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MICRO-ECONOMIC DETERMINANTS OF PARENTAL INVESTMENT IN HUMAN AND NON-HUMAN ASSETS IN INDIA

The University of Rochester PH.D. 1983

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MICRO-ECONOMIC DETERMINANTS OF PARENTAL INVESTMENT IN HUMAN AND NON-HUMAN ASSETS IN INDIA

by

Kokila P. Doshi

Submitted in Partial Fulfillment

of the

Requirements for the Degree

DOCTOR OF PHILOSOPHY

Supervised by

Dr. Stanley L. Engerman
Department of Economics
College of Arts and Science

and

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Rochester, New York

1982

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Abstract

The primary dimension of household behaviour analyzed in this thesis is asset-accumulation in the form of human and non-human capital. In developing countries, children are regarded as forms of saving. To secure an even flow of consumption over the life-cycle, households in developed countries accumulate financial assets during the working span. But in developing countries, such intertemporal transfers of consumption are effected partly through investment in children. The basic hypothesis investigated in this study is that if children serve as old-age security, households substitute investment in children (human assets) for physical and financial (non-human) assets. The focus of the study is on the investment in education of children.

A two period 'Fisherian' model is developed in which consumption, financial saving and investment in children's human capital are determined. Household survey data from India are used for empirical testing of the model. As the study focuses on life-time asset-accumulation, the level of non-human assets and cumulative stock of child-educational expenditures are estimated. Two model variants - recursive and simultaneous - are employed to explore the role of economic and demographic factors underlying household asset-behaviour. The recursive model seems to produce more consistent and plausible results.

The findings lend some support to the hypothesis of substitution between assets in human and non-human forms. Permanent income stands out as an important determinant of both the level of assets and stock of child-educational capital. The level of non-human assets is found to be responsive to education and occupation of the household head and number of earners. Among the important factors influencing investment in child-education stock are age and education of household head, household size and number of children.

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CHAPTER I

Introduction and Literature Review

The objective of this paper is to analyze household decisions regarding consumption, saving and investment in children.

In developing countries, children are viewed as forms of saving or human capital. Parents invest in children by bearing the costs of raising and educating them in anticipation of retirement years when children in turn, will support them. As T.W. Schultz [1973] has pointed out - "children are in a very important sense poor man's capital."

According to the life-cycle hypothesis, savings are for retirement or old-age. Individuals try to spread their consumption evenly over their life-time. Securing an even flow of consumption over one's life-cycle involves the transfer of resources from the productive working span to the retirement period when "earning power tends to dry up." [Modigliani, 1966] However, saving for retirement takes different form in developed and developing nations. In developed countries, such inter-temporal transfers of consumption opportunities are effected through the accumulation of financial assets - that is claims to future consumption - during the earning span or through a social security system. In less developed countries, the capital

market "fails to provide effective financial means or welfare institutions for old-age security" [Dov Chernichovsky, 1975]. Investment in children[1] rather than investment in financial assets appears to be a lower-cost and safer way to effect inter-temporal transfers of consumption in these countries. Under-developed capital markets[2] involving high risk, imperfect knowledge, high search costs and lumpy investments make long-term investment in financial assets less attractive. Households in low income countries consequently, substitute investment in children - both in terms of quantity and quality - for non-human forms of saving in their retirement programme. A larger flow of retirement income can be obtained either by having a larger number of children or by fewer but better-educated children. Life-cycle saving thus, may display a different pattern if savings are narrowly defined to include non-human forms of assets only. The concept of asset-accumulation must be broadened to include investment in human capital - especially investment in the education of children. Kelley and Williamson [1968] made an attempt to test the life-cycle hypothesis on Indonesian data. They concluded that the life-cycle hypothesis needs to be modified to make it applicable to developing countries, because the "assumptions of constant consumption over time and a strong retirement motive for saving are not tenable in an environment of extended family system where children become

the means of accumulating future productive assets."

Thus, viewing children as producer durables or forms of saving, has important implications for various aspects of household behaviour such as family-size, asset-holding and investment in human capital.

Literature Review

The basic hypothesis investigated in this thesis is that in developing countries where children are vehicles of old-age insurance, households substitute investment in child-capital (human assets) for physical and financial (non-human) assets. The purpose of this research is to explore the role of various economic and demographic factors affecting physical and human capital formation using survey data from India.

The literature treating children as saving is at best in its infancy. While the idea that children serve as old-age security dates back at least as far as H. Liebenstein's discussion [1957], in the context of the development process, few studies have been made to explore its implications and to provide empirical evidence. Most of the studies made so far have limited themselves to the discussion of fertility behaviour. Little if any attention is paid to household asset accumulation.

Philip Neher [1971] examined the pension motive for

having children in the context of primitive society. Using a three generational model, he derived the conditions for the optimal stock of children and associated optimal life-time consumption profile. He discussed the implications of alternate pension schemes for family-size and concluded that the "pension motive disappears, however if markets extend beyond the bounds of the family unit and if the share alike ethic is abandoned..." His approach however is mainly aggregate and growth-theoretic, with no empirical work attempted.

Allen C. Kelley [1976] discussed the impact of children on household saving and income-generation in his empirical study of urban Kenya. He found that "number of children does not influence the rate of household financial saving ... the number of children has an impact on the composition of saving if this definition is expanded to include human capital formation and specifically expenditures on education." One of the shortcomings of his study is that he does not provide any theoretical framework to discuss the role of children as producer durables. His empirical conclusions have been attacked by his critics on the ground that the data used in his study seem "to be a bit weak" [Perlman, 1981] and his analysis is mechanistic.

Dov Chernichovsky [1975] in his elaborate study investigated the behavioural implications of investment-motivated fertility behaviour. In the first part of his

model, services from children are treated as a deterministic variable. In the second part, he takes into account the possibility that parents can affect "their future income distribution by investment in their children's health and education." An expected utility analysis is applied to determine how much is invested in each asset. One of his findings is that income elasticity of children and their education is positive. Investment in health and education are found to be complementary. His empirical analysis which uses data on two Indian villages shows a negative relation between household's stock of financial assets and children." While this may be consistent with the hypothesis that the two "assets" are substitutes, it may also reflect regular savings behaviour..." [page 67]. That is, it may also mean that larger families save less, controlling for income. The trade-off between assets and children cannot be unambiguously established as the hypothesis is not rigourously tested. Also, his statistical exercise is subject to biases due to simultaneity among variables and quality of data.

The fact that the pension motive affects fertility is widely recognized and usefully analyzed in previous investigations. The present thesis shifts the emphasis from fertility to asset-holding. The study focuses explicitly on the trade-off between assets and child-capital in the life-cycle context.

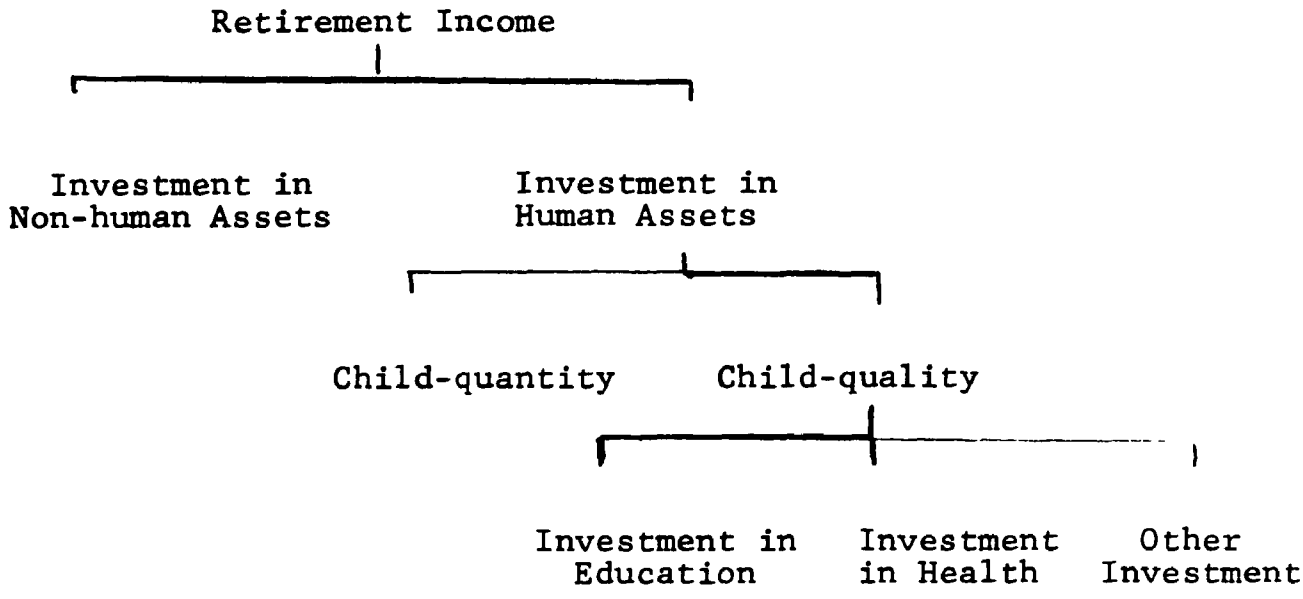
The schematic graph (Fig. 1.1) presents the problem in broad perspective. In the context of less developed countries, a steady flow of income (and consumption) during retirement can be secured either by saving in the form of financial or physical assets or by investing in children. Now, the investment in children can take place extensively through number of children i.e. child-quantity or intensively through child-quality. Child-quality in turn, can be formed in a number of ways - investing in health, education or other forms like practical work-experience, on-the-job training, etc.

In the above-citied studies, the primary emphasis is on the link between family-size (i.e. child-quantity) and saving in the form of physical and financial assets. A number of research studies led by the pioneering work of Becker-Lewis [1973] have explored the interaction between child-quantity and child-quality. [Detray, 1972, 1973, Roberts, 1973, Willis 1973]. Most of these studies use the household production function approach and discuss the allocation of parental time inputs and market goods to the production of child-quantity and child-quality subject to the full income constraint.

As there are a number of interactions involved, the problem can be analyzed from different perspectives. The focus of the present thesis however, is on the relation between investment in non-human assets and investment in child-education [as shown by the bold lines in Figure (1.1)].

Figure (1.1)

Schematic Graph



The fertility decisions are assumed to be exogeneous. Thus, the forthcoming model differs from 'Becker type' models in which fertility is endogeneously determined. While there are other dimensions of child-quality, for the purpose of this study, the emphasis is on child-quality as provided through education. Expenditures on health and other investments are ignored here for simplicity.

Thus, borrowing from the economics of family-formation, literature on investment in human capital, and the life-cycle hypothesis, the thesis throws light on the important connections between asset-accumulation and child-capital formation. The study involves an exploration of economic and demographic determinants of these two important facets of the household behaviour.

There are a number of studies on household saving behaviour in developing countries. Kelley and Williamson [1968] for Indonesia and Peter Peek [1974] for Philippines examined the effect of economic and demographic factors on saving. Ramanathan [1969] investigated the role of permanent income, age, occupation and education using a cross-section sample from India. Jane Lillydahl [1976] and Allen Kelley [1976] highlighted the impact of socio-economic variables and demographic influences on urban Kenyan saving behaviour. As Donald Snyder mentioned in his survey article [1974], the works on saving are "largely exploratory." More empirical confirmations from developing countries are

needed to draw firm conclusions about the role of various determinants of saving.

As noted in some of these studies, looking at the accumulation of physical and financial assets alone will give an incomplete picture of life-cycle saving in the countries where households view children as assets. In such an environment, investment in human capital especially in child-schooling forms an important component of total saving.

Despite the importance of human capital, little research has been made at micro-level[3] on the factors underlying expenditures on child-education. Mark Rosenzweig [1977] developed an intertemporal model of farm family decisions regarding school - quantity (time devoted to schooling) and school-quality (purchased inputs per student) and tested it on U.S. State level data. Although it is a study of a developed country, his findings are relevant in the context of developing countries characterized by a large rural-farm sector. Low school enrollment rates are explained by the importance of children's contribution to family income and stagnant agricultural technology. Rosenzweig and Evenson [1975], using district-level data from India, examined the determinants of family-size, child-schooling and child-labor-force participation in a simultaneous framework. They found that the variables that are positively related to the pecuniary returns to child-labor

(such as child-wage rate) are negatively related to child-schooling but positively related to fertility and to child-labor-force participation. In a recent study of Guatemala, Carol Clark [1979], investigated the role of economic and demographing factors affecting household decisions regarding education of children. She discusses how the value of children as determined by the household composition and other socio-economic variables affects the probability of school-attendance in a sample of children between age 7 and 14. Her study is confined to the analysis of primary school education.

This review of the literature thus, suggests that while previous investigations have usefully analyzed physical capital formation and fertility, human capital formation through investment in child-education is a relatively less explored area. A deeper inquiry into household investment in child-capital and its interaction with non-human asset formation, undertaken in this study, will provide a valuable insight into the importance of various economic and demographic factors.

The remainder of the thesis is organized as follows. A brief discussion of value of education, value of children and the cost-benefit calculus of investment in human capital in the context of developing countries is provided in Chapter II. A two period "Fisherian' inter-generational model is developed in Chapter III to identify key variables affecting

parental allocation of life-time resources to consumption, saving and investment in child-education. Comparative static results are derived to discover the implications of changes in the child-wage rate, the cost of education, the rate of interest and the proportion of income remitted. The basic model is then modified to include child-services in parents' utility function and its implications are reported in brief.

The model is tested on the household data from the Resurvey of Matar Taluka of Western India for the year 1975-76. Chapter IV describes the data, the region and some socio-economic characteristics of the survey population. The empirical analysis is developed in the same chapter which includes definition and measurement of variables and a description of estimating equations, methodology and sub-samples. The results of regression equations are discussed in Chapter V. The final chapter is devoted to summary and conclusions, policy implications, and suggestions for future research.

CHAPTER II

Investment In Human Capital

> "Investment in human capital..... rests on the proposition that there are certain expenditures (sacrifices) that are made deliberately to create productive stocks, embodied in human beings, that provide services over future periods. These services consist of producer services revealed in future earnings and of consumer services that accrue to the individual as satisfactions over his life-time."
>
> T. W. Schultz [1973]

Section 2.1 Value of Education

In this study, children are viewed as forms of human capital. From the expenditures made on children, parents in rich countries "acquire mainly future personal satisfactions." [Schultz, 1973] While in under-developed countries, where children provide old-age support to their parents, the parents derive mainly "producer services" in the form of greater future earnings from children. Thus, the expenditures made on children, especially on their education, are looked upon more as investment than as consumption expenditure by the parents in less developed

countries.

The demand for child-education in these countries is thus, derived demand in the sense that expenditures on child-schooling, by enriching the stock of child-human capital, increase the future earnings of children, which in turn, may result in a larger flow of retirement support [4] to their parents. Thus, the value of education of children, derived from the economic value of children themselves, acquires an added dimension in the context of developing countries.

This is not to rule out other motives behind parental[5] expenditures on education.

(1) Children also provide psychic consumption services in addition to rendering services as factors of production and insurance for old-age [Leibenstein H., 1957]. As Schultz [1973] has noted "investment in children is in many ways akin to the investment in homegrown trees for their beauty and fruit." Parents may derive consumer services from better-educated children. In this case, education is treated as a consumption good satisfying the preferences of parents.

(2) It will be inappropriate to assume that parents look for their own selfish gains only in rearing and educating children. Parental concern for their children's well-being extends well beyond their own life-time and planning horizons. This brings forth the bequest motive.

Parents desire to pass along a stock of capital - material or human - to their children. "As long as rates of return to investment in human capital remain above, or fall more slowly than, the rates of return to other forms of capital, parents will be induced to bequeath a greater part in the form of human capital."[6] Thus, the bequest motive may intensify the tendency to invest in the quality of children.

(3) Social considerations may also motivate parents to educate their children. e.g. a well-educated child may command more respect in the society, or may be able to find a better marital partner. In some regions where the bride-price phenomenon is prevalent, well-educated daughters may bring higher bride-prices to their parents.

Section 2.2 Cost-benefit Analysis

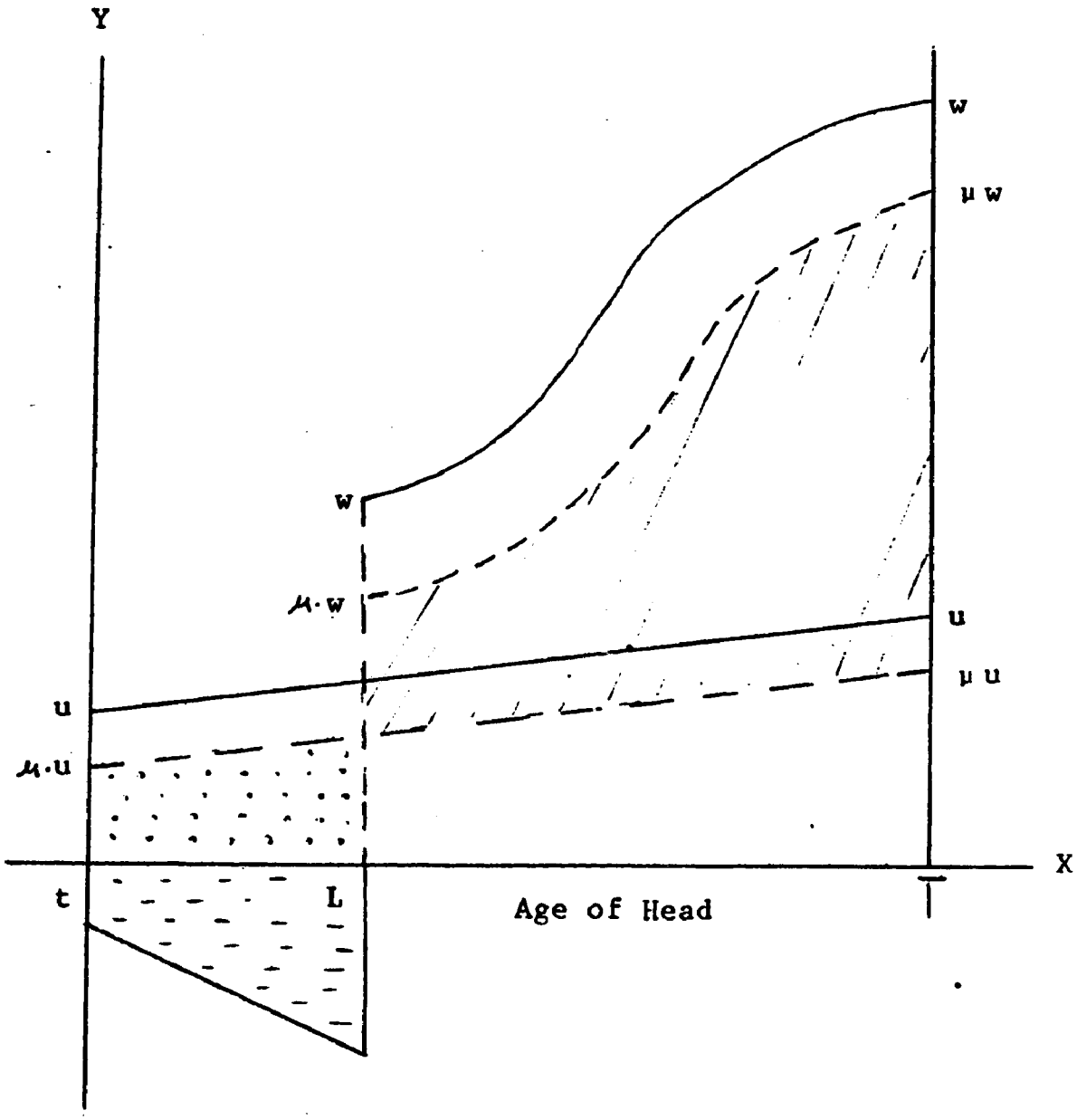
In the framework used in this study, parents - not children - are the decision-makers. Parents weigh the costs they bear against the benefits they reap from investing in children's education.[7]

Let u_u represent the earnings of an uneducated child and $\mu \cdot u$ represent the proportion of child-income remitted to parents. If parents decide to educate their child, they incur two types of costs -

(1) Direct Cost of education - out-of-pocket expenses on school fees, books, uniform, transportation, etc.

