Vol. I: Objectives, Design and Administration, Chapter 5, "Rules of Operation," p. 22.

Table 2. Alternate Tax Rate--Guarantee Combinations.

Plan No.	Tax Rate	Guarantee Level	Iowa Sample Size			North Carolina Sample Size			Total Sample Size		
			Data Set			Data Set			Data Set		
			H	S	A	H	S	A	H	S	A
1	.50	.50	11	9	20	23	14	37	34	23	57
2	.70	.75	8	8	16	14	11	25	22	19	41
3	.50	.75	26	28	54	47	34	81	73	62	135
4	.30	.75	23	24	47	39	31	70	62	64	117
5	.50	1.00	26	23	49	38	33	71	64	36	120
6	.50	1.25	2	0	2	0	0	0	2	0	2
7	.70	1.25	0	0	0	0	0	0	0	0	0
8	.30	1.00	2	0	2	0	0	0	2	0	2
9	0.00	0.00	106	98	204	183	146	329	289	244	533
			204	190	394	344	269	613	548	459	1007

Unanticipated signs for the nonincome coefficients will not be, however, a sufficient reason for removal of a variable from the model.

The investigation of income is more comprehensive than that of the other variables, and it focuses upon a consideration of alternative hypotheses concerning the role and composition of the consumption units' income which may contribute to the level of QLI for the household head and spouse.

As noted in the discussion of prior studies, cross-sectional analysis (within societies) demonstrates a positive association between income and happiness. Although other components of socio-economic status such as education are mentioned, economic considerations have been found to be the most frequently mentioned reason for being happy or unhappy (13, pp. 215-223). Stumpel (34) in a more recent study has also found a strong relationship between satisfaction with income and a sense of well-being.

Thus, economic theory and prior research into the area of happiness and indicators of well-being appear to justify the somewhat detailed consideration of the relationship between income and the QLI undertaken in this analysis.

General Model Hypotheses

Selection of a functional form for the general QLI model will be accompanied by the first test of hypotheses. The first hypotheses involve the selection of the variables to be retained in the model. These tests will provide an empirical evaluation of the independent variables selected as theoretically appropriate for the model. The tests consist of the determination of the significance of the regression coefficients of the variables to be retained in the model. These tests will be conducted using all three data sets: head of household, spouse of head of household, and data set ALL.

Two hypotheses of specific economic orientation will be evaluated with the general model.

Income Relevance Hypothesis

This hypothesis will test the justification for the inclusion of income in the QLI model. The null hypothesis to be tested is that income is not a significant variable in the determination of the perceived quality of life as reflected by QLI_i. Two levels of evaluation will be used to establish the role of income in QLI. First, an unrestricted and restricted model will be run. These models will be respectively the general QLI model with and without income as an independent variable. The null hypothesis will then be evaluated using the restricted and unrestricted models to perform an F test. Second, the significance of the respective regression coefficients for income variables relevant to the functional form selected will be tested using a t-test. Rejection of the null hypotheses that income is not significant in the regression model and that the regression coefficients are not significantly different from zero would support the conclusion that income does play a role in the determination of the individual QLI and would form the basis for a more comprehensive consideration of the exact relationship of income in the QLI model.

If income is retained as a variable in the QLI functional relationship, it will provide the departure point for the testing of various alternative hypotheses to ascertain more precisely the exact relationship between income and the QLI.

Temporary Phenomenon Hypothesis

This hypothesis will test for the effect of time upon QLI when all other variables are held constant. The evaluation of time will be undertaken in two parts. Given values of the independent variables, the first hypothesis to be tested is that the QLI does not change over time. QTR will not indicate the source of variation, but the significance of QTR will indicate a systematic variation in QLI which is not explained by the other variables in the model. The significance of the coefficient of QTR will demonstrate potential refinement of QLI which can be made with improvement in the data and/or an expanded and improved model.

Income Specific Hypotheses

Given that income is found to significantly influence QLI, the analysis will proceed to evaluate alternative hypotheses concerning the role of income in the determination of QLI.

Age-Income Hypothesis

The impact of income on QLI may differ by age groups within the population. The interaction terms considered in the formulation of the general model will test for changes in the slope of the function resulting from an age-income interaction, but they will not test for linear shifts in the function resulting from an age-income interaction. The age-income hypothesis will test for this type of linear shift.

Relative versus Absolute Hypothesis

QLI may be affected by the relative rather than the absolute level of income. A demonstration affect has been observed in the formation of individual attitudes and individual perception of reality. With any given level of income, the possibility exists that there is an independent influence upon QLI resulting from the individual's income level relative to that of other persons in the area. The relative versus absolute hypothesis will be tested first through an evaluation of a linear shift variable. These variables will be constructed to indicate income level relative to the sample mean of the respective areas. If the linear shift is found to exist, the structural stability of the system will also be tested.

Irreversibility Hypothesis

It is possible that irreversibility is present in the relationship between income and QLI. Once a level of QLI has been reached by the individual, irreversibility means that the coefficients of the income variables are different for rising and falling income. The presence of one or more irreversible variables in a function may affect the analysis in two ways: (1) the partial influence of each independent variable cannot be determined exactly, (2) the coefficients of all other independent variables can be distorted--even changes in signs may occur (37).

The variable change hypothesis will examine the question of irreversibility in the QLI-income relationship. This hypothesis will be evaluated by two methods. First, the entire sample will be considered and income will be segmented into two components. The procedure for segmenting the variable is outlined in an article by Tweeten and Quance (37) and supplemented in a subsequent comment by Wolffram (36). Houck (16) has pointed out that the Tweeten-Quance and Wolffram framework had not dealt with the critical problem of the starting point or initial observation. In this study, the Houck method is used, employing income observations from the time period prior to the first QLI observations. The test of irreversibility will take place in two stages. The first stage is to test the significance of the individual components of the income variable. If the individual components are found significant, the second stage test will be to test whether the coefficients of the individual components are different from each other. The marginal response of QLI to income is expected to be greater for falling income than for rising income.

The second method of evaluation of the variable change hypothesis will be to divide the sample into two subsets: observations for an increase in income and those for a decrease in income. The structural stability of the system with respect to a rising-falling income classification will be evaluated by comparing the regression results of the pooled and segmented data sets.

Earned Income Hypothesis

Two alternative positions have been put forth in the economic literature which make it imperative to separate the response of QLI to earned and unearned income. The first position holds that there is a social status and psychological lift imported to the individual engaged in gainful employment (6). The receipt of transfer payments is considered to be demeaning and a stigma is attached to those on welfare.

Given this position, one expects a discounting of Y_{tr} when compared to Y_e in the QLI. The second position holds that governmental transfer income to low income individuals results in less work and more leisure for recipients (23), and it implies that Y_{tr} and the accompanying leisure contribute more to individual QLI than Y_e. Given that a rational individual will not voluntarily lower his QLI, position one implies that for a given total income, QLI will be higher the larger Y_e and the smaller Y_{tr}. Position two implies the reverse. Since the second position is attributed in particular to low income individuals, the study sample should display this characteristic if it is indeed prevalent within the economy. The relationship among QLI, Y_e, and Y_{tr} is tested in two stages. The first stage consists of the determination of the significance of Y_e and Y_{tr} in the QLI model. If Y_e and Y_{tr} are found to be significant components when entered separately into the QLI, the analysis will turn to a comparison of the regression coefficients of the respective variables. If they do not differ significantly from each other, they will be combined into the single income component Y.

Farm Income Hypothesis

The variable PERFARMY allows the analysis to measure the potential effect of the farm income as a proportion of total income on QLI. It does not, however, allow the analysis to consider farm income as a separate type of income. The farm income hypothesis is included as a test of the admissibility of farm income as a separate income component into the QLI framework.

Net Worth Hypothesis

The existence of a wealth effect and the potential influence of this effect upon consumers has been discussed in the economic literature since Pigou put forth a formulation of this proposition in 1941. A net worth hypothesis is included in the analysis as a potential measure of the impact of wealth upon QLI.

CHAPTER V

EMPIRICAL VALIDATION OF THE MODEL AND ASSOCIATED HYPOTHESES

Empirical evaluation of the general form of the model and hypotheses will be undertaken in two phases. The first phase will evaluate alternative functional forms and the variables appropriate to the respective forms. This phase will test the noneconomic hypotheses discussed in Chapter IV and the economic hypothesis that income should be included in the model. Given the general form for the QLI model selected in the first phase of the empirical evaluation, the second phase will assess the precise role of income in the determination of the QLI.

Model Selection

Model selection consists of choosing appropriate functional forms and the variables relevant to each respective model.

Functional Forms Considered

Four general forms for the model are considered as consistent with economic theory.

Power Function

The power or Cobb-Douglas functional relationship is considered as potentially appropriate for the general form of the model. Since negative coefficients for the income variable of the model would result in interpretations inconsistent with economic theory, only a positive coefficient is considered acceptable for inclusion in the final model. This functional form would allow the QLI to increase at an increasing rate or to decrease at a decreasing rate with respect to the independent variables. A declining marginal response of QLI to income would be expected. Although the influence upon QLI of any variable in this functional form may diminish and approach zero, the form also assumes that QLI never reaches a maximum or minimum. While the marginal response of QLI is infinite for the first unit of income and cannot be negative, these shortcomings of the power function may be ignored in the range of income data considered.

The function

$$QLI_i = a \overset{k}{\underset{j=1}{\pi}} X_{ij}^{b} \cdot e^{c_1 D_{i1} + x_1 D_{i2}}$$

$i = 1, 2, \ldots, n$ (observations)

$j = 1, 2, \ldots, k$ (variables)

X_{ij}^{b} = the respective independent variables introduced in Chapter IV

D_1 = location dummy

D_2 = time dummy

was estimated using ordinary least squares as follows:

$$\log QLI_i = \log a + \sum_{j=1}^{k} b_j \log X_{ij} + c_1 D_{i1} + c_2 D_{i2}.$$

While conserving degress of freedom by use of a minimum number of variables, this form of the model has the additional appeal of allowing curvilinear responses and interaction among explanatory variables. It has, however, the computational problem of not easily accommodating variables which have some observations with a value of zero.

Quadratic Function

Given the expectation of a declining marginal response of QLI to income, the quadratic functional relationship is also considered as potentially appropriate for the basic model. It allows the response of QLI to the respective independent variable to reach a maximum and to decline. Mathematically the possibility exists for a positive or negative coefficient to be associated with any of the squared terms, but a positive coefficient for the squared income term would not be consistent with the theory of declining satisfaction resulting from continued consumption of additional units of any good or service beyond some point. Thus, a negative coefficient for the squared income term and the accompanying declining marginal relationship between the economic variables and the QLI is expected. The quadratic form does, however, force a linear marginal response of QLI to the independent variables.

The function to be estimated includes linear and squared terms as well as terms for the interaction among variables. No more than two-way interactions are considered for the quadratic and other functional forms discussed below.

Square Root Function

The square root functional relationship is considered as an alternative to the quadratic functional form. It allows the QLI to reach a maximum and decline as does the quadratic, and a curvilinear marginal relationship may decrease at a decreasing rate. Positive coefficients for the square root terms of the income variables are consistent with economic theory, and a declining marginal relationship between the QLI and the economic variables was expected. The function to be estimated includes the noneconomic variables discussed in Chapter IV, aggregate income, and the variables representing the potential interactions among the various independent variables.

Cubic Function

The analysis also considers the possibility that the QLI-income relationship could be more complex than suggested by a second order polynomial. To explore this possibility, a cubic functional relationship is considered as potentially appropriate for the income variable in the general QLI model.

Interaction Terms

Due to the large number of potential interaction terms, the Stepwise MAXR procedure (28, pp. 127-131) of the SAS system is used to select interaction terms for the square root, quadratic, and cubic models. The MAXR procedure is initially applied to the models containing all linear interaction terms judged to be relevant to the model. Addition of theoretically relevant squared and cubic interaction terms does not result in additional significant coefficients for variables.

Evaluation Criteria

Variables included in the general form of the model are evaluated on the basis of coefficient size and statistical significance. Income variables will be rejected if signs of coefficients do not conform with economic theory. Because theory is less precise for the non-economic variables, these variables will be evaluated only on the basis of the statistical significance of the coefficients.

The economic orientation of the analysis makes the significance and signs of the income coefficients the first evaluation criteria. As may be seen in Tables 3, 6, 7, and 8 the signs of the income coefficients are consistent with economic theory for all functional forms, but the significance levels for some of the coefficients of the income variables in the square root and cubic forms of the general QLI model make them less desirable as tools for the analysis of income within the QLI. The final forms of the quadratic and power functions were, therefore, compared for their ability to explain the variation observed in the QLI. A comparison of the R^2 for the respective functions shows that the quadratic form explains 15 percent more QLI variation than does the power function. Based upon these evaluations the quadratic functional form is selected as the most appropriate basic model for the QLI relationship. Since the quadratic form is selected as the basic model, an initial and intermediate form of this function are presented in Tables 4 and 5.

Certain of the interaction terms selected by the MAXR procedure were removed from the model to ascertain the behavior of the model when they were not present. This was done with the variables YN, EDPERFARMY, and EDN. The interaction term for income and number in family (YN) enters the model as significant at the 0.03 probability level, but Y enters the model only if the admissible significance level is set much lower than .10. Removal of the term YN results in a significance

Table 3. Final Regression Equation for the Power Function Form of the General QLI Model--Dependent Variable: QLI; Data Set = ALL.

Variable	Coefficient	Prob > $\lvert T \rvert$	T for H_0: B=0	Standard Coefficient
Intercept	4.84362082	0.0001	25.98322	--
log Y	0.01685491	0.0670	1.83300	0.03225
log ED	0.08229415	0.0016	3.15720	0.06359
log PERFARMY[a]	0.01261101	0.0001	4.98557	0.08794
log AGE	-0.07176591	0.0498	-1.96274	-0.03672
STATE	0.10111901	0.0001	4.43480	0.08530
QTR	-0.73772791	0.0001	-37.87394	-0.63737

N = 1995[b] R^2 = 0.447   F Statistic = 267.43

S = 0.4312   Sig. of F = 0.0001

[a] Individuals with PERFARMY = 0 were assigned a value of 0.0001 to prevent a significant reduction in sample size.

[b] Nineteen observations were lost due to variables whose value was zero.

Table 4. Initial Regression Equation for the Quadratic Form of the General QLI Model--Dependent Variable: QLI; Data Set = ALL.

Variable	Coefficient	Prob > |T|	T for H_0: B=0	Standard Coefficient
Intercept	100.42401844	0.0001	14.97129	--
Y	0.00302804	0.0001	4.59346	0.14350
Y^2	-0.00000011	0.0084	-2.63724	-0.07766
ED^2	0.09944735	0.0001	6.43813	0.11757
STATE	5.69888587	0.0014	3.20101	0.06542
AGE	0.72902036	0.0098	2.58702	0.21297
AGE^2	-0.00835319	0.0067	-2.71546	-0.22639
R	0.36625849	0.8204	0.22704	0.00412
N	-0.43683561	0.1841	-1.32876	-0.02220
QTR	-63.37719429	0.0001	-51.63233	-0.74532

N = 2014 R^2 = 0.589 F = 320.212

s = 27.297 Sig. of F = 0.0001

Table 5. Intermediate Regression Equation for the Quadratic Form of the General QLI Model--Dependent Variable: QLI; Data Set = ALL.

Variable	Coefficient	Prob > |T|	T for H_0: B=0	Standard Coefficient
Intercept	99.58092426	0.0001	15.11090	--
Y	0.00284304	0.0001	4.42834	0.13474
Y^2	-0.00000010	0.0140	-2.45845	-0.07128
ED^2	0.10028774	0.0001	6.51020	0.11856
STATE	5.89522212	0.0001	3.93343	0.06767
AGE	0.66398729	0.0169	2.38979	0.19397
AGE^2	-0.00736001	0.0139	-2.46239	-0.19948
QTR	-63.39446761	0.0001	-51.65903	-0.74553

N = 2014 R^2 = 0.589 F = 411.413

s = 27.297 Sig. of F = 0.0001

Table 6. Final Regression Equation for the Quadratic Form of the General QLI Model--Dependent Variable: QLI; Data Set = ALL.

Variable	Coefficient	Prob > |T|	T for H_0: B=0	Standard Coefficient
Intercept	89.80638857	0.0001	11.66334	--
Y	0.00285160	0.0001	4.47336	0.13514
Y^2	-0.00000012	0.0032	-2.94706	-0.08506
ED^2	0.20842045	0.0001	6.00953	0.24640
PERFARMY	8.80197191	0.0001	4.42121	0.06939
STATE	4.00214190	0.0094	2.60059	0.04594
AGE	0.99629061	0.0017	3.13554	0.29104
AGE^2	-0.00707992	0.0201	-2.32545	-0.19188
AGEED	-0.04265370	0.0003	-3.65903	-0.14434
QTR	-63.17335131	0.0001	-51.83931	-0.74293

N = 2014 R^2 = 0.596 F Statistic = 328.94

s = 27.0802 Sig. of F = 0.0001

Table 7. Final Regression Equation for the Square Root Form of the General QLI Model--Dependent Variable: QLI; Data Set = ALL.

Variable	Coefficient	Prob > $\|T\|$	T for H_0: B=0	Standard Coefficient
Intercept	32.84997834	0.3063	1.02321	--
Y	-0.00008720	0.9194	0.10118	0.00413
$Y^{.5}$	0.16724609	0.0908	1.69181	0.06996
$ED^{.5}$	13.72717077	0.0055	2.77969	0.18304
PERFARMY	9.62936294	0.0001	4.74543	0.07592
STATE	5.84380114	0.0001	3.83986	0.06708
AGE	-0.91090888	0.1022	-1.63487	-0.26610
$AGE^{.5}$	14.81785053	0.0513	1.94983	0.33045
AGEED	-0.03124301	0.1051	-1.62151	-0.10572
QTR	-63.11474946	0.0001	-51.34507	-0.74224

N = 2014 $R^2 = 0.590$ F Statistic = 319.85

s = 27.3062 Sig. of F = 0.0001

Table 8. Final Regression Equation for the Cubic Form of the General QLI Model--Dependent Variable: QLI; Data Set = ALL.

Variable	Coefficient	Prob > $\|T\|$	T for H_0: B=0	Standard Coefficient
Intercept	89.08857788	0.0001	11.49792	--
Y	0.00361756	0.0012	3.23998	0.17144
Y^2	-0.00000027	0.1417	-1.46988	-0.19082
Y^{3a}	0.00000551	0.4035	0.83561	0.07743
ED^2	0.20953449	0.0001	6.03674	0.24771
PERFARMY	9.03333738	0.0001	4.49383	0.07122
STATE	3.95072609	0.0104	2.56494	0.04535
AGE	0.99040198	0.0019	3.11601	0.28932
AGE^2	-0.00691592	0.0235	-2.26670	-0.18744
AGEED	-0.04319234	0.0002	-3.69930	-0.14616
QTR	-63.19974449	0.0001	-51.83965	-0.74324

N = 2014 R^2 = 0.596 F Statistic = 296.070

s = 27.082 Sig. of F = 0.0001

[a] Due to the larger number resulting from Y^3, the value used in the regression model was $Y^3/1000000$.

level of .0001 for the coefficient of the Y variable. The interaction terms EDPERFARMY and EDN enter the MAXR procedure results at the 0.0060 and 0.0160 levels of significance respectively, and PERFARMY enters at the 0.6868 level. Removal of EDPERFARMY and EDN results in the entry of PERFARMY into the model at the 0.0001 level of significance. The model resulting from the removal of these interaction terms has the appeal of simplicity and ease of interpretation.

General Model Hypotheses

Three data sets were identified for utilization in model development, but the data sets household head and spouse do not result in significant coefficients for many of the variables which enter into the final model selected. Data set ALL is, therefore, selected as the appropriate data set, and the tests of hypotheses are performed only upon data set ALL.

The evaluation criteria used for the selection of the basic model results in the simultaneous testing of the general hypothesis

$H_0: B_x = 0$

$H_1: B_x \neq 0$

where B_x is respectively each of the coefficients associated with the variables in the model. The variables considered are those enumerated in the theoretical function presented in Chapter IV.