Figure 2.1

Cost and Returns from Investment in Child-education



Direct Cost of Education

Foregone Earnings

Gross Returns from Education

(2) Opportunity Cost of education - Child-income foregone for the period during which child receives education. These foregone earnings directly depend on the value of child-time.

The ww curve shows the earnings of a child with education. The earnings curve of an educated child is steeper than that of an uneducated child. Investment in human capital makes the age-earnings curve steeper and more concave i.e. "the rate of increase in earnings is affected more at younger than at older ages." [Gary Becker, 1962].

The present value of the difference between the remittances parents receive from an educated child and the remittances they might have received had they not educated their child (assuming for convenience that μ is the same in both situations)[8] represents the total gross returns to investment in education.

The magnitude of the costs and benefits of investing in child-education may differ in rural and urban areas. Rural households face higher opportunity costs of schooling due to relatively higher value of child-time. Also, they may not realize as many pecuniary benefits from educated children as their urban counterparts do because labor market opportunities for educated workers may not be as great as in urban areas. "Child-schooling, in the traditional rural environment of an LDC...is assumed to yield negligible pecuniary returns" (Rosenzweig and Evenson, 1975). For

farm families investment in child-capital competes additionallywith investment in land and other agricultural assets. These differences appear to explain at least partially why demand for education is comparatively low in rural areas.

CHAPTER III

The Model

The preceding analysis while suggestive, does not provide a 'solution' in terms of optimum investment in human capital. Irving Fisher regarded "investment not as an end in itself but rather a process for distributing consumption over time." [Hirschleifer, 1958] Optimal investment decisions cannot be made independently of consumption decisions.

In order to show how households determine the optimum levels of consumption, saving and investment in child-human capital, a simple two-period 'Fisherian' model is developed in this chapter.

The life-span of parents is divided into two periods - the working span (t) and the retirement period (t + 1). In this intergenerational model, in period t, parents work, raise and educate their children, and support their parents. During the next period (t + 1), grandparents die, parents retire and children start working and raise a new generation of children. Thus, each individual is assumed to live for three periods.

The model rests on the following assumptions:

(1) Parents make all the life-time decisions at the beginning of period t under perfect foresight. Decisions under uncertainty fall beyond the scope of this study.

(2) The size of the family is exogeneously determined.[9]

This may not be an appropriate assumption in the context of developed countries. But in developing countries, family-planning is not widely practiced due to high child-mortality rates, ignorance or limited knowledge about contraceptives, or for religious, social or economic reasons. Thus, for the households in developing countries, the assumption of exogeneous fertility can be justified as a useful approximation.[10]

(3) A fixed proportion (μ) of the total income is remitted to parents by each generation.

(4) The capital markets are perfect i.e. borrowing and lending take place at the same rate of interest (r)

(5) Prices of commodities are exogeneously determined and are constant.

(6) The rental rate per unit of time, per unit of capital stock embodied in children (ω) is given.

(7) There are no transactions costs of acquiring assets.

(8) There is no depreciation of non-human assets or human capital.

(9) There are no bequests or inheritances.

Section 3.1 The Basic Model

In this simple model, it is assumed that only the services of commodities and not of children enter the utility function of parents. In other words, children are treated here only as sources of income and not of satisfaction.

The intertemporal utility function underlying the household behaviour can be written as

$$U = U\left(Z_t, Z_{t+1}\right) \qquad \text{.... EQ. (3.1)}$$

where Z_i refers to the flow of services of a composite commodity (representing all consumption goods and services) in period i.

Production Function for Child-capital:

In period t, parents possess a homogeneous stock of human capital embodied in children, $\bar{K}_t$, which is exogeneously given. This can be viewed as a measure of labor in efficiency units. Its size, together with the market - determined rental rate (ω) defines earning capacity, which is $\omega \cdot \bar{K}_t$.

The opportunities for increasing the stock of child-capital by educating[11] children are summarized by a concave production-function for child-education -

$$Q_t = Q_t\left(E_t, s_t\bar{K}_t\right) \qquad \text{....EQ. (3.2)}$$

Q_t describes the flow of additions to the stock of existing child-capital. E_t refers to the quantity of purchased inputs to education and $0 \leq s_t \leq 1$ is the fraction and $s_t\bar{K}_t$ is the quantity of child-capital stock allocated to the production of human capital in the form of child-education. As Yoram Ben Porath [1967] has pointed out "if activities are not mixed, that is, if there is no joint production of earnings and of human capital, then s_t is also the proportion of time devoted to the production of human capital." Thus,

the production of child-capital requires purchased inputs and child-time and both the schooling inputs have positive first derivatives. In this framework, in period t, the children's time is allocated between schooling (s_t) and labor-market activities $(1-s_t)$. Child-leisure is implicitly ignored.[12]

Under the assumption that child-capital does not depreciate, the stock of the child-capital at the beginning of period t+1 is

$$K_{t+1} = \bar{K}_t + Q_t \qquad \text{.....EQ. (3.3)}$$

$\omega \cdot K_{t+1}$ will be the earnings of children in period t+1 given the rental rate ω . From the equations (3.2) and (3.3) above, it is clear that the more parents spend on the education of their children the greater will be K_{t+1}. With given ω and μ, larger K_{t+1} implies more child-income $(\omega \cdot K_{t+1})$ and more income to parents $(\mu \cdot \omega \cdot K_{t+1})$. Thus, there is a positive relation between what parents put in as educational expenditures and what they get-out as remitted income.

The present value of the difference between the income parents receive from educated children and the income they would have received had they not educated their children, i.e. $\rho\mu\omega[K_{t+1} - \bar{K}_t]$, is their gross return on the investment in children. The net return equals —

$[\rho\mu\omega(K_{t+1} - \bar{K}_t)] - [\omega\, s_t\bar{K}_t + \Pi_\varepsilon \cdot E_t]$ where $\omega \cdot s_t\bar{K}_t$ represents the foregone earnings and $\Pi_\varepsilon \cdot E_t$ is the direct money-cost of education - Π_ε being the price per unit of

quantity of education.

The Life-time Budget Constraint:

The parents life-time budget constraint stating that the discounted present value of life-time income equals the discounted present value of life-time expenditure can be written as -

$$(1-\mu)Y_t + \omega(1-s_t)\bar{K}_t + \rho\mu\omega K_{t+1} = \Pi_z\left(Z_t + \rho Z_{t+1}\right) + \Pi_\varepsilon \cdot E_t \quad \text{....EQ (3.4)}$$

where Y_t = labor-income of parents in period t

ρ = discount factor

Π_z = the price of composite commodity

Π_ε = the price of a unit of educational inputs

In period t, parents transfer a proportion μ of their income from work Y_t to support their own parents (as assumed earlier); $(1-\mu)Y_t$ is therefore, the amount of income available for consumption. Another source of income to parents in period t is what children earn in the labor-market while taking education i.e. $\omega(1-s_t)\bar{K}_t$. It is assumed that in period t when children are dependent on the parents all earnings of the children accrue to the parents. Since it is assumed that parents retire in period t+1, $Y_t+1 = 0$. During retirement, however, they receive income from children; $\omega \cdot K_{t+1}$ is the income of children in period t+1, of which a fraction μ is remitted to parents.

Optimizing Behaviour:

Parents maximize the utility function (3.1) subject to

the production function (3.2) and the full wealth constraint (3.4). Substituting equations (3.2) and (3.3) into equation (3.4) produces the following Lagrangian function:

$$L = U\left(Z_t,\ Z_{t+1}\right) + \lambda\Big[(1-\mu)Y_t + \omega(1-s_t)\bar{K}_t + \rho\,\mu\,\omega\left\{K_t + Q_t\left(E_t,\ s_t\bar{K}_t\right)\right\} - \Pi_z\left(Z_t + \rho Z_{t+1}\right) - \Pi_E \cdot E_t \qquad \text{....EQ. (3.5)}$$

Differentiating L with respect to the choice variable - Z_t, Z_{t+1}, E_t, $s_t\bar{K}_t$ and λ results in the following first-order conditions.

$$\frac{dL}{dZ_t} = U_{Z_t} - \lambda\,\Pi_z = 0 \qquad \text{.....EQ. (3.6)}$$

$$\frac{dL}{dZ_{t+1}} = U_{Z_{t+1}} - \lambda\,\rho\,\Pi_z = 0 \qquad \text{.....EQ. (3.7)}$$

$$\frac{dL}{ds_t\bar{K}_t} = -\lambda\,\omega + \lambda\,\rho\,\mu\,\omega\,\frac{\partial Q_t}{\partial s_t\bar{K}_t} = 0 \qquad \text{...EQ. (3.8)}$$

$$\frac{dL}{dE_t} = \lambda\,\rho\,\mu\,\omega\,\frac{\partial Q_t}{\partial E_t} - \lambda\,\Pi_E = 0 \qquad \text{.....EQ. (3.9)}$$

$$\frac{dL}{d\lambda} = (1-\mu)Y_t + \omega(1-s_t)\bar{K}_t + \rho\,\mu\,\omega\left[\bar{K}_t + Q_t\left(E_t, s_t\bar{K}_t\right)\right] - \Pi_z\left(Z_t + \rho\,Z_{t+1}\right) - \Pi_E \cdot E_t = 0 \qquad \text{....EQ. (3.10)}$$

The optimum levels of consumption in two periods, the quantity of purchased inputs to education and the time spent in schooling are obtained from the following conditions derived

from the relevant first-order conditions:

$$\frac{U_{Z_t}}{U_{Z_{t+1}}} = \frac{1}{\rho} = 1+r \qquad \text{.....EQ. (3.11)}$$

$$\rho \mu \omega \frac{\partial Q_t}{\partial E_t} = \Pi_E \qquad \text{.....EQ. (3.12)}$$

$$\rho \mu \omega \frac{\partial Q_t}{\partial s_t \bar{K}_t} = \omega \qquad \text{.....EQ. (3.13)}$$

Equation (3.11) states that the optimum levels of consumption in two periods, Z_t^* and Z_{t+1}^*, are obtained when the marginal rate of substitution between consumption flows in the two periods is equal to the market discount rate.

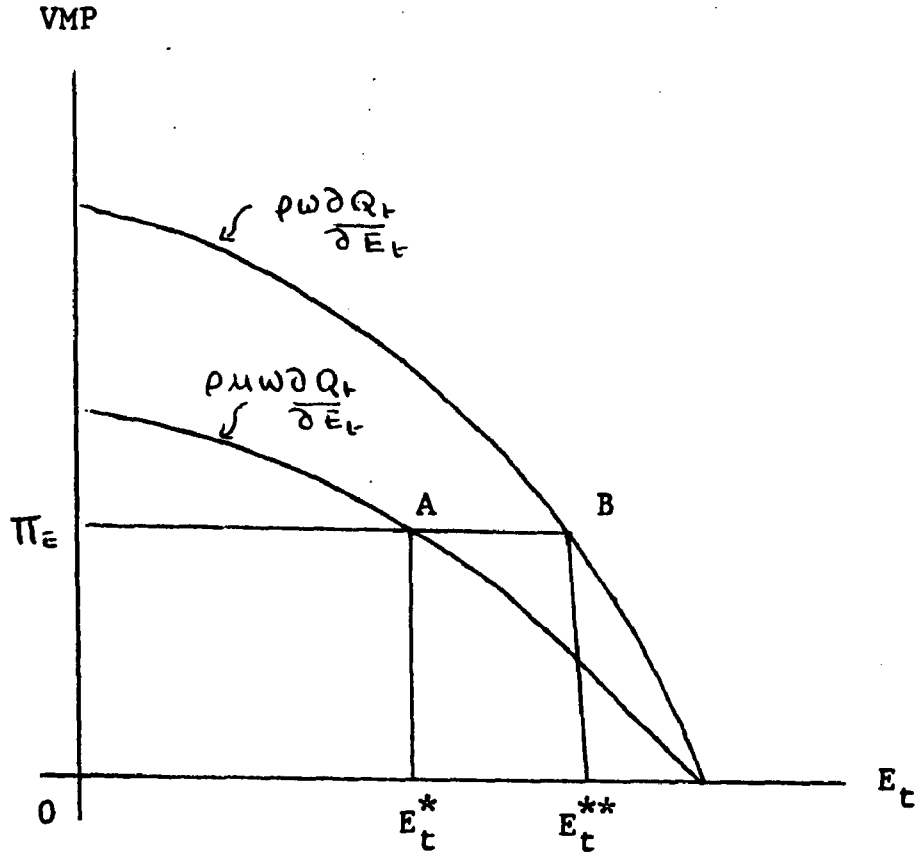
As shown by equation (3.12), the optimum quantity of educational input, E_t^*, is obtained when the discounted present value of the parents' share of the Value of the Marginal Product of additional purchased educational inputs equal their price per unit.

Similarly, equation (3.13) suggests that the optimum amount of time spent in schooling, $s_t\bar{K}_t^*$, is achieved where the discounted present value of the parents' share of the Value of Marginal Product of an added unit of time equals its opportunity cost, the child-wage rate.

It is obvious from the optimum conditions (3.12) and (3.13) that there is in a sense, 'under-investment' in child-capital by the parents due to the presence of an externality.

Figure 3.1

Underinvestment in Purchased Educational Inputs



While weighing the marginal returns against the marginal cost, parents take into account only <u>their</u> share (μ) of the marginal returns from investing in the education of their children. Instead, if the children themselves were the decision-makers, then the entire marginal returns accruing to them from the education would enter their cost-benefit calculus. Consequently, they would have invested a larger amount. Figure (3.1) illustrates this for purchased educational inputs; the parents purchase E_t^*, while the children would purchase E_t^{**}. A similar diagram could be drawn for the allocation of time to education. The smaller is μ, the larger is the extent of underinvestment.

The optimum levels of financial (non-human) savings in two periods are given by the following equations:

$$S_t^* = \left[(1-\mu)Y_t + \omega(1-s_t)\bar{K}_t\right] - \left[\Pi_z Z_t^* + \Pi_\varepsilon \cdot E_t\right] \quad \text{...EQ. (3.14)}$$

$$S_{t+1}^* = \left[rS_t^* + \mu\,\omega K_{t+1}\right] - \left[\Pi_z Z_{t+1}^*\right] = -S_t^* \quad \text{....EQ. (3.15)}$$

In equation (3.14), there is no interest income because it is assumed that there is no inherited wealth. The assumption of no bequests, implies that $S_{t+1}^* = -S_t^* < 0$; parents' consumption in period t+1, $\Pi_z Z_{t+1}^*$ will be equal to $(1+r)S_t^* + \mu\,\omega K_{t+1}$.

Using a Fisherian framework, figures (3.2A) and (3.2B) illustrate the basic structure of the model and the underlying

Figure 3.2A

Optimum Levels of Consumption, Saving and Investment in Human Capital: Lending Household

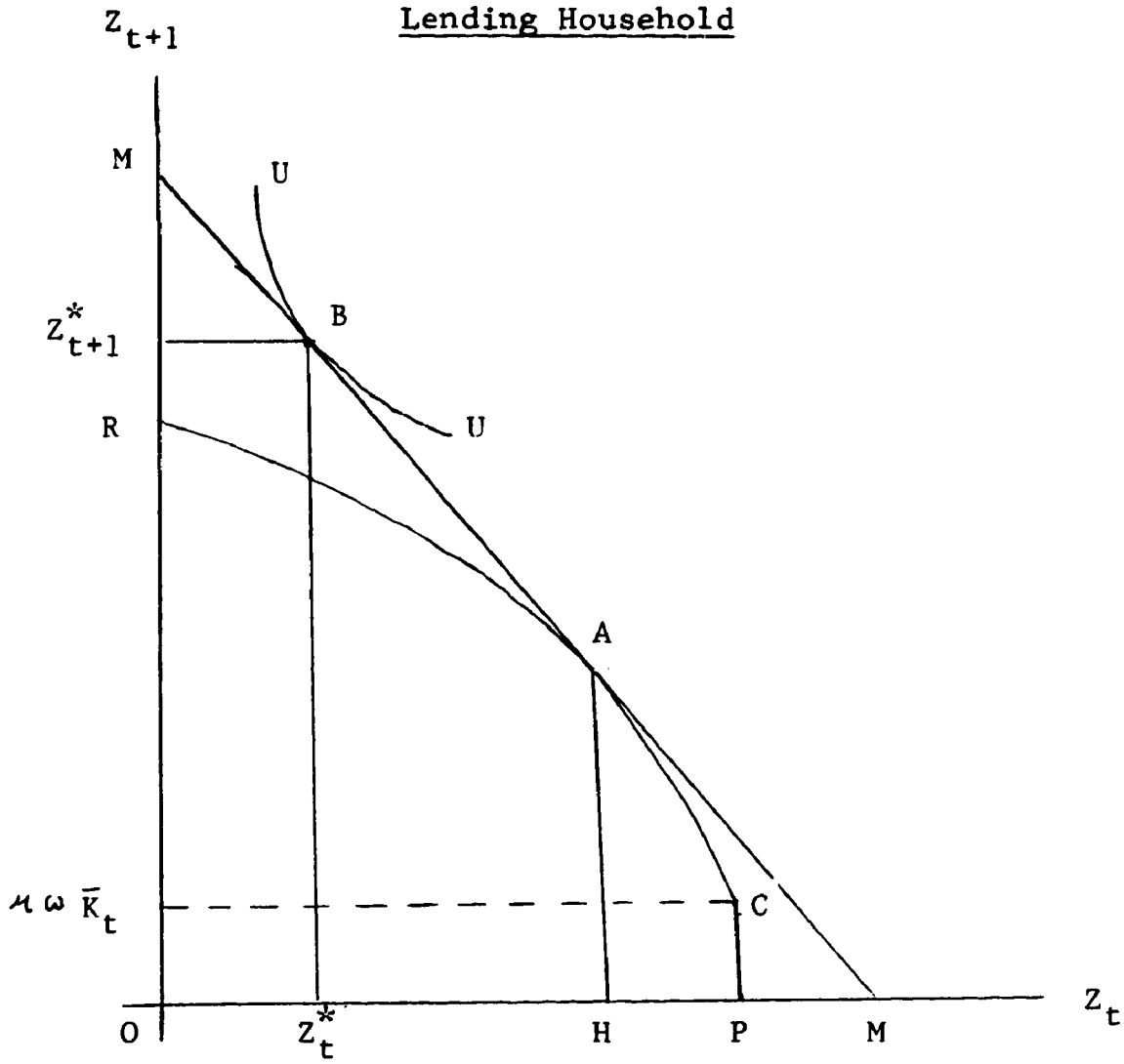
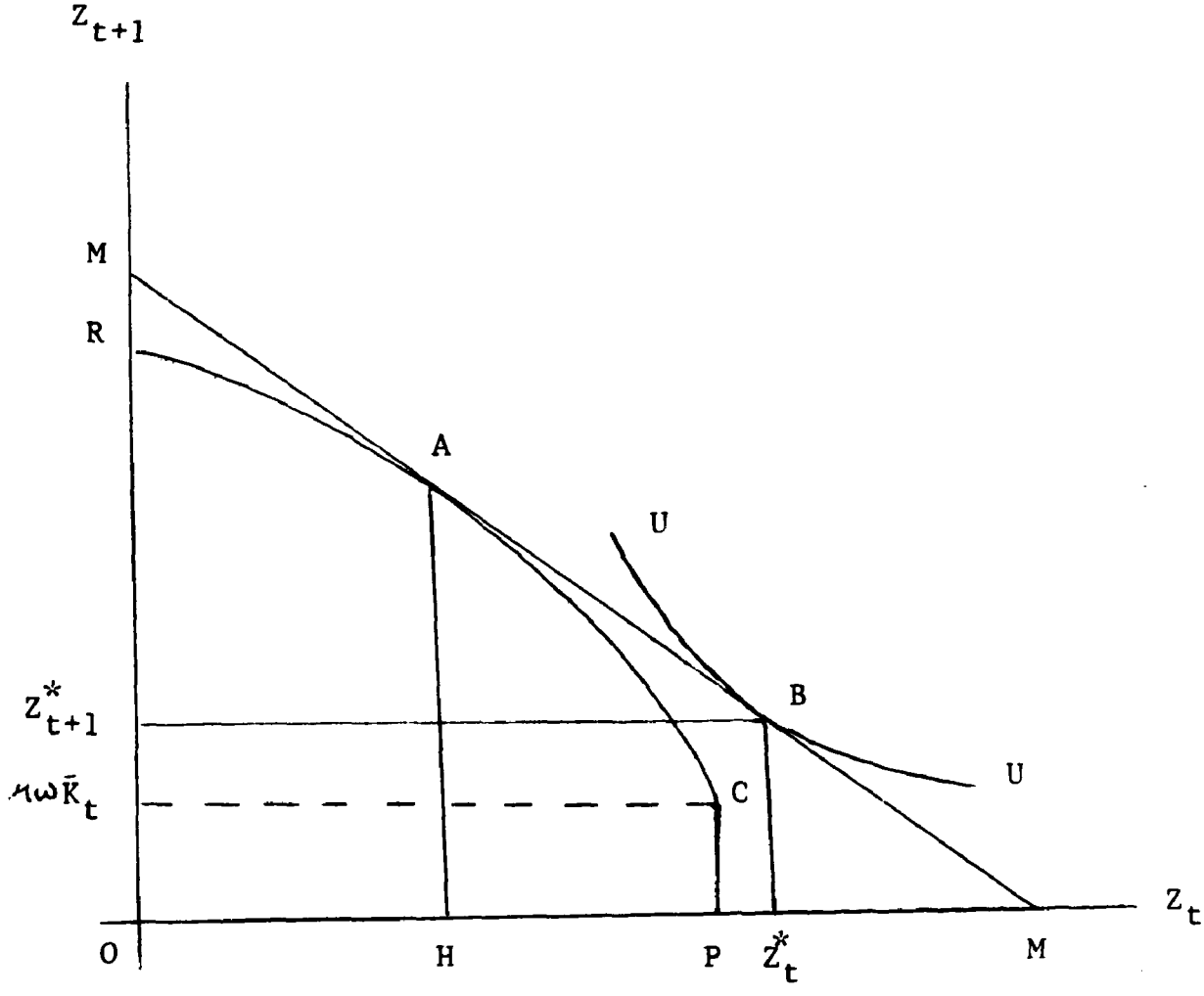


Figure 3.2B

Optimum Levels of Consumption, Saving and Investment in Human Capital: Borrowing Household



decision-makeing process. Fisher's analysis of optimum investment decisions is applied here to the production of human capital. The analysis is restricted to the case of perfect capital market.

Consumption in periods t and t+1 are represented by the horizontal and vertical axis respectively in Fig. (3.2A) and Fig. (3.2B). The parents' endowment point is C; without investment in child-capital they will have incomes of $(1-\mu)Y_t + \omega\bar{K}_t$ (point P on the horizontal axis) in period t and $\mu\omega K_t$ in period t+1. The transformation curve PCR is the locus of the points attainable to the parents as they sacrifice present for future income through investment in child-capital stock using the optimum combination of E_t and $s_t\bar{K}_t$ at each investment level. The vertical segment CP of the curve shows that it is not possible to disinvest the initial endowment of child-capital, $\bar{K}_t$.

In addition to the productive opportunities represented by the transformation curve, parents also face market opportunitites i.e. they can trade the consumption in one period for the consumption in another by lending or borrowing at a market rate of interest. The consumption possibilities open to the parents are bounded by the market line MM. UU is one of the indifference curves.

As the Separation Theorm states, the optimum solution is reached by a two stage process:

(a) First, the parents maximize wealth (i.e. attain the highest achieveable budget-line MM) by moving along PCR to an optimum investment point (A). At this point of tangency between the transformation curve and the market line, the marginal rate of transformation (MRT) between income in the two periods equals the market exchange-rate (1+r). At this point, the optimal addition to child-capital stock (Q_t^*) is being produced through the use of the optimal quantities of education inputs (E_t^*) and time spent in schooling ($s_t^* K_t$).

The equilibrium conditions corresponding to point A are equations (3.7) and (3.8) which can be rewritten as follows:

$$\frac{\mu \omega \frac{\partial Q_t}{\partial E_t}}{\pi_E} = \frac{1}{\rho} = 1+r$$

$$\frac{\mu \omega \frac{\partial Q_t}{\partial s_t K_t}}{\omega} = \frac{1}{\rho} = 1+r$$

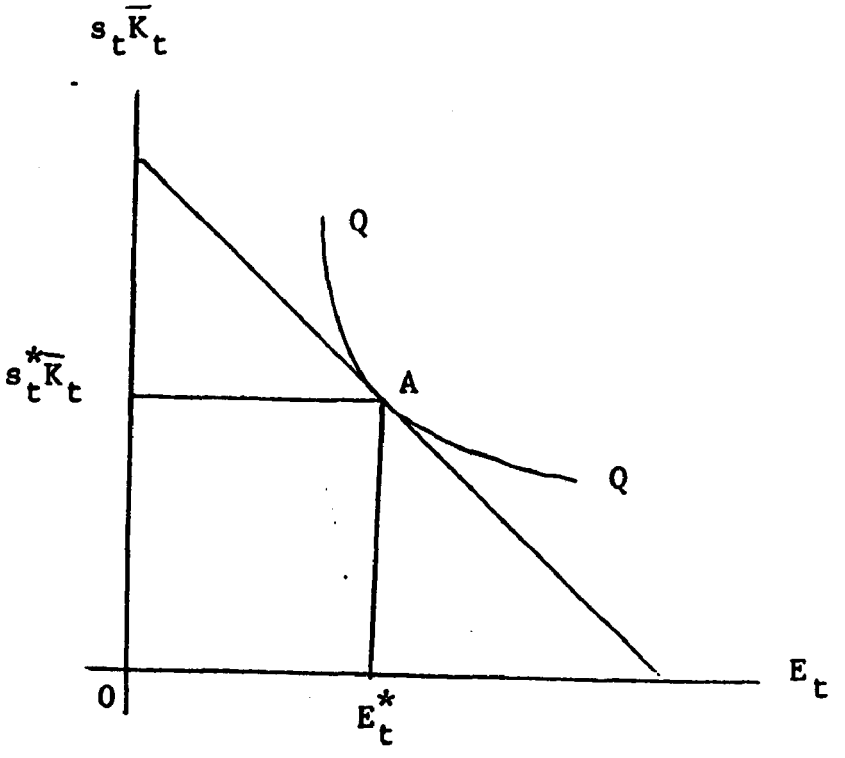
To increase E_t by one unit, parents sacrifice π_E units of current income which in turn yield $\mu \omega \frac{\partial Q_t}{\partial E_t}$ units of future income. Parents stop making additional investment in child-capital stock at a point where MRT equals the market rate of return. The distance HP gives the optimum total investment

in child-capital stock ($\Pi_E \cdot E_t^* + \omega \cdot s_t^* K_t$). The optimum mix of E_t and $s_t\overline{K}_t$ however, can be found out by combining the optimum conditions (3.8) and (3.9) as illustrated in Figure (3.3).

$$\frac{\frac{\partial Q_t}{\partial E_t}}{\frac{\partial Q_t}{\partial s_t K_t}} = \frac{\Pi_E}{\omega} \qquad \text{...EQ. (3.16)}$$

Figure 3.3

Optimum Levels of Schooling Inputs



The condition (3.16) above states that the optimum quantities of two inputs E_t and $s_t\bar{K}_t$ are given by the equality of Marginal Rate of Substitution (MRS) between the two inputs and their price-ratio.

(b) Once the optimum investment point is reached, parents move along the market-line MM to a utility maximizing consumption point by either lending or borrowing at the market rate of interest. In Figure (3.2A) they lend the amount Z_t^*H to achieve the optimal time pattern of consumption (Z_t^*, Z_{t+1}^*) as represented by the point B. In Figure (3.2B), such an optimum is reached at point B' by borrowing the amount HZ_t^*. At the optimum consumption point (B or B'), MRS between the consumption flows in two periods equals the market exchange rate as shown by equation (3.6).

<u>Decision-making Process</u> - Simultaneous or Recursive?

Depending on the assumptions made about the capital market and the nature of assets, two alternative conceptualizations are possible:

If the capital market is perfect (i.e. if the lending rate equals the borrowing rate) and if child-education can be treated as a pure investment good, consumption-saving and investment decisions can be separated. In this case, the decision-making process is recursive as the household reaches the overall optimum in two stages [as illustrated in Figure (3.2A) and (3.2B)]. In the first stage, the

household can be regarded as making its investment decisions first, on the basis of maximization of wealth. In the second stage, the household makes intertemporal consumption-saving choices on the basis of utility maximization.

On the other hand, if the capital market is imperfect and/or if child-education has some consumption value, then consumption-saving and investment decisions are made jointly. In this simultaneous framework, the household problem can be regarded as a problem of allocating full wealth among consumption, financial (non-human) saving and investment in human capital. The optimum levels of these variables are determined simultaneously on the basis of marginal utilities, marginal rates of return and interest rate.

In the present study, both these model variants are explored. As will be explained in a later section, the study focuses on life-time asset-accumulation. As a result, empirical estimation focuses on the level of non-human assets (ASSET) and the cumulative stock of ecuational expenditures (ED) as dependent variables.

<u>Simultaneous Model:</u>

The basic structural equations are presented below:

$$ASSET = f\ [\ Y,\ \widehat{ED},\ r, \omega, \mu,\ \bar{K}_t] \qquad \text{....EQ. (3.17)}$$

$$ED = f\ [\ Y,\ \widehat{ASSET},\ r, \omega, \mu,\ \bar{K}_t] \qquad \text{....EQ. (3.18)}$$

The optimum levels of the endogeneous variables as a function

of exogeneous variables are given by the reduced form equations below:

$$ASSET = f\ [\ Y,\ r, \omega, \mu, \bar{K}_t] \qquad .....EQ.\ (3.19)$$

$$ED = f\ [\ Y,\ r, \omega, \mu, \bar{K}_t] \qquad .....EQ.\ (3.20)$$

Recursive Model:

In the recursive model, since the investment decisions are made first, investment in human capital is determined independently of the level of assets. However, the level of assets is determined by the investment in human capital. Also, since education is treated as a pure investment good, the level of investment in education does not depend on the level of income.

$$ED = f\ [\ r, \omega, \mu, \bar{K}_t] \qquad ....EQ.\ (3.21)$$

$$ASSET = f\ [\ Y,\ ED,\ r, \omega, \mu, \bar{K}_t] \qquad ....EQ.\ (3.22)$$

The modifications required in the form of these equations for the empirical estimation will be described in Chapter IV.

Section 3.2

Child-services in the Utility-function

In the basic model developed in section 3.1, children were treated only as a source of income and not of utility. However, as described in Chapter II, children also provide psychic consumption services in addition to rendering services as producer-durables and income security. In this

section therefore, the basic model is modified to include child-services as an argument in parents' utility function.

$$U = U\left(Z_t, C_t, Z_{t+1}, C_{t+1} \right) \qquad \text{....EQ. (3.23)}$$

where C_i refers to the flow of child-services in period i and Z_i are the services of a composite commodity (representing all the consumption goods) in period i. The level of utility-generating child-services (child-quality) is assumed to be a function of the stock of human capital embodied in children -

$$C_i = g\ (K_i) \qquad \text{.....EQ. (3.24)}$$

Since $\bar{K}_t$ is fixed, the constraint can be rewritten as

$$C_{t+1} = g\ (K_{t+1}) \qquad \text{.....EQ. (3.25)}$$

Parents maximize an intertemporal utility function (3.23) subject to the budget-constraint (3.4), the production function (3.2) and the constraint (3.25) above. The first order conditions are obtained by maximizing the Lagrangian:

$$\begin{aligned} L = {} & U\ (Z_t, C_t, Z_{t+1}, C_{t+1}) + \lambda_1\Big[(1-\mu)Y_t + \omega(1-s_t)\bar{K}_t \\ & + \rho\,\mu\,\omega\Big\{K_t + Q_t(E_t, s_t\bar{K}_t)\Big\} - \Pi_z\ (Z_t + \rho\, Z_{t+1}) \\ & - \Pi_E E_t\Big] + \lambda_2\Big[C_{t+1} - g\Big\{K_t + Q_t(E_t, s_t\bar{K}_t)\Big\}\Big] \end{aligned}$$

$$\text{.....EQ. (3.26)}$$

$$\frac{dL}{dZ_t} = U_{Z_t} - \lambda_1\Pi_z = 0 \qquad \text{.....EQ. (3.27)}$$

$$\frac{dL}{dZ_{t+1}} = U_{Z_{t+1}} - \rho \lambda_1 \Pi_Z = 0 \qquad \text{.....EQ. (3.28)}$$

$$\frac{dL}{dC_{t+1}} = U_{C_{t+1}} + \lambda_2 = 0 \qquad \text{.....EQ. (3.29)}$$

$$\frac{dL}{dE_t} \quad \lambda_1 \rho \mu \omega \frac{\partial Q_t}{\partial E_t} - \lambda_1 \Pi_E - \lambda_2 \frac{\partial g}{\partial Q_t} \frac{\partial Q_t}{\partial E_t} = 0 \qquad \text{....EQ. (3.30)}$$

$$\frac{dL}{ds_t K_t} = -\lambda_1 \omega + \lambda_1 \rho \mu \omega \frac{\partial Q_t}{\partial s_t K_t} - \lambda_2 \frac{\partial g}{\partial Q_t} \frac{\partial Q_t}{\partial s_t K_t} = 0$$

$$\text{.....EQ. (3.31)}$$

The optimum levels of Z_t, Z_{t+1}, C_{t+1}, E_t and $s_t\bar{K}_t$ are derived from the relevant first order conditions respectively as follows:

$$\frac{U_{Z_t}}{U_{Z_{t+1}}} = \rho = 1 + r \qquad \text{....EQ. (3.32)}$$

$$U_{C_{t+1}} = -\lambda_2 \qquad \text{....EQ. (3.33)}$$

$$\lambda_1 \rho \mu \omega \frac{\partial Q}{\partial E_t} + U_{C_{t+1}} \frac{\partial g}{\partial Q_t} \frac{\partial Q_t}{\partial E_t} = \lambda_1 \Pi_E \text{....EQ. (3.34)}$$

$$\lambda_1 \rho \mu \omega \frac{\partial Q}{\partial s_t K_t} + U_{C_{t+1}} \frac{\partial g}{\partial Q_t} \frac{\partial Q_t}{\partial s_t K_t} = \lambda_1 \omega \quad \text{....EQ. (3.35)}$$

λ_2 is the "shadow price" of child-quality in consumption. Equation (3.31) indicates that parents invest in E_t upto a level at which the sum of present discounted value of marginal returns accruing to parents and the marginal utility (MU) of child-quality times the marginal product (MP) of child-capital stock times the MP of education equals the marginal cost (MC) of transferring one more unit of E_t^* to the production of human capital (or the price per unit of quantity of E_t).

In the same fashion, as shown in equation (3.32), the optimum amount of time spent in schooling is obtained when the sum of present discounted value of marginal returns accruing to parents from an added unit of $s_t\bar{K}_t$ and the MU of child-quality times the MP of child-capital stock times the MP of time spent in schooling equals its MC in terms of income foregone per unit of $s_t\bar{K}_t$ or the child-wage rate.

Two things must be noted here. First, since the second term in equation (3.31) and in (3.32) is positive and since the prices per unit of E_t and $s_t\bar{K}_t$ (π_E and ω respectively) are constant, in equilibrium the MP of these schooling inputs must diminish. This suggests that when child-services enter the utility function, parents make larger investment in both schooling inputs.

Secondly, the optimum levels of the schooling inputs are both at levels at which MC exceeds the marginal productivity. "But this possible pecuniary loss is just compensated by the additions to parental satisfaction arising from more highly-schooled children." (M. Rosenzweig [1977])

Section 3.3 Comparative Static Analysis

Earlier in section 3.1, it was shown that the optimum levels of Z_t, Z_{t+1}, $s_t\bar{K}_t$ and E_t depend on the following set of exogeneous variables - ω, Π_E, ρ, μ, Y and $\bar{K}_t$. In this section, the effects of changes in the exogeneous variables on the equilibrium levels of choice variables are examined.

By differentiating totally the first order conditions [EQ. (3.6) - EQ. (3.10)], the following system of simultaneous equations in matrix form is obtained:

$$
\begin{bmatrix}
U_{Z_t Z_t} & U_{Z_t Z_{t+1}} & 0 & 0 & -\Pi_z \\
U_{Z_t Z_{t+1}} & U_{Z_{t+1} Z_{t+1}} & 0 & 0 & -\Pi_z \\
0 & 0 & \lambda \rho \mu \omega \dfrac{\partial^2 Q_t K_t}{\partial^2 s_t K_t} & \lambda \rho \mu \omega \dfrac{\partial^2 Q_t}{\partial s_t K_t \partial E_t} & 0 \\
0 & 0 & \lambda \rho \mu \omega \dfrac{\partial^2 Q_t K_t}{\partial E_t \partial s_t K_t} & \lambda \rho \mu \omega \dfrac{\partial^2 Q_t}{\partial^2 E_t} & 0 \\
-\Pi_z & -\Pi_z \rho & 0 & 0 & 0
\end{bmatrix}
\begin{bmatrix}
dZ_t \\ dZ_{t+1} \\ ds_t \\ dE_t \\ d\lambda
\end{bmatrix}
$$

$$
= \begin{bmatrix}
0 & 0 & 0 & 0 \\
0 & 0 & \lambda \Pi_z & 0 \\
0 & 0 & -\lambda \mu \omega \dfrac{\partial Q_t}{\partial s_t K_t} & -\lambda \rho \mu \dfrac{\partial Q_t}{\partial s_t K_t} \\
-\lambda \rho \mu \dfrac{\partial Q_t}{\partial E_t} & \lambda & -\lambda \mu \omega \dfrac{\partial Q_t}{\partial E_t} & -\lambda \rho \omega \dfrac{\partial Q_t}{\partial E_t} \\
-(1-s_t)\bar{K}_t + \rho \mu(\bar{K}_t + Q_t) & E_t & -\left[\mu \omega(\bar{K}_t + Q_t) - \Pi_z \cdot Z_{t+1}\right] & Y_t - \rho \mu(\bar{K}_t + Q_t)
\end{bmatrix}
\begin{bmatrix}
d\omega \\ d\Pi \\ d\rho \\ d\mu
\end{bmatrix}
$$

Effect of a Change in ω :

The effects of a change in the rental rate on child-capital stock on Z_t and Z_{t+1} are given by equations (3.33) and (3.34) -

$$\frac{dZ_t}{d\omega} = \left[\frac{U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z}{\left(U_{Z_tZ_t} \cdot \Pi_z^2 \rho + U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z^2\right)}\right] \cdot \left[\begin{array}{c} \bar{K}_t(1-s_t) + \\ \rho\mu\left\{\bar{K}_t + Q_t\left(E_t, s_t\bar{K}_t\right)\right\} \end{array}\right] > 0$$

.....EQ. (3.33)

$$\frac{dZ_{t+1}}{d\omega} = \left[\frac{U_{Z_tZ_t} \cdot \Pi_z \rho}{U_{Z_tZ_t} \cdot \Pi_z^2 \rho + U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z^2}\right] \cdot \left[\begin{array}{c} \bar{K}_t(1-s_t) + \\ \rho\mu\left\{\bar{K}_t + Q_t\ E_t, s_t\bar{K}_t\right. \end{array}\right] > 0$$

.....EQ. (3.34)

An increase in ω increases life-time wealth and results in an unambiguous increase in current and future consumption.

As far as the schooling inputs - $s_t\bar{K}_t$ and E_t are concerned, the effect of a change in ω depends on the signs of own

and cross-partial derivatives of production function for child-capital.

$$\frac{ds_t}{d\omega} = \left[\frac{\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t K_t}{\partial^2 s_t K_t} \quad \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \, \partial E_t}\right)} \right] \cdot \left[\lambda\rho\mu \frac{\partial Q_t}{\partial E_t} \right] \qquad \text{....EQ. (3.35)}$$

$\dfrac{ds_t}{d\omega} < 0$ if it is assumed that

(a) the own-effects are stronger than the cross-effects (i.e. the denominator of the first term is positive). This assumption is maintained throughout the analysis.