Age

Age enters the model in three components: a linear term, a squared term , and a linear interaction term with education (Table 6). Based upon these results, the null hypotheses that the coefficients for AGE,

AGE^2, and AGEED are respectively zero is rejected. Given the rejection of the null hypothesis for these variables, the specific relationship between AGE and QLI will be considered. The results show that QLI does increase with respect to AGE, but will reach a maximum at some point and decline. Due, however, to the interaction with education, the maximum QLI with respect to age will vary with the individual's educational level.

The relationship between AGE and QLI may be seen in the following:

$$\frac{\partial QLI}{\partial AGE} = .99629061 - 0.01415984\ AGE - 0.04265370\ ED$$

$$\frac{\partial^2 QLI}{\partial AGE^2} = -0.1415984.$$

These results indicate that as education increases the maximum QLI with respect to age declines. Fully, 69.0 percent of the sample had less than 12 years of education and only 3.0 percent had more than 12 years of education. It is apparent, therefore, that the results must be interpreted cautiously for higher levels of education.

Education

The coefficients for the squared term for ED and the linear interaction with age were significantly different from zero (Table 6). A linear term for education (ED) was significant only at the 0.32 level and the variable is not retained in the model. The results indicate that as education increases QLI increases, but increasing age at any level of education will lower the contribution of education to QLI. This is shown by the marginal relationship of education to the QLI

$$\frac{\partial QLI}{\partial ED} = .41906898\ ED - 0.04265370\ AGE\,.$$

The marginal contribution of education indicates that so long as the educational process continues it will make a positive contribution to the level of QLI. Once the educational process terminates and only age increases, time will, however, lower the positive contribution to QLI made by education.

Number in Family

The number of persons in the household (N) was found to be a significant variable. The coefficient of N was significant at only the 0.97 probability level. This result provides no basis for the rejection of the null hypothesis for this variable.

Location

The variable for state of residence (STATE) was found to be statistically significant (Table 6), and the null hypothesis for the coefficient is rejected. The relationship of STATE to QLI is given by

$$\frac{\partial QLI}{\partial STATE} = 4.00214190$$

which indicates that STATE makes a positive contribution to QLI. The variable is STATE = 1 when the individual resided in Iowa and STATE = 0 when the individual resided in North Carolina. The analysis finds that individuals residing in Iowa have a higher perceived quality of life than those residing in North Carolina, other things being equal. The result could arise because of superior public services and other "environmental" influences in Iowa. Interpretation of STATE will be discussed more fully under the relative income hypothesis test.

Race

The coefficient for race (R) is significant only at the 0.60 probability level. This provides no basis to reject the null hypothesis that, other things equal, QLI was the same between races.

Farm Income-Total Income Ratio

The coefficient of the farm income-total income ratio variable (PERFARMY) differs significantly from zero (Table 6). PERFARMY was calculated in the following manner

$$\text{PERFARMY} = \frac{\text{Farm derived income}}{\text{Total income}}$$

which gives PERFARMY a potential range of 0 - 1. The rejection of the null hypothesis demonstrates that for the rural population income from farm related sources makes a positive contribution to the QLI. Two possible sources of this positive relationship are immediately apparent. First, individuals may consider farming a consumption good and enhance QLI by the consumption of an agrarian life style. Second, there is the potential for the underreporting of farm income. In the case of underreporting, the reported farm income represents a larger actual income. It is possible that if farm income were as fully reported as is nonfarm income, the coefficient of PERFARMY would be zero.

Income

The income variables meet both the sign and significance level criteria for retention in the model (Table 6), and the null hypothesis is rejected for both Y and Y^2. Using the functional relationship established, the analysis turns to an examination of the effect of income upon QLI.

The marginal function

$$\frac{\partial QLI}{\partial Y} = 0.00285160 - 0.00000024\ Y$$

for the basic QLI model suggests that the incremental affect of income upon the QLI declines in linear fashion, becomes zero at some point, and is negative thereafter. The marginal contribution of income to QLI decreases and becomes zero at $11,882 per quarter or $47,527 per year. The latter result may have little or no meaning because only 3 percent of the sample had quarterly incomes that exceeded $5940.84--one-half of the income required for the contribution of income to QLI to become zero.

The income relevance hypothesis discussed in Chapter IV is evaluated with the basic QLI model taken as the unrestricted model and the model with income terms removed taken as the restricted model. The test used evaluates the significance of the additional variation in QLI which is explained by the presence of the income terms in the model. The F statistic for the test is

$$F = \frac{(1486526.51 - 1469612.42)/2}{1469612.42/(2014 - 10)} = 11.53.$$

Based upon the F statistic, the analysis rejects, at the 0.0001 level of significance, the null hypothesis that the income terms do not increase the amount of variation in QLI explained by the model. This result indicates that the individual's level of income does influence quality of life perceived by the individual.

APPENDIXES

When all other variables are held constant, the test indicates that the passage of time results in a significant reduction in the QLI. Although QTR has been established as a significant variable in the model, the data are not adequate for an identification of the source of the variation accounted for by time. The significance of QTR demonstrates the need to pursue the source of the QTR variation. Three sources appear to justify further analysis.

The first source of variation is associated with payments to experimentals. Initiation of program payments could produce a transitory increase in QLI which "washes out" as the new income is integrated into the individual's socio-economic reference system and becomes part of his expected income. The decline in QLI from quarter two to quarter ten would then represent a return to some "permanent" QLI level. QLI would in this case appear to be influenced by a factor or set of factors which are not currently in the model. A second related explanation accounting for the decline in QLI which is associated with the variable QTR is the existence of an experimental effect whereby participation in the program and its interview process results in an increase in QLI. As the quarterly questionnaire interview becomes an established component of the individuals' environment this experimental effect might decline and produce the result observed in the variable QTR. Third, with the model components held constant other parts of the individual's socio-economic environment such as the general mood of the country could potentially account for the observed variation in QLI over time.

Income Specific Hypotheses

The analysis now shifts to the evaluation of hypotheses put forth in Chapter IV concerning the precise role and composition of income within the QLI framework.

Age-Income Hypothesis

The Age-Income Hypothesis is constructed to further ascertain the effect of potential age-income interactions upon QLI. Linear age-income interaction terms do not enter the general model, and the affect of age upon the slope of the functional relationship is not found to be significant. The possibility exists, however, for age and income to interact within segmented age groups and for the resulting interactions to produce a linear shift in the QLI for one age group which does not occur for other age groups.

The Age-Income Hypothesis is tested using dummy variables for the age groups--30-39 (A2), 40-49 (A3), and 50+ (A4)--with the age group of less than 30 years falling in the intercept term. The general model is run with the variables Y and Y^2 along with the income-age dummy variable interaction variables. The first test of the affect of the interaction variables upon the general model is an evaluation of the coefficients for the interaction terms within the general framework

$H_0: B_x = 0$

$H_1: B_x \neq 0$

where B_x is respectively the coefficient for each of the interaction terms and the relevant test statistics are:

Variable	Coefficient	Prob > $\|T\|$	T for H_0: B=0	Standard Coefficient
YA2	-0.00248259	0.1450	-1.45807	-0.10435
YA3	-0.00263695	0.2018	-1.27683	-0.08982
YA4	-0.00512537	0.0987	-1.65200	-0.10433
Y^2A2	0.00000020	0.3748	0.88776	0.12666
Y^2A3	0.00000014	0.5616	0.58050	0.04708
Y^2A4	0.00000063	0.2941	1.04941	0.04548

Based upon the test statistic, the analysis rejects the null hypothesis only in the case of the variable YA4 at the 0.10 probability level.

The second evaluation considers the combined influence of the age-income interaction variables. The general QLI model is taken as the restricted model and the general model plus the interaction terms is taken as the unrestricted model. An F statistic is calculated to determine the significance of the additional variation in the QLI explained by the addition of the interaction variables. The hypothesis tested is

$$H_0\colon B_{YA2} = B_{YA3} = B_{Y^2A2} = B_{Y^2A3} = B_{Y^2A4} = 0$$

$$H_1\colon \text{Not } H_0$$

$$F = \frac{(1469612.42 - 1465496.13)/6}{1465496.13/(2014 - 16)} = 0.93534.$$

Based upon the F statistic, the analysis fails to reject the null hypothesis at the 0.01 level of significance. Age-income interaction does not produce linear shifts in the QLI function.

Relative Versus Absolute Hypothesis

The relative versus absolute hypothesis tests the proposition that QLI depends upon the relative as well as the absolute level of income. The first evaluation of this hypothesis uses a dummy variable (PI) constructed to separate the set of all observations into two subsets: individuals whose income was greater than the mean of the sample from the respective location and individuals whose income was less than or equal to the mean of the sample from the respective location. The dummy variable is equal to one for those above the mean with all other individuals falling into the intercept term. The variable PI represents a potential linear shift in the level of QLI which would accompany the fact that the individual's income exceeds the mean of his respective group. Given that the individual's income exceeds the relevant mean, the linear shift is presumed to be the same for all income levels. The hypothesis tested is

H_0: $B_{PI} = 0$

H_1: $B_{PI} \neq 0$

where the relevant test statistics are:

Variable	Coefficient	Prob > $\|T\|$	T for H_0: B=0	Standard Coefficient
PI	4.09566744	0.041	2.04348	0.04687

Based on these results, the analysis rejects the null hypothesis at the 0.05 level of significance. The variable STATE may also measure a part of the variation in QLI which arises from the relative income phenomenon. If each individual from one of the study areas feels that his income is lower than that in the surrounding area, then STATE would measure this variation and leave only within-state variation to be picked up by the relative income tests.

Since the variable PI tests only a linear shift in the functional relationship, a second test of structural stability is used to further evaluate the relative versus absolute hypothesis. This test is performed to evaluate the possibility that the entire structural relationship of the QLI function is affected by the individual's level of income relative to the relevant mean income. The study sample is segmented into two subsets: individuals with incomes less than or equal to the mean of their respective location and individuals with incomes greater than the mean of their respective location. The Chow Test (6; 10, pp. 173-97) is used to evaluate whether the regression coefficients estimated by assigning subsets of the study set of observations to two different structures do, in fact, belong to the same structure.

The Chow Test requires that the model be run on each subset and the pooled or entire data set. The hypothesis tested is of the following form:

H_0: $(B_{it=1}) = (B_{it=2})$ $\qquad i = 1, 2, \ldots, k$

H_1: $(B_{it=1}) \neq (B_{it=2})$ $\qquad t_1 = 1, 2, \ldots, T1$

$t_2 = 1, 2, \ldots, T2$

$T = T1 + T2$

where

k = independent variable in the regression model,

T1 = number of observations in the first subset,

T2 = number of observations in the second subset,

T = number of observations in the entire or pooled data set.

The F statistic for the test is

$$F = \frac{U_t^{*2}/K}{(U_{t_1}^2 + U_{t_2}^2)/(T - 2K)}$$

K = number of parameters estimated,

$U_t^{*2} = ESS_T - (ESS_{T1} + ESS_{T2})$

$U_{t_1}^2 = ESS_{T1}$

$U_{t_2}^2 = ESS_{T2}$

$$F = \frac{1469612.42 - (520260.57 + 935178.34)/10}{(520260.57 + 935178.34)/(2012 - 20)} = 1.9399.$$

The tabled value for F_{T-2K}^{K} is 1.83 for a 0.05 level of significance. Based upon the results of the Chow Test, the analysis rejects at the 0.05 level the null hypothesis that the two structures are the same.

Although the test results support the relative versus absolute hypothesis, the pooled data set is retained as the data base for the subsequent analysis. This is done because the relative versus absolute hypothesis is not fully developed and because use of the concept would unduly complicate succeeding tests.

Irreversibility Hypothesis

The variable change hypothesis is tested to evaluate potential differences in the effect of rising and falling income upon QLI. As indicated in Chapter IV, income was segmented according to the Wolffram method. This evaluation technique requires the segmentation of income in the following manner. The individual variables Y and Y^2 are calculated for quarters one, two, and ten, and the following transformations are made. The variable θ is calculated where

$$\theta = 1 \text{ if } (Y_{it} - Y_{it-1}) > 0 \quad \text{where} \quad t = 1, 2, 10$$

$$\theta = 0 \text{ if } (Y_{it} - Y_{it-1}) < 0 \quad \quad i = 1, 2, \ldots, n \text{ (individuals)}$$

then

$$Y'_{it=1} = Y_{it=1}$$

$$Y'_{it=2} = Y'_{it=1} + \theta(Y_{it=2} - Y_{it=1})$$

$$Y'_{it=10} = Y_{it=2} + \theta(Y_{it=10} - Y_{it=2})$$

$$Y''_{it=1} = Y_{it=1}$$

$$Y''_{it=2} = Y''_{it=1} + (1 - \theta)(Y_{it=2} - Y_{it=1})$$

$$Y''_{it = 10} = Y''_{it=2} + (1 - \theta)(Y_{it=10} - Y_{it=2}).$$

The segmented values for the Y^2 terms are calculated in the same manner. The income variables for the unrestricted model thus become Y', Y'', $Y^{2\prime}$, and $Y^{2\prime\prime}$ where Y' and $Y^{2\prime}$ are the rising income components and Y'' and $Y^{2\prime\prime}$ are the falling income components. The income variables for the restricted model are Y and Y^2.

The first test performed on the segmented income variable is a test of the significance of the coefficients of the individual variables. This test takes the general form

$$H_0\colon B_y = 0$$

$$H_1\colon B_y \neq 0$$

where y is respectively each of the segmented income variables, and the relevant statistics are:

Variable	Coefficient	Prob > $\|T\|$	T for H_0: B=0	Standard Coefficient
Y'	0.00217719	0.0242	2.25574	0.10785
Y"	0.00113045	0.1903	1.31017	0.05347
Y^{2}'	-0.00000008	0.0973	-1.64909	-0.06398
Y^{2}"	-0.00000005	0.3340	-0.96635	-0.03138

Based upon these results, the analysis rejects the null hypothesis for Y' and Y^{2}', and it fails to reject the null hypothesis for Y" and Y^{2}". Since the time periods between the income observations are not equally spaced, the results of this test must be interpreted with caution.

The second test performed under the segmented income approach is the F test for the restricted and unrestricted models. The segmented income form constitutes the unrestricted model and the general model form constitutes the restricted model. The F statistic is

$$F = \frac{(1469612.42 - 1464928.07)/2}{1464928.07/(2014 - 12)} = 3.2022.$$

The tabled value for F^{K-H}_{T-2} is 3.00 for a 0.05 significance level. Based upon the calculated F statistic, the analysis rejects at the 0.05 level the null hypothesis that the segmented income model does not significantly increase the amount of explained variation in the dependent variable.

Although the test of significance for the individual coefficients causes some doubt concerning the appropriateness of this model form, the signs and relative sizes of the coefficients do conform to economic theory. The results indicate that a given increase in income raises QLI less than the same decrease in income lowers QLI. Taking the relevant derivatives of the functional relationship with respect to income:

$$\frac{\partial QLI}{\partial Y'} = 0.00217719 - 0.00000016\ Y'$$

$$\frac{\partial^2 QLI}{\partial Y'^2} = -0.00000016$$

$$\frac{\partial QLI}{\partial Y''} = 0.00113045 - 0.00000010\ Y''$$

$$\frac{\partial^2 QLI}{\partial Y''^2} = -0.00000010.$$

The results suggest that a small change in income has 1.6 times as much influence on QLI for an individual whose income is falling than for an individual whose income is rising.

Due to the mixed results of the first evaluation of the variable changed hypothesis, a second test is performed to evaluate the hypothesis. The second approach consists of segmenting the study group into two subsets: observations with rising income and observations with falling income. The Chow Test is then used to evaluate whether the regression coefficients estimated, by assigning subsets of the set of observations to two different structures, do in fact belong to the same structure. The F statistic for the test is

$$F = \frac{146912.42 - (923814.44 + 531136.36)/10}{(923814.44 + 531136.36)/(2012-20)} = 1.940.$$

The tabled value for F^{K}_{T-2K} is 1.83 for a 0.05 level of significance. The result of the Chow Test rejects, at the 0.05 level of significance, the null hypothesis that the regression coefficients estimated by assigning subsets of the study set of observations to two different structures belong to the same structure.

The coefficients of the rising and falling data sets used in the Chow Test are used to derive the marginal relationships presented in Figure 1, page 85. The results suggest that for any income redistribution program the individual giving up income must have considerably larger income than the individual receiving income if the incremental changes in the QLI are to be equated.

Due to the mixed results of the tests of the Variable Change Hypothesis, a differentiation between rising and falling groups based upon the data base of this analysis does not appear to be appropriate.

Earned Income Hypothesis

As indicated in Chapter IV, two opposing views of the earned-unearned income relationship are found in the economic literature. Therefore, statistical analysis is performed to test the hypothesis that earned income and unearned income should enter the QLI framework as separate variables.

The first hypothesis to be tested is of the general form

H_0: $B_y = 0$ y_e = earned income

H_1: $B_y \neq 0$ y_{tr}= unearned income[1]

where y is respectively Y_e, Y_e^2, Y_{tr}, Y_{tr}^2 and the relevant statistics are:

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[1] For this test Y_e is the income term Y_e and Y_{tr} is the term $(Y_{tr} + Y_{pp})$ discussed in Chapter IV, p. 40.

Variable	Coefficient	Prob > $\lvert T \rvert$	T for H_0: B=0	Standard Coefficient
Y_e	0.00247470	0.0020	3.09306	0.09661
Y_e^2	-0.00000011	0.0282	-2.19564	-0.05997
Y_{tr}	0.00437377	0.0020	3.09132	0.08498
Y_{tr}^2	-0.00000074	0.0715	-1.80342	-0.05184

Based upon these results, the analysis rejects the null hypothesis that the coefficients for the earned and unearned income variable are zero.

Having found the coefficients of the earned and unearned income variables to be significant, the second evaluation of the earned income hypothesis is to test whether the coefficients for the paired linear and squared terms are not equal. The hypothesis tested is:

H_0: $B_e = B_{tr}$

H_1: $B_e \neq B_{tr}$

where B_e and B_{tr} are respectively the paired linear terms and the paired squared terms. The test statistics for the linear and squared terms are respectively[2/]

[2/] The hypothesis tested is that the true coefficients obey the condition c'B = r where c is a vector of constants and r is a known constant, in this case zero. The test statistic is

$$t = \frac{\hat{r} - r}{s_{\hat{r}}} .$$

In this case c is a column vector with k elements all of which are zero except the elements which correspond to Y_e and Y_{tr}. The elements corresponding to Y_e and Y_{tr} are 1 and -1 respectively. $\hat{r} = c'\hat{B}$ where the $\hat{B}$ are the regression coefficient for the model and

$$s_{\hat{r}} = [s^2 c'(X'X)^{-1} c]^{.5} .$$

For a detailed explanation of the procedure for testing a linear combination of regression coefficients see J. Johnson, Econometric Methods, 2nd, McGraw-Hill Book Co., New York, 1972, pp. 155-59.

$$t = \frac{\hat{r} - 0}{s_{\hat{r}}} = \frac{0.006848470 - 0}{0.0003247326} = 21.0896$$

$$t = \frac{\hat{r} - 0}{s_{\hat{r}}} = \frac{0.000000850 - 0}{0.00000008073074} = 9.736.$$

The null hypothesis for both tests is rejected at the 0.001 level.

The coefficients for both the earned and unearned income variables have signs conforming with economic theory, but the magnitudes of the influences are quite different as is apparent below:

$$\frac{\partial QLI}{\partial Y_e} = 0.00247470 - 0.00000022\ Y_e$$

$$\frac{\partial^2 QLI}{\partial Y_e^2} = -0.00000022$$

$$\frac{\partial QLI}{\partial Y_{tr}} = 0.00437377 - 0.00000148\ Y_{tr}$$

$$\frac{\partial^2 QLI}{\partial Y_{tr}^2} = -0.00000148.$$

QLI with respect to both Y_e and Y_{tr} increases at a decreasing rate, reaches a maximum, and declines thereafter. However, the maximum with respect to earned income occurs at a level of income 3.81 times greater than the maximum for unearned income. The marginal change in QLI with respect to unearned income decreases at 6.73 times the rate of decrease for earned income.