(b) $$\frac{\partial^2 Q_t}{\partial E_t \, \partial s_t K_t} < 0$$

i.e. the MP of $s_t \bar{K}_t$ declines as E_t increases.

$$\frac{dE_t}{d\omega} = \left[\frac{\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t K_t \, \partial E_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t}\right)} \right]$$

$$\cdot \; - \left[\lambda\rho\mu\omega \frac{\partial Q_t}{\partial E_t} \right] \qquad \text{....EQ. (3.36)}$$

$$\frac{dE_t}{d\omega} > 0 \qquad \text{if } \frac{\partial^2 Q_t}{\partial^2 s_t K_t} < 0$$

ω being the opportunity cost of time spent in school, wealth and substitution effect work in the opposite direction as far as s_t is concerned but they work in the same direction for E_t. More E_t is substituted for s_t. What happens to Q_t depends on the relative strength of the two elasticities -

$$\frac{dQ_t}{d\omega} = \frac{\partial Q_t}{\partial E_t} \cdot \frac{dE}{d\omega} + \frac{\partial Q_t}{\partial s_t \bar{K}_t} \cdot \frac{ds_t}{d\omega}$$

Effect of a Change in Π_E:

An increase in Π_E implies worsening of terms of trade; the production possibilities curve moves inward. Consumption in period t and t+1 declines.

$$\frac{dZ_t}{d\Pi_E} = - \frac{U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z}{U_{Z_tZ_t} \Pi_z \rho^2 + U_{Z_{t+1}Z_{t+1}} \Pi_z^2} \cdot E_t < 0$$

....EQ. (3.37)

and

$$\frac{dZ_{t+1}}{d\Pi_E} = - \frac{U_{Z_tZ_t} \cdot \Pi_z \rho}{U_{Z_tZ_t} \Pi_z^2 \rho + U_{Z_{t+1}Z_{t+1}} \Pi_z^2} E_t < 0$$

....EQ. (3.38)

The impact of a change in Π_E on schooling inputs is given by the following equations:

$$\frac{ds_t}{d\Pi_E} = \left[\frac{-\ \lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \ \partial s_t \bar{K}_t}}{\left(\lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \ \partial E_t} \cdot \lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \ \partial s_t \bar{K}_t}\right)} \right]$$

$$\cdot \left[\lambda \right] \qquad \text{....EQ. (3.38)}$$

$$\frac{ds_t}{d\Pi_E} > 0 \quad \text{if} \quad \frac{\partial^2 Q_t}{\partial E_t \ \partial s_t \bar{K}_t} < 0$$

$$\frac{dE_t}{d\Pi_E} = \left[\frac{\lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t K_t}}{\left(\lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t K_t \ \partial E_t} \cdot \lambda\rho\mu\omega \ \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \ \partial s_t \bar{K}_t}\right)} \right]$$

$$\cdot \left[\lambda \right] \qquad \text{....EQ. (3.39)}$$

$$\frac{dE_t}{d\Pi_E} < 0 \quad \text{if} \quad \frac{\partial^2 Q_t}{\partial^2 s_t \bar{K}_t} < 0$$

An increase in Π_E leads to the substitution of s_t for E_t.

Effect of a Change in ρ :

An increase in ρ increases life-time wealth and as such will increase consumption in both the periods. But with an increase in ρ , future consumption (Z_{t+1}) becomes more expensive; the budget line rotates toward the horizontal axis. The effect of ρ on current and future consumption largely depends on the endowment point i.e. whether a person is a net buyer or a net seller of Z_{t+1} - which is now more expensive.

$$\frac{dZ_t}{d\rho} = \left[\frac{-\rho\Pi_z^2 \cdot \lambda\Pi_z}{U_{Z_tZ_t}\,\Pi_z^2\rho + U_{Z_{t+1}Z_{t+1}}\,\Pi_z^2}\right] +$$

$$\left[-\left\{\frac{U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z}{U_{Z_tZ_t} \cdot \Pi_z^2\rho + U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z^2}\right\} \cdot -\left\{\mu\omega\left(\bar{K}_t + Q_t(E_t,\ s_t\bar{K}_t)\right)\right\} - \Pi_z \cdot Z_{t+1}\right]$$

....EQ. (3.40)

$$\frac{dZ_t}{d\rho} > 0 \quad \text{if} \quad \mu\omega\left\{\bar{K}_t + Q_t(E_t,\ s_tK_t)\right\} > \Pi_z \cdot Z_{t+1}$$

i.e. income in t+1 > consumption in t+1 (implying that the person is a net seller of Z_{t+1}).

In this case, income effect and substitution effect are both positive leading to an increase in current consumption.

However, if $\mu\omega\{K_t+Q_t\ (E_t,\ s_tK_t)\} < \Pi_z\ \ Z_{t+1}$, i.e. the person is a net buyer of Z_{t+1}. The income effect is negative as with an increase in ρ, he will be worse off. But the substitution effect is positive. The relative strength of the two effects will determing whether current consumption increases or decreases. From equation (3.40).

$\frac{dZ_t}{d\rho} \gtrless 0$ depending on whether the first term is greater than or less than the second term.

The impact of a change in ρ on future consumption is given by the following equation:

$$\frac{dZ_{t+1}}{d\rho} = \left[\frac{\Pi_z^2 \cdot \lambda\Pi_z}{U_{Z_tZ_t}\ \Pi_z^2\rho\ + U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z^2} \right] +$$

$$\left[-\left\{ \frac{U_{Z_tZ_t} \cdot \Pi_z\rho}{U_{Z_tZ_t} \cdot \Pi_z^2\ \rho + U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z^2} \right\} \cdot -\left\{ \mu\omega\left(K_t+Q_t(E_t,\ s_tK_t)\right.\ \ \Pi_z\ Z_{t+1} \right.\right.$$

.....EQ. (3.41)

If $\bar{K}_t+Q_t(E_t,\ s_t\bar{K}_t) > \Pi_z\ \ Z_{t+1}$, the income effect is positive contrary to the substitution effect $\frac{dZ_{t+1}}{d\rho} \gtrless 0$

depending on whether the first term in EQ. (3.41) is smaller or larger than the second term.

$$\text{if} \quad \mu\omega\left\{K_t+Q_t(E_t,\ s_t\bar{K}_t)\right\} < \Pi_z \cdot Z_{t+1},$$

the income effect is negative as the person is worse off as he is the buyer of Z_{t+1} which is now more expensive. The income and substitution effects work in the same direction leading to a decrease in Z_{t+1}.

As far as the schooling inputs are concerned, the effect of ρ is indeterminate.

$$\frac{ds_t}{d\rho} = \left[-\lambda\mu\omega \frac{\partial Q_t}{\partial s_t K_t}\right] \cdot$$

$$\left[\frac{\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t K_t}{\partial^2 s_t K_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t K_t \partial E_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t K_t}{\partial E_t \partial s_t K_t}\right)}\right]$$

$$+ \left[\lambda\mu\omega \frac{\partial Q_t}{\partial E_t} \right] \cdot$$

$$\left[\frac{- \lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t} \right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \partial E_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t} \right)} \right]$$

.....EQ. (3.42)

Assuming that own-effects are stronger than the cross effects as before,

$$\frac{ds_t}{d\rho} \gtrless 0$$

depending on whether the first term is greater than or less than the second term.

$$\frac{dE_t}{d\rho} = \left[-\lambda\mu\omega \frac{\partial Q_t}{\partial s_t \bar{K}_t} \right] \cdot$$

$$\left[\frac{-\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \, \partial E_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t} \right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \, \partial E_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t} \right)} \right]$$

$$+ \left[\lambda\mu\omega \frac{\partial Q_t}{\partial E_t} \right] \cdot$$

$$\left[\frac{\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t} \right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \, \partial E_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t} \right)} \right]$$

.....EQ. (3.43)

$\frac{dE_t}{d\rho} \gtrless 0$ depending on whether the first term is less than or greater than the second term.

Effect of a Change in μ:

In this intergenerational model, a change in μ affects the remittances parents make to grandparents and the remittances they receive from their children. The effects of a change in μ are relatively straight forward. If the parents obtain a net gain from an increase in μ, Z_t and Z_{t+1}, will increase.

$$\frac{dZ_t}{d\mu} = \left[\frac{-\ U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z}{U_{Z_tZ_t} \cdot \Pi_z^2\ \rho + U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z^2}\right] \cdot \left[Y_t - \rho\omega\left\{\bar{K}_t + Q_t(E_t,\ s_t\bar{K}_t)\right\}\right]$$

....EQ. (3.44)

If $Y_t - \rho\omega\left\{\bar{K}_t + Q_t(E_t,\ s_tK_t)\right\} < 0$ i.e. if the amount parents lose to the grandparents is less than the gain to the parents from the children, $\frac{dZ_t}{d\mu} > 0$

$$\frac{dZ_{t+1}}{d\mu} = \left[\frac{-\ U_{Z_tZ_t} \cdot \Pi_z\rho}{U_{Z_tZ_t} \cdot \Pi_z^2\ \rho + U_{Z_{t+1}Z_{t+1}} \cdot \Pi_z^2}\right] \cdot \left[Y_t - \rho\omega\left\{\bar{K}_t + Q_t(E_t,\ s_t\bar{K}_t)\right\}\right]$$

.....EQ. (3.45)

If $Y_t - \rho\omega\left\{\bar{K}_t + Q_t(E_t,\ s_t\bar{K}_t)\right\} < 0$

$$\frac{dZ_{t+1}}{d\mu} > 0$$

Regarding the investment in schooling inputs the effect of μ is ambiguous.

$$\frac{ds_t}{d\mu} = \left[-\lambda\rho\omega\ \frac{\partial Q_t}{\partial s_t\bar{K}_t}\right] \cdot$$

$$\left[\frac{-\ \lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t}{\partial^2 E_t}}{\left(\lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t\bar{K}_t}{\partial^2 s_t\bar{K}_t} \cdot \lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t}{\partial s_t\bar{K}_t \partial E_t} \cdot \lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t\bar{K}_t}{\partial E_t\ \partial s_t\bar{K}_t}\right)}\right]$$

$$+\ \left[-\lambda\rho\omega\ \frac{\partial Q_t}{\partial E_t}\right] \cdot$$

$$\left[-\ \frac{\lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t\bar{K}_t}{\partial E_t\ \partial s_t\bar{K}_t}}{\left(\lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t\bar{K}_t}{\partial^2 s_t\bar{K}_t}\ \ \lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t}{\partial s_t\bar{K}_t \partial E_t} \cdot \lambda\rho\mu\omega\ \dfrac{\partial^2 Q_t\bar{K}_t}{\partial E_t\ \partial s_t\bar{K}_t}\right)}\right]$$

....EQ. (3.46)

$\frac{ds_t}{d\mu} \gtrless 0$ depending on whether the first term is greater than or less than the second term.

$$\frac{dE_t}{d\mu} = \left[-\lambda\rho\omega \frac{\partial Q_t}{\partial s_t \bar{K}_t}\right] \cdot$$

$$\left[\frac{-\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \, \partial E_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t K_t \, \partial E_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \, \partial s_t \bar{K}_t}\right)}\right]$$

$$+ \left[-\lambda\rho\omega \frac{\partial Q_t}{\partial E_t}\right] \cdot$$

$$\left[\frac{\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t}}{\left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial^2 s_t \bar{K}_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial^2 E_t}\right) - \left(\lambda\rho\mu\omega \dfrac{\partial^2 Q_t}{\partial s_t \bar{K}_t \, \partial E_t} \cdot \lambda\rho\mu\omega \dfrac{\partial^2 Q_t \bar{K}_t}{\partial E_t \partial s_t \bar{K}_t}\right)}\right]$$

....EQ. (3.47)

$\frac{dE_t}{d\mu} \gtrless 0$ depending on whether the first term is less than or greater than the second term.

To sum up, an increase in the rental rate on child-capital (ω) results in an increase in current and future consumption and substitution of purchased educational inputs for time devoted to schooling. A policy of reduction in the price of purchased inputs (π_6) would, in the same way, lead to an increase in consumption in both periods and substitution of purchased inputs for time devoted to schooling. However, in both these cases of an increase in and a decline in there is ambiguity as far as the effect on the production of human capital (Q_t) is concerned.

The development of capital market is marked by an increase in the market rate of return. On the consumption side, the effect of an increase in r depends on whether a household is a net lender or borrower of future consumption. On the production side, theoretically, a decline in the investment in human capital is expected as it becomes more efficient to trade current consumption for future consumption by means of financial assets than by the investment in human capital. However, the results derived in this section show that the effect of a change in r on schooling inputs is indeterminate. An increase in the fraction of income remitted (μ) increases current and future consumption if parents obtain a net gain from such an increase in . Again, the effect of an increase in on schooling inputs is indeterminate.

CHAPTER IV

Empirical Analysis

Section 4.1 The Data

The theoretical model developed in Section 3.1 is tested on the Household Resurvey Data of Matar Taluka of Gujrat State of India for the year 1975-76. Matar Taluka is an administrative unit consisting of 82 villages. The Taluka is divided into three regions - Matar, Navagam and Limbasi. The Taluka is located in the western part of India and is a part of Kaira District.

In 1965-66, 998 households from the three regions of Matar Taluka were surveyed. The survey, collecting information on 431 variables, was designed and executed by Mr. Vimal Shah of Gujrat Institute of Area Planning and Dr. C.H. Shah of the University of Bombay. The sampling was done in two stages - first, a third of the total number of villages were selected randomly in each of the three regions. Next, households in each of the chosen villages were selected on the basis of a stratified random sample. The occupation of the household head was used as a stratifying variable.

Subsequently in 1975-76, another survey was taken for a sample of 1111 families, of which 861 households belonging

to 1965-66 sample were resurveyed. In addition to the original households of 1965-66, several new households were randomly selected within each occupational catagory in 1975-76 to preserve the representativeness of the sample.

The data is of good quality and unique in so far as it contains retrospective information on demographic and socio-economic variables spanning the entire decade 1965-75 for a fairly good sample size.

In this study, only the Resurvey data for 1975-76 is used. Although both the surveys were executed by the same individuals and efforts were made to ensure maximum comparibility, using a two time-period data-set presented several difficulties. The 1975-76 survey has an expanded data-base. As against 431 variables in 1965-66, information is collected on 11,130 variables in 1975-76. There were some definitional problems. One of the major problems was how to treat satallite families who did not exist as separate households in 1965-66. Since it is possible to use 1975-76 data as an independent cross-sectional survey, this study uses the Resurvey data for 1975-76 only.

From the original sample of 1111 households, 73 households were dropped due to

(1) Missing data or

(2) Difficulties in the calculation of child-educational stock of the households [13]

e.g. Households with no household head or more than one head.

There is no reason to believe that the attributes of this smaller sample of 1038 families differ from the attributes of the original sample.

Section 4.2

Some Socio-economic Characteristics of the Sample Population

Out of 1038 families, 536 (51.64 %) are cultivating families and 306 (29.48 %) families are farm laborers. The remaining 196 (18.88 %) are non-farm households which include a miscellaneous group of traders, artisans, retired, salary-earners, etc.

The age-distribution of the household heads is presented in Table [4.1]. The mean age of 44.13 reflects the fact that this is a comparatively aged population. A relatively large proportion of the household heads (23.89) are over age 55.

Table 4.1

Age-distribution of Household Heads

Age-group (years)	Frequency	Percent	Cumulative Percent
less than 14	5	0.482	0.482
15-24	41	3.950	4.432
25-34	201	19.364	23.796
35-44	290	27.938	51.734
45-54	253	24.374	76.108
55 and above	248	23.892	100.000

The education level of the household heads is broken down by age in Table [4.2]. The proportion of the household heads with no education is very large (48.42 %). The highest proportion of primary secondary and college educated heads is found in the age-group 30-44.

Table 4.2

Percentage Distribution of Household Heads by Education-level and Age

Age-group	Highest Level of Education					
	No Education	Primary	Secondary	College	Other	Total
15-29	4.45	5.25	2.57	0.10	0.00	12.35
30-44	16.40	18.38	2.87	1.28	0.30	39.23
45-59	17.89	12.65	1.19	0.30	0.00	32.02
60 & more	9.69	6.32	0.40	0.00	0.00	16.40
All Ages	48.42	42.59	7.02	1.68	0.30	

Out of 1038 households 544 (52.41 %) are extended families and 494 (47.59 %) are nuclear families. The average number of children for the entire sample is 2.8. As expected, the average family-size for joint families is higher (3.15) than for the nuclear families (2.3). A relatively greater proportion of joint families are in the higher net-asset categories.

Table 4.3

Percentage Distribution of Households by Earners and Occupation

No. of Earners	Occupation of the Household Head			
	Cultivator	Farm-labor	Non-farm Occupation	Total
0	0.19	0.10	0.87	1.16
1	17.05	6.84	10.40	34.30
2	15.70	12.43	5.20	33.33
3	8.48	4.14	1.54	14.16
4	5.01	3.47	0.67	9.15
5 & more	5.20	2.50	0.19	7.90

On an average, there are 2.27 earners per household. The proportions of one-earner and two-earners families are almost equal (34% and 33%). 30% of the families have 3 or more earners. Table [4.3]. The sub-division by occupation shows that non-farm families are mainly one-earner families, while cultivators and farm-labor families have two earners on an average.

The average flow of savings during the survey year for the sample is negative (Rs. -167.31). The mean financial assets is Rs. 2230 while the mean physical assets are Rs. 22,339.[14] 5.68% or 59 households have negative net

assets. None of these households belong to the cultivating class. 50% of the households have assets less than Rs. 10,000. The average net assets are Rs. 23,486. Only cultivating families belonged to the top net asset levels ranging from Rs. 100,000 to Rs. 300,000.

Section 4.3

Development of the Empirical Model

Description of Variables:

The hypothesis to be tested is that households in developing countries substitute investment in child-human-capital for physical and financial asset formation.

The following section describes how the dependent and independent variables were measured. This will be followed by the description of estimating models and equations.

Dependent Variables:

In the theoretical model, the choice-variables are consumption in two periods (Z_t and Z_{t+1}), quantity of education (E_t) and the fraction of child-time allocated to the production of human capital (s_t).

However, the development of empirical model to test the hypothesis is influenced by the available data. The fact that the data were not collected specifically to address

to the issue of investment in child-education, constrained the choice of dependent variables. Ideally the data on school attendance and details of child-time-use would have permitted the estimation of s_t. In the absence of this data, the empirical section focuses on the process of life-time asset-accumulation using two 'stock' variables as dependent variables - the Level of Net Assets and the Stock of Educational expenditure on children. Instead of estimating s_t separately, the opportunity costs of child-time are included in the stock of educational expenditures on children to represent the full-cost of schooling. Each of the dependent variables is described briefly below.

Level of Net Assets: (ASSET)

Most empirical studies use saving or change in net worth measured as 'flow' variable to study household asset-accumulation behaviour. In this thesis, the emphasis in on the explanation of life-time asset-formation and the Level of Net Assets measured as a 'stock' variable is used as a dependent variable. The 1975-76 survey contained information on physical as well as financial assets. The Level of Net Assets was derived as the difference between Total (physical and financial) Assets and Total Liabilities.

Stock of Child-human-capital: (ED)

Unlike the case of Net Assets, this variable did not have a clear empirical counterpart. Its measurement therefore,

is subject to several limitations. The Stock of Child-human capital is measured as the present discounted value of the schooling expenditures incurred to date by the household head for educating children. This quantification raised several issues. Below is the step-by-step discussion of some of the problems faced in the estimation of education-stock and how they were resolved.

(i) Identifying Children:

The Resurvey data gives information only on current (1975) educational expenditures. A household may have grown-up children who may be out of school. But at some point in time, parents might have spent money on educating them. Thus, when the variable measures educational expenses incurred anytime in the past, 'children' could not be identified by age or by the fact that they are in school. They were to be identified by the relationship to the household head. In the context of developing countries, families included more than one married couple, brothers, sisters and other relatives. Household head might have educated younger brothers, sisters and other relatives too. Thus, it was difficult to identify the persons who were educated by the household head.

In this study, only the immediate family members who were by relation, son, daughter, grandson or granddaughters have been considered. Brothers, sisters and other relatives were left out while computing the educational stock of a

household. The omission is not expected to be serious because the number of persons who were excluded is very small.[15] The age-structure of those who were left out will determine the extent and the direction of bias due to this omission.

(ii) Level of Education:

Having identified the persons to be included in educational-stock measure, the next question is to measure their level of education. Ideally one would like to have the data on years of education completed. However, the Resurvey data recorded education under coded groups. For the catagories such as Matriculate, Inter and Graduate it was easy to find the years completed. Whenever it was not clear, certain number of years were assumed. Table [4.4] gives the assumed number of years completed for each code.

The structure of formal education, in general, required 7 years in primary school, additional 4 years in secondary school and yet 4 more years of college education. For computing the child-education stock therefore, education codes 2, 3 and 4 are assumed to represent primary and codes 5 and 6 to represent secondary education. Codes 7 and 8 identify college level.

Table 4.4

Assumed Number of Years Completed For

Educational Codes

Code	Education Level	Assumed No. of Years Completed
0	not applicable*	—
1	Illiterate*	0
2	can read or write** (1 to 2 years)	1
3	3 - 4 years	3
4	5 - 7 years	6
5	8 - 10 years	9
6	Matric	11
7	Inter	13
8	Graduate	15
9	Other	—

* All persons with code = 0 or 1 were excluded from the computation of education stock. As it was not clear what 'other' level of education meant corresponding to code 9 and how many years of training it required, this catagory was also excluded.

** 'can read and write' is assumed to include 1 - 2 grades.

(iii) Cost of Education

The total cost of education consists of

(a) Direct costs in the form of out-of-pocket expenses and

(b) Indirect or opportunity cost of education

(a) Direct Cost of Education

The estimates of direct cost of schooling have been obtained by regressing education expenditures of households in 1975, on number of children at primary, secondary and college level (See Appendix II). The direct marginal cost of schooling at primary level is Rs. 27, Rs. 106 at secondary level and Rs. 513 at college level. Since primary education (and in some areas secondary education too) is free in Gujrat State, direct marginal cost at this level mainly includes expenses on school-supplies, uniform, travel, etc.

The results of F-test indicated that the cost-coefficients for girsl were not significantly different from those for boys (Appendix II).

(b) Opportunity Cost of Education

The fact that economic contribution of children in developing countries may be significant suggests that decisions about child-schooling must include the indirect cost of child-time as well. In order to send a child to school, households in less-developed countries forego the income the child

could have earned by working on the family-farm, in the household enterprise (such as family-owned store) or by working for wages. The child-time can be employed within the household as well; by meeting the housekeeping or child-care needs of the household a child may be able to release other family-members to earn income and thus, contribute indirectly to the household production. Both these phenomena - substitution of child-time for adult-time and direct employment of child-labor - add up to the fact that the education of a child in rural agricultural setting turns out to be an expensive proposition. Thus, the opportunity costs measured as earnings foregone must rightly be included in the total cost of schooling.

The importance of the foregone earning is evident from the fact that even when tution is free, only a small proportion of children in LDC avail themselves of higher education.

The considerations of high opportunity costs rather than out-of-pocket expenses on schooling loom large in the minds of parents in low-income countries. The households with meager income have a strong incentive to withdraw children from school as these households have less ability to bear such costs and have greater value of what children can work.

While there is almost[16] a consensus of opinion regarding the inclusion of opportunity costs, its measurement is not an easy task. Ideally one must have the detailed data on child-time use, labor-market conditions etc. In the absence of such data,[17] the estimation of opportunity costs had to rest on several assumptions. The Table [4.5] below shows the opportunity cost figures used in this study.

Table 4.5

Estimates of Direct and Opportunity Costs of Education

Education Level	Assumed Age-group	Years of Schooling	Direct Cost	Opportunity Cost	Total Cost	Opp. Cost as % of Total Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Primary	6 - 12	7	Rs. 27	0	Rs. 27	—
Secondary	13 - 16	4	106	106	212	50%
College	17 - 20	4	513	1539	2052	75%

It is assumed that at primary level, opportunity costs of education are zero. Generally in India, children start working at age 10 - 11. The reason for assuming zero opportunity cost is that the kind of activities children engage themselves at such tender age are 'light' activities mostly carried out on an hourly basis. These activities are likely to be compatible with school-schedule (which is often times

half-day schedule at primary level). Thus, zero opportunity-cost does not imply zero earnings. It only implies that the difference between what they could have earned by not going to school and what they earn while attending school is negligible considering the flexibility of work hours in agricultural setting, nature of activities and their compatibility with the school-schedule.

At secondary level, for children belonging to age-group 13 - 16, it is assumed that about 50 to 55 workdays might be lost. At a wage rate of Rs. 2.00 per day for children ("Agricultural Wages in India" 1963-64, 1971-72), the income foregone will come to Rs. 100 - 110 which is roughly equal to the direct cost of schooling at secondary level. Although, there is little compatability of work with (full-day) school-schedule at secondary level, children in rural area meet seasonal demand by missing school days. The evidence does show that the school-attendance falls very sharply at secondary level especially during the busy season.

At college level, the opportunity costs are likely to be much greater. Those belonging to the age-group 17 - 20 may be able to enter the work-force as adults and may find regular, permanent employment as an alternative to attending college. This, combined with the possibility of leaving the village for college education leaves no scope for comparibility or meeting work-needs by missing school-days. Assuming

that they can earn an adult wage-rate of Rs. 5.50 (which is the minimum wage-rate) per day for about 280 days, the opportunity cost comes to Rs. 1540 which is about three times the direct cost of education.

Thus, the figures for opportunity costs of schooling are derived as a matter of judgement considering the periodicity and variability[18] of opportunity cost, nature of activities carried out by children in different age-groups and their compatibility with the school-schedule.

At first, these estimates may look arbitrary, but they are not out of line when compared to similar estimates used in other studies of India as well as of other developing countries.[19]

Table [4.6] presents for comparison the findings of two notable works on returns to education in India by A.C. Harberger [1965] and V.N. Kothari [1967].

The comparison of these estimates with the estimates used in this study Table [4.5] indicated that while the figures for direct cost of education for all the educational categories and earnings foregone (both absolute amount and percentage) at college level are comparable. However, there is a divergence in the magnitudes of earnings foregone at secondary level. Both Harberger and Kothari have used urban data and made no adjustment on earnings foregone for unemployment among job-seekers. As a result, such earnings are probably overestimated. Also, this upward bias may

decrease as the level of schooling increases. The compatibility of work and schooling - a factor that reduced estimated used in this study income foregone at secondary level considerably - is not very relevant in the urban context and therefore, is ignored in both these studies. The assumed age-groups are also different. Thus, the differences in the sample, procedures and assumptions explain to a large extent, the differences in estimates of earnings foregone at secondary level.

Although the estimates of opportunity cost used in this thesis are not free from limitations, considering their importance, some measurement is better than none. Regresions are run both with and without opportunity costs included.

Table 4.6A

Direct and Opportunity Cost of Education

A. C. Harberger (1957)

Education Level	Years Spent at Each Level	Age-Group	Direct[c] Cost (Rs.)	Earnings[d] Foregone (Rs.)	Total Cost (Rs.)	Earnings Foregone as % of Total
Primary	8	6-13	(24)*	—	(24)	—
Secondary	4	14-17	I[a] 120	654	774	84.5
			II[b] 327	654	981	66.6
Higher Education	6	18-23	I 494	1164	1658	70.2
			II 582	1164	1746	66.6
College**	4	18-21	I 405	1068	1473	79.0
			II 534	1068	1602	66.6

* Based on Indian Government published data. Harberger does not provide foregone earnings figures for Primary level as it is difficult to estimate such earnings "at this early a stage" and since foregone earnings are important cost of education only at higher levels.

** Harberger combines under-graduates and graduates under "Higher Education" and assumes the duration of 6 years. To make the figures more comparable with those in Table 4.5, the figures for 4 years of college education have been calculated.

a The figures correspond to Harberger's Assumption I under which direct costs are assumed to be varying percentage (12 to 24% for secondary and 30 to 50% for college level) of earnings foregone at different ages.

b The figures correspond to Harberger's Assumption II under which direct costs are assumed to be 50% of income foregone both at secondary and college level.

c The reported figures for direct costs of education at secondary level are the averages of Harberger's estimated direct costs under two assumptions (see his Table (10)) for ages 14 to 17. Similarly the direct cost figures for higher education and college level are the averages of his estimated direct costs for ages 18 to 23 and 19 to 21 respectively.

d Harberger has derived Age-earnings Profile (his Table (9)) for different education levels. The earnings of primary-completers between ages 14-17 are taken as the earnings foregone at secondary level. Earnings of secondary-completers between ages 18 to 23 (or 18 to 21) are assumed to be the earnings foregone by those pursuing higher education (or college education). The foregone earnings reported in Col. 5 are obtained by averaging earnings over the relevant age-group for all each education level.

Table 4.6B

Direct and Opportunity Costs of Education

V. N. Kothari (1960)

Education Level	Years Spent at Each Level	Age-Group	Direct Cost Rs.	Earnings[e] Foregone Rs.	Total Cost Rs.	Earnings Foregone as % of Total
Primary*	8	6-13	—	—	—	—
Secondary	4	14-17	175	570	745	76.
College	5	18-22	640	1400	2040	68.6
College**	4	18-21	350	1350	1700	78.8

* Kothari limits his area of inquiry to estimating rates of return to secondary and college level as "it is difficult to calculate the foregone earnings by these completeing the primary and middle school education."

** The 'college-level' in his study includes various types of graduate courses - arts and science, technical and professional. The duration of these courses range between 4 to 7 years. Therefore, 5 years is taken as a representative figure. However, to make the figures more comparable with those in Table 4.5, foregone earnings as % of total cost using his estimate of direct cost of Rs. 350 for arts and science graduates who spend 4 years in college have been calculated.

e As in Part A of Table [4.6] earnings foregone shown here for secondary level are the average earnings (obtained from his age-earning profile) of completers of middle school between age 14 and 17. At college level, foregone earnings reported in the Table are the average earnings of marticulates between age 18 and 23 (and 18 and 21).

(iv) Adjustment for Changes in the Price-level:

Having obtained the nominal cost of education, the next is the issue of adjusting these figures for changes in the price-level over time. The nominal costs of education are deflated by the relevant price-indices. (Appendix II). This assumes that the nominal cost of education has remained constant and the real cost has changed. However, since the cost of education has not changed radically over time in India, another set of figures is derived by making an extreme assumption that the real cost of education has remained constant.

(v) Discounting Educational Expenditures:

Educational expenditures are discounted at four different rates of interest - zero, 5, 10, and 15 percent.

Thus, all together, 16 different measures of the Stock of Child-human capital are used as dependent variable as shown in Table [4.7] below.

Table 4.7

Different Measure of Child-education Stock

Child-education Stock		Rate of Interest			
		0	5	10	15
Without Opportunity Cost	Deflated	ED1	ED2	ED3	ED4
	Not Deflated	ED5	ED6	ED7	ED8
With Opportunity Cost	Deflated	ED9	ED10	ED11	ED12
	Not Deflated	ED13	ED14	ED15	ED16

Models and Estimating Equations:

The stock of non-human assets (ASSET) and of child-education capital (ED) are estimated using two alternative conceptualizations.

(1) Simultaneous Model:

The household decisions regarding the accumulation of human and non-human assets are assumed to be interdependent here. Equations (4.1) and (4.2) describe the empirical form the structural equations for two endogeneous variables take.

Structural Equations:

ASSET = f [Permanent income, ED, Age, Age^2, EHP, EHS, EP, ED, Cultivation, Farm-labor, Family-type, No. of Earners, Existence of Children*].....EQ. (4.1)

ED = f [Permanent income, Asset, Age, Age^2, EHP, EHS, EP, ES, Family-type, HH-size, Male 6-12, Male 13-19, Female 6-12, Female 13-19, Child-survival, Existence of Children*] ....EQ. (4.2)

The initial stock of child-capital ($\bar{K}_t$), the price of composite commodity (π_z), the price of education, (π_E) the wage-rate, ω, the rate of time-preference (ρ) and the fraction of income remitted to parents (μ) are assumed to be exogeneous to the system.

* The variable "Existence of Children' is used only for the total sample.

For identifying the equations, household characterisics such as the occupation of household head, and the no. of earners appear only in the Asset equation. While the child-related characteristics like the child-survival ratio, and sex-specific age categories of children appear only in the ED equation.

The parameters of structural equations are estimated using the Two Stage Least Square method.

(2) Recursive Model:

The theoretical model developed in Chapter III is clearly recursive in nature. In this model, the accumulation of non-human assets is determined by, but does not determine the investment in child-human capital. Also, child-human capital is treated purely as an investment good and borrowing and lending rates are assumed to be equal.

As an empirical counterpart of the theoretical model, following two equations are estimated in a single-equation framework. The Ordinary Least Square Method is used for parameter estimates.

ED = f [Permanent income, Age, Age^2, EHP, EHS, EP. ES, Family-type, HH-size, Male 6-12, Male 13-19, Female 6-12, Female 13-19, Child-survival,Existence of Children*]

....EQ. (4.3)

$$ASSET = f\ [\text{Permanent income, ED, Age, Age}^2\text{, EHP, EHS, EP, ES, Cultivation, Farm-labor, Family-type, No. of Earners, Existence of Children*}] \quad ....EQ.\ (4.4)$$

* The variable 'Existence of Children' is used only for the total sample.

Explanatory Variables:

1. Permanent Income: This variable is proxied by a measure of permanent consumption as it was not possible to find permanent income from the available data. The measure used is household expenditures on non-durable goods.

2. Age: Age in completed years.

3. AgeSQ: $(Age)^2$

4. EHP: This is a dummy variable which is equal to one if the education level of the household head is primary (codes 2, 3 or 4 in Table [4.4]) zero otherwise.

5. EHS: This dummy variable takes on the value equal to one if the education level of the household head is secondary or high (codes 5 to 8 in Table [4.4]) zero otherwise.

6. EP: dummy variable = 1 if the education level of the spouse is primary (2, 3, or 4), zero otherwise.

7. ES: dummy variable = 1 if the education level of the spouse is secondary or higher (codes 5 to 8).

8. Child-survival: It is a ratio of number of children alive to number of children born in a household.

The variable gives an idea of household-specific child-mortality experience. The variable is measured at household level and not for individuals couples.

9. Family-type: This is a dummy variable for joint family.

10. Household-size: This variable simply measures the household size in terms of number of persons in a household. No attempt has been made to find a measure of adult-equivalents.

11. Male 6-12: Number of male children between ages 6 and 12 per household. The variable roughly includes children of primary school-age.

12. Male 13-19: Number of male children between ages 13 and 19 per household. This variable roughly includes children at the age for secondary or higher education.

13. Female 6-12: Number of female children in the age-group 6-12.

14. Female 13-19: Number of female children in the age-group 13-19.

15. No. of Earners: This variable includes self-employed and working dependents but excludes unemployed and young dependents.

16. Cultivation: This dummy variable is equal to one if the occupation is cultivation, zero otherwise.

17. Farm-labor: This dummy variable is equal to 1 if the occupation is farm-labor, zero otherwise.

The excluded category includes non-farm families engaged in trade, industry, service, crafts etc. It also includes families with household head in school or retired.

18. Existence of children: This dummy variable is equal to one if the household head has either son, daughter, grandson, or granddaughter above age 6, zero otherwise.

The variable distinguishes the households with existence of children who could have ever attended school. The variable in effect shows whether the household head had an opportunity to invest in child-education or not.

Means and standard deviations of the variables are displayed in Table [4.8].

TABLE 4.8

Means and Standard Deviations of Variables

N=1038

Variable Name	Mean	Standard Deviation
Asset	23486.13	34748.09
ED1	630.28	1353.14
ED2	1148.98	2937.57
ED3	2451.73	10066.61
ED4	6458.14	46815.72
ED5	295.86	617.64
ED6	466.62	991.85
ED7	809.35	1992.99
ED8	1610.03	5811.44
ED9	1045.21	3157.52
ED10	1811.58	6156.97
ED11	3644.96	17861.46
ED12	9017.79	71969.58
ED13	517.13	1554.88
ED14	783.17	2354.12
ED15	1295.85	4415.22
ED16	2446.12	11699.06
Permanent Income	1490.63	953.17
Age	44.13	13.52
Family type	1.48	00.50

TABLE 4.8 cont.

Variable Name	Mean	Standard Deviation
Child-survival Ratio	0.77	0.36
No. of Earners	2.27	1.49
Education of Household Head	2.35	1.64
Education of Spouse	1.18	1.15
Occupation	1.67	0.77
HH Size	6.43	3.31
Male 6-12	0.46	0.71
Male 13-19	0.57	0.79
Female 6-12	0.40	0.65
Female 13-19	0.57	0.83
Existence of Children	0.74	0.44
Total Children	2.94	2.06

The Sample and Sub-samples:

Equations [4.1] to [4.4] are estimated first for the total sample consisting of 1038 households. To see if some of the sample-characteristics have any differential impact on asset-accumulation behaviour, the same equations are estimated for the following sub-samples:

1. Sample with Positive ED Stock: A sample that included only those families who had a positive stock of child-education. (N=562)

2. Sample with Existence of Children: A sample which consisted of only those households which had opportunity to invest in children's education currently or sometime in the past. More specifically, this is a sub-sample of all the families identified to have sons, daughters, grandsons or granddaughters above age 6. (N=772)

3. Joint Sample: A sample of households identified as joint families in 1975. (N=544)

4. Nuclear Sample: A sample of nuclear families (N=494)

5. Sample of Young Household Heads: A sample of families with the age of household head no more than 50 years.[21] (N=757)

CHAPTER V

The Results

The results of the Two Stage Least Square and the Ordinary Least Square methods for both ASSET and ED equations for 16 different measures of ED [as described in Table 4.7] are reported for the total sample in Table [5.1 - 5.4]. For other sub-samples, the results are displayed in Appendix III.

Below, the results are discussed variable by variable for both the equations separately. The actual signs of the variables obtained from the regressions are compared with a priori expectations. Wherever necessary, the results for the total sample are compared with those obtained for other samples.

Section 5.1 ASSET EQUATION

The ASSET equation explains about 45% of the total variation in the stock of assets for the total sample. The R^2 is quite high for a cross-section sample. Most of the variables are significant and have expected signs.