The final evaluation of the earned income hypothesis is to calculate the F statistic for the restricted and unrestricted models. The model containing the segmented earned and unearned income variables comprises the unrestricted model, and the basic model with aggregated income constitutes the restricted model. The F statistic was

$$F = \frac{(1459612.42 - 1468294.42)/2}{1468294.43/(2014 - 12)} = 0.8985.$$

Based upon this test the analysis fails to reject at the 0.10 level the null hypothesis that the unrestricted model explains no more of the observed variation in the QLI than does the restricted model.

Although the test of restricted and unrestricted models fails to reject the null hypothesis, the results of the first two tests and economic theory support the segmenting of income into earned and unearned income. The revised general model is presented in Table 9. As may be seen in Figure 1, the regression results show that for moderate levels of income equal dollar amounts of income contribute more to QLI if the income is unearned. For higher levels of income a dollar of earned income contributes more to QLI than would an equal amount of unearned income, and the marginal contribution of Y_{tr} to QLI reaches zero at a much lower level of income than does Y_e.

Farm Income Hypothesis

The farm income hypothesis is considered to determine if farm income should enter the QLI function as a separate income variable. The variable PERFARMY demonstrates that changing the proportions of the farm and nonfarm components of total income results in a shift in the QLI, but this does not test whether farm income and nonfarm income have separate nonlinear affects upon QLI.

The farm income hypothesis was tested by separateing farm income (Y_f) from the other income components and entering farm income as a separate variable. The hypothesis to be tested is of the general form

Table 9. Revised Form of the Final Regression Equation for the Quadratic Form of the General QLI Model--Dependent Variable: QLI; Data Set = ALL.

Variable	Coefficient	Prob > |T|	T for H_0: B=0	Standard Coefficient
Intercept	89.49111788	0.0001	11.60528	--
Y_e	0.00247470	0.0020	3.09306	0.09661
Y_e^2	-0.00000011	0.0282	-2.19564	-0.05997
Y_{tr}	0.00437377	0.0200	3.09132	0.08498
Y_{tr}^2	-0.00000074	0.0715	-1.80342	-0.05184
ED^2	0.20822139	0.0001	6.00116	0.24616
PERFARMY	9.53997138	0.0001	4.47541	0.07521
STATE	3.96639199	0.0100	2.57754	0.04553
AGE	1.00627724	0.0016	3.16544	0.29396
AGE^2	-0.00725959	0.0173	-2.38271	-0.19675
AGEED	-0.04283825	0.0002	-3.67346	-0.14496
QTR	-63.15322538	0.0001	-51.80989	-0.74269

N = 2014 $R^2 = 0.597$ F Statistic = 269.27

s = 27.0816 Sig. of F = 0.0001

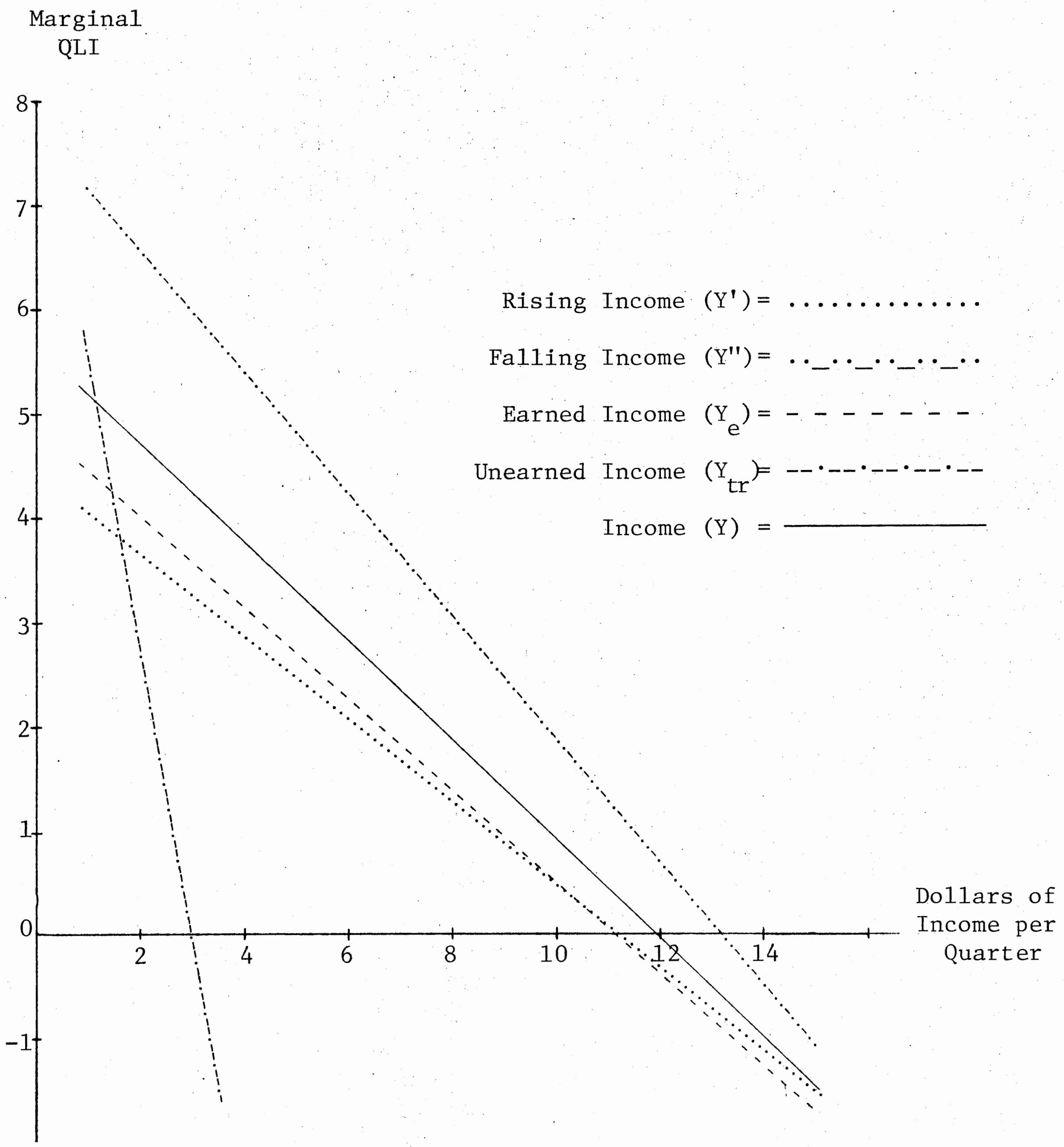

Figure 1. Relationship of Marginal QLI to Types of Income

H_0: $B_y = 0$

H_1: $B_y \neq 0$

where y is respectively Y_f and Y_f^2 and the relevant statistics are:

Variable	Coefficient	Prob > $\|T\|$	T for H_0: B=0	Standard Coefficient
Y_f	0.00151974	0.1586	1.41028	0.05991
Y_f^2	-0.00000006	0.3324	-0.96954	-0.03202

Based upon these results, the analysis fails to reject at the 0.10 level the null hypothesis that the coefficients of the farm income variables are zero, and the farm income-nonfarm income segmentation is not retained as a variation of the general form of the QLI model.

Accompanying Y_f and Y_f^2 in the model, PERFARMY continues to have a significance level of better than 0.10. This result supports the proposition that, as submitted earlier, PERFARMY measures more than the effect of income level per se. To wit, farming may also be a consumption good and/or farmers significantly underreport income with the contribution of the unreported income to QLI accounted for by PERFARMY.

Net Worth Hypothesis

As indicated in Chapter IV, the net worth hypothesis is to evaluate family wealth effects on the QLI. This hypothesis is tested by entering net worth (NW) as a separate linear variable in the basic QLI model.

The hypothesis tested is of the form:

H_0: $B_{nw} = 0$

H_1: $B_{nw} \neq 0$

where B_{nw} is the coefficient of the net worth variable and the relevant statistics are

Variable	Coefficient	Prob > |T|	T for H_0: B=0	Standard Coefficient
NW	0.00021360	0.1459	1.45467	0.02139

Based upon these results, the analysis fails to reject at the 0.10 level the null hypothesis that the coefficient for NW is zero. Caution should, however, be exercised in the interpretation of the test results. The data available on wealth were incomplete and represent only an approximation of net worth. The fact that a large portion of the sample was from low income households with little wealth may also reduce the possibility that net worth will enter the personal evaluation of individual quality of life. Therefore, characteristics of the sample and inadequacies of the NW variable may account for the failure of wealth to influence QLI in this study. Due to the strong conceptual reasons to expect wealth to influence the quality of life, the wealth-QLI relationship should be analyzed more completely in subsequent studies.

CHAPTER VI

SUMMARY, APPLICATIONS AND CONCLUSIONS

The emphasis of the analysis has been to develop an index for individual perceived quality of life and to use that index to examine the role of income and income composition in the determination of the level of the quality of life index (QLI). A functional form for the general model is established and used to test hypotheses pertaining to the role of income and income composition in determining the QLI. The analysis and its resulting model will provide a starting point for further research into the area of individual quality of life.

Summary

The analysis undertaken results in the selection of a set of variables for the general QLI model, a functional form for the general model, and an evaluation of the role of income within the QLI model.

Variables

Statistical evaluation of the theoretically appropriate variables and proposed hypotheses results in the selection of the following variables for the general QLI model: earned income (Y_e), unearned income (Y_{tr}), educational level (ED), farm income-total income ratio (PERFARMY), location or state of residence (STATE), age (AGE), and time (QTR). The coefficients for these variables were all significant at least at the 0.10 probability level.

Functional Form

The analysis selects the quadratic form of the general QLI model. The general form is

$$QLI_i = f(Y_{e_i}, Y^2_{e_i}, Y_{tr_i}, Y^2_{tr_i}, ED^2_i, PERFARMY_i, STATE_i, AGE_i, AGE^2_i,$$
$$AGEED_i, QTR).$$

The power function also yields statistically significant coefficients, but it explains less of the observed variation in the QLI.

The square root and cubic forms of the general model were rejected due to statistically insignificant variables including some of the income variables in each case. The revised form of the quadratic function (Table 9) suggests that the differentiation of income into earned and unearned income provides additional information into the total and marginal responses of QLI to changes in income. The response of QLI to an income change depends not only upon the initial level but also upon the income classification undergoing the change. The marginal responses of QLI to the alternative classifications of income considered in the analysis are shown in Figure 1. The marginal response of QLI is declining in each case, but the rate of decline for a given change in income differs among types of income. Until a more representative data base is analyzed, the relationship between QLI and any of the income types must be regarded as tentative when applied to the population of the economy in general.

Income in the Final Model

Pursuant to the development of the QLI, the analysis evaluates the role of income and income composition with the general QLI model.

The amplified consideration of income yields results pertaining to the quantitative and qualitative aspects of individual income.

Quantitative Results

The income coefficients resulting from the regression analysis are significant, and within the range of the income data, additional units of income increase the QLI (see Table 9). Income accounts, however, for only a small percentage of the variation in QLI, and the declining marginal relationship suggests that, all other variables constant, at some level the contribution of additional income to the QLI reaches zero and becomes negative thereafter.

Qualitative Results

The qualitative results of the analysis pertain to the composition of income. These results suggest that for a given level of total income the composition, source, or form of income received is also significant in the variation of QLI explained by the model.

The analysis of PERFARMY and the Farm Income Hypothesis suggests that for the study group the realization of income from farm activities produces a positive effect upon QLI in addition to the effect associated with income as income. When farm income is entered as a separate income component, the analysis fails to reject the null hypothesis that the variable coefficients are equal to zero. Although the analysis does not corroborate a distinction between farm and nonfarm classifications of income, the t-value for the coefficient of PERFARMY remains statistically significant. This suggests that income generated from farming may also function as a consumption good so that farm income need not be as high as nonfarm income to achieve the same level of QLI. It is also possible that PERFARMY demonstrates a preference for farm income and its accompanying potential for underreporting. Given this result, policy measures to equalize nominal income between farm and nonfarm sectors would result in a higher QLI for farm residents and disequilibrium in terms of QLI per dollar of income. Policies providing alternative employment and stimulating labor movement out of farming must address the issue of buying power among sectors.

The Earned Income Hypothesis indicates that for the study group in general and the low income individuals in particular, level of income does not account for the full income-QLI relationship. Earned Y_e and unearned Y_{tr} do not affect QLI in the same manner (Chapter V and Figure 1). The positive marginal contribution of Y_{tr} to QLI does not exist for as large a range of income as does the positive marginal contribution of Y_e. For an annual transfer income below \$6,029, the total and marginal contribution of Y_{tr} to QLI are positive and greater than the contribution from an equal amount of Y_e. At an annual transfer income of \$11,821 the marginal contribution of Y_{tr} is negative, but the marginal contribution of Y_e does not become negative until an annual income of \$44,995 which is outside the range of the sample data. This result suggests that transfer payments to individuals with high incomes may be of little value for increasing the perceived quality of life.

Analysis of the Relative Income Hypothesis indicates that individuals whose income exceeds the mean of the sample from each area experience an increase in QLI which is not accounted for by absolute income level. This suggests that the socio-psychological feeling that influence QLI are, in part, a function of relative deprivation and affluence. Some part of the lower QLI associated with low income would not, therefore, be eliminated by an across the board increase in all incomes in society.

The Rising-Falling Hypothesis also provides qualitative insight into individual QLI when income rises or falls. For incrementally equal changes in income from the same base, a fall in income appears to reduce QLI more than the increase in income raises QLI. Given this finding, the declining marginal response of QLI to income could not be used as the sole justification of a redistribution of income to raise the overall QLI of the economy. Persons with higher incomes could incur greater loss of well-being from a given decrease in income than the lower income persons gain in well-being from the receipt of the redistributed income.

Areas for Further Research and Model Development

Further research on and development of the QLI model derived by this analysis is required in three areas: data base, variables, and model amplification.

Data Base

The data base used by this analysis is adequate for an initial development of a QLI model. But prior to a general application of the model to specific problems, certain inadequacies in the data base must be corrected.

The first deficiency of the data is suggested by the time variable in the model. QTR indicates a decline in QLI between two periods of time. There is not, however, a preprogram measurement of the variables used to derive the QLI. Lacking this preprogram information, it is not possible to determine whether the decline is a continuation of an established trend, or whether it is a movement back toward a preprogram level. Identification of reasons for the change in QLI which occurs between the time periods is of importance for policies initiated to change QLI through the manipulation of the independent variables.

Three potential deficiencies exist in the income data base used to construct the QLI. The study sample consists largely of a low income, rural population taken from only two areas of the United States. To be applicable to the rural population in general, results need to be obtained with a data base expanded to include a representative sample of individuals from higher income levels and individuals from other geographic regions of the United States. Application of the QLI model to the urban population would also require the integration of the urban population sample into the data base. The extent and seriousness of these deficiencies depend upon the manner in which the results of the current analysis are to be used.

Variables

Expansion of the data base to correct the data deficiencies existing in the current analysis requires that the variables which were selected on theoretical grounds but rejected by the statistical analysis be reconsidered. Failure to consider these variables with the expanded data base could result in the misspecification of the final model derived with the larger sample and in biased estimates for the coefficients of the included variables. Reconsideration is particularly valid for the net worth component of income which is not adequately measured in the current analysis.

Model Expansion

The model developed by the analysis has included only personal measures of individual perceived quality of life in the QLI. There is, however, another aspect of quality of life within the economy: the environmental aspects of the economic region. The externalities resulting from regional environmental factors presumably influence perceived quality of life and are in the QLI; however, environmental measures such as community services need to be included as independent variables. This could provide estimates of the role of each variable rather than an aggregated measure such as that which may currently enter the model. Shabman (29) discusses the results of an attempt to integrate economic well-being, housing, employment, education, health, and population into a measure of the quality of life. These measures are more readily accessible and are available for all regions of the United States, but they neglect any personal evaluation of quality of life by the individuals who actually experience the conditions of the relevant area. Shabman suggests that it may be desirable to weight components of a QLI when comparing regions, but without a consideration of individual perceptions, there can be no meaningful assignment of weights to any measure to reflect its importance in the demarcation of one region from another. The use of individual perceptions of quality of life by this study eliminates the need to rely upon the researcher's personal value judgments when weights are assigned.

The QLI developed by the current analysis reflects the environment only as it influences individual responses. It would appear that a more adequate measure of quality of life would result from a model that supplements the general QLI model developed with variables that reflect the institutional structure of the environment. Aggregation of the personal measures of quality of life developed in this analysis and criterion such as those discussed by Shabman into a broader model should result in a QLI model which reflects both the personal and environmental aspects of perceived quality of life. QLI would be a function of both personal considerations and the economic environmental parameters of the relevant region. As noted by Shabman (29, pp. 10-11), the use of the QLI to make equalizing policy measures may run contrary to the concept of a free functioning, competitive human resource market, but the concept of a competitive human resource market assumes the absence of market imperfections. A comprehensive QLI model would allow policymakers to evaluate potential policy actions directed toward the reduction of inequalities produced by market imperfections.

Model Applications

The QLI model developed by this analysis may be used to evaluate the impact upon the individual of an economic policy or activity which affects any of the independent variables exogenous to the individual. The only information required is the change in the value of the affected variable. The QLI may also be utilized in analyses which require an estimate of the satisfaction derived by the individual from the determinants of QLI.

A Specific Application: The Income Tax

Analysis of the Federal Income Tax Schedule within the context of the QLI yields results which illustrate potential uses of the QLI: (1) based upon some criteria, the sacrifice in QLI from the income tax could be equalized; (2) given an amount of tax to be collected, the income tax could be adjusted to maximize the QLI or to minimize the loss of QLI for all taxpayers; (3) given that other forms of taxation are not progressive, the income tax could be adjusted to result in an equal marginal sacrifice for all taxpayers from all taxes.

The Federal Income Tax may be considered an example of a progressive tax based upon the level of income or the ability to pay. The proposition that the tax collected should vary with the individual's ability to pay may be accompanied by assumptions concerning the distribution of individual sacrifice, but it does not provide specific insight into the level and distribution of the actual sacrifice associated with a given tax schedule. The functional relationship established by the QLI may be used to evaluate the decreases in QLI produced by the tax collected.

The 1975 Federal Income Tax Schedule, Table 4 (38, pp. 19-20) is used to demonstrate the type of analysis which may be accomplished with the QLI. Using the functional form given in Table 6, the analysis assumes: (1) a married taxpayer, (2) four exemptions, (3) a joint return, (4) 25 years of age, (5) 12 years of education, (6) residence in Iowa, (7) 100 percent farm income, and (8) QTR = 0. The analysis will consider the tax schedule in terms of the marginal QLI reduction (A ADJ D-QLI) experienced by the median taxpayer to Table 4 of the tax schedule. The quantitative results of the tax analysis are presented in Appendix C. Application of the QLI model to the tax schedule reveals two points of interest. First, the tax schedule (TABLED TX) exhibits an almost constant marginal tax rate (MAR TAX) in terms of dollars of tax. The marginal reduction in QLI associated with the tax schedule (B ADJ D-QLI) shows that as a result of the scheduled tax rate, the QLI for each level of income after taxes (QLI A TAB-TX) is undergoing an increasing marginal QLI reduction. Second, adjustment of the tax schedule to incorporate the constant marginal reduction in QLI (A ADJ D-QLI) requires that the marginal dollar tax rate vary across the range of total tax paid. ADJ'D MAR TX is the marginal dollar tax rate required to produce the A ADJ D-QLI used in the example. Use of median taxpayer QLI reduction to adjust the tax schedule for equal marginal QLI reduction results in an after adjustment QLI (QLI AA-TAX) for each income level. QLI AA-TAX is less than the QLI resulting from the median and QLI AA-TAX is greater than QLI A TAB-TX for those above the median. The adjusted tax (ADJ'D TAX) is greater than TABLED TX for taxpayers below the median, and ADJ'D TAX is less than TABLED TX for taxpayers above the median.

Depending upon the value judgment used to define equity within the tax structure, the QLI may be employed to arrive at the proper tax schedule. If one assumes that all taxpayers share equally in the benefits derived from the use of tax dollars and that a given amount of tax must be collected, the tax load may be distributed to result in an equal marginal sacrifice in QLI by all taxpayers. If one assumes that individuals with different levels of income benefit differently from the use of tax dollars, the sacrifice in terms of QLI could be weighted to make the sacrifice proportional to the benefits received.

General Areas of Application

The QLI model developed by this analysis may also be used to evaluate the cost of risk. It has been shown that whether a certain income provides more satisfaction than the same average income received stochastically depends on the marginal utility of income. The cost of risk depends upon the marginal utility assigned to money by the individual. Past studies attempting to estimate the marginal utility assigned to money have relied upon the unwieldly "standard-gamble" technique in which each individual respondent attempts to assign some preference ranking to a group of incomes which have probabilities of their occurance preassigned by the researcher. The QLI provides a measure of the value of income to the individual, and it does not rely upon a contrived risk situation to determine the role of money in the individual's socio-economic reference system. Thus, QLI should provide a comprehensive alternative to the "standard-gamble" measure of satisfaction derived from money, and it should be applicable to analyses requiring a measure of the marginal utility of money.

The QLI could also be used to extend the results of benefit-cost analysis. The estimates of benefits and costs could be used to derive the effect of a proposed project upon QLI. Given that public projects have the purpose of making improvements in the socio-economic environment and individual quality of life, a QLI evaluation of benefit-cost would allow a weighting of benefits and costs among income groups within the area affected. Evaluation of the projected changes in income and income composition for various groups, with and without the proposed project, can be accomplished by comparing the QLI for the respective groups with and without the project. The expanded model discussed earlier as an extension of the current analysis would be particularly well suited to benefit-cost evaluations. It would allow both personal and economic environment considerations to be incorporated into the evaluation of the changes in QLI resulting from a given project.

An example of QLI application to benefit-cost analysis could be an evaluation of an irrigation project for a region. In the simplest case it would allow a comparison of the net change in QLI. Some incomes would increase, some would fall or be eliminated, some would change in composition, and some groups would have to pay the taxes necessary to build the project, but QLI evaluation would provide an estimate of the net change in quality of life produced by the project.

The QLI developed will serve also as an instrument for an appraisal of changes in the income and income composition of low income farm families. Given the goal of higher income for these families, the objective may be approached through increased farm income, adding or increasing nonfarm income in the total income stream, or a combination of the two. The QLI function provides the framework necessary to determine the extent to which nonfarm income substitutes for farm income in attaining a given quality of life. This relationship is also basic to the setting of poverty income thresholds among different sectors within the economy.

Conclusions

The empirical analysis of this study provides the basis for some tentative conclusions concerning individual quality of life. A measure of perceived quality of life, the QLI, has been constructed, and the analysis has defined, within the limits imposed by the data, a relationship between observed variation in the QLI and certain parameters of individuality. Given the QLI function, the analysis concludes that income, age, education, state of residence, and the ratio of farm income to total income are personal characteristics which influence the individual quality of life perceived by the rural population. The passage of time also influences the QLI within the econometric model developed. Race, number in the family unit, and many of the expected interactions do not enter into the final QLI model.

Comprehensive analysis of the income component of the general QLI model yields the following conclusions: (1) income influences QLI; (2) income displays a declining marginal relationship with the QLI; (3) earned and unearned income display the declining marginal relationship, but the marginal contribution of unearned income declines faster and reaches zero at a much lower income level; (4) the response to incrementally equally increases and decreases to the same income do not result in a symmetric QLI response to income; (5) a given dollar value of income provides a greater quality of life if derived from farm than nonfarm occupations; and (6) the <u>relative</u> position of individual income above or below the mean income of the respective area as well as absolute income influences individual perceived quality of life.

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APPENDIX A

SUBINDEX SCALES

Table 10. Anomie (An) Scale.

DEI		Data Set								
		Head			Spouse			All		
		$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3099 What is lacking in the world today is the old kind of friendship that lasted for a lifetime	Q02	4.30	0.05	1.08	4.19	0.06	1.19	4.25	0.04	1.13
	Q10	4.23	0.00	0.09	4.21	0.01	0.09	4.22	0.01	0.09
3100 Everything changes so quickly these days that I often have trouble deciding what is right and what is wrong	Q02	3.88	0.06	1.37	3.75	0.07	1.47	3.82	0.04	1.41
	Q10	3.78	0.01	0.19	3.75	0.01	0.19	3.76	0.01	0.19
3101 I often feel that many things our parents stood for are being destroyed before our very eyes	Q02	4.32	0.04	1.04	1.69	0.04	0.93	1.65	0.03	0.93
	Q10	4.22	0.01	0.13	4.20	0.01	0.13	4.21	0.01	0.13
3102 The trouble with the world today is that most people really don't believe in anything	Q02	3.97	0.06	1.33	3.85	0.06	1.37	3.91	0.04	1.35
	Q10	3.88	0.01	0.16	3.85	0.01	0.16	3.86	0.01	0.16
3103 People were better off in the old days when everyone knew just how he was expected to act	Q02	3.62	0.06	1.44	3.40	0.07	1.47	3.52	0.05	1.46
	Q10	3.48	0.01	0.17	3.45	0.01	0.17	3.47	0.01	0.17

Responses: 1 Disagree a lot
2 Disagree a little
3 Depends (or don't know)
4 Agree a little
5 Agree a lot

Table 11. Negative Affect (NA) Scale.

DEI			Data Set								
			Head			Spouse			All		
			$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3064	How often have you felt so restless that you couldn't sit long in a chair	Q02	3.35	0.07	1.61	3.50	0.07	1.54	3.42	0.05	1.58
		Q10	3.33	0.07	1.54	3.46	0.07	1.47	3.39	0.05	1.51
3066	How often have you felt very lonely or apart from other people	Q02	2.46	0.07	1.55	2.90	0.07	1.55	2.66	0.05	1.56
		Q10	2.54	0.06	1.50	2.92	0.07	1.45	2.71	0.05	1.49
3068	How often have you felt "bored" (like doing something, but you didn't have anything to do?)	Q02	2.96	0.07	1.59	2.92	0.08	1.63	2.94	0.05	1.61
		Q10	2.90	0.06	1.50	2.75	0.07	1.54	2.83	0.05	1.52
3070	How often have you felt depressed or very unhappy	Q02	3.04	0.06	1.44	3.32	0.06	1.34	3.17	0.04	1.41
		Q10	3.06	0.06	1.33	3.23	0.06	1.30	3.14	0.04	1.32
3072	How often have you been upset because someone criticized you	Q02	2.40	0.06	1.43	2.76	0.07	1.44	2.56	0.05	1.45
		Q10	2.28	0.06	1.37	2.69	0.07	1.44	2.46	0.04	1.42

Responses:
1 Never
2 Once or twice
3 Don't know or remember
4 A few times
5 Often

Table 12. Powerlessness (P) Scale.

DEI		Data Set								
		Head			Spouse			All		
		$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3094 People can control their own future and can determine how their lives will turn out	Q02 Q10	3.20 2.91	0.07 0.07	1.56 1.54	3.07 2.68	0.07 0.07	1.60 1.51	3.14 2.80	0.05 0.05	1.58 1.53
3095 Planning only makes a person unhappy since your plans hardly ever work out anyway	Q02 Q10	2.75 2.69	0.06 0.06	1.49 1.49	2.66 2.71	0.07 0.07	1.53 1.48	2.71 2.70	0.05 0.05	1.51 1.49
3096 Nowadays, with world conditions the way they are, the wise person lives for today and lets tomorrow take care of itself	Q02 Q10	2.92 2.81	0.07 0.07	1.68 1.63	2.84 2.86	0.08 0.08	1.64 1.65	2.88 2.83	0.05 0.05	1.66 1.64

Responses:
1 Disagree a lot
2 Disagree a little
3 Not sure, depends (or don't know, no opinion)
4 Agree a little
5 Agree a lot

DEI		Head $\bar{X}$	Head s.e. $\bar{X}$	Head s	Spouse $\bar{X}$	Spouse s.e. $\bar{X}$	Spouse s	All $\bar{X}$	All s.e. $\bar{X}$	All s
3128 Good luck is more important than hard work for success	Q02 Q10	2.81 2.81	0.07 0.07	1.60 1.61	2.31 2.52	0.07 0.07	1.48 1.55	2.58 2.68	0.05 0.05	1.56 1.59
3129 Many times I feel "that I have little influence over the things that happen to me." (that I can't control the things that happen to me.)	Q02 Q10	3.38 3.17	0.06 0.06	1.37 1.40	3.25 3.12	0.06 0.06	1.33 1.38	3.32 3.15	0.04 0.04	1.35 1.39

Table 12. (Continued)

DEI		Data Set								
		Head			Spouse			All		
		$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3130 If a person works hard and tries to get ahead he will be sure to make things better for himself and his family	Q02	4.52	0.04	0.96	4.57	0.04	0.91	4.54	0.05	0.94
	Q10	4.54	0.01	0.14	4.54	0.01	0.14	4.54	0.01	0.14
3131 People like me don't have much of a chance to be successful in life	Q02	2.63	0.07	1.57	2.27	0.07	1.49	2.47	0.05	1.54
	Q10	2.53	0.07	1.53	2.38	0.07	1.46	2.46	0.05	1.50
3132 If a person is not successful in life it is his own fault	Q02	3.26	0.06	1.48	3.25	0.07	1.49	3.25	0.05	1.49
	Q10	3.25	0.06	1.48	3.18	0.07	1.51	3.22	0.05	1.49
3133 I don't have any problems I can't solve myself	Q02	3.45	0.06	1.43	3.32	0.07	1.44	3.39	0.04	1.43
	Q10	3.31	0.06	1.45	3.31	0.07	1.44	3.31	0.05	1.45
3134 Everytime I try to get ahead something or somebody stops me	Q02	2.95	0.06	1.50	2.65	0.07	1.44	2.81	0.05	1.48
	Q10	3.02	0.06	1.50	2.81	0.07	1.44	2.92	0.05	1.47
3135 Things almost always work out just the way I plan them	Q02	2.52	0.06	1.30	2.39	0.06	1.32	2.46	0.04	1.31
	Q10	2.50	0.06	1.36	2.47	0.06	1.30	2.48	0.04	1.33

Responses:
1 Disagree a lot
2 Disagree a little
3 Don't know
4 Agree a little
5 Agree a lot

Table 13. Worry (W) Scale.

		Data Set								
DEI		Head			Spouse			All		
		$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3141 How much do you worry about not having enough money to make ends meet	Q04 Q10	2.08 2.02	0.05 0.04	1.09 0.93	1.97 1.98	0.01 0.05	0.15 0.97	2.05 2.00	0.03 0.03	0.81 0.95
3142 How much do you worry about your health--about having a serious illness	Q04 Q10	2.79 2.56	0.05 0.05	1.23 1.20	2.45 2.48	0.01 0.05	0.28 1.19	2.45 2.52	0.03 0.04	1.00 1.20
3143 How much do you worry about the health of your wife (and children)	Q04 Q10	2.14 1.91	0.04 0.04	1.05 0.98	1.71 1.72	0.01 0.04	0.15 0.93	1.98 1.82	0.03 0.03	0.84 0.96
3144 How much do you worry about bringing up your children	Q04 Q10	2.08 1.97	0.04 0.04	1.04 0.99	1.74 1.75	0.01 0.04	0.06 0.96	2.05 1.87	0.02 0.03	0.77 0.98
3145 How much do you worry about the possibility of losing your job	Q04 Q10	3.24 3.26	0.04 0.04	1.06 1.02	3.10 3.11	0.01 0.04	0.04 0.80	3.13 3.19	0.02 0.03	0.79 0.93

Responses: 1 Worry a lot
2 Worry a little
3 No Opinion (or does not apply)
4 Don't worry

Table 14. Self-Satisfaction (SS) Scale.

DEI		Data Set								
		Head			Spouse			All		
		$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3078 On the whole, I am satisfied with myself	Q02	3.82	0.05	1.24	3.75	0.06	1.28	3.78	0.04	1.26
	Q10	3.97	0.05	1.20	3.88	0.06	1.28	3.93	0.04	1.24
3079 At times I think I am no good at all	Q02	2.53	0.06	1.45	2.90	0.07	1.44	2.69	0.05	1.46
	Q10	2.37	0.06	1.45	2.63	0.07	1.45	2.49	0.05	1.46
3080 I feel that I have a number of good qualities	Q02	4.18	0.04	0.98	4.12	0.04	0.95	4.15	0.03	0.96
	Q10	4.30	0.04	0.83	4.34	0.03	0.75	4.32	0.02	0.79
3081 I am able to do things as well as most people	Q02	4.08	0.05	1.25	3.99	0.06	1.24	4.04	0.04	1.25
	Q10	4.06	0.05	1.24	3.97	0.06	1.22	4.02	0.04	1.23
3082 I feel that I do not have much to be proud of	Q02	2.33	0.07	1.55	1.90	0.06	1.39	2.14	0.05	1.49
	Q10	1.83	0.05	1.26	1.75	0.06	1.19	1.80	0.04	1.23
3083 I certainly feel useless at time	Q02	2.89	0.06	1.48	3.06	0.07	1.43	2.97	0.05	1.46
	Q10	2.69	0.06	1.45	3.08	0.06	1.39	2.87	0.05	1.43
3084 I feel that I am a person of worth, at least equal to others	Q02	4.29	0.04	1.02	4.26	0.05	1.08	4.28	0.03	1.04
	Q10	4.33	0.04	0.95	4.35	0.04	0.95	4.34	0.03	0.95
3085 I wish I could have more respect for myself	Q02	3.21	0.06	1.53	2.84	0.07	1.54	3.04	0.05	1.54
	Q10	2.85	0.06	1.52	2.55	0.07	1.51	2.71	0.05	1.52
3086 All in all, I feel I am a failure	Q02	1.81	0.05	1.23	1.62	0.05	1.04	1.72	0.04	1.15
	Q10	1.63	0.05	1.09	1.54	0.05	1.01	1.59	0.03	1.06
3087 When I try to do something I usually think I can do it	Q02	4.54	0.04	0.85	4.40	0.05	1.06	4.48	0.03	0.95
	Q10	4.52	0.04	0.85	4.43	0.04	0.91	4.48	0.03	0.88

Responses: 1 Disagree a lot
2 Disagree a little
3 Don't know
4 Agree a little
5 Agree a lot

Table 15. Positive Affect (PA) Scale.

DEI		Data Set								
		Head			Spouse			All		
		$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3063 During the last year how often have you felt very excited or interested in something?	Q02	3.69	0.05	1.20	3.85	0.06	1.18	3.76	0.04	1.20
	Q10	3.84	0.05	1.13	4.06	0.05	1.00	3.94	0.03	1.08
3065 How often have you felt "proud because someone complimented you on something you had done?" (good because someone told you they liked something you had done)	Q02	3.63	0.05	1.26	3.94	0.05	1.11	3.77	0.04	1.20
	Q10	3.68	0.05	1.21	3.90	0.05	1.07	3.78	0.04	1.15
3067 How often have you felt pleased "about having accomplished something?" (about finishing something you wanted to get done)	Q02	4.17	0.04	1.03	4.15	0.05	1.04	4.16	0.03	1.03
	Q10	4.08	0.04	1.04	4.16	0.05	1.00	4.12	0.03	1.02
3069 How often have you felt "on top of the world" (really happy)	Q02	2.75	0.07	1.58	3.07	0.07	1.50	2.89	0.05	1.55
	Q10	2.84	0.06	1.49	3.15	0.07	1.43	2.98	0.05	1.47
3071 How often have you felt "that things were going your way?"	Q02	3.40	0.06	1.38	3.46	0.07	1.41	3.43	0.04	1.39
	Q10	3.25	0.06	1.43	3.35	0.06	1.39	3.30	0.04	1.41

Responses:
1 Never
2 Once or twice
3 Don't know or remember
4 A few times
5 Often

Table 16. Life Satisfaction (LS) Scale.

DEI		Data Set								
		Head			Spouse			All		
		$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s	$\bar{X}$	s.e. $\bar{X}$	s
3089 Keeping in mind that step 10 represents the best way of life, and step 1 the worst way of life, will you look at the picture and tell me the step number that best describes where you are now	Q02	5.80	0.08	1.96	6.22	0.09	1.96	5.99	0.06	1.97
	Q10	5.92	0.08	1.80	6.08	0.08	1.82	5.99	0.06	1.81
3092 Will you please tell me the step number that best describes where you would like to be five years from now	Q02	9.30	0.06	1.33	9.41	0.05	1.12	9.35	0.04	1.24
	Q10	9.04	0.06	1.37	9.18	0.05	1.14	9.10	0.04	1.27
3093 Will you please tell me the step number that best describes where you think you really will be five years from now	Q02	7.31	0.09	2.03	7.72	0.08	1.73	7.50	0.06	1.91
	Q10	7.24	0.08	1.87	7.55	0.08	1.65	7.38	0.06	1.78
Responses: Scores range from 1-10 with high scores indicating a better life situation										
3058 All things taken together how happy are you these days	Q02	1.85	0.02	0.59	2.00	0.03	0.64	1.92	0.02	0.62
	Q10	2.05	0.03	0.60	2.16	0.03	0.59	2.11	0.02	0.60
Responses: 1 Not too happy 2 Pretty happy 3 Very happy										
3060 Would you like your life to continue as it is, or would you change it	Q02	2.12	0.03	0.73	2.20	0.03	0.70	2.16	0.02	0.71
	Q10	2.12	0.03	0.66	2.15	0.03	0.64	2.13	0.02	0.65
Responses: 1 Change many parts 2 Change some parts 3 Continue as it is										

APPENDIX B

RESULTS OF FACTOR ANALYSIS OF SUBINDEX SCALES

Table 17. Anomie (An) Scale Factor Weights.

Data Set Quarter 02						Data Set Quarter 10[a]					
Head		Spouse		All		Head		Spouse		All	
DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1
3102	0.73050	3099	0.69470	3102	0.70947	3099	1.00000	3099	1.00000	3099	1.00000
3101	0.68048	3102	0.69232	3103	0.65251	3100	1.00000	3100	1.00000	3100	1.00000
3103	0.65280	3103	0.64719	3099	0.64789	3101	1.00000	3101	1.00000	3101	1.00000
3099	0.58385	3100	0.57689	3100	0.54786	3102	1.00000	3102	1.00000	3102	1.00000
3100	0.52716	3101	-0.71696	3101	-0.69094	3103	1.00000	3103	1.00000	3103	1.00000

	Eigenvalue	Portion	Cum Portion		Eigenvalue	Portion	Cum Portion
Head				Head			
Factor 1	2.0416	0.408	0.408	Factor 1	5.0000	1.000	1.000
Factor 2	0.8633	0.173	0.581	Factor 2	0.0000	0.000	0.000
Spouse				Spouse			
Factor 1	2.2776	0.446	0.446	Factor 1	5.0000	1.000	1.000
Factor 2	0.8381	0.168	0.613	Factor 2	0.0000	0.000	0.000
All				All			
Factor 1	2.1264	0.425	0.425	Factor 1	5.0000	1.000	1.000
Factor 2	0.8316	0.166	0.592	Factor 2	0.0000	0.000	0.000

[a] Due to the absence of observations for the An scale in quarter 10, values were estimated using regression analysis, and the use of these estimated values in the factor analysis resulted in factor loadings of 1.0. This results in some bias, but prevents the elimination of the anomie scale from the analysis.

Table 18. Negative Affect (NA) Scale Factor Weights.

Data Set Quarter 02						Data Set Quarter 10					
Head		Spouse		All		Head		Spouse		All	
DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1
3070	0.75250	3066	0.75998	3070	0.75602	3070	0.74584	3066	0.75163	3070	0.74207
3066	0.71482	3070	0.75976	3066	0.73991	3066	0.70254	3070	0.73435	3066	0.72783
3068	0.68324	3072	0.63776	3068	0.63187	3068	0.68224	3068	0.68075	3068	0.67071
3064	0.56773	3068	0.58520	3072	0.58292	3072	0.58992	3064	0.58857	3072	0.59458
3072	0.52196	3064	0.53044	3064	0.55480	3064	0.53764	3072	0.58579	3064	0.56177

	Eigenvalue	Portion	Cum Portion		Eigenvalue	Portion	Cum Portion
Head				Head			
Factor 1	2.1388	0.428	0.428	Factor 1	2.1524	0.430	0.430
Factor 2	0.8716	0.174	0.602	Factor 2	0.8626	0.173	0.603
Spouse				Spouse			
Factor 1	2.1854	0.437	0.437	Factor 1	2.2572	0.451	0.451
Factor 2	0.9121	0.182	0.619	Factor 2	0.8355	0.167	0.619
All				All			
Factor 1	2.1659	0.433	0.433	Factor 1	2.1994	0.440	0.440
Factor 2	0.8710	0.174	0.607	Factor 2	0.8387	0.168	0.608

Table 19. Powerlessness (P) Scale Factor Weights.