1. Permanent Income:

This variable stands out as a powerful predictor of the stock of assets in both the simultaneous and the recursive models for all the samples. The coefficient of permanent income is consistently positive and significant at 99% confidence level for all the 16 equations [corresponding to

TABLE NO 5.1

REGRESSION RESULTS FOR

TOTAL SAMPLE

RECURSIVE MODEL

ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	ED	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	NO. OF EARNERS	FAMILY TYPE	EXISTENCE OF CHILDREN	R^2	F- Ratio (d.f. = 14, 1024)
ED1	-16641.30*	16.48**	-0.33	-224.97	4.43	5159.37**	12825.34**	2533.90	8028.71	29050.41**	8133.61**	-2127.46**	2268.38	-1299.66	0.45	65.44
	-(2.27)	(16.55)	-(.48)	-(.96)	(1.25)	(2.81)	(3.49)	(.96)	(1.16)	(12.79)	(3.20)	-(3.53)	(1.33)	-(.61)		
ED2	-16435.90*	16.72**	-0.52	-280.68	5.20	5393.88**	13107.70**	2587.69	7908.99	29127.59**	8149.73**	-2082.92**	2407.67	-908.17	0.46	65.80
	-(2.25)	(17.03)	-(1.67)	-(.85)	(1.49)	(2.94)	(3.57)	(.99)	(1.14)	(12.33)	(3.20)	-(3.46)	(1.41)	-(.43)		
ED3	-15622.70*	16.66**	-0.20*	-327.70	5.77	5416.48**	13352.91**	2368.92	7943.47	29208.00**	8231.67**	-2080.87**	2405.35	-917.87	0.46	66.22
	-(2.14)	(17.27)	-(2.40)	-(.99)	(1.65)	(2.97)	(3.64)	(.91)	(1.15)	(12.88)	(3.24)	-(3.46)	(1.41)	-(.44)		
ED4	-15432.80*	16.51**	-0.04*	-317.61	5.60	5328.65**	13324.12**	2261.07	8014.62	29205.44**	8260.73**	-2112.26**	2341.15	-1106.70	0.46	66.24
	-(2.11)	(17.23)	-(2.43)	-(.96)	(1.61)	(2.92)	(3.63)	(.86)	(1.16)	(12.88)	(3.26)	-(3.52)	(1.38)	-(.53)		
ED5	-16116.20*	16.25**	0.54	-221.00	4.29	4969.81**	12695.37**	2321.55	8152.77	29046.33**	8172.26**	-2138.92**	2167.75	-1620.17	0.45	65.43
	-(2.19)	(16.27)	(.36)	-(.67)	(1.24)	(2.70)	(3.45)	(.88)	(1.17)	(12.78)	(3.21)	-(3.55)	(1.26)	-(.76)		
ED6	-16638.70*	16.47**	-0.40	-223.41	4.40	5150.00**	12830.39**	2526.86	8034.38	29048.48**	8134.82**	-2130.11**	2261.70	-1314.68	0.45	65.43
	-(2.27)	(16.51)	-(.43)	-(.68)	(1.27)	(2.80)	(3.49)	(.96)	(1.16)	(12.79)	(3.20)	-(3.54)	(1.32)	-(.62)		
ED7	-16520.30*	16.72**	-0.72	-274.65	5.13	5378.96**	13129.44**	2596.59	7901.09	29115.83**	8145.72**	-2087.05**	2399.77	-918.63	0.46	65.76
	-(2.26)	(16.97)	-(1.58)	-(.83)	(1.47)	(2.93)	(3.57)	(.99)	(1.14)	(12.83)	(3.21)	-(3.47)	(1.40)	-(.43)		
ED8	-15661.60*	16.72**	-0.36*	-333.99	5.86	5438.86**	13433.98**	2388.53	7894.59	29207.61**	8229.12**	-2069.55**	2426.99	-844.78	0.46	66.23
	-(2.15)	(17.27)	-(2.41)	-(1.00)	(1.68)	(2.98)	(3.86)	(.91)	(1.14)	(12.88)	(3.24)	-(3.44)	(1.42)	-(.40)		
ED9	-16453.30*	16.61**	-0.29	-247.07	4.70	5209.40**	12833.49**	2631.71	7886.37	29089.20**	8159.74**	-2140.80**	2303.80	-1198.94	0.45	65.56
	-(2.25)	(16.79)	-(1.04)	-(.75)	(1.35)	(2.85)	(3.49)	(1.00)	(1.14)	(12.81)	(3.21)	-(3.56)	(1.35)	-(.57)		
ED10	-15758.20*	16.81**	-0.30*	-315.91	5.56	5356.25**	13129.72**	2616.28	7714.35	29177.18**	8216.61**	-2120.94**	2402.15	-994.42	0.46	66.03
	-(2.16)	(17.14)	-(2.10)	-(.95)	(1.59)	(2.93)	(3.58)	(1.00)	(1.11)	(12.86)	(3.24)	-(3.53)	(1.41)	-(.43)		
ED11	-14991.00**	16.75**	-0.13**	-363.99	6.14	5400.42**	13529.80**	2357.66	7749.95	29245.18**	8295.65**	-2109.40**	2411.42	-861.19	0.46	66.53
	-(2.05)	(17.35)	-(2.83)	-(1.10)	(1.76)	(2.96)	(3.67)	(.90)	(1.12)	(12.91)	(3.27)	-(3.52)	(1.42)	-(.41)		
ED12	-15037.40*	16.57**	-0.03**	-344.25	5.91	5343.07**	13557.35**	2213.55	7889.80	29231.66**	8308.83**	-2124.66**	2355.69	-1038.97	0.46	66.54
	-(2.06)	(17.30)	-(2.84)	-(1.04)	(1.70)	(2.93)	(3.69)	(.85)	(1.14)	(12.91)	(3.28)	-(3.54)	(1.38)	-(.50)		
ED13	-16536.10*	16.43**	-0.18	-220.54	4.34	5101.00**	12773.32**	2509.52	8037.17	29052.68**	8150.11**	-2143.10**	2231.25	-1406.14	0.45	65.42
	-(2.26)	(16.60)	-(.31)	-(.67)	(1.26)	(2.78)	(3.48)	(.95)	(1.76)	(12.79)	(3.20)	-(3.56)	(1.31)	-(.67)		
ED14	-16543.50*	16.62**	-0.40	-243.41	4.66	5215.87**	12873.36**	2640.63	7881.47	29088.63**	8160.10**	-2143.05**	2302.18	-1197.66	0.45	65.57
	-(2.26)	(16.79)	-(1.06)	-(.74)	(1.35)	(2.85)	(3.51)	(1.00)	(1.14)	(12.81)	(3.21)	-(3.56)	(1.35)	-(.57)		
ED15	-15935.70*	16.81**	-0.42*	-307.69	5.47	5353.83**	13229.89**	2619.87	7697.84	29167.06**	8217.17**	-2122.48**	2394.63	-914.79	0.46	66.04
	-(2.18)	(17.14)	-(2.11)	-(.93)	(1.57)	(2.93)	(3.60)	(1.00)	(1.11)	(12.86)	(3.24)	-(3.53)	(1.40)	-(.43)		
ED16	-15139.10*	16.78**	-0.21**	-359.00	6.09	5386.65**	13671.96**	2361.31	7697.23	29229.12**	8296.04**	-2103.34**	2463.77	-857.56	0.46	66.54
	-(2.07)	(17.36)	-(2.84)	-(1.08)	(1.75)	(2.96)	(3.72)	(.90)	(1.11)	(12.91)	(3.27)	-(3.51)	(1.41)	-(.41)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. 5.2

REGRESSION RESULTS FOR

TOTAL SAMPLE

SIMULTANEOUS MODEL

ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ED}$	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	NO. OF EARNERS	FAMILY TYPE	EXISTENCE OF CHILDREN	R^2	F- Ratio (d.f. = 14, 1024)
ED1	-14334.40 -(1.85)	15.21** (9.48)	2.94 (.90)	-115.05 -(.46)	3.07 (.82)	4047.18 (1.87)	12049.00** (3.17)	1453.14 (.51)	8678.73 (1.23)	29012.15** (12.03)	8365.23** (3.24)	-2311.24** -(3.62)	1707.31 (.94)	-3113.71 -(1.11)	0.45	64.07
ED2	-16322.80* -(2.18)	15.11** (9.90)	1.76 (1.07)	-3.92 -(.01)	1.18 (.26)	3868.95 (1.78)	11522.35** (2.93)	1874.00 (.69)	8730.96 (1.22)	28765.35** (12.28)	8175.39** (3.13)	-2352.94** -(3.63)	1538.19 (.83)	-3443.74 -(1.22)	0.44	62.35
ED3	-18910.30* -(2.35)	15.40** (11.08)	0.65 (.99)	129.46 (.26)	-0.39 -(.07)	3885.97 (1.73)	10838.34* (2.52)	2610.40 (.95)	8580.30 (1.18)	28526.57** (11.74)	7908.83** (2.96)	-2336.88** -(3.54)	1589.11 (.84)	-3273.37 -(1.15)	0.43	59.99
ED4	-19962.40* -(2.23)	15.79** (12.68)	0.16 (.78)	145.40 (.25)	-0.49 -(.07)	4016.88 (1.72)	10634.22* (2.25)	3016.83 (1.05)	8365.59 (1.14)	28482.00** (11.26)	7796.07** (2.86)	-2292.79** -(3.44)	1760.51 (.93)	-2835.00 -(1.01)	0.43	58.57
ED5	-14568.30 -(1.75)	15.73** (9.54)	3.37 (.46)	-230.20 -(.70)	4.19 (1.21)	4500.79* (2.06)	12328.31** (3.25)	1739.06 (.58)	8391.61 (1.20)	29102.98** (12.77)	8332.18** (3.23)	-2218.47** -(3.54)	2010.08 (1.14)	-2323.13 -(.84)	0.45	65.21
ED6	-14336.10 -(1.83)	15.28** (9.23)	3.68 (.80)	-168.39 -(.50)	3.26 (.88)	4120.23 (1.89)	11993.20** (3.13)	1506.04 (.52)	8631.05 (1.23)	29030.98** (12.66)	8358.68** (3.24)	-2292.31** -(3.60)	1765.03 (.98)	-2993.34 -(1.05)	0.45	64.28
ED7	-16043.90* -(2.15)	15.13** (9.47)	2.41 (.97)	-29.63 -(.08)	1.51 (.33)	3949.49 (1.81)	11481.76** (2.89)	1858.75 (.68)	8739.85 (1.23)	28812.37** (12.35)	8188.86** (3.15)	-2334.53** -(3.61)	1582.91 (.85)	-3356.70 -(1.17)	0.44	62.77
ED8	-18387.30* (2.34)	15.38** (10.53)	0.95 (.90)	86.64 (.18)	0.17 (.03)	4031.16 (1.83)	10959.70* (2.56)	2533.09 (.93)	8639.92 (1.20)	28605.19** (11.93)	7944.09** (3.00)	-2315.36** -(3.55)	1623.63 (.86)	-3170.84 -(1.11)	0.44	61.24
ED9	-16342.60* -(2.23)	15.95** (9.06)	0.47 (.27)	-170.33 -(.46)	3.63 (.86)	4780.72* (2.30)	12594.63** (3.38)	2091.29 (.72)	8411.93 (1.19)	28987.93** (12.67)	8165.85** (3.20)	-2174.33** -(3.52)	2079.66 (1.17)	-1926.33 -(.73)	0.45	65.02
ED10	-17244.60* -(2.25)	15.78** (9.26)	0.38 (.41)	-91.66 -(.20)	2.66 (.50)	4644.79* (2.22)	12244.08** (3.13)	2176.73 (.80)	8566.50 (1.21)	28889.38** (12.43)	8093.44** (3.15)	-2197.13** -(3.52)	1982.40 (1.10)	-2213.31 -(.80)	0.45	64.26
ED11	-18056.70* -(2.11)	15.90** (10.40)	0.16 (.38)	-48.08 -(.09)	2.13 (.32)	4634.80* (2.16)	11833.07** (2.67)	2501.96 (.94)	8486.36 (1.19)	28821.12** (12.13)	8002.30** (3.07)	-2197.80** -(3.49)	1987.68 (1.09)	-2197.64 -(.78)	0.45	63.61
ED12	-17859.60 -(1.92)	16.13** (12.43)	0.03 (.26)	-84.00 -(.14)	2.58 (.35)	4730.76* (2.13)	11883.50* (2.37)	2646.12 (.95)	8290.60 (1.17)	28857.52** (11.98)	8004.77** (3.03)	-2180.68** -(3.46)	2069.13 (1.14)	-1944.58 -(.71)	0.45	63.81
ED13	-16454.70* -(2.14)	16.38** (9.39)	-0.06 -(.02)	-219.38 -(.66)	4.32 (1.20)	5071.00* (2.41)	12763.50** (3.44)	2457.89 (.80)	8079.04 (1.15)	29044.46** (12.77)	8148.63** (3.20)	-2136.29** -(3.48)	2213.29 (1.27)	-1456.81 -(.57)	0.45	65.41
ED14	-16249.80* -(2.21)	16.04** (8.98)	-0.48 -(.21)	-186.19 -(.51)	3.84 (.94)	4836.85* (2.30)	12582.43** (3.34)	2160.81 (.74)	8340.53 (1.18)	29003.90** (12.69)	8163.92** (3.20)	-2165.76** -(3.51)	2114.25 (1.20)	-1820.31 -(.69)	0.45	65.13
ED15	-16923.20* -(2.25)	15.86** (8.93)	0.45 (.33)	-120.29 -(.27)	3.01 (.58)	4710.93* (2.24)	12275.59** (3.02)	2212.07 (.81)	8511.60 (1.20)	28924.04** (12.48)	8101.71** (3.16)	-2186.01** -(3.51)	2025.34 (1.12)	-2088.46 -(.75)	0.45	64.48
ED16	-17539.50* -(2.09)	15.98** (9.74)	0.18 (.28)	-92.84 -(.17)	2.69 (.40)	4748.44* (2.23)	11928.48* (2.53)	2483.61 (.93)	8447.38 (1.19)	28883.30** (12.22)	8031.56** (3.08)	-2181.30** -(3.48)	2040.58 (1.12)	-2035.73 -(.71)	0.45	64.13

* Significant at .05 level ** Significant at .01 level

TABLE NO. 5.3

REGRESSION RESULTS FOR

TOTAL SAMPLE

RECURSIVE MODEL

ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	AGE	AGE^2	HHP	HHS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	FAMILY TYPE	EXISTENCE OF CHILDREN	R^2	F- Ratio (d.f. = 16, 1022)
ED1	-988.13** (-2.97)	0.33** (7.44)	-16.37 (-1.10)	0.35* (2.23)	328.58** (4.14)	262.57 (1.63)	319.45** (2.75)	-171.45 (-.56)	72.09** (4.42)	-290.26** (-5.00)	81.07 (1.55)	-185.89** (-3.00)	-64.65 (-1.28)	157.86 (1.41)	129.35 (1.72)	616.50** (5.84)	0.29	27.59
ED2	-850.01 (-1.14)	0.59** (5.93)	-101.16** (-3.05)	1.53** (4.39)	607.10** (3.42)	749.00* (2.07)	266.50 (1.02)	-456.39 (-.66)	181.89** (4.98)	-553.89** (-4.34)	-14.13 (-.13)	-378.65** (-2.74)	-244.24* (-2.17)	380.87 (1.52)	292.42 (1.73)	1253.13** (5.30)	0.25	22.05
ED3	1456.44 (.54)	1.10** (3.27)	-466.42** (-3.86)	6.46** (5.08)	1549.47 (2.40)	3025.31* (2.30)	-464.10 (-.49)	-1317.17 (-.52)	495.01** (3.72)	-1158.66* (-2.49)	-294.47 (-.69)	-936.98 (-1.86)	-867.35* (-2.11)	1309.73 (1.44)	709.55 (1.22)	3045.21** (3.53)	0.15	11.51
ED4	14620.42 (1.12)	2.67 (1.53)	-2074.06** (-3.56)	27.94** (4.55)	5630.46 (1.81)	13439.16* (2.12)	-4691.91 (-.98)	-4089.02 (-.34)	1546.36* (2.41)	-2973.35 (-1.32)	-915.59 (-.44)	-3065.80 (-1.26)	-3221.40 (-1.62)	5550.72 (1.26)	2204.45 (.77)	9161.02* (2.20)	0.00	5.92
ED5	-611.24** (-4.04)	0.16** (7.84)	3.29 (.49)	0.03 (.41)	165.81** (4.59)	130.91 (1.78)	203.84** (3.85)	-43.47 (-.31)	19.60** (2.63)	-113.85** (-4.38)	82.75** (3.48)	-71.38* (-2.53)	-6.61 (-.29)	69.68 (1.37)	44.85 (1.31)	261.15** (5.43)	0.29	28.03
ED6	-754.87** (-3.11)	0.25** (7.65)	-10.42 (-.96)	0.24* (2.09)	245.44** (4.23)	221.29 (1.87)	243.13** (2.86)	-118.94 (-.53)	48.74** (4.08)	-201.16** (-4.82)	71.63 (1.87)	-127.69** (-2.82)	-45.34 (-1.23)	116.90 (1.43)	92.58 (1.68)	440.11** (5.80)	0.29	27.98
ED7	-677.97 (-1.35)	0.43** (6.43)	-65.09** (-2.92)	1.00** (4.26)	416.14** (3.40)	559.95* (2.30)	206.19 (1.18)	-321.94 (-.88)	119.17** (4.85)	-365.73** (-4.25)	8.44 (.11)	-243.95** (-2.62)	-168.69* (-2.22)	255.26 (1.52)	202.43 (1.78)	864.50** (5.43)	0.26	23.38
ED8	587.71 (.38)	0.84** (4.09)	-276.21** (-4.02)	3.85** (5.33)	917.47* (2.50)	1930.76** (2.58)	-217.74 (-.41)	-917.77 (-.65)	305.74** (4.04)	-712.89** (-2.70)	-182.99 (-.76)	-543.69 (-1.88)	-565.42* (-2.42)	763.81 (1.48)	488.46 (1.48)	1947.04** (3.90)	0.17	14.17
ED9	-770.04 (-.94)	0.80** (7.30)	-88.18* (-2.35)	1.20** (3.11)	543.38** (2.77)	395.46 (.79)	614.61* (2.35)	-749.17 (-.98)	131.74** (3.26)	-646.34** (-4.57)	-7.33 (-.06)	-403.93** (-2.64)	-168.66 (-1.35)	380.12 (1.08)	206.24 (1.10)	1225.58** (4.69)	0.20	16.93
ED10	763.68 (.47)	1.36** (6.30)	-287.57** (-3.98)	3.75** (4.93)	935.96* (2.42)	1420.07 (1.81)	539.64 (.95)	-1550.28 (-1.03)	290.85** (3.66)	-1070.76** (-3.85)	-202.47 (-.80)	-688.91* (-2.29)	-494.86* (-2.01)	639.57 (1.17)	459.70 (1.25)	2362.72** (4.59)	0.18	15.39
ED11	6889.60 (1.42)	2.54** (3.92)	-970.55** (-4.48)	12.50** (5.49)	2246.20 (1.94)	5970.88* (2.53)	-811.10 (-.48)	-3616.06 (-.81)	718.56** (3.01)	-1951.69* (-2.34)	-635.90 (-.83)	-1447.22 (-1.60)	-1549.97* (-2.10)	1984.83 (1.22)	1138.19 (1.03)	5333.27** (3.46)	0.13	10.02
ED12	30811.32 (1.53)	5.25* (1.96)	-3517.58** (-3.92)	45.61** (4.83)	7782.99 (1.62)	24910.42* (2.55)	-7471.16 (-1.06)	-9455.31 (-.51)	2102.46* (2.13)	-6412.05 (-1.28)	-1422.25 (-.45)	-4204.81 (-1.12)	-5325.06 (-1.75)	7834.52 (1.16)	3314.71 (.73)	14657.72* (2.29)	0.08	5.83
ED13	-917.40* (-2.26)	0.39** (7.26)	-11.05 (-.61)	0.24 (1.24)	300.76** (3.10)	1761.60 (.88)	458.55** (3.23)	-291.71 (-.78)	45.38* (2.28)	-311.59** (-4.46)	69.79 (1.09)	-203.80** (-2.69)	-38.78 (-.63)	152.81 (1.12)	66.26 (.72)	540.95** (4.19)	0.19	16.40
ED14	-767.78 (-1.25)	0.60** (7.33)	-55.29* (-2.02)	0.81** (2.80)	419.45** (2.87)	388.78 (1.31)	501.19* (2.42)	-544.87 (-.96)	91.26** (3.03)	-468.33** (-4.45)	20.87 (.22)	-300.11** (-2.63)	-115.14 (-1.24)	236.32 (1.15)	144.74 (1.04)	892.03** (4.58)	0.20	17.04
ED15	186.77 (.16)	0.99** (6.38)	-187.93** (-3.62)	2.50** (4.58)	666.92* (2.40)	1240.22* (2.19)	397.41 (.98)	-1126.70 (-1.04)	192.46** (3.31)	-727.77** (-3.64)	-105.08 (-.57)	-476.79* (-2.20)	-335.36 (-1.90)	468.06 (1.20)	316.79 (1.20)	1640.05** (4.44)	0.18	15.08
ED16	3867.13 (1.22)	1.81** (4.28)	-607.49** (-4.29)	7.89** (5.29)	1377.08 (1.82)	4523.23** (2.93)	-517.25 (-.47)	-2630.71 (-.88)	442.91** (2.84)	-1199.31* (-2.20)	-389.93 (-.78)	-889.03 (-1.50)	-1003.71* (-2.08)	1275.31 (1.19)	745.05 (1.03)	3474.93** (3.44)	0.13	10.25