Data Set Quarter 02								
Head			Spouse			All		
DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2
3095	0.69343	0.06265	3131	0.71704	-0.16477	3131	0.69912	-0.09210
3131	0.67959	-0.04129	3095	0.67158	0.03262	3095	0.67720	0.05256
3128	0.61412	0.15461	3096	0.63089	0.14005	3128	0.62749	0.16166
3134	0.60926	-0.03212	3128	0.62441	0.15583	3096	0.60481	0.10130
3096	0.59323	0.08017	3134	0.44420	-0.13409	3134	0.55422	-0.07769
3129	0.58576	-0.19877	3129	0.42639	0.03399	3129	0.52493	-0.10022
3132	0.09046	0.67549	3132	0.00303	0.72683	3132	0.04570	0.70595
3133	-0.01981	0.67359	3135	-0.13892	0.67556	3133	-0.00698	0.62790
3094	-0.17695	0.57310	3133	-0.00935	0.57816	3135	-0.06307	0.59569
3135	-0.02400	0.51507	3094	0.02465	0.48035	3094	-0.09208	0.53474
3130	0.04613	0.13636	3130	0.09113	0.30897	3130	0.05829	0.21917

	Eigenvalue	Portion	Cum Portion
Head			
Factor 1	2.4304	0.221	0.221
Factor 2	1.5971	0.145	0.366
Factor 3	1.0632	0.097	0.463
Spouse			
Factor 1	2.1609	0.196	0.196
Factor 2	1.7360	0.158	0.354
Factor 3	1.0542	0.096	0.450
All			
Factor 1	2.3077	0.210	0.210
Factor 2	1.6451	0.150	0.359
Factor 3	1.0244	0.093	0.452

Table 19. (Continued)

Data Set Quarter 10								
Head			Spouse			All		
DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2
3130	0.86539	0.13289	3132	0.89601	0.07040	3132	0.87046	0.08743
3132	0.86008	0.10028	3130	0.88863	0.12430	3130	0.86932	0.12868
3133	0.57773	-0.02337	3133	0.52916	0.02748	3133	0.56246	-0.00094
3135	0.56448	-0.06739	3094	0.36286	-0.16666	3135	0.46801	-0.08313
3094	0.51609	-0.13470	3135	0.29889	-0.11704	3094	0.46024	-0.13800
3131	-0.06526	0.71406	3095	-0.02835	0.74201	3095	-0.04657	0.70413
3095	-0.06196	0.67676	3131	-0.17764	0.66360	3131	-0.11139	0.69451
3128	0.09469	0.61070	3096	0.18327	0.56118	3128	0.01890	0.58784
3096	0.09110	0.60811	3128	-0.10755	0.55043	3096	0.12868	0.58484
3134	-0.21827	0.56845	3134	-0.17877	0.54598	3134	-0.20541	0.55984
3128	0.00118	0.45127	3129	0.04589	0.37707	3129	0.01820	0.42080

	Eigenvalue	Portion	Cum Portion
Head			
Factor 1	2.4822	0.226	0.226
Factor 2	2.2866	0.208	0.434
Factor 3	1.0543	0.096	0.529
Spouse			
Factor 1	2.2536	0.205	0.205
Factor 2	2.0632	0.188	0.392
Factor 3	1.2445	0.113	0.506
All			
Factor 1	2.3495	0.214	0.214
Factor 2	2.1915	0.199	0.413
Factor 3	1.1101	0.101	0.514

Table 20. Worry (W) Scale Factor Weights.

Data Set Quarter 04						Data Set Quarter 10					
Head		Spouse[a]		All		Head		Spouse		All	
DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1
3143	0.67359	3141	1.00000	3143	0.70230	3143	0.75407	3143	0.73566	3143	0.74615
3141	0.65794	3142	1.00000	3142	0.67097	3142	0.66598	3142	0.70682	3142	0.68078
3142	0.64487	3143	1.00000	3141	0.65486	3141	0.65872	3141	0.63525	3141	0.64606
3144	0.60110	3144	1.00000	3144	0.62528	3144	0.63843	3144	0.56968	3144	0.61695
3145	0.54808	3145	1.00000	3145	0.54508	3145	0.45661	3145	0.39064	3145	0.43796

	Eigenvalue	Portion	Cum Portion		Eigenvalue	Portion	Cum Portion
Head				Head			
Factor 1	1.9642	0.393	0.393	Factor 1	2.0621	0.412	0.412
Factor 2	0.9321	0.186	0.579	Factor 2	0.9255	0.185	0.598
Spouse				Spouse			
Factor 1	5.0000	1.000	1.000	Factor 1	1.9215	0.384	0.384
Factor 2	0.0000	0.000	0.000	Factor 2	0.9830	0.197	0.581
All				All			
Factor 1	2.0604	0.412	0.412	Factor 1	2.0100	0.402	0.402
Factor 2	0.9065	0.181	0.593	Factor 2	0.9274	0.185	0.587

[a] Due to the absence of observations for Data Set Spouse in quarter 2, values were estimated using regression analysis, and the use of these estimated values in the factor analysis resulted in factor loadings of 1.0. This results in some bias, but prevents the elimination of the worry scale from the analysis.

Table 21. Self-Satisfaction (SS) Scale Factor Weights.

Data Set Quarter 02								
Head			Spouse			All		
DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2
3086	0.71211	-0.15472	3083	0.66994	-0.10810	3086	0.69477	-0.12243
3083	0.70006	-0.10260	3086	0.64758	-0.09467	3083	0.67298	-0.12601
3085	0.64410	0.02901	3085	0.62276	0.01467	3085	0.63872	0.03416
3079	0.63426	-0.24250	3079	0.58083	-0.17113	3082	0.59036	0.00414
3082	0.61067	-0.01595	3082	0.52734	-0.02439	3079	0.58357	-0.24138
3084	0.03632	0.70374	3081	-0.16361	0.67746	3081	-0.16064	0.66889
3081	-0.16569	0.66237	3087	-0.01609	0.60736	3084	0.02572	0.64591
3080	-0.09640	0.65801	3080	-0.06572	0.58455	3087	0.00294	0.62299
3087	-0.00176	0.64417	3084	0.00443	0.57514	3080	-0.08501	0.61595
3078	-0.16984	0.41842	3078	-0.10793	0.43340	3078	-0.14238	0.42533

	Eigenvalue	Portion	Cum Portion
Head			
Factor 1	2.7025	0.270	0.270
Factor 2	1.5899	0.159	0.429
Factor 3	0.9155	0.092	0.521
Spouse			
Factor 1	2.2755	0.228	0.228
Factor 2	1.3779	0.138	0.365
Factor 3	1.1479	0.115	0.480
All			
Factor 1	2.4919	0.249	0.249
Factor 2	1.4981	0.150	0.399
Factor 3	1.0215	0.102	0.501

Table 21. (Continued)

Data Set Quarter 10								
Head			Spouse			All		
DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2
3079	0.70006	-0.19505	3086	0.68223	-0.07870	3086	0.68967	-0.14108
3086	0.69862	-0.19576	3083	0.65520	-0.07296	3083	0.67252	-0.08246
3083	0.68019	-0.10846	3079	0.62474	-0.20396	3079	0.67237	-0.18688
3082	0.64590	-0.11213	3082	0.58496	0.02451	3082	0.61899	-0.05477
3085	0.54592	-0.03701	3085	0.50636	-0.26163	3085	0.52147	-0.12299
3084	-0.09295	0.75973	3084	0.07435	0.73416	3084	-0.03041	0.74953
3087	-0.06114	0.72869	3080	-0.05032	0.65892	3087	-0.07904	0.68501
3080	-0.09530	0.67205	3087	-0.10582	0.60667	3080	-0.08669	0.65787
3081	-0.20285	0.62682	3081	-0.26568	0.59203	3081	-0.23126	0.61417
3078	-0.27709	0.35860	3078	-0.23613	0.42998	3078	-0.26560	0.38560

	Eigenvalue	Portion	Cum Portion
Head			
Factor 1	3.0867	0.309	0.309
Factor 2	1.3921	0.139	0.448
Factor 3	0.9155	0.092	0.539
Spouse			
Factor 1	2.6625	0.266	0.266
Factor 2	1.3656	0.137	0.403
Factor 3	1.0547	0.105	0.408
All			
Factor 1	2.8783	0.288	0.288
Factor 2	1.3650	0.136	0.424
Factor 3	0.9688	0.097	0.521

Table 22. Positive Affect (PA) Scale Factor Weights.

Data Set Quarter 02						Data Set Quarter 10					
Head		Spouse		All		Head		Spouse		All	
DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1	DEI	Factor 1
3067	0.66904	3067	0.66495	3067	0.65965	3067	0.68794	3067	0.68778	3067	0.68270
3069	0.66482	3071	0.65591	3071	0.65365	3065	0.64301	3063	0.66870	3065	0.63553
3071	0.65979	3069	0.62737	3069	0.64766	3071	0.55300	3071	0.66860	3071	0.60645
3065	0.53760	3065	0.61084	3065	0.57927	3069	0.52452	3065	0.62927	3063	0.59592
3063	0.39392	3063	0.52205	3063	0.46601	3063	0.52334	3069	0.59693	3069	0.56481

	Eigenvalue	Portion	Cum Portion		Eigenvalue	Portion	Cum Portion
Head				Head			
Factor 1	1.7691	0.354	0.354	Factor 1	1.7415	0.348	0.348
Factor 2	1.0541	0.211	0.565	Factor 2	0.9703	0.194	0.542
Factor 3	0.7926	0.159	0.723				
Spouse				Spouse			
Factor 1	1.9116	0.382	0.382	Factor 1	2.1195	0.424	0.424
Factor 2	0.8882	0.178	0.560	Factor 2	0.8791	0.176	0.600
All				All			
Factor 1	1.8346	0.367	0.367	Factor 1	1.9119	0.382	0.382
Factor 2	0.9752	0.195	0.562	Factor 2	0.9166	0.183	0.566

Table 23. Life Satisfaction (LS) Scale Factor Weights.

Data Set Quarter 02								
Head			Spouse			All		
DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2
3093	0.85181	0.15424	3093	0.86193	0.12412	3093	0.85381	0.14877
3089	0.77938	0.29878	3089	0.73460	0.34220	3089	0.75918	0.32408
3092	0.69264	-0.31299	3092	0.71138	-0.29378	3092	0.70577	-0.29935
3060	-0.01395	0.79449	3060	0.01954	0.80294	3060	-0.00333	0.80050
3058	0.13251	0175911	3058	0.06778	0.74688	3058	0.11277	0.75358

	Eigenvalue	Portion	Cum Portion
Head			
Factor 1	1.9385	0.388	0.388
Factor 2	1.3105	0.262	0.650
Factor 3	0.6911	0.138	0.788
Spouse			
Factor 1	1.8924	0.438	0.378
Factor 2	1.3226	0.265	0.643
Factor 3	0.7472	0.149	0.792
All			
Factor 1	1.9335	0.387	0.387
Factor 2	1.3082	0.262	0.648
Factor 3	0.7081	0.142	0.790

Table 23. (Continued)

Data Set Quarter 10								
Head			Spouse			All		
DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2	DEI	Factor 1	Factor 2
3093	0.83111	0.17806	3093	0.84527	0.23213	3093	0.83760	0.20297
3092	0.77590	-0.24920	3092	0.77620	-0.23350	3092	0.77854	-0.23946
3089	0.75917	0.33860	3089	0.73566	0.41402	3060	0.74725	0.37403
3060	-0.03629	0.80718	3060	0.00337	0.83955	3060	-0.01944	0.82339
3058	0.17542	0.75744	3058	0.14837	0.76601	3058	0.16761	0.76036

	Eigenvalue	Portion	Cum Portion
Head			
Factor 1	2.0599	0.412	0.412
Factor 2	1.2750	0.255	0.667
Factor 3	0.6766	0.135	0.802
Spouse			
Factor 1	2.1884	0.424	0.438
Factor 2	1.2633	0.253	0.690
Factor 3	0.6568	0.131	0.822
All			
Factor 1	2.1191	0.424	0.424
Factor 2	1.2700	0.254	0.678
Factor 3	0.6428	0.129	0.806

APPENDIX C

QLI ANALYSIS OF FEDERAL INCOME TAX SCHEDULE: MEDIAN INCOME TAXPAYER ILLUSTRATION

Nomenclature

INCOME	Taxable income levels from Federal Income Tax Schedule
TABLED TX	Tax from the Federal Income Tax Schedule
ADJ'D TX	Tax to be paid by the respective income level if tax adjusted for equal reduction in QLI
B-TAX QTR Y	Before tax quarterly income
A-TAX QTR Y	Quarterly income after scheduled tax
ADJ'D QTR Y	Quarterly income after adjusted tax
ADJ'D YEARLY Y	Yearly income after adjusted tax
MAR TAX	Marginal tax from tax schedule
ADJ'D MAR TX	Marginal tax based upon tax rate adjusted for equal reductions in QLI
QLI B-TX	QLI before tax
QLI A TAB-TX	QLI after scheduled tax
QLI AA-TAX	QLI after adjusted tax
B ADJ D-QLI	Change in QLI resulting from tax in the tax schedule
A ADJ D-QLI	Change in QLI resulting from adjusted tax rate

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              OMNITAB TAX ADJUSTMENT SCHEDULES                                                                        PAGE   1
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS      MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON QLI REDUCTION OF                      MEDIAN INCOME TAXPAYER
    INCOME         TABLED TX        ADJ'D TAX        B-TAX QTR Y      A-TAX QTR Y      ADJ'D QTR Y      ADJ YEARLY Y

 4.9000000D 03    0.0              0.0              1.2250000D 03    1.2250000D 03    1.2250000D 03    4.9000000D 03
 4.9500000D 03    4.0000000D 00    7.2977040D 02    1.2375000D 03    1.2365000D 03    1.0550570D 03    4.2202300D 03
 5.0000000D 03    1.1000000D 01    7.3059850D 02    1.2500000D 03    1.2472500D 03    1.0673500D 03    4.2694020D 03
 5.0500000D 03    1.5000000D 01    7.3142840D 02    1.2625000D 03    1.2580000D 03    1.0796430D 03    4.3185720D 03
 5.1000000D 03    2.5000000D 01    7.3226030D 02    1.2750000D 03    1.2687500D 03    1.0919350D 03    4.3677400D 03
 5.1500000D 03    3.2000000D 01    7.3309400D 02    1.2875000D 03    1.2795000D 03    1.1042270D 03    4.4169060D 03
 5.2000000D 03    3.9000000D 01    7.3392960D 02    1.3000000D 03    1.2902500D 03    1.1165180D 03    4.4660700D 03
 5.2500000D 03    4.6000000D 01    7.3476700D 02    1.3125000D 03    1.3010000D 03    1.1288080D 03    4.5152330D 03
 5.3000000D 03    5.3000000D 01    7.3560640D 02    1.3250000D 03    1.3117500D 03    1.1410980D 03    4.5643940D 03
 5.3500000D 03    6.0000000D 01    7.3644770D 02    1.3375000D 03    1.3225000D 03    1.1533880D 03    4.6135520D 03

 5.4000000D 03    6.7000000D 01    7.3729090D 02    1.3500000D 03    1.3332500D 03    1.1656770D 03    4.6627090D 03
 5.4500000D 03    7.4000000D 01    7.3813600D 02    1.3625000D 03    1.3440000D 03    1.1779660D 03    4.7118640D 03
 5.5000000D 03    8.1000000D 01    7.3898300D 02    1.3750000D 03    1.3547500D 03    1.1902540D 03    4.7610170D 03
 5.5500000D 03    8.8000000D 01    7.3983200D 02    1.3875000D 03    1.3655000D 03    1.2025420D 03    4.8101680D 03
 5.6000000D 03    9.5000000D 01    7.4068290D 02    1.4000000D 03    1.3762500D 03    1.2148290D 03    4.8593170D 03
 5.6500000D 03    1.0200000D 02    7.4153570D 02    1.4125000D 03    1.3870000D 03    1.2271160D 03    4.9084640D 03
 5.7000000D 03    1.0900000D 02    7.4239050D 02    1.4250000D 03    1.3977500D 03    1.2394020D 03    4.9576090D 03
 5.7500000D 03    1.1600000D 02    7.4324730D 02    1.4375000D 03    1.4085000D 03    1.2516880D 03    5.0067530D 03
 5.8000000D 03    1.2300000D 02    7.4410600D 02    1.4500000D 03    1.4192500D 03    1.2639740D 03    5.0558940D 03
 5.3500000D 03    1.3000000D 02    7.4496670D 02    1.4625000D 03    1.4300000D 03    1.2762580D 03    5.1050330D 03

 5.9000000D 03    1.3700000D 02    7.4582930D 02    1.4750000D 03    1.4407500D 03    1.2885430D 03    5.1541710D 03
 5.9500000D 03    1.4400000D 02    7.4669400D 02    1.4875000D 03    1.4515000D 03    1.3008270D 03    5.2033060D 03
 6.0000000D 03    1.5100000D 02    7.4756060D 02    1.5000000D 03    1.4622500D 03    1.3131100D 03    5.2524390D 03
 6.0500000D 03    1.5900000D 02    7.4842920D 02    1.5125000D 03    1.4727500D 03    1.3253930D 03    5.3015710D 03
 6.1000000D 03    1.6600000D 02    7.4929980D 02    1.5250000D 03    1.4835000D 03    1.3376750D 03    5.3507000D 03
 6.1500000D 03    1.7400000D 02    7.5017250D 02    1.5375000D 03    1.4940000D 03    1.3499570D 03    5.3998280D 03
 6.2000000D 03    1.8100000D 02    7.5104710D 02    1.5500000D 03    1.5047500D 03    1.3622380D 03    5.4489530D 03
 6.2500000D 03    1.8900000D 02    7.5192380D 02    1.5625000D 03    1.5152500D 03    1.3745190D 03    5.4980760D 03
 6.3000000D 03    1.9600000D 02    7.5280250D 02    1.5750000D 03    1.5260000D 03    1.3867990D 03    5.5471970D 03
 6.3500000D 03    2.0400000D 02    7.5368330D 02    1.5875000D 03    1.5365000D 03    1.3990790D 03    5.5963170D 03

 6.4000000D 03    2.1100000D 02    7.5456610D 02    1.6000000D 03    1.5472500D 03    1.4113580D 03    5.6454340D 03
 6.4500000D 03    2.1900000D 02    7.5545090D 02    1.6125000D 03    1.5577500D 03    1.4236370D 03    5.6945490D 03
 6.5000000D 03    2.2600000D 02    7.5633780D 02    1.6250000D 03    1.5685000D 03    1.4359160D 03    5.7436620D 03
 6.5500000D 03    2.3400000D 02    7.5722680D 02    1.6375000D 03    1.5790000D 03    1.4481930D 03    5.7927730D 03
 6.6000000D 03    2.4100000D 02    7.5811780D 02    1.6500000D 03    1.5897500D 03    1.4604710D 03    5.8418820D 03
 6.6500000D 03    2.4900000D 02    7.5901090D 02    1.6625000D 03    1.6002500D 03    1.4727470D 03    5.8909890D 03
 6.7000000D 03    2.5600000D 02    7.5990610D 02    1.6750000D 03    1.6110000D 03    1.4850230D 03    5.9400940D 03
 6.7500000D 03    2.6400000D 02    7.6030350D 02    1.6875000D 03    1.6215000D 03    1.4972990D 03    5.9891970D 03
 6.8000000D 03    2.7100000D 02    7.6170290D 02    1.7000000D 03    1.6322500D 03    1.5095740D 03    6.0382970D 03
 6.8500000D 03    2.7900000D 02    7.6260440D 02    1.7125000D 03    1.6427500D 03    1.5218490D 03    6.0873960D 03

 6.9000000D 03    2.8600000D 02    7.6350800D 02    1.7250000D 03    1.6535000D 03    1.5341230D 03    6.1364920D 03
 6.9500000D 03    2.9400000D 02    7.6441380D 02    1.7375000D 03    1.6640000D 03    1.5463970D 03    6.1855860D 03
 7.0000000D 03    3.0200000D 02    7.6532170D 02    1.7500000D 03    1.6745000D 03    1.5586700D 03    6.2346780D 03
 7.0500000D 03    3.1000000D 02    7.6623170D 02    1.7625000D 03    1.6850000D 03    1.5709420D 03    6.2837680D 03
 7.1000000D 03    3.1800000D 02    7.6714390D 02    1.7750000D 03    1.6955000D 03    1.5832140D 03    6.3328560D 03
 7.1500000D 03    3.2600000D 02    7.6805820D 02    1.7875000D 03    1.7060000D 03    1.5954850D 03    6.3819420D 03
 7.2000000D 03    3.3400000D 02    7.6897470D 02    1.8000000D 03    1.7165000D 03    1.6077560D 03    6.4310250D 03
 7.2500000D 03    3.4200000D 02    7.6989340D 02    1.8125000D 03    1.7270000D 03    1.6200270D 03    6.4801070D 03
 7.3000000D 03    3.5000000D 02    7.7081420D 02    1.8250000D 03    1.7375000D 03    1.6322960D 03    6.5291860D 03
 7.3500000D 03    3.5800000D 02    7.7173730D 02    1.8375000D 03    1.7480000D 03    1.6445660D 03    6.5782630D 03
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                 OMNITAB TAX ADJUSTMENT SCHEDULES                                                                 PAGE   2
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS      MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON CLI REDUCTION OF                      MEDIAN INCOME TAXPAYER
    INCOME        TABLED TX        ADJ'D TAX      B-TAX QTR Y     A-TAX QTR Y     ADJ'D QTR Y     ADJ YEARLY Y

 7.4000000D 03   3.6600000D 02   7.726625D 02   1.8500000D 03   1.7535000D 03   1.656834D 03   6.627338D 03
 7.4500000D 03   3.7400000D 02   7.735899D 02   1.8625000D 03   1.7690000D 03   1.669103D 03   6.676410D 03
 7.5000000D 03   3.8200000D 02   7.745195D 02   1.8750000D 03   1.7795000D 03   1.681370D 03   6.725480D 03
 7.5500000D 03   3.9000000D 02   7.754514D 02   1.8875000D 03   1.7900000D 03   1.693637D 03   6.774549D 03
 7.6000000D 03   3.9800000D 02   7.763855D 02   1.9000000D 03   1.8005000D 03   1.705904D 03   6.823615D 03
 7.6500000D 03   4.0600000D 02   7.773216D 02   1.9125000D 03   1.8110000D 03   1.718170D 03   6.872678D 03
 7.7000000D 03   4.1400000D 02   7.782603D 02   1.9250000D 03   1.8215000D 03   1.730435D 03   6.921740D 03
 7.7500000D 03   4.2200000D 02   7.792011D 02   1.9375000D 03   1.8320000D 03   1.742700D 03   6.970799D 03
 7.8000000D 03   4.3000000D 02   7.801441D 02   1.9500000D 03   1.8425000D 03   1.754964D 03   7.019856D 03
 7.8500000D 03   4.3800000D 02   7.810894D 02   1.9625000D 03   1.8530000D 03   1.767228D 03   7.068911D 03

 7.9000000D 03   4.4600000D 02   7.820370D 02   1.9750000D 03   1.8635000D 03   1.779491D 03   7.117963D 03
 7.9500000D 03   4.5400000D 02   7.829869D 02   1.9875000D 03   1.8740000D 03   1.791753D 03   7.167013D 03
 8.0000000D 03   4.6300000D 02   7.839390D 02   2.0000000D 03   1.8842500D 03   1.804015D 03   7.216061D 03
 8.0500000D 03   4.7100000D 02   7.848935D 02   2.0125000D 03   1.8947500D 03   1.816277D 03   7.265107D 03
 8.1000000D 03   4.8000000D 02   7.858502D 02   2.0250000D 03   1.9050000D 03   1.828537D 03   7.314150D 03
 8.1500000D 03   4.8800000D 02   7.868093D 02   2.0375000D 03   1.9155000D 03   1.840798D 03   7.363191D 03
 8.2000000D 03   4.9700000D 02   7.877707D 02   2.0500000D 03   1.9257500D 03   1.853057D 03   7.412229D 03
 8.2500000D 03   5.0500000D 02   7.887344D 02   2.0625000D 03   1.9362500D 03   1.865316D 03   7.461266D 03
 8.3000000D 03   5.1400000D 02   7.897004D 02   2.0750000D 03   1.9465000D 03   1.877575D 03   7.510300D 03
 8.3500000D 03   5.2200000D 02   7.906688D 02   2.0875000D 03   1.9570000D 03   1.889833D 03   7.559331D 03

 8.4000000D 03   5.3100000D 02   7.916396D 02   2.1000000D 03   1.9672500D 03   1.902090D 03   7.608360D 03
 8.4500000D 03   5.3900000D 02   7.926127D 02   2.1125000D 03   1.9777500D 03   1.914347D 03   7.657387D 03
 8.5000000D 03   5.4800000D 02   7.935882D 02   2.1250000D 03   1.9880000D 03   1.926603D 03   7.706412D 03
 8.5500000D 03   5.5600000D 02   7.945661D 02   2.1375000D 03   1.9985000D 03   1.938858D 03   7.755434D 03
 8.6000000D 03   5.6500000D 02   7.955463D 02   2.1500000D 03   2.0087500D 03   1.951113D 03   7.804454D 03
 8.6500000D 03   5.7300000D 02   7.965290D 02   2.1625000D 03   2.0192500D 03   1.963368D 03   7.853471D 03
 8.7000000D 03   5.8200000D 02   7.975141D 02   2.1750000D 03   2.0295000D 03   1.975621D 03   7.902486D 03
 8.7500000D 03   5.9000000D 02   7.985015D 02   2.1875000D 03   2.0400000D 03   1.987875D 03   7.951498D 03
 8.8000000D 03   5.9900000D 02   7.994914D 02   2.2000000D 03   2.0502500D 03   2.000127D 03   8.000509D 03
 8.8500000D 03   6.0700000D 02   8.004838D 02   2.2125000D 03   2.0607500D 03   2.012379D 03   8.049516D 03

 8.9000000D 03   6.1600000D 02   8.014785D 02   2.2250000D 03   2.0710000D 03   2.024630D 03   8.098521D 03
 8.9500000D 03   6.2500000D 02   8.024758D 02   2.2375000D 03   2.0812500D 03   2.036881D 03   8.147524D 03
 9.0000000D 03   6.3400000D 02   8.034755D 02   2.2500000D 03   2.0915000D 03   2.049131D 03   8.196525D 03
 9.0500000D 03   6.4400000D 02   8.044776D 02   2.2625000D 03   2.1015000D 03   2.061381D 03   8.245522D 03
 9.1000000D 03   6.5300000D 02   8.054823D 02   2.2750000D 03   2.1117500D 03   2.073629D 03   8.294518D 03
 9.1500000D 03   6.6300000D 02   8.064894D 02   2.2875000D 03   2.1217500D 03   2.085878D 03   8.343511D 03
 9.2000000D 03   6.7200000D 02   8.074990D 02   2.3000000D 03   2.1320000D 03   2.098125D 03   8.392501D 03
 9.2500000D 03   6.8200000D 02   8.085111D 02   2.3125000D 03   2.1420000D 03   2.110372D 03   8.441489D 03
 9.3000000D 03   6.9100000D 02   8.095258D 02   2.3250000D 03   2.1522500D 03   2.122619D 03   8.490474D 03
 9.3500000D 03   7.0100000D 02   8.105429D 02   2.3375000D 03   2.1622500D 03   2.134864D 03   8.539457D 03

 9.4000000D 03   7.1000000D 02   8.115626D 02   2.3500000D 03   2.1725000D 03   2.147109D 03   8.588437D 03
 9.4500000D 03   7.2000000D 02   8.125649D 02   2.3625000D 03   2.1825000D 03   2.159354D 03   8.637415D 03
 9.5000000D 03   7.2900000D 02   8.136096D 02   2.3750000D 03   2.1927500D 03   2.171598D 03   8.686390D 03
 9.5500000D 03   7.3900000D 02   8.146370D 02   2.3875000D 03   2.2027500D 03   2.183841D 03   8.735363D 03
 9.6000000D 03   7.4800000D 02   8.156689D 02   2.4000000D 03   2.2130000D 03   2.196083D 03   8.784333D 03
 9.6500000D 03   7.5800000D 02   8.166994D 02   2.4125000D 03   2.2230000D 03   2.208325D 03   8.833301D 03
 9.7000000D 03   7.6700000D 02   8.177345D 02   2.4250000D 03   2.2332500D 03   2.220566D 03   8.882265D 03
 9.7500000D 03   7.7700000D 02   8.187722D 02   2.4375000D 03   2.2432500D 03   2.232807D 03   8.931228D 03
 9.8000000D 03   7.8600000D 02   8.198125D 02   2.4500000D 03   2.2535000D 03   2.245047D 03   8.980187D 03
 9.8500000D 03   7.9600000D 02   8.208554D 02   2.4625000D 03   2.2635000D 03   2.257286D 03   9.029145D 03
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                OMNITAB TAX ADJUSTMENT SCHEDULES                                                          PAGE   3
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS      MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON WLI REDUCTION OF                      MEDIAN INCOME TAXPAYER
    INCOME         TABLED TX        ADJ'D TAX       B-TAX QTR Y      A-TAX QTR Y     ADJ'D QTR Y      ADJ YEARLY Y

 9.900000D 03    8.050000D 02    8.219010D 02    2.475000D 03    2.273750D 03    2.269525D 03    9.078099D 03
 9.950000D 03    8.150000D 02    8.229492D 02    2.487500D 03    2.283750D 03    2.281763D 03    9.127051D 03
 1.000000D 04    8.240000D 02    8.240000D 02    2.500000D 03    2.294000D 03    2.294000D 03    9.176000D 03
 1.005000D 04    8.340000D 02    8.250535D 02    2.512500D 03    2.304000D 03    2.306237D 03    9.224947D 03
 1.010000D 04    8.430000D 02    8.261097D 02    2.525000D 03    2.314250D 03    2.318473D 03    9.273890D 03
 1.015000D 04    8.530000D 02    8.271685D 02    2.537500D 03    2.324250D 03    2.330708D 03    9.322831D 03
 1.020000D 04    8.620000D 02    8.282300D 02    2.550000D 03    2.334500D 03    2.342942D 03    9.371770D 03
 1.025000D 04    8.720000D 02    8.292943D 02    2.562500D 03    2.344500D 03    2.355176D 03    9.420706D 03
 1.030000D 04    8.810000D 02    8.303612D 02    2.575000D 03    2.354750D 03    2.367410D 03    9.469639D 03
 1.035000D 04    8.910000D 02    8.314309D 02    2.587500D 03    2.364750D 03    2.379642D 03    9.518569D 03

 1.040000D 04    9.000000D 02    8.325033D 02    2.600000D 03    2.375000D 03    2.391874D 03    9.567497D 03
 1.045000D 04    9.100000D 02    8.335784D 02    2.612500D 03    2.385000D 03    2.404105D 03    9.616422D 03
 1.050000D 04    9.190000D 02    8.346563D 02    2.625000D 03    2.395250D 03    2.416336D 03    9.665344D 03
 1.055000D 04    9.290000D 02    8.357369D 02    2.637500D 03    2.405250D 03    2.428566D 03    9.714263D 03
 1.060000D 04    9.380000D 02    8.368203D 02    2.650000D 03    2.415500D 03    2.440795D 03    9.763180D 03
 1.065000D 04    9.480000D 02    8.379065D 02    2.662500D 03    2.425500D 03    2.453023D 03    9.812093D 03
 1.070000D 04    9.570000D 02    8.389955D 02    2.675000D 03    2.435750D 03    2.465251D 03    9.861004D 03
 1.075000D 04    9.670000D 02    8.400873D 02    2.687500D 03    2.445750D 03    2.477478D 03    9.909913D 03
 1.080000D 04    9.760000D 02    8.411319D 02    2.700000D 03    2.456000D 03    2.489705D 03    9.958818D 03
 1.085000D 04    9.860000D 02    8.422793D 02    2.712500D 03    2.466000D 03    2.501930D 03    1.000772D 04

 1.090000D 04    9.950000D 02    8.433796D 02    2.725000D 03    2.476250D 03    2.514155D 03    1.005662D 04
 1.095000D 04    1.005000D 03    8.444827D 02    2.737500D 03    2.486250D 03    2.526379D 03    1.010552D 04
 1.100000D 04    1.014000D 03    8.455867D 02    2.750000D 03    2.496500D 03    2.538603D 03    1.015441D 04
 1.105000D 04    1.024000D 03    8.466975D 02    2.762500D 03    2.506500D 03    2.550826D 03    1.020330D 04
 1.110000D 04    1.033000D 03    8.478092D 02    2.775000D 03    2.516750D 03    2.563048D 03    1.025219D 04
 1.115000D 04    1.043000D 03    8.489239D 02    2.787500D 03    2.526750D 03    2.575269D 03    1.030108D 04
 1.120000D 04    1.052000D 03    8.500414D 02    2.800000D 03    2.537000D 03    2.587490D 03    1.034996D 04
 1.125000D 04    1.062000D 03    8.511618D 02    2.812500D 03    2.547000D 03    2.599710D 03    1.039884D 04
 1.130000D 04    1.071000D 03    8.522851D 02    2.825000D 03    2.557250D 03    2.611929D 03    1.044771D 04
 1.135000D 04    1.081000D 03    8.534114D 02    2.837500D 03    2.567250D 03    2.624147D 03    1.049659D 04

 1.140000D 04    1.090000D 03    8.545407D 02    2.850000D 03    2.577500D 03    2.636365D 03    1.054546D 04
 1.145000D 04    1.100000D 03    8.556728D 02    2.862500D 03    2.587500D 03    2.648582D 03    1.059433D 04
 1.150000D 04    1.109000D 03    8.568080D 02    2.875000D 03    2.597750D 03    2.660796D 03    1.064319D 04
 1.155000D 04    1.119000D 03    8.579461D 02    2.887500D 03    2.607750D 03    2.673013D 03    1.069205D 04
 1.160000D 04    1.128000D 03    8.590873D 02    2.900000D 03    2.618000D 03    2.685228D 03    1.074091D 04
 1.165000D 04    1.138000D 03    8.602314D 02    2.912500D 03    2.628000D 03    2.697442D 03    1.078977D 04
 1.170000D 04    1.147000D 03    8.613786D 02    2.925000D 03    2.638250D 03    2.709655D 03    1.083862D 04
 1.175000D 04    1.157000D 03    8.625287D 02    2.937500D 03    2.648250D 03    2.721868D 03    1.088747D 04
 1.180000D 04    1.166000D 03    8.636820D 02    2.950000D 03    2.653500D 03    2.734080D 03    1.093632D 04
 1.185000D 04    1.176000D 03    8.648382D 02    2.962500D 03    2.668500D 03    2.746290D 03    1.098516D 04

 1.190000D 04    1.185000D 03    8.659976D 02    2.975000D 03    2.678750D 03    2.758501D 03    1.103400D 04
 1.195000D 04    1.193000D 03    8.671600D 02    2.987500D 03    2.689250D 03    2.770710D 03    1.108284D 04
 1.200000D 04    1.201000D 03    8.683255D 02    3.000000D 03    2.699750D 03    2.782919D 03    1.113167D 04
 1.205000D 04    1.209000D 03    8.694941D 02    3.012500D 03    2.710250D 03    2.795126D 03    1.118051D 04
 1.210000D 04    1.217000D 03    8.706658D 02    3.025000D 03    2.720750D 03    2.807334D 03    1.122933D 04
 1.215000D 04    1.225000D 03    8.718407D 02    3.037500D 03    2.731250D 03    2.819540D 03    1.127816D 04
 1.220000D 04    1.233000D 03    8.730186D 02    3.050000D 03    2.741750D 03    2.831745D 03    1.132698D 04
 1.225000D 04    1.241000D 03    8.741998D 02    3.062500D 03    2.752250D 03    2.843950D 03    1.137580D 04
 1.230000D 04    1.249000D 03    8.753841D 02    3.075000D 03    2.762750D 03    2.856154D 03    1.142462D 04
 1.235000D 04    1.257000D 03    8.765715D 02    3.087500D 03    2.773250D 03    2.868357D 03    1.147343D 04
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          CAPITAL TAX ADJUSTMENT SCHEDULES
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS       MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON GEI REDUCTION OF                       MEDIAN INCOME TAXPAYER
    INCOME        TABLED TX      ADJ'D TAX      B-TAX QTR Y     A-TAX QTR Y     ADJ'D QTR Y     ADJ YEARLY Y

  1.240000D 04   1.265000D 03   8.777622D 02   3.100000D 03   2.783750D 03   2.880559D 03   1.152224D 04
  1.245000D 04   1.273000D 03   8.789560D 02   3.112500D 03   2.794250D 03   2.892761D 03   1.157104D 04
  1.250000D 04   1.281000D 03   8.801531D 02   3.125000D 03   2.804750D 03   2.904962D 03   1.161985D 04
  1.255000D 04   1.289000D 03   8.813534D 02   3.137500D 03   2.815250D 03   2.917162D 03   1.166865D 04
  1.260000D 04   1.297000D 03   8.825569D 02   3.150000D 03   2.825750D 03   2.929361D 03   1.171744D 04
  1.265000D 04   1.305000D 03   8.837637D 02   3.162500D 03   2.836250D 03   2.941559D 03   1.176624D 04
  1.270000D 04   1.313000D 03   8.849738D 02   3.175000D 03   2.846750D 03   2.953757D 03   1.181503D 04
  1.275000D 04   1.321000D 03   8.861871D 02   3.187500D 03   2.857250D 03   2.965953D 03   1.186381D 04
  1.280000D 04   1.329000D 03   8.874037D 02   3.200000D 03   2.867750D 03   2.978149D 03   1.191260D 04
  1.285000D 04   1.337000D 03   8.886236D 02   3.212500D 03   2.878250D 03   2.990344D 03   1.196138D 04

  1.290000D 04   1.345000D 03   8.898469D 02   3.225000D 03   2.888750D 03   3.002538D 03   1.201015D 04
  1.295000D 04   1.353000D 03   8.910734D 02   3.237500D 03   2.899250D 03   3.014732D 03   1.205893D 04
  1.300000D 04   1.361000D 03   8.923034D 02   3.250000D 03   2.909750D 03   3.026924D 03   1.210770D 04
  1.305000D 04   1.369000D 03   8.935366D 02   3.262500D 03   2.920250D 03   3.039116D 03   1.215646D 04
  1.310000D 04   1.377000D 03   8.947733D 02   3.275000D 03   2.930750D 03   3.051307D 03   1.220523D 04
  1.315000D 04   1.386000D 03   8.960133D 02   3.287500D 03   2.941000D 03   3.063497D 03   1.225399D 04
  1.320000D 04   1.395000D 03   8.972567D 02   3.300000D 03   2.951250D 03   3.075686D 03   1.230274D 04
  1.325000D 04   1.404000D 03   8.985036D 02   3.312500D 03   2.961500D 03   3.087874D 03   1.235150D 04
  1.330000D 04   1.413000D 03   8.997538D 02   3.325000D 03   2.971750D 03   3.100062D 03   1.240025D 04
  1.335000D 04   1.422000D 03   9.010075D 02   3.337500D 03   2.982000D 03   3.112248D 03   1.244899D 04