* Significant at .05 level ** Significant at .01 level

REGRESSION RESULTS FOR

TOTAL SAMPLE

SIMULTANEOUS MODEL

ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{\text{ASSET}}$	AGE	AGE^2	EMP	EMS	EP	ES	EH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	FAMILY TYPE	EXISTENCE OF CHILDREN	R^2	F- Ratio (d.f. = 17, 1021)
ED1	-985.94**	0.33**	0.01	-16.28	0.35*	327.28**	299.36	319.22**	-173.01	71.86**	-290.55**	81.46	-185.74**	-65.24	157.85	129.07	616.97**	0.29	25.83
	-(2.95)	(4.58)	(.07)	-(1.09)	(2.19)	(4.00)	(1.54)	(2.75)	-(.56)	(4.36)	-(5.07)	(1.55)	-(3.00)	-(1.27)	(1.41)	(1.70)	(5.82)		
ED2	-819.73	0.54**	0.01	-99.86**	1.51**	589.01**	704.68	263.31	-478.05	178.70**	-557.97**	-8.92	-376.56*	-252.34*	380.79	288.90	1259.72**	0.24	20.57
	-(1.09)	(3.37)	(.41)	-(2.99)	(4.25)	(3.21)	(1.86)	(1.01)	-(.69)	(4.17)	-(4.34)	-(.08)	-(2.72)	-(2.20)	(1.52)	(1.71)	(5.31)		
ED3	1611.10	0.92	0.02	-459.76**	6.35**	1457.06*	2798.55*	-480.40	-1427.80	478.70**	-1179.51*	-267.86*	-926.31	-908.72*	1309.28	731.56	3078.87**	0.14	10.71
	(.59)	(1.58)	(.57)	-(3.17)	(4.90)	(2.18)	(2.03)	-(.51)	-(.52)	(3.50)	-(2.52)	-(2.52)	-(1.83)	-(2.16)	(1.43)	(1.18)	(3.55)		
ED4	15322.64	1.49	0.07	-204.81**	27.40**	5210.90	12409.60	-4565.91	-4591.30	1472.30*	-3068.03	-794.78	-3017.34	-3409.27	5548.69	2202.78	9313.86*	0.08	5.52
	(1.16)	(.53)	(.53)	-(3.47)	(4.39)	(1.61)	(1.86)	-(1.00)	-(.38)	(2.23)	-(1.36)	-(.38)	-(1.23)	-(1.68)	(1.26)	(.74)	(2.23)		
ED5	-614.02**	0.16**	-0.01	3.17	0.03	167.46**	134.97	204.13**	-41.49	19.89**	-113.48**	82.27**	-71.57*	-5.87	69.89	45.18	280.54**	0.29	26.24
	-(4.03)	(5.02)	-(.18)	(.47)	(.43)	(4.50)	(1.76)	(3.86)	-(.29)	(2.62)	-(4.35)	(3.43)	-(2.54)	-(.25)	(1.37)	(1.21)	(5.48)		
ED6	-754.07**	0.25**	0.01	-10.38	0.24*	244.96**	220.12	243.04**	-119.52	48.66**	-201.27**	71.76	-127.63**	-45.55	116.90	92.49	440.28**	0.29	26.20
	-(3.08)	(4.74)	(.03)	-(.95)	(2.05)	(4.10)	(1.78)	(2.86)	-(1.53)	(3.98)	-(4.80)	(1.86)	-(2.82)	-(1.22)	(1.43)	(1.67)	(5.78)		
ED7	-660.39	0.40**	0.01	-64.33**	0.99**	405.64**	534.18*	204.34	-334.54	117.32**	-368.10**	11.46	-242.74**	-173.39*	255.21	200.38	868.33**	0.26	21.83
	-(1.31)	(3.72)	(.35)	-(2.86)	(4.16)	(3.28)	(2.09)	(1.17)	-(.72)	(4.65)	-(4.26)	(.14)	-(2.60)	-(2.25)	(1.51)	(1.76)	(5.43)		
ED8	672.96	0.69*	0.01	-272.54**	3.78**	866.54*	1805.78*	-226.72	-978.74	296.75**	-724.38**	-168.33	-537.81	-588.23*	763.96	478.54	1965.59**	0.17	13.19
	(.43)	(2.11)	(.55)	-(3.93)	(5.14)	(2.28)	(2.30)	-(.42)	-(.42)	(3.82)	-(2.72)	-(.69)	-(1.87)	-(2.47)	(1.47)	(1.36)	(3.99)		
ED9	-733.98	0.74**	0.01	-84.63*	1.17**	521.84*	342.59	670.81*	-774.96	127.94**	-651.28**	-1.12	-401.44**	-178.31	300.02	208.05	1233.43**	0.20	15.82
	-(.89)	(4.20)	(.44)	-(2.29)	(2.99)	(2.57)	(.82)	(2.33)	-(1.01)	(3.09)	-(4.58)	-(.01)	-(2.61)	-(1.48)	(1.08)	(1.07)	(4.78)		
ED10	855.86	1.21**	0.01	-283.60**	3.68**	880.88*	1284.93	529.93	-1616.21	281.13**	-1083.09**	-186.62	-682.55*	-558.52*	639.31	449.18	2382.78**	0.18	14.33
	(.52)	(3.46)	(.57)	-(3.88)	(4.76)	(2.20)	(1.56)	(.93)	-(1.07)	(3.44)	-(3.87)	-(.73)	-(2.25)	-(2.07)	(1.17)	(1.21)	(4.68)		
ED11	7167.58	2.07*	0.03	-958.57**	12.29**	2080.11	5563.32*	-840.39	-3814.89	689.25**	-1981.17**	-588.08	-1428.03	-1634.34*	1984.03	1186.85	5393.77**	0.13	9.32
	(1.46)	(1.98)	(.57)	-(4.39)	(5.29)	(1.73)	(2.25)	-(.49)	-(.84)	(2.81)	-(2.37)	-(.76)	-(1.57)	-(2.16)	(1.21)	(1.88)	(3.47)		
ED12	31788.68	3.62	0.09	-3475.48**	44.88**	7199.04	23477.46*	-7574.16	-10154.40	1999.39*	-4543.83	-1254.11	-4137.37	-5586.53	7831.71	3281.03	14878.44*	0.08	5.44
	(1.57)	(.84)	(.48)	-(3.84)	(4.67)	(1.45)	(2.29)	-(1.07)	-(.54)	(1.97)	-(1.31)	-(.38)	-(1.10)	-(1.88)	(1.15)	(.78)	(2.31)		
ED13	-903.81*	0.37**	0.01	-10.47	0.22	292.64*	156.68	457.12**	-301.43	43.94*	-313.42**	72.13	-202.86**	-42.42	152.77	84.67	542.90**	0.19	15.36
	-(2.21)	(4.26)	(.33)	-(.57)	(1.17)	(2.92)	(.76)	(3.22)	-(.80)	(2.15)	-(4.47)	(1.12)	-(2.68)	-(.68)	(1.12)	(.78)	(4.20)		
ED14	-742.80	0.56**	0.01	-54.21*	0.79**	404.52*	352.14	516.56*	-562.74	88.62**	-471.70**	25.17	-298.39**	-121.82	236.25	141.83	897.47**	0.20	15.93
	-(1.20)	(4.24)	(.41)	-(1.97)	(2.69)	(2.68)	(1.13)	(2.41)	-(.98)	(2.87)	-(4.46)	(.26)	-(2.61)	-(1.29)	(1.14)	(1.02)	(4.59)		
ED15	244.00	0.81**	0.01	-185.46**	2.45**	632.72*	1156.31	391.38	-1161.64	186.43**	-735.49**	-95.23	-472.84*	-350.67	467.98	318.14	1652.51**	0.18	14.06
	(.21)	(3.58)	(.49)	-(3.55)	(4.42)	(2.20)	(1.95)	(.96)	-(1.07)	(3.18)	-(3.66)	-(.52)	-(2.17)	-(1.95)	(1.19)	(1.17)	(4.44)		
ED16	4022.83	1.55*	0.02	-600.78**	7.77**	1284.06	4294.74**	-533.66	-2742.08	426.49**	-1220.38*	-383.15	-878.28	-1045.37*	1274.86	726.94	3588.81**	0.13	9.55
	(1.26)	(2.28)	(.49)	-(4.10)	(5.12)	(1.64)	(2.66)	(.48)	-(.92)	(2.66)	-(2.22)	-(.72)	-(1.48)	-(2.13)	(1.19)	(1.08)	(3.45)		

* Significant at .05 level ** Significant at .01 level

different measures of ED] in all the samples.

Permanent income is proxied by permanent consumption. The coefficient of this variable indicates that an increase in permanent consumption by Re. 1 increases the stock of assets by nearly Rs. 15 i.e. it takes Rs. 15 to finance Re. 1 of permanent consumption (implying an interest rate or yield on assets of 1/15 = 6.67% - which is a quite plausible figure).

2. Stock of Child-education Capital (ED or $\hat{ED}$)

The hypothesis advanced earlier implied that if households treat children as forms of saving, there is a subsitution between physical capital (including financial assets) and child-human capital. As such we expect a negative sign on ED (in the recursive model) or $\hat{ED}$ (in the simultaneous model).

The findings lend a partial support to the hypothesis. The recursive model produces consistently a negative sign on ED for all the samples except the nuclear sample and the sample of young household heads. For the total sample, ED is significant at 95% for 8 out of 16 equations. Ed is found to be significant mostly for equations corresponding to 10 and 15 percent rate of interest.

As far as the simultaneous model is concerned the coefficient of $\hat{ED}$ has a positive sign in all the samples and for all the equations (except 2 equations in total sample). However, it is not significant anywhere; apparently the

rather poor fit of the estimated ED equation produces a measure of estimated education that has large errors of measurement.

3. Age and Age^2:

The age variables were entered to capture the life-cycle effect. Most empirical studies [Kelly and Williamson (1968), Peter Peek (1974) have found little or no support for the life-cycle hypothesis in developing countries. In the simultaneous model, for the joint sample, the sample with existence of children and the sample of young household heads, the theoretically correct pattern of positive sign on age and negative sign on age^2 is obtained. The same sign configuration is obtained in the recursive model for the sample with positive ED stock. For the rest of the samples in the recursive model and for the total sample in the simultaneous model, the signs on age (-) and age^2 (+) imply a theoretically incorrect U-shaped asset-profile by household's age. Neither of the age-coefficients are significant in any of the samples.

4. Occupation:

'Cultivation' - a dummy variable for owner-cultivators is consistently positive and significant at 99% for all the samples and for both the simultaneous and the recursive models. The parameter estimate of 'cultivation' indicates that on an average, a cultivating family has about Rs. 29,000 worth more assets than non-farm families

(which constitute the excluded category).

However, 'farm-labor' - a dummy variable for farm-labor families does not have an expected sign. The coefficient of 'farm-labor' is positive for all ED measures and in all the samples. It is significant at 95% level for all the equations and for all except the nuclear sample.

It is hard to believe that farm-labor families have on an average Rs. 8,100 more in the stock of net assets as compared to non-farm families.

5. Education of Household Head: (EHP, EHS)

EHP and EHS - dummy variables representing the education of houshold head up to primary and secondary or higher level respectively - both have expected positive sign. More own-human-captial leads to greater accumulation of non-human assets. This is probably due to the positive correlation between income and education. As would be expected the coefficient on EHS is consistently larger than on EHP (in all except the nuclear sample).

In the recursive model, the coefficient of EHP is significant in all the samples. The household head with primary education has on an average Rs. 5,159 more in assets as compared to the illiterate category. The coefficient of EHS is statistically significant in the total sample, the joint sample and the sample of young household heads. Both levels of education seem to exercise greater impact in the sample of young household heads.

6. Education of Spouse: (EP, ES)

EP and ES both have expected positive signs in the recursive model for all the samples. As far as spouse's education is concerned, primary education does not seem to play an important role as the coefficient on EP is not significant in any sample. But the secondary or higher education of wives seems to be more important in younger and nuclear households as the coefficient of ES is very large and significant only for the nuclear sample and the sample of young household heads. More women are likely to be educated in these households and less traditional attitudes of younger and nuclear families might enable educated wives to participate in the job market and add to the family saving.

7. No. of Earners:

A-priori nothing can be said about the sign of the variable. It can have a positive or negative effect on the asset level. More earners mean more income and more saving. This is positive income-effect. Blumenthal [1969] found for Japanese households a positive effect of number of earners on saving-ratio after controlling for household-size, age and income of the household head. According to him, this is due to the reverse relation between saving-ratio (independent variable) and number of earners (dependent variable). Wives go out to work in order to increase family savings. Also, "families regard the income of family's head

as 'regular income' to be used for current expenses while the income of other family members is regarded as 'extra income' to be saved for specific purposes" (pg. 66).

But more earners may discourage savings too, due to less precautionary motive. As suggested by Eizenga (1961), families with more than one earner are less vulnerable in case of sickness and old-age and thus, need a smaller reserve of saving.

The sample results here produce a negative sign on no. of earners, and the coefficient is significantly different from zero at 99% level consistently. An increase in no. of earners by one reduces asset-accumulation by Rs. 2,100 approximately on an average - in the total Sample. Multiple-earner families have less need for precautionary saving.

8. Type of Family:

Generally, it is hypothesized that an extended family system depresses household asset-formation. Due to the burden of supporting a large number of persons (who are often dependents), joint families have less ability to save. Donald Snyder (1974), Wayne Nafziger (1969), Jane Lillydahl (1976), have found evidences of depressing effect of joint families on saving.

On the other hand, it is conceivable in the context of developing countries that joint family may act as a substitue for capital market. Family members may pool their assets and collectively finance certain business needs or investment

projects. A positive effect may also emerge if there are considerable scale economies in consumption or if household members finance their consumption needs by added income.

The coefficient of dummy variable for joint family in our regression results in positive but not significantly different from zero in all the samples. After controlling for income and no. of earners, a joint family has on an average Rs. 2,200 to 2,400 more in assets for the total sample. This can be explained probably in terms of reverse relation between family-structure and assets. It is quite likely in countries like India that families with more assets organize (or are capable of organizing) themselves as joint families. The coefficient is slightly smaller in the simultaneous model. The positive coefficient of 'family type' and the negative coefficient of no. of earners are roughly the same in magnitude.

9. Existence of Children

As explained earlier, this is a dummy variable indicating the presence of children above age 6. The variable distinguishes the families which had opportunity to invest in education of children from the families who have very young children and as yet do not have a chance to invest in child-education.

The variable was expected to have a negative sign on the ground that investment in education competes with physical and financial asset-formation. The variable was entered in

both the equations only for the total sample. It does have the anticipated sign but the coefficient is not significantly different from zero.

Section 5.2 ED Equation

The ED equation does not fare as well as the Asset equation. The magnitudes of the independent variables as well as R^2 change with the discount-rate and different measures of the dependent-variable. The R^2 ranges from .08 to .29. Strictly speaking, the R^2's obtained for different equations are not comparable as the total variation itself is different for different equations. The education equation would be expected to fit somewhat less well than the asset equation because of the measurement errors introduced by the need to construct a measure of the education-stock. Most of the variables however, have the expected signs and plausible magnitudes.

1. Permanent Income:

This variable[22] has expected positive effect on education-stock. The coefficient is significant for all data-sets and for most of the ED measures. At zero rate of interest, an increase in permanent income by Re. 1, will increase the real educational-stock by Rs. .33. The coefficient ranges from .16 to 3.62 for different ED measures. But for more realistic discount-rates, the demand for child-education-stock appears to be relatively less elastic.

2. Stock of Assets: ($\widehat{\text{Asset}}$)

As per the hypothesis of substitution between investment in child-education and non-human assets, a negative sign was expected on the coefficient of this variable in the simultaneous model. (In the recursive model, this variable is not included on the ground that investment in child-education is determined first and therefore does not depend on the stock of assets.) In the sample with positive ED stock, the sample with existence of children and the joint sample, a negative sign is obtained for most of the ED measures. For the remaining samples the sign of $\widehat{\text{asset}}$ is positive. The coefficient is extremely small and not significant in any of the samples. Thus, the results do not lend a strong support to the hypothesis.

3. Age and Age^2:

The life-cycle effect as shown by the age terms seems to be more important in human capital formation than in asset formation. The signs of age (-) and age^2 (+) in the total sample (and all other sub-samples except the nuclear sample) indicate an U-shaped profile relating age and child-education stock. The coefficients are significant in about 12 out of 16 equations for the total sample. The results are similar in both the simultaneous and the recursive model. Using the ED1 measure, the coefficients of age and age^2 in the recursive model for total sample show that

the lowest point corresponds to age 21. The turning point comes at age 33 if ED2 measure (5 % discount rate) is used. This seems plausible since after about age 30, investment in education is likely to increase as children reach school-going age.

4. Education of Household Head: (EHP, EHS)

EHP and EHS - dummy variables corresponding to primary and secondary or higher level of education of household head are expected to be positively related to the child-education stock. The education level of household head reflects partly the tastes and preferences and partly the ability to pay for schooling of children. Most of the empirical studies have found a positive[23] relation between the education level of the household head and child-education [Rosenzweig and Evenson (1975), Allen Kelly (1976)].

The regression results (for the recursive and the simultaneous model) show that the coefficient of EHP is consistently positive and significant at least at 90% in all the samples except the sample of young household head and the nuclear sample. The household head with primary education spends on average Rs. 328 more on educational stock (using ED1 measure) as compared to the category of illiterate heads. The coefficient is larger in the sample with positive ED stock. (This probably reflects the taste for child-education.)

The two levels of schooling for household head were

employed to capture the potential non-linear effect on educational stock as would be expected. The coefficient of EHS is larger than that of EHP at 10 and 15% discount rate.

The coefficient of EHS is consistently positive and significant (for most of the equations) in all samples except the nuclear sample and the sample of young household heads. Overall, it appears that in nuclear and younger households education (especially at higher level) does not have significant impact on the child-education stock.

5. Education Level of Spouse: (EP, ES)

Positive signs are expected on the coefficients of EP and ES. The regression results for the simultaneous and the recursive model yield positive signs for all the ED measures in the nuclear sample and the sample of young household heads. In the remaining samples, EP has a positive sign corresponding to low discount rates. The coefficient is significant for a few ED measures. Thus, primary education of spouse does not seem to play an important role in the formation of child-education capital.

As far as the coefficient of ES is concerned, it has a consistently negative sign in all the samples except the sample of young household heads. The coefficient however, is not statistically significant. The negative sign possibly implies that the women with secondary or higher education must be curtailing family size considerably.

6. Household Size:

Household size, in the presence of variables such as income, age of the household head, school-going age children and household structure, picks up the effect of number of adults and young children below age 5. Thus, the coefficient of houshold size is difficult to interpret. The coefficient is consistently positive and significant for all ED measures and all the samples.[24] This probably indicates that in a large household, a more efficient organization of labor is possible which enables the household to send more children to school.

7. No of School-going Age Children

Four age-sex-specific variable were entered in the equation - Male 6-12, Male 13-19, Female 6-12, Female 13-19. Normally one would expect a direct relation between the no, of school-going age children and educational expenditures and hence positive signs on thes coefficients. However, the child-education stock, the way it is measured here has two components - quantity i.e. no. of children and quality which refers to the education expenditure per child (constant cost per year X level of education). Thus, the coefficients on number of school-going age children can be interpreted as reflecting in a crude way, the trade-off between child-quantity and quality. With this interpretation,[25] negative signs are expected. The regression results produce consistently negative signs on Male 6-12, Female 6-12, and Female 13-19.

The coefficient of Male 13-19 is positive for a few ED measures. The coefficient of Male 6-12 is significant for ED measures in the recursive model for the total sample. More or less the same pattern is found for other samples as well. The coefficient of Male 13-19 is generally not significant in any sample except in the sample of young household heads. As far as the female children are concerned, the coefficients of both Female 6-12, and Female 13-19 are not significant in the joint sample and the sample of young household heads. In the rest of the samples, Female 6-12 has statistically significant coefficient in about 10 out of 16 equations. The coefficient of Female 13-19 is significant at 5% level in 7 out of 16 equations for the total sample. The coefficient is not significant in the remaining samples.

In order to interpret the size of the coefficient let us take the simple case of an equation corresponding to ED5 - the not deflated, not discounted measure of ED. The magnitude of the coefficient on Male 6-12 for example suggests that other things remaining constant, one more male child between the age 6-12, reduces education stock by Rs. 113.85. This implies that just the presence of one more male child in the stated age category (increase in child-quantity) would result in reduction in the household's stock of child-education by about 4 years of primary (at Rs. 17 which is the cost per year of primary schooling) or about 1 year of secondary (at Rs. 106 - the cost per year of

secondary schooling) education.

The age of the household head matters as far as signs of these variables are concerned. Young families with children still in shcool have not completed yet the investment in education. There is still potential for future investment. This probably may result in negative signs on young children between age 6 and 12. For older male children whatever education parents wanted to give is almost there. There is not much potential left for future investment. This might yield a positive coefficient on its coefficient. There is another possible explanation too, for the positive sign on Male13-19. If a family wants to invest in higher education, it would probably give preference to male children.

F-tests were performed to see if parents invest differentially in child-education according to sex or ages of children. As far as the sex of children was concerned, the results of the test provided no such evidence. However, ages of children were found to be significant.