  1.340000D 04   1.432000D 03   9.022647D 02   3.350000D 03   2.992250D 03   3.124434D 03   1.249774D 04
  1.345000D 04   1.441000D 03   9.035253D 02   3.362500D 03   3.002250D 03   3.136619D 03   1.254647D 04
  1.350000D 04   1.450000D 03   9.047895D 02   3.375000D 03   3.012500D 03   3.148803D 03   1.259521D 04
  1.355000D 04   1.459000D 03   9.060571D 02   3.387500D 03   3.022750D 03   3.160986D 03   1.264394D 04
  1.360000D 04   1.469000D 03   9.073282D 02   3.400000D 03   3.032750D 03   3.173168D 03   1.269267D 04
  1.365000D 04   1.478000D 03   9.086028D 02   3.412500D 03   3.043000D 03   3.185349D 03   1.274140D 04
  1.370000D 04   1.487000D 03   9.098810D 02   3.425000D 03   3.053250D 03   3.197530D 03   1.279012D 04
  1.375000D 04   1.496000D 03   9.111628D 02   3.437500D 03   3.063500D 03   3.209709D 03   1.283884D 04
  1.380000D 04   1.506000D 03   9.124481D 02   3.450000D 03   3.073500D 03   3.221888D 03   1.288755D 04
  1.385000D 04   1.515000D 03   9.137370D 02   3.462500D 03   3.083750D 03   3.234066D 03   1.293626D 04

  1.390000D 04   1.524000D 03   9.150295D 02   3.475000D 03   3.094000D 03   3.246243D 03   1.298497D 04
  1.395000D 04   1.533000D 03   9.163255D 02   3.487500D 03   3.104250D 03   3.258419D 03   1.303367D 04
  1.400000D 04   1.543000D 03   9.176253D 02   3.500000D 03   3.114250D 03   3.270594D 03   1.308237D 04
  1.405000D 04   1.552000D 03   9.189287D 02   3.512500D 03   3.124500D 03   3.282768D 03   1.313107D 04
  1.410000D 04   1.561000D 03   9.202356D 02   3.525000D 03   3.134750D 03   3.294941D 03   1.317976D 04
  1.415000D 04   1.570000D 03   9.215465D 02   3.537500D 03   3.145000D 03   3.307113D 03   1.322845D 04
  1.420000D 04   1.580000D 03   9.228609D 02   3.550000D 03   3.155000D 03   3.319285D 03   1.327714D 04
  1.425000D 04   1.589000D 03   9.241790D 02   3.562500D 03   3.165250D 03   3.331455D 03   1.332582D 04
  1.430000D 04   1.598000D 03   9.255006D 02   3.575000D 03   3.175500D 03   3.343625D 03   1.337450D 04
  1.435000D 04   1.607000D 03   9.268264D 02   3.587500D 03   3.185750D 03   3.355793D 03   1.342317D 04

  1.440000D 04   1.617000D 03   9.281557D 02   3.600000D 03   3.195750D 03   3.367961D 03   1.347184D 04
  1.445000D 04   1.626000D 03   9.294886D 02   3.612500D 03   3.206000D 03   3.380128D 03   1.352051D 04
  1.450000D 04   1.635000D 03   9.308257D 02   3.625000D 03   3.216250D 03   3.392294D 03   1.356917D 04
  1.455000D 04   1.644000D 03   9.321664D 02   3.637500D 03   3.226500D 03   3.404458D 03   1.361783D 04
  1.460000D 04   1.653000D 03   9.335109D 02   3.650000D 03   3.236750D 03   3.416622D 03   1.366649D 04
  1.465000D 04   1.663000D 03   9.348592D 02   3.662500D 03   3.246750D 03   3.428785D 03   1.371514D 04
  1.470000D 04   1.672000D 03   9.362114D 02   3.675000D 03   3.257000D 03   3.440947D 03   1.376379D 04
  1.475000D 04   1.681000D 03   9.375674D 02   3.687500D 03   3.267250D 03   3.453108D 03   1.381243D 04
  1.480000D 04   1.690000D 03   9.389273D 02   3.700000D 03   3.277500D 03   3.465268D 03   1.386107D 04
  1.485000D 04   1.700000D 03   9.402911D 02   3.712500D 03   3.287500D 03   3.477427D 03   1.390971D 04
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                OMNITAB TAX ADJUSTMENT SCHEDULES                                                                        PAGE    5
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS      MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON GLI REDUCTION OF                       MEDIAN INCOME TAXPAYER
    INCOME        TABLED TX         ADJ'D TAX        B-TAX QTR Y      A-TAX QTR Y      ADJ'D QTR Y      ADJ YEARLY Y

 1.4900000D 04    1.7090000D 03    9.4165860D 02    3.7250000D 03    3.2977500D 03    3.4895850D 03    1.3958340D 04
 1.4950000D 04    1.7180000D 03    9.4303050D 02    3.7375000D 03    3.3080000D 03    3.5017420D 03    1.4006970D 04
 1.5000000D 04    1.7270000D 03    9.4440610D 02    3.7500000D 03    3.3182500D 03    3.5138980D 03    1.4055590D 04
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           CAPITAL TAX ADJUSTMENT SCHEDULES                                                                         PAGE    6
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS        MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON QLI REDUCTION OF                        MEDIAN INCOME TAXPAYER
    INCOME          MAR TAX        ADJ'D MAR TX    QLI B-TAX       QLI A TAB-TX    QLI AA-TAX      B ADJ D-QLI      A ADJ D-QLI

  4.9000000D 03   0.0             0.0             1.438824D 02    1.438824D 02    1.438824D 02    0.0              0.0
  4.9500000D 03   4.0000000D 00   7.297704D 02    1.439150D 02    1.439124D 02    1.434361D 02    2.603120D-03     4.788923D-01
  5.0000000D 03   7.0000000D 00   8.280391D-01    1.439475D 02    1.439403D 02    1.434686D 02    7.150907D-03     4.788923D-01
  5.0500000D 03   7.0000000D 00   8.299549D-01    1.439800D 02    1.439683D 02    1.435011D 02    1.166893D-02     4.788923D-01
  5.1000000D 03   7.0000000D 00   8.318270D-01    1.440124D 02    1.439962D 02    1.435335D 02    1.621719D-02     4.788923D-01
  5.1500000D 03   7.0000000D 00   8.337054D-01    1.440448D 02    1.440241D 02    1.435659D 02    2.073568D-02     4.788923D-01
  5.2000000D 03   7.0000000D 00   8.355900D-01    1.440772D 02    1.440520D 02    1.435983D 02    2.524441D-02     4.788923D-01
  5.2500000D 03   7.0000000D 00   8.374610D-01    1.441095D 02    1.440798D 02    1.436306D 02    2.974337D-02     4.788923D-01
  5.3000000D 03   7.0000000D 00   8.393784D-01    1.441418D 02    1.441076D 02    1.436629D 02    3.423257D-02     4.788923D-01
  5.3500000D 03   7.0000000D 00   8.412822D-01    1.441741D 02    1.441354D 02    1.436952D 02    3.871200D-02     4.788923D-01

  5.4000000D 03   7.0000000D 00   8.431924D-01    1.442063D 02    1.441631D 02    1.437274D 02    4.318167D-02     4.788923D-01
  5.4500000D 03   7.0000000D 00   8.451091D-01    1.442385D 02    1.441908D 02    1.437596D 02    4.764157D-02     4.788923D-01
  5.5000000D 03   7.0000000D 00   8.470323D-01    1.442706D 02    1.442185D 02    1.437917D 02    5.209171D-02     4.788923D-01
  5.5500000D 03   7.0000000D 00   8.489620D-01    1.443027D 02    1.442462D 02    1.438238D 02    5.653208D-02     4.788923D-01
  5.6000000D 03   7.0000000D 00   8.508982D-01    1.443348D 02    1.442738D 02    1.438559D 02    6.096269D-02     4.788923D-01
  5.6500000D 03   7.0000000D 00   8.528410D-01    1.443668D 02    1.443014D 02    1.438879D 02    6.538353D-02     4.788923D-01
  5.7000000D 03   7.0000000D 00   8.547904D-01    1.443988D 02    1.443290D 02    1.439199D 02    6.979461D-02     4.788923D-01
  5.7500000D 03   7.0000000D 00   8.567464D-01    1.444308D 02    1.443566D 02    1.439519D 02    7.419592D-02     4.788923D-01
  5.8000000D 03   7.0000000D 00   8.587091D-01    1.444627D 02    1.443841D 02    1.439836D 02    7.858747D-02     4.788923D-01
  5.8500000D 03   7.0000000D 00   8.606785D-01    1.444946D 02    1.444116D 02    1.440157D 02    8.296925D-02     4.788923D-01

  5.9000000D 03   7.0000000D 00   8.626546D-01    1.445264D 02    1.444391D 02    1.440475D 02    8.734127D-02     4.788923D-01
  5.9500000D 03   7.0000000D 00   8.646375D-01    1.445582D 02    1.444665D 02    1.440793D 02    9.170352D-02     4.788923D-01
  6.0000000D 03   7.0000000D 00   8.666272D-01    1.445900D 02    1.444939D 02    1.441111D 02    9.605601D-02     4.788923D-01
  6.0500000D 03   8.0000000D 00   8.686236D-01    1.446217D 02    1.445207D 02    1.441428D 02    1.010354D-01     4.788923D-01
  6.1000000D 03   7.0000000D 00   8.706270D-01    1.446534D 02    1.445481D 02    1.441745D 02    1.053677D-01     4.788923D-01
  6.1500000D 03   8.0000000D 00   8.726372D-01    1.446851D 02    1.445748D 02    1.442062D 02    1.103256D-01     4.788923D-01
  6.2000000D 03   7.0000000D 00   8.746543D-01    1.447167D 02    1.446021D 02    1.442376D 02    1.146377D-01     4.788923D-01
  6.2500000D 03   8.0000000D 00   8.766783D-01    1.447483D 02    1.446287D 02    1.442694D 02    1.195742D-01     4.788923D-01
  6.3000000D 03   7.0000000D 00   8.787093D-01    1.447798D 02    1.446560D 02    1.443009D 02    1.238661D-01     4.788923D-01
  6.3500000D 03   8.0000000D 00   8.807473D-01    1.448113D 02    1.446826D 02    1.443324D 02    1.287811D-01     4.788923D-01

  6.4000000D 03   7.0000000D 00   8.827924D-01    1.448428D 02    1.447097D 02    1.443639D 02    1.330529D-01     4.788923D-01
  6.4500000D 03   8.0000000D 00   8.848445D-01    1.448742D 02    1.447363D 02    1.443953D 02    1.379465D-01     4.788923D-01
  6.5000000D 03   7.0000000D 00   8.869037D-01    1.449056D 02    1.447634D 02    1.444267D 02    1.421981D-01     4.788923D-01
  6.5500000D 03   8.0000000D 00   8.889701D-01    1.449370D 02    1.447899D 02    1.444581D 02    1.470702D-01     4.788923D-01
  6.6000000D 03   7.0000000D 00   8.910436D-01    1.449683D 02    1.448170D 02    1.444894D 02    1.513016D-01     4.788923D-01
  6.6500000D 03   8.0000000D 00   8.931243D-01    1.449995D 02    1.448434D 02    1.445207D 02    1.561523D-01     4.788923D-01
  6.7000000D 03   7.0000000D 00   8.952123D-01    1.450308D 02    1.448705D 02    1.445519D 02    1.603635D-01     4.788923D-01
  6.7500000D 03   8.0000000D 00   8.973075D-01    1.450620D 02    1.448968D 02    1.445831D 02    1.651927D-01     4.788923D-01
  6.8000000D 03   7.0000000D 00   8.994100D-01    1.450932D 02    1.449238D 02    1.446143D 02    1.693838D-01     4.788923D-01
  6.8500000D 03   8.0000000D 00   9.015198D-01    1.451243D 02    1.449501D 02    1.446454D 02    1.741916D-01     4.788923D-01

  6.9000000D 03   7.0000000D 00   9.036370D-01    1.451554D 02    1.449771D 02    1.446765D 02    1.783625D-01     4.788923D-01
  6.9500000D 03   8.0000000D 00   9.057616D-01    1.451865D 02    1.450033D 02    1.447076D 02    1.831488D-01     4.788923D-01
  7.0000000D 03   8.0000000D 00   9.078936D-01    1.452175D 02    1.450296D 02    1.447386D 02    1.879240D-01     4.788923D-01
  7.0500000D 03   8.0000000D 00   9.100331D-01    1.452485D 02    1.450558D 02    1.447696D 02    1.926882D-01     4.788923D-01
  7.1000000D 03   8.0000000D 00   9.121801D-01    1.452794D 02    1.450820D 02    1.448005D 02    1.974414D-01     4.788923D-01
  7.1500000D 03   8.0000000D 00   9.143347D-01    1.453103D 02    1.451081D 02    1.448314D 02    2.021836D-01     4.788923D-01
  7.2000000D 03   8.0000000D 00   9.164968D-01    1.453412D 02    1.451343D 02    1.448623D 02    2.069147D-01     4.788923D-01
  7.2500000D 03   8.0000000D 00   9.186665D-01    1.453720D 02    1.451604D 02    1.448931D 02    2.116347D-01     4.788923D-01
  7.3000000D 03   8.0000000D 00   9.208439D-01    1.454028D 02    1.451865D 02    1.449239D 02    2.163438D-01     4.788923D-01
  7.3500000D 03   8.0000000D 00   9.230289D-01    1.454336D 02    1.452125D 02    1.449547D 02    2.210417D-01     4.788923D-01
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                OMNITAB TAX ADJUSTMENT SCHEDULES                                                    PAGE    7
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS     MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON QLI REDUCTION OF                     MEDIAN INCOME TAXPAYER
    INCOME          MAR TAX         ADJ'D MAR TX   QLI B-TAX       QLI A TAB-TX    QLI AA-TAX      B ADJ D-QLI     A ADJ D-QLI

  7.4000000D 03   8.0000000D 00   9.2522170D-01   1.4546430D 02   1.4523860D 02   1.4498540D 02   2.2572870D-01   4.7889230D-01
  7.4500000D 03   8.0000000D 00   9.2742220D-01   1.4549500D 02   1.4526460D 02   1.4501610D 02   2.3040460D-01   4.7889230D-01
  7.5000000D 03   8.0000000D 00   9.2963050D-01   1.4552560D 02   1.4529060D 02   1.4504670D 02   2.3506940D-01   4.7889230D-01
  7.5500000D 03   8.0000000D 00   9.3184660D-01   1.4555620D 02   1.4531650D 02   1.4507730D 02   2.3972330D-01   4.7889230D-01
  7.6000000D 03   8.0000000D 00   9.3407050D-01   1.4558680D 02   1.4534240D 02   1.4510790D 02   2.4436600D-01   4.7889230D-01
  7.6500000D 03   8.0000000D 00   9.3630240D-01   1.4561730D 02   1.4536830D 02   1.4513840D 02   2.4899780D-01   4.7889230D-01
  7.7000000D 03   8.0000000D 00   9.3854220D-01   1.4564780D 02   1.4539420D 02   1.4516890D 02   2.5361850D-01   4.7889230D-01
  7.7500000D 03   8.0000000D 00   9.4079000D-01   1.4567830D 02   1.4542010D 02   1.4519940D 02   2.5822810D-01   4.7889230D-01
  7.8000000D 03   8.0000000D 00   9.4304570D-01   1.4570870D 02   1.4544590D 02   1.4522980D 02   2.6282680D-01   4.7889230D-01
  7.8500000D 03   8.0000000D 00   9.4530960D-01   1.4573910D 02   1.4547170D 02   1.4526020D 02   2.6741430D-01   4.7889230D-01

  7.9000000D 03   8.0000000D 00   9.4758150D-01   1.4576940D 02   1.4549740D 02   1.4529050D 02   2.7199090D-01   4.7889230D-01
  7.9500000D 03   8.0000000D 00   9.4986150D-01   1.4579970D 02   1.4552320D 02   1.4532080D 02   2.7655640D-01   4.7889230D-01
  8.0000000D 03   9.0000000D 00   9.5214970D-01   1.4583000D 02   1.4554830D 02   1.4535110D 02   2.8172280D-01   4.7889230D-01
  8.0500000D 03   8.0000000D 00   9.5444610D-01   1.4586020D 02   1.4557400D 02   1.4538130D 02   2.8626560D-01   4.7889230D-01
  8.1000000D 03   9.0000000D 00   9.5675070D-01   1.4589040D 02   1.4559900D 02   1.4541150D 02   2.9140800D-01   4.7889230D-01
  8.1500000D 03   8.0000000D 00   9.5906360D-01   1.4592060D 02   1.4562470D 02   1.4544170D 02   2.9592810D-01   4.7889230D-01
  8.2000000D 03   9.0000000D 00   9.6138480D-01   1.4595070D 02   1.4564970D 02   1.4547180D 02   3.0104660D-01   4.7889230D-01
  8.2500000D 03   8.0000000D 00   9.6371440D-01   1.4598080D 02   1.4567520D 02   1.4550190D 02   3.0554390D-01   4.7889230D-01
  8.3000000D 03   9.0000000D 00   9.6605230D-01   1.4601080D 02   1.4570020D 02   1.4553190D 02   3.1063850D-01   4.7889230D-01
  8.3500000D 03   8.0000000D 00   9.6839870D-01   1.4604080D 02   1.4572570D 02   1.4556190D 02   3.1511310D-01   4.7889230D-01

  8.4000000D 03   9.0000000D 00   9.7075360D-01   1.4607080D 02   1.4575060D 02   1.4559190D 02   3.2018370D-01   4.7889230D-01
  8.4500000D 03   8.0000000D 00   9.7311700D-01   1.4610070D 02   1.4577610D 02   1.4562180D 02   3.2463570D-01   4.7889230D-01
  8.5000000D 03   9.0000000D 00   9.7548890D-01   1.4613060D 02   1.4580090D 02   1.4565170D 02   3.2968230D-01   4.7889230D-01
  8.5500000D 03   8.0000000D 00   9.7786950D-01   1.4616050D 02   1.4582640D 02   1.4568160D 02   3.3411150D-01   4.7889230D-01
  8.6000000D 03   9.0000000D 00   9.8025860D-01   1.4619030D 02   1.4585120D 02   1.4571140D 02   3.3913420D-01   4.7889230D-01
  8.6500000D 03   8.0000000D 00   9.8265650D-01   1.4622010D 02   1.4587650D 02   1.4574120D 02   3.4354070D-01   4.7889230D-01
  8.7000000D 03   9.0000000D 00   9.8506310D-01   1.4624980D 02   1.4590130D 02   1.4577090D 02   3.4853940D-01   4.7889230D-01
  8.7500000D 03   8.0000000D 00   9.8747840D-01   1.4627950D 02   1.4592660D 02   1.4580060D 02   3.5292320D-01   4.7889230D-01
  8.8000000D 03   9.0000000D 00   9.8990260D-01   1.4630920D 02   1.4595130D 02   1.4583030D 02   3.5789800D-01   4.7889230D-01
  8.8500000D 03   8.0000000D 00   9.9233560D-01   1.4633880D 02   1.4597660D 02   1.4585990D 02   3.6225910D-01   4.7889230D-01

  8.9000000D 03   9.0000000D 00   9.9477740D-01   1.4636840D 02   1.4600120D 02   1.4588950D 02   3.6720990D-01   4.7889230D-01
  8.9500000D 03   9.0000000D 00   9.9722830D-01   1.4639800D 02   1.4602530D 02   1.4591910D 02   3.7214840D-01   4.7889230D-01
  9.0000000D 03   9.0000000D 00   9.9968810D-01   1.4642750D 02   1.4605040D 02   1.4594860D 02   3.7707470D-01   4.7889230D-01
  9.0500000D 03   1.0000000D 01   1.0021570D 00   1.4645700D 02   1.4607440D 02   1.4597810D 02   3.8258750D-01   4.7889230D-01
  9.1000000D 03   9.0000000D 00   1.0046350D 00   1.4648640D 02   1.4609890D 02   1.4600750D 02   3.8748860D-01   4.7889230D-01
  9.1500000D 03   1.0000000D 01   1.0071220D 00   1.4651580D 02   1.4612290D 02   1.4603690D 02   3.9297500D-01   4.7889230D-01
  9.2000000D 03   9.0000000D 00   1.0096180D 00   1.4654520D 02   1.4614730D 02   1.4606630D 02   3.9785090D-01   4.7889230D-01
  9.2500000D 03   1.0000000D 01   1.0121230D 00   1.4657450D 02   1.4617120D 02   1.4609560D 02   4.0331090D-01   4.7889230D-01
  9.3000000D 03   9.0000000D 00   1.0146380D 00   1.4660380D 02   1.4619570D 02   1.4612490D 02   4.0816160D-01   4.7889230D-01
  9.3500000D 03   1.0000000D 01   1.0171620D 00   1.4663310D 02   1.4621950D 02   1.4615420D 02   4.1359530D-01   4.7889230D-01

  9.4000000D 03   9.0000000D 00   1.0196950D 00   1.4666230D 02   1.4624390D 02   1.4618340D 02   4.1842070D-01   4.7889230D-01
  9.4500000D 03   1.0000000D 01   1.0222370D 00   1.4669150D 02   1.4626770D 02   1.4621260D 02   4.2382800D-01   4.7889230D-01
  9.5000000D 03   9.0000000D 00   1.0247890D 00   1.4672060D 02   1.4629200D 02   1.4624170D 02   4.2862830D-01   4.7889230D-01
  9.5500000D 03   1.0000000D 01   1.0273510D 00   1.4674970D 02   1.4631570D 02   1.4627080D 02   4.3400920D-01   4.7889230D-01
  9.6000000D 03   9.0000000D 00   1.0299220D 00   1.4677880D 02   1.4634000D 02   1.4629990D 02   4.3878430D-01   4.7889230D-01
  9.6500000D 03   1.0000000D 01   1.0325020D 00   1.4680780D 02   1.4636370D 02   1.4632890D 02   4.4413870D-01   4.7889230D-01
  9.7000000D 03   9.0000000D 00   1.0350930D 00   1.4683680D 02   1.4638790D 02   1.4635790D 02   4.4888870D-01   4.7889230D-01
  9.7500000D 03   1.0000000D 01   1.0376920D 00   1.4686580D 02   1.4641160D 02   1.4638690D 02   4.5421670D-01   4.7889230D-01
  9.8000000D 03   9.0000000D 00   1.0403020D 00   1.4689470D 02   1.4643560D 02   1.4641580D 02   4.5894150D-01   4.7889230D-01
  9.8500000D 03   1.0000000D 01   1.0429210D 00   1.4692360D 02   1.4645930D 02   1.4644470D 02   4.6424310D-01   4.7889230D-01
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              OMNITAB TAX ADJUSTMENT SCHEDULES                                                      PAGE    8
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS     MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON QLI REDUCTION OF                     MEDIAN INCOME TAXPAYER
   INCOME         MAR TAX        ADJ'D MAR TX    QLI B-TAX       QLI A TAB-TX    QLI AA-TAX       B ADJ D-QLI     A ADJ D-QLI

 9.900000D 03    9.000000D 00    1.045550D 00    1.469524D 02    1.464835D 02    1.464735D 02    4.689427D-01    4.788923D-01
 9.950000D 03    1.000000D 01    1.048189D 00    1.469812D 02    1.465070D 02    1.465023D 02    4.742179D-01    4.788923D-01
 1.000000D 04    9.000000D 00    1.050838D 00    1.470100D 02    1.465311D 02    1.465311D 02    4.788923D-01    4.788923D-01
 1.005000D 04    1.000000D 01    1.053497D 00    1.470387D 02    1.465546D 02    1.465596D 02    4.841412D-01    4.788923D-01
 1.010000D 04    9.000000D 00    1.056165D 00    1.470674D 02    1.465786D 02    1.465885D 02    4.887904D-01    4.788923D-01
 1.015000D 04    1.000000D 01    1.058844D 00    1.470961D 02    1.466021D 02    1.466172D 02    4.940128D-01    4.788923D-01
 1.020000D 04    9.000000D 00    1.061533D 00    1.471247D 02    1.466261D 02    1.466458D 02    4.986368D-01    4.788923D-01
 1.025000D 04    1.000000D 01    1.064232D 00    1.471533D 02    1.466494D 02    1.466744D 02    5.038329D-01    4.788923D-01
 1.030000D 04    9.000000D 00    1.066941D 00    1.471818D 02    1.466734D 02    1.467029D 02    5.084317D-01    4.788923D-01
 1.035000D 04    1.000000D 01    1.069661D 00    1.472103D 02    1.466967D 02    1.467314D 02    5.136014D-01    4.788923D-01

 1.040000D 04    9.000000D 00    1.072391D 00    1.472388D 02    1.467206D 02    1.467599D 02    5.181750D-01    4.788923D-01
 1.045000D 04    1.000000D 01    1.075131D 00    1.472672D 02    1.467439D 02    1.467883D 02    5.233182D-01    4.788923D-01
 1.050000D 04    9.000000D 00    1.077881D 00    1.472956D 02    1.467678D 02    1.468167D 02    5.278667D-01    4.788923D-01
 1.055000D 04    1.000000D 01    1.080642D 00    1.473240D 02    1.467910D 02    1.468451D 02    5.329836D-01    4.788923D-01
 1.060000D 04    9.000000D 00    1.083414D 00    1.473523D 02    1.468148D 02    1.468734D 02    5.375068D-01    4.788923D-01
 1.065000D 04    1.000000D 01    1.086196D 00    1.473806D 02    1.468380D 02    1.469017D 02    5.425973D-01    4.788923D-01
 1.070000D 04    9.000000D 00    1.088988D 00    1.474088D 02    1.468617D 02    1.469299D 02    5.470954D-01    4.788923D-01
 1.075000D 04    1.000000D 01    1.091792D 00    1.474370D 02    1.468849D 02    1.469581D 02    5.521594D-01    4.788923D-01
 1.080000D 04    9.000000D 00    1.094606D 00    1.474652D 02    1.469086D 02    1.469863D 02    5.566323D-01    4.788923D-01
 1.085000D 04    1.000000D 01    1.097431D 00    1.474933D 02    1.469317D 02    1.470144D 02    5.616700D-01    4.788923D-01

 1.090000D 04    9.000000D 00    1.100266D 00    1.475214D 02    1.469553D 02    1.470425D 02    5.661177D-01    4.788923D-01
 1.095000D 04    1.000000D 01    1.103113D 00    1.475495D 02    1.469784D 02    1.470706D 02    5.711289D-01    4.788923D-01
 1.100000D 04    9.000000D 00    1.105970D 00    1.475775D 02    1.470019D 02    1.470986D 02    5.755515D-01    4.788923D-01
 1.105000D 04    1.000000D 01    1.108839D 00    1.476055D 02    1.470249D 02    1.471266D 02    5.805363D-01    4.788923D-01
 1.110000D 04    9.000000D 00    1.111718D 00    1.476334D 02    1.470485D 02    1.471545D 02    5.849337D-01    4.788923D-01
 1.115000D 04    1.000000D 01    1.114609D 00    1.476613D 02    1.470714D 02    1.471824D 02    5.898921D-01    4.788923D-01
 1.120000D 04    9.000000D 00    1.117510D 00    1.476892D 02    1.470949D 02    1.472103D 02    5.942643D-01    4.788923D-01
 1.125000D 04    1.000000D 01    1.120423D 00    1.477170D 02    1.471178D 02    1.472381D 02    5.991963D-01    4.788923D-01
 1.130000D 04    9.000000D 00    1.123348D 00    1.477448D 02    1.471413D 02    1.472659D 02    6.035433D-01    4.788923D-01
 1.135000D 04    1.000000D 01    1.126283D 00    1.477726D 02    1.471641D 02    1.472937D 02    6.084490D-01    4.788923D-01

 1.140000D 04    9.000000D 00    1.129230D 00    1.478003D 02    1.471875D 02    1.473214D 02    6.127707D-01    4.788923D-01
 1.145000D 04    1.000000D 01    1.132189D 00    1.478280D 02    1.472103D 02    1.473491D 02    6.176500D-01    4.788923D-01
 1.150000D 04    9.000000D 00    1.135159D 00    1.478556D 02    1.472337D 02    1.473767D 02    6.219466D-01    4.788923D-01
 1.155000D 04    1.000000D 01    1.138140D 00    1.478832D 02    1.472564D 02    1.474043D 02    6.267995D-01    4.788923D-01
 1.160000D 04    9.000000D 00    1.141133D 00    1.479108D 02    1.472797D 02    1.474319D 02    6.310709D-01    4.788923D-01
 1.165000D 04    1.000000D 01    1.144138D 00    1.479383D 02    1.473024D 02    1.474594D 02    6.356973D-01    4.788923D-01
 1.170000D 04    9.000000D 00    1.147155D 00    1.479658D 02    1.473257D 02    1.474869D 02    6.401436D-01    4.788923D-01
 1.175000D 04    1.000000D 01    1.150183D 00    1.479933D 02    1.473483D 02    1.475144D 02    6.449436D-01    4.788923D-01
 1.180000D 04    9.000000D 00    1.153223D 00    1.480207D 02    1.473715D 02    1.475418D 02    6.491647D-01    4.788923D-01
 1.185000D 04    1.000000D 01    1.156275D 00    1.480481D 02    1.473941D 02    1.475692D 02    6.539383D-01    4.788923D-01

 1.190000D 04    9.000000D 00    1.159339D 00    1.480754D 02    1.474173D 02    1.475965D 02    6.581342D-01    4.788923D-01
 1.195000D 04    8.000000D 00    1.162416D 00    1.481027D 02    1.474410D 02    1.476238D 02    6.617541D-01    4.788923D-01
 1.200000D 04    8.000000D 00    1.165504D 00    1.481300D 02    1.474646D 02    1.476511D 02    6.653630D-01    4.788923D-01
 1.205000D 04    8.000000D 00    1.168604D 00    1.481572D 02    1.474883D 02    1.476783D 02    6.689609D-01    4.788923D-01
 1.210000D 04    8.000000D 00    1.171717D 00    1.481844D 02    1.475119D 02    1.477055D 02    6.725477D-01    4.788923D-01
 1.215000D 04    8.000000D 00    1.174842D 00    1.482116D 02    1.475355D 02    1.477327D 02    6.761234D-01    4.788923D-01
 1.220000D 04    8.000000D 00    1.177980D 00    1.482387D 02    1.475590D 02    1.477598D 02    6.796882D-01    4.788923D-01
 1.225000D 04    8.000000D 00    1.181129D 00    1.482658D 02    1.475825D 02    1.477869D 02    6.832419D-01    4.788923D-01
 1.230000D 04    8.000000D 00    1.184292D 00    1.482928D 02    1.476060D 02    1.478139D 02    6.867845D-01    4.788923D-01
 1.235000D 04    8.000000D 00    1.187467D 00    1.483198D 02    1.476295D 02    1.478409D 02    6.903161D-01    4.788923D-01
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                OMNITAX TAX ADJUSTMENT SCHEDULES                                                       PAGE   9
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS      MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON QLI REDUCTION OF                      MEDIAN INCOME TAXPAYER
   INCOME          MAR TAX        ADJ'D MAR TX     QLI B-TAX      QLI A TAB-TX   QLI AA-TAX      B ADJ D-QLI     A ADJ D-QLI

 1.2400000D 04   8.0000000D 00   1.190654D 00   1.483463D 02   1.476530D 02   1.478679D 02   6.938367D-01   4.788923D-01
 1.2450000D 04   8.0000000D 00   1.193354D 00   1.483737D 02   1.476764D 02   1.478948D 02   6.973462D-01   4.788923D-01
 1.2500000D 04   8.0000000D 00   1.197067D 00   1.484006D 02   1.476998D 02   1.479217D 02   7.008447D-01   4.788923D-01
 1.2550000D 04   8.0000000D 00   1.200293D 00   1.484275D 02   1.477231D 02   1.479486D 02   7.043322D-01   4.788923D-01
 1.2600000D 04   8.0000000D 00   1.203532D 00   1.484543D 02   1.477465D 02   1.479754D 02   7.078086D-01   4.788923D-01
 1.2650000D 04   8.0000000D 00   1.206784D 00   1.484811D 02   1.477698D 02   1.480022D 02   7.112739D-01   4.788923D-01
 1.2700000D 04   8.0000000D 00   1.210048D 00   1.485078D 02   1.477931D 02   1.480289D 02   7.147283D-01   4.788923D-01
 1.2750000D 04   8.0000000D 00   1.213326D 00   1.485345D 02   1.478164D 02   1.480556D 02   7.181716D-01   4.788923D-01
 1.2800000D 04   8.0000000D 00   1.216617D 00   1.485612D 02   1.478396D 02   1.480823D 02   7.216038D-01   4.788923D-01
 1.2850000D 04   8.0000000D 00   1.219921D 00   1.485878D 02   1.478628D 02   1.481089D 02   7.250250D-01   4.788923D-01

 1.2900000D 04   8.0000000D 00   1.223239D 00   1.486144D 02   1.478860D 02   1.481355D 02   7.284352D-01   4.788923D-01
 1.2950000D 04   8.0000000D 00   1.226570D 00   1.486410D 02   1.479091D 02   1.481621D 02   7.318343D-01   4.788923D-01
 1.3000000D 04   8.0000000D 00   1.229914D 00   1.486675D 02   1.479323D 02   1.481886D 02   7.352224D-01   4.788923D-01
 1.3050000D 04   8.0000000D 00   1.233272D 00   1.486940D 02   1.479554D 02   1.482151D 02   7.385995D-01   4.788923D-01
 1.3100000D 04   8.0000000D 00   1.236644D 00   1.487204D 02   1.479785D 02   1.482415D 02   7.419655D-01   4.788923D-01
 1.3150000D 04   9.0000000D 00   1.240029D 00   1.487468D 02   1.480015D 02   1.482679D 02   7.458690D-01   4.788923D-01
 1.3200000D 04   9.0000000D 00   1.243428D 00   1.487732D 02   1.480234D 02   1.482943D 02   7.497602D-01   4.788923D-01
 1.3250000D 04   9.0000000D 00   1.246841D 00   1.487995D 02   1.480459D 02   1.483206D 02   7.536391D-01   4.788923D-01
 1.3300000D 04   9.0000000D 00   1.250267D 00   1.488258D 02   1.480683D 02   1.483469D 02   7.575058D-01   4.788923D-01
 1.3350000D 04   9.0000000D 00   1.253708D 00   1.488521D 02   1.480907D 02   1.483732D 02   7.613601D-01   4.788923D-01

 1.3400000D 04   1.0000000D 01   1.257162D 00   1.488783D 02   1.481126D 02   1.483994D 02   7.657477D-01   4.788923D-01
 1.3450000D 04   9.0000000D 00   1.260631D 00   1.489045D 02   1.481349D 02   1.484256D 02   7.695769D-01   4.788923D-01
 1.3500000D 04   9.0000000D 00   1.264114D 00   1.489306D 02   1.481572D 02   1.484517D 02   7.733938D-01   4.788923D-01
 1.3550000D 04   9.0000000D 00   1.267611D 00   1.489567D 02   1.481795D 02   1.484778D 02   7.771984D-01   4.788923D-01
 1.3600000D 04   1.0000000D 01   1.271123D 00   1.489828D 02   1.482013D 02   1.485039D 02   7.815337D-01   4.788923D-01
 1.3650000D 04   9.0000000D 00   1.274649D 00   1.490088D 02   1.482235D 02   1.485299D 02   7.853131D-01   4.788923D-01
 1.3700000D 04   9.0000000D 00   1.278189D 00   1.490348D 02   1.482457D 02   1.485559D 02   7.890803D-01   4.788923D-01
 1.3750000D 04   9.0000000D 00   1.281744D 00   1.490608D 02   1.482679D 02   1.485819D 02   7.928351D-01   4.788923D-01
 1.3800000D 04   1.0000000D 01   1.285314D 00   1.490867D 02   1.482896D 02   1.486078D 02   7.971183D-01   4.788923D-01
 1.3850000D 04   9.0000000D 00   1.288899D 00   1.491126D 02   1.483117D 02   1.486337D 02   8.008479D-01   4.788923D-01

 1.3900000D 04   9.0000000D 00   1.292498D 00   1.491384D 02   1.483339D 02   1.486595D 02   8.045653D-01   4.788923D-01
 1.3950000D 04   9.0000000D 00   1.296112D 00   1.491642D 02   1.483560D 02   1.486853D 02   8.082704D-01   4.788923D-01
 1.4000000D 04   1.0000000D 01   1.299741D 00   1.491900D 02   1.483775D 02   1.487111D 02   8.125014D-01   4.788923D-01
 1.4050000D 04   9.0000000D 00   1.303385D 00   1.492157D 02   1.483995D 02   1.487368D 02   8.161813D-01   4.788923D-01
 1.4100000D 04   9.0000000D 00   1.307045D 00   1.492414D 02   1.484216D 02   1.487625D 02   8.198489D-01   4.788923D-01
 1.4150000D 04   9.0000000D 00   1.310719D 00   1.492671D 02   1.484436D 02   1.487882D 02   8.235042D-01   4.788923D-01
 1.4200000D 04   1.0000000D 01   1.314409D 00   1.492927D 02   1.484650D 02   1.488138D 02   8.276830D-01   4.788923D-01
 1.4250000D 04   9.0000000D 00   1.318115D 00   1.493183D 02   1.484870D 02   1.488394D 02   8.313132D-01   4.788923D-01
 1.4300000D 04   9.0000000D 00   1.321835D 00   1.493438D 02   1.485089D 02   1.488649D 02   8.349310D-01   4.788923D-01
 1.4350000D 04   9.0000000D 00   1.325572D 00   1.493693D 02   1.485308D 02   1.488904D 02   8.385366D-01   4.788923D-01

 1.4400000D 04   1.0000000D 01   1.329324D 00   1.493948D 02   1.485521D 02   1.489159D 02   8.426632D-01   4.788923D-01
 1.4450000D 04   9.0000000D 00   1.333091D 00   1.494202D 02   1.485740D 02   1.489413D 02   8.462436D-01   4.788923D-01
 1.4500000D 04   9.0000000D 00   1.336875D 00   1.494456D 02   1.485958D 02   1.489667D 02   8.498117D-01   4.788923D-01
 1.4550000D 04   9.0000000D 00   1.340674D 00   1.494710D 02   1.486176D 02   1.489921D 02   8.533675D-01   4.788923D-01
 1.4600000D 04   9.0000000D 00   1.344490D 00   1.494963D 02   1.486394D 02   1.490174D 02   8.569111D-01   4.788923D-01
 1.4650000D 04   1.0000000D 01   1.348321D 00   1.495216D 02   1.486606D 02   1.490427D 02   8.609725D-01   4.788923D-01
 1.4700000D 04   9.0000000D 00   1.352169D 00   1.495468D 02   1.486823D 02   1.490679D 02   8.644909D-01   4.788923D-01
 1.4750000D 04   9.0000000D 00   1.356033D 00   1.495720D 02   1.487040D 02   1.490931D 02   8.679970D-01   4.788923D-01
 1.4800000D 04   9.0000000D 00   1.359914D 00   1.495972D 02   1.487257D 02   1.491183D 02   8.714907D-01   4.788923D-01
 1.4850000D 04   1.0000000D 01   1.363810D 00   1.496223D 02   1.487466D 02   1.491434D 02   8.755000D-01   4.788923D-01
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                  CAPITAL TAX ADJUSTMENT SCHEDULES                                                        PAGE  10
ADJUSTMENT OF STANDARD TAX TABLE 1975 TAX YEAR, RETURNS     MARRIED FILING JOINT CLAIMING FOUR EXEMPTIONS NOT ITEMIZING
ADJUSTMENTS BASED UPON QLI REDUCTION OF                     MEDIAN INCOME TAXPAYER
    INCOME          MAR TAX        ADJ'D MAR TX   QLI B-TAX       QLI A TAB-TX   QLI AA-TAX      B ADJ D-QLI     A ADJ D-QLI

 1.4900000D 04   9.0000000D 00   1.3677240D 00   1.4964740D 02   1.4876850D 02   1.4916850D 02   8.789686D-01    4.788923D-01
 1.4950000D 04   9.0000000D 00   1.3716540D 00   1.4967250D 02   1.4879010D 02   1.4919360D 02   8.824249D-01    4.788923D-01
 1.5000000D 04   9.0000000D 00   1.3756000D 00   1.4969750D 02   1.4881160D 02   1.4921860D 02   8.858690D-01    4.788923D-01
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VITA

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Doctor of Philosophy

Thesis: THE ROLE OF INCOME IN THE PERCEIVED QUALITY OF LIFE OF THE RURAL POPULACE

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