8. Type of Family:

A priori, extended family may have depressing or favourable effect on investment in child-education. A joint family may be able to send fewer children to school because of the large household size. If the extended families have older household heads who are less well-educated, they may not attach much importance to education

(Massell & Heyer, 1969).

On the other hand, in a joint family more income earners are expected. This may reduce the need for borrowing from outside sources. Also, there are more children around in an extended family to 'invest in' (Jane Lillydahl, 1976). Thus, an extended family may encourage more investment in child-education.

Our statistical results show that the coefficient on the extended family variable is consistently positive for all the equations and all the samples (supporting the latter reasoning). But it is not significant in any sample. The variable is robbed of its significance perhaps due to the presence of other variables in the equation which might be correlated to the type of family e.g. household size, number of children, income, existence of school-going age children. The extended family does not seem to have any independent significant effect.[26]

9. Child-survival Ratio:

As explained earlier, this variable is measured as the ratio of no. of children alive to no. of children born in a household. It gives an idea of household-specific experience of child-mortality. A decrease in child-mortality generally leads to an increase in investment on child-human capital (O'Hara, 1975). The variable has expected positive sign for all the equations and for all the data-sets. The co-efficient is significant for all the ED measures at 5%

level in the nuclear sample and at 5% or 10% level in the sample of young household heads. For the total sample, however, the coefficient is not significantly different from zero. This is probably due to the additional variable - the existence of children above age 6 which is entered only in the total sample.

The significance of the coefficient in the nuclear sample and the sample of households with head's age > 50 shows that the child-survival is a more important and relevant factor for young families with young children. Also, for the nuclear families the measure of the child-survival ratio closely corresponds to the mortality experience for the household head's own children and not for the nephews and nieces as might be the case in a joint family.

10. Existence of Children:

This dummy variable distinguishes the households which had opportunity to invest in children from those which had no such opportunity as these households had either no children or very young children who have not yet reached the school-going age. The variable was included in the equation to distinguish between two cases - a household may not spend on child-education (i) either because there are no 'children to invest in' (ii) or because the household head does not find it optimal to invest in education even when there are children of school-going age.

As expected the coefficient is positive and significant

for all the ED measures. (It was entered only for the total sample). This is partly due to the accounting factor as in the measurement of the child-education stock, only children above age 6 are included.

Earlier in Chapter IV, the need to include the opportunity costs of child-time in the total cost of education was justified. As opportunity costs play an important role in the decisions regarding investment in education, it was expected that the equations with opportunity costs (ED9 - ED16) would produce better results for both Asset and ED equations. However, judging in terms of R^2 or statistical significance of variables, the equations with opportunity costs do not fare better than the equations without opportunity costs. This probably implies that the opportunity costs are not adequately measured.

Section 5.3

Regression Results Excluding Permanent Income

The regressions were run excluding permanent income as an explanatory variable. The results are presented in Table [AIV.1 - AIV.4]. As shown in section 4.3, permanent income was found to be a significant factor explaining both asset-accumulation and the stock of child-capital. But since permanent income = $i \times$ Total Wealth = $i \times$ (Asset + ED), permanent income might have turned out to be a significant variable due to this accounting identity. As a result, Asset and ED equations are estimated excluding permanent

income as an explanatory variable and the results are reported below in brief.

The exclusion of permanent income resulted in substantially lower R^2 for both Asset and ED equations. The Asset equation seems to be affected more than the ED equation as far as the size and the significance of the coefficient of the included variables are concerned.

As far as the ED equation is concerned, in the simultaneous model, Assets becomes significant in 7 equations at 95% confidence level. However the size of the coefficient does not change much. In the recursive model, the coefficients of EHP, EHS, and HH size become larger and the coefficient of ES which was negative before, now turns out to be positive (in 14 equations).

In the Asset equation, ED seems to be picking up the effect of permanent income in the simultaneous model. The coefficient of ED turns out to be significant at 95% confidence level and its magnitude becomes almost as large as the coefficient of permanent income in Tables [5.1 and 5.2]. In the simultaneous model, the coefficients of age variables give an inverted U-shaped asset-profile. However, in the recursive model, the coefficients of age variables do not change their signs.

The dummy variable for the 'farm-labor' which had a statistically significant coefficient before, now loses its significance. In the recursive model, the coefficient of

'number of earners' becomes smaller and is now significant at 90% confidence level as against 99% confidence level before.

CHAPTER VI

Summary of Findings

The primary dimensions of the household behaviour modelled here are the accumulation of non-human assets (ASSET EQ.) and the human capital in the form of child-education, (ED EQ). Both the variables estimated are 'stock'variables. Both the simultaneous and the recursive models are used to estimate these equations. For empirical testing of the model, micro-economic survey data for Matar Taluka (Western India) for the year 1975-76 is employed. The results obtained aid us in understanding the key factors behind the household asset-formation behaviour.

Overall, the results are in conformity with a priori expectations. The asset-behaviour is better explained than the investment in child-education stock. This is partly due to the fact that while the dependent variable - ASSET did have a close empirical counterpart, the child-education stock did not. The measurement of the latter therefore, has several limitations. A better measurement of opportunity cost of child-time and detailed data on child-time-use might improve the estimation of ED equation.

The hypothesis that in underdeveloped countries households tend to substitute child-human capital for physical and financial assets in their retirement plan, is upheld

by the findings of the recursive model. Every rupee transferred to finance child-education, reduces the stock of assets by .33 rupee (using the ED1 measure). The less than rupree-for-rupree reduction suggests either that the two forms of assets are imperfect substitutes or that education is partly a consumption good, rising as income and non-human assets rise . However, the simultaneous model gives positive but insignificant relation between assets and child-education stock. Overall, the recursive model produces more plausible and consistent results. As least tentatively therefore, it appears that the recursive process gives a more plausible representation of the household-decision-making process than the simultaneous framework. In any case, the relation between human and non-human assets seems to be more complicated than initially hypothesized.

Turning to the factors influencing the household decisions regarding asset-accumulation and investment in child-education, premanent income has a strong positive effect on both human and non-human assets. As explained earlier, this may be partly due to the accounting factor. The life-cycle effect as shown by the age terms is not found to be important for physical and financial assets. But age of the household head plays an important role in human capital formation. This is not surprising recalling from Chapter 1 the reasoning why the life-cycle hypothesis is not fully applicable to less developed countries. Saving for retirement

takes a different form in these countries. While in a developed country, people accumulate financial assets during their productive life-span to finance consumption during retirement, in a less developed country, such intertemporal transfers of consumption are partly effected through investment in children. Thus, if we look at the accumulation of saving in the form of physical and fianancial assets only, the life-cycle pattern may not be observed in developing countries, as people regard children as forms of saving. The findings show that the age-investment in children-profile is U-shaped. The expenditure on child-education starts increasing after age 33 (using ED1 measure).

As far as the role of the education of the household head is concerned, both levels of schooling have favourable and significant effects on both the stock of assets and on child-education. This is in contrast to the general belief that the formal education - especially at higher level does not play an important role in agricultural rural communities. Female education at any level does not exert any significant impact on asset-accumulation except for the nuclear sample and the sample of young household heads. Higher education of women significantly adds to the assets in these samples. There is weak evidence that mothers with some primary education encourage child-education stock. However, the higher education of women discourages investments in child-education, significantly so in young households.

This result implies that women with secondary education involve themselves in more formal jobs which are less compatible with child-rearing. As a result, working women must be curtailing family-size considerably. The young households, especially the households organized on nuclear basis, are likely to be less tradition-bound and are likely to provide more opportunity for women to work. The spread of primary education in this community seems to be a self-perpetuating process. Parents with primary education are likely to invest more on education of their children. Thus, the government efforts towards free and "compulsory" primary education seem to be in the right direction.

The extended family system has positive but insignificant impact on assets as well as on human capital formation. The existence of school-going age children reduces physical and financial assets but increases significantly investment in child-capital. This provides some support to the reasoning that households with opportunity to invest in children, substitute child-capital for non-human assets. But it must be remembered that the accounting factor is at work too.

Among other important determinants of asset-behaviour, the occupation of the household head and the number of earners must be mentioned. On average, cultivators and farm-laborers were found to have significantly more assets that the non-farm families. The negative and significant relation between

the number of earners and the stock of assets strongly supports the hypothesis that multiple-earner households have less precautionary motive to save.

Other important factors influencing the investment in child-education include household-composition and demographic variables. Household size has strong stimulating effect on the stock of child-education. The relation between the number of children and the child-education stock was found to have an important bearing on the trade-off between child-quantity and quality. Just the presence of one more child, reduces significantly the household's child-education stock. It was not the original intention of the research to examine child-quantity-quality trade-off. But this opens up an interesting avenue for future research. The findings indicate no significant differences in parental investment in the education of male and female children.[27] The child-survival ratio and the household investment in child-education are positively related. The relation is significant for the sample of young household heads and the nuclear sample. It is well-established in the literature that a decline in child-mortality encourages investment in children. However, due to the data-constraint, the variable is measured at household level and shows family-specific mortality experience. A more satisfactory measure relating to individual couples and their own children would have been more desirable.

To sum up, in spite of some of the limitations, the results do give us an important insight into the process of accumulating human and non-human assets in developing countries.

Suggestions for Future Research

From the foregoing discussion, it is clear that the model developed in this thesis has shown itself to be fairly adequate for the analysis of household decisions regarding investment in assets and child-capital. However, some modifications or extensions in the theoretical and empirical model will help us derive bolder conclusions and identify better the role of some important factors. In this section, an attempt is made to identify the areas future research may explore to gain more comprehensive insight into the household decision-making process.

A relatively simple and aggregate theoretical model focusing on the determination of saving and child-education expenditures is developed in this thesis. The family-size was assumed to be exogeneous. The two dimensions of child-capital-quantity and quality are lumped together in the model. One possible extension is to model family-size explicitly. This would enable one to study the

(i) Substitution between child-quantity and child-quality i.e. the composition of child-capital.

(ii) Substitution between child-capital and other non-human assets.

Secondly, one of the research needs is that the empirical model corresponds as closely to the theoretical model as possible. But as mentioned earlier, the presence of the trade-off between child-quantity and child-quality was weakly suggested by the empirical relation between child-education stock and the number of children. More conclusive answers can be found by endogenizing family-size.

Children are viewed in this research as income-earning assets. It is implicity assumed that this income-earning quality is produced through the investment in education. It remains to be seen how far does this assumption hold in rural-agricultural communities. Child-schooling in traditional agricultural communities of less developed countries yield negligible pecuniary returns. The types of work available in rural areas quite often do not require more than basic ability to read and write and practical experience. Home, farm or vocational training centres can provide such training. Thus, formal schooling may not be of primary importance and parents may have more incentive to invest in practical training and other substitutes for schooling than in formal education itself. The role of child-schooling also depends on parents' aspirations. If they want their children to migrate to urban areas, investment in education plays an important role. Thus, the production function for child-capital needs to be expanded taking into account the value of schooling. Other forms of training through which child-

quality can be produced and parents' aspirations.

The role of opportunity cost of schooling also deserves more attention. Our empirical results showed that the equations with opportunity costs did not fare better than the equations without such costs included. This probably suggests that indirect costs of schooling are not adequately captured in our model.[28] An in-depth inquiry into the factors affecting opportunity costs and estimating separately these costs - ($\omega \cdot s_t$) may be very helpful. This would require detailed data on child-time use, wage-rates, the kinds of employment opportunities available to school-going age children of different sex and ages, household composition and child-labor needs of the families.

Thus, future work covering different aspects of the decision-making process such as interaction between child-quantity and child-quality, value of children, role of schooling would provide useful information on the missing links. Such an integrated analysis may give us a better understanding of the basic issue and help us derive more conclusive answers.

FOOTNOTES

1. In the context of India, as in many other developing countries, the responsibility of old-age support is generally assumed by sons. "...The average Hindu wants sons, an understandable attitude in a country where there is neither social security nor old-age pensions, sickness benefits nor unemployment insurance for an overwhelming majority of population." S. Chandrashekhar, pp. 55-56.

2. Although an underdeveloped capital market is widely cited as a reason for viewing children as capital assets, this may not be the only reason. In his study of early China, S.N.S. Cheung, (1972) makes a remark in the footnote on the role of instability. "Where wars and famines are frequent, the assets chosen may take peculiar forms based on their potential security under different kinds of risk - e.g. popularity of golden teeth is S.E. Asia. Social instability tends to increase the relative value of human capital since not even land possesses its attribute of the "dog that follows."

3. At the macro level, several studies have focussed on the estimation of the rate of return to education, measurement of education capital and on the optimal allocation of public resources to education sector. See e.g. Nalla (1967), Panchmukhi (1965).

4. Or 'remittances from children' to use a more general term. This will take into account the possibility that children may provide income to their parents even before their retirement age is reached.

5. Unlike the situation in advanced countries, in most of the less developed countries, a significant proportion of schooling costs are privately borne by the parents or other members of tne extended family.

6. This observation was made by Marc Nerlove ("Toward a New Theory of Population and Economic Growth" in T.W. Schultz (1974) pp. 543) in the context of western countries.

7. It is assumed here for simplicity that parents bear all the costs of children's education and that the benefits that children receive from schooling, do not enter the economic calculus of parents.

8. Quite possibly μ would be an increasing function of the level of the child's education (and hence income).

9. In this model, the analysis is restricted to the investment in child-quality given the child-quantity. However, the scope of the model could be broadened by including fertility as an endogeneous variable. This would enable one to discuss the interaction between child-quantity and child-quality.

10. Carol Clark (1979) tested the assumption of exogeneous fertility for Guatemala using a multi-variate analysis. Her results showed that while for the semi-urban sample the assumption was not wholly justified, rural households do not provide evidences of planning or controlling family-size.

11. Expenditures on health would also enhance the stock of child-capital. However, the study concentrates only on the investment in education.

12. As suggested by Mark Rosenzweig (1977), it can be assumed that "leisure and schooling are complements such that circumstances increasing returns to child-labor will reduce both child-school-attendance and leisure."

13. See Appendix (AII).

14. Chernichovsky (1975) uses data from two Indian villages in his empirical analysis; one of the villages (Ankodia) is located in the same region that is being studied here. For this village he also finds that the value of land (Rs. 21,412) is approximately ten times the value of financial assets (Rs. 2,143) per household. (See Table 1, pp. 68) Note that the absolute amounts are also roughly the same as obtained in this study.

15. By limiting the measurement to immediate family members, only 164 persons have been excluded from the computation.

16. According to some writers opportunity costs of education are zero in the context of high and chronic unemployment. "Income is foregone only to the extent of the possibility of finding a job." Investment in Human Resources - Indian Economic Conference (1965, pp. 58).

17. Using a sub-sample from the same Resurvey Data of Matar Taluka (1975), Deolalikar (1980) has derived marginal opportunity cost of schooling by regressing the total number of days worked by all the household members on the number of members in several age-sex-working status categories. From the coefficients of this regression equation, number of work-days lost due to schooling were obtained for primary and higher education level. The opportunity cost of education for girls were assumed to be equal to zero as the co-efficients were statistically insignificant. The opportunity cost of education at mean wage-rate (Rs. 6.11) for boys were Rs. 515.68 at primary level and Rs. 1687.64 at secondary or college level. However, there are several limitations: (i) Data excludes activities of persons below 12. (ii) Only market activities are taken into account. (iii) Same wage-rate is applied at both the education levels. (iv) Age-group 0-14 corresponding to primary education does not make much sense. (v) The estimated opportunity cost figures are very high. Especially the figure for higher education (Rs. 1687.64) does not seem plausible. (vi) Girls' education is not without opportunity cost.

18. The periodicity of opportunity costs plays an important role in school-enrollment decision. A low cost opportunity cost which is more or less constant throughout the year does not discourage enrollment or attendance as is the case at primary level. A high opportunity cost for a short period of time (as found at secondary level) is a disincentive for school-attendance but not for enrollment. A high opportunity cost throughout the year at college level is a strong deterrent to enrollment. (See Carol Clark 1979 pp. 42)

19. T.W. Schultz (1963) pp. 29 reports following figures for earnings foregone as % of total cost of education for two high and two low income countries.

U.S.A. (1956)	%	Mexico (1957)	%
8 Years of Primary	0	6 Years of Primary	0
4 Years of High School	60	6 Years of Secondary	61
4 Years of College	59	3 Years of University	57
Israel (1957-58)		**Venezuela (1957-58)**	
8 Years of Primary	18	6 Years of Primary	0
4 Years of Post-Primary	60	5 Years of Secondary	81
3 Years of Higher Education	54	4 Years of University	71

20. It can be argued that permanent income = i x (total wealth) = i x (ASSET + ED). Now, if permanent income is included as an explanatory variable in ASSET and ED equation, it may turn out to be significant due to this accounting identity. Alternatively therefore, these equations are estimated without permanent income . The results are discussed in section (5.3). Note, however, that the measure of permanent income used in the estimation is not calculated from ASSET and ED but instead is based on "permanent consumption" (see under "explanatory variables").

21. The sample excludes older household heads because it is likely that they might have grown-up sons who might have established independent households, and the age-group that is covered to measure ED might not have included them.

22. The equation (in section 5.3) is estimated without permanent income to avoid the problem of accounting identity discussed earlier.

23. Jane Lillydahl (1976) found a negative relation between literate household head and school-fees. The relation is explained in terms of negative correlation between education level and family size.

24. The magnitude of the coefficient is smaller for the nuclear sample and the sample of young household heads.

25. It is not the original intention of the research to test for the child-quantity, quality trade-off. Otherwise, with proper sub-sample of families and appropriately measured variables, more rigourous conclusions could have been drawn.

26. 'Family type' has a statistically significant coefficient if household size or number of children or income term is deleted.

27. The figures in Appendix (AI) on female enrollment in Matar Taluka cast some doubt on this finding.

28. Or this may imply that opportunity costs are not very important. In the literature, indirect costs of schooling are emphasized as an important consideration in the decisions about investment in education. But, if schooling itself is not perceived to be important, then opportunity costs may not play a significant role.

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Appendix I

Description of the Region

Matar Taluka is located in Kaira District of Gujrat State in Western India. The name 'Matar' is derived from the work 'matbar' which means prosperous. Kaira District is one of the most prosperous districts in Gujrat State.

The Taluka has an area of 2212 square miles with 82 villages. According to 1971 census, the total population of the Taluka is 132,084 of which 69,800 are males and 62,284 are females. The Taluka is divided into three regions - Matar, Navagam and Limbasi. All the three regions are basically rural agricultural communities. The main crops grown in the area are rice, wheat, pulses, tabacco, cotton, etc. The spread of irrigation and the development of AMUL dairy co-operative have been the key factors in the economic growth of Matar Taluka. These developments have resulted in the diversification of crops, increase in marketed surplus and redistribution of income in favor of small farmers and landless laborers.

As regards the quality of human resources in the region, as judged by the level of literacy, there has been noticeable progress. From the figures in Table [AI-1], it can be seen that during the period 1951-71, male literacy has increased nearly 1 1/2 times while female literacy has increased nearly 2 times.

Growth of educational institutions has contributed to the improvement in the literacy level. Table A1-2 gives relevant figures at primary and secondary level. Over the decade of 1961-71, the number of primary schools has gone up from 77 to 94. As regards to higher education big strides need to be taken. According to the census of 1971, out of 82 villages only 11 villages had secondary schools and there was not a single college in the region.

Student enrollment at secondary level declines markedly. The number of female students attending primary school is about half that of male students. At the secondary level, female student enrollment is only about one third that of male student.

TABLE AI.1

Literacy Level in Matar Taluka

Year	No. of Literates			Percentage		
	Male	Female	Total	Male	Female	Total
1951	13922	4392	18314	34.25	11.88	23.60
1961	22082	7800	29882	41.55	16.18	29.49
1971	34511	13844	48355	49.44	22.23	36.61

District Statistical Abstract, Kaira District

1960-61

1963-64

1970-71

Bureau of Economics & Statistics - AHMEDABAD

TABLE AI.2

Growth of Education in Matar Taluka

(a) Primary Education

Year	No. of Schools	No. of Teachers	No. of Students Male	Female	Total
1960-61	77	288	7073	3687	10760
1965-66	93	388	10277	5565	15842
1970-71	94	429	11771	6046	17817
1972-73	94	466	9575	6734	16309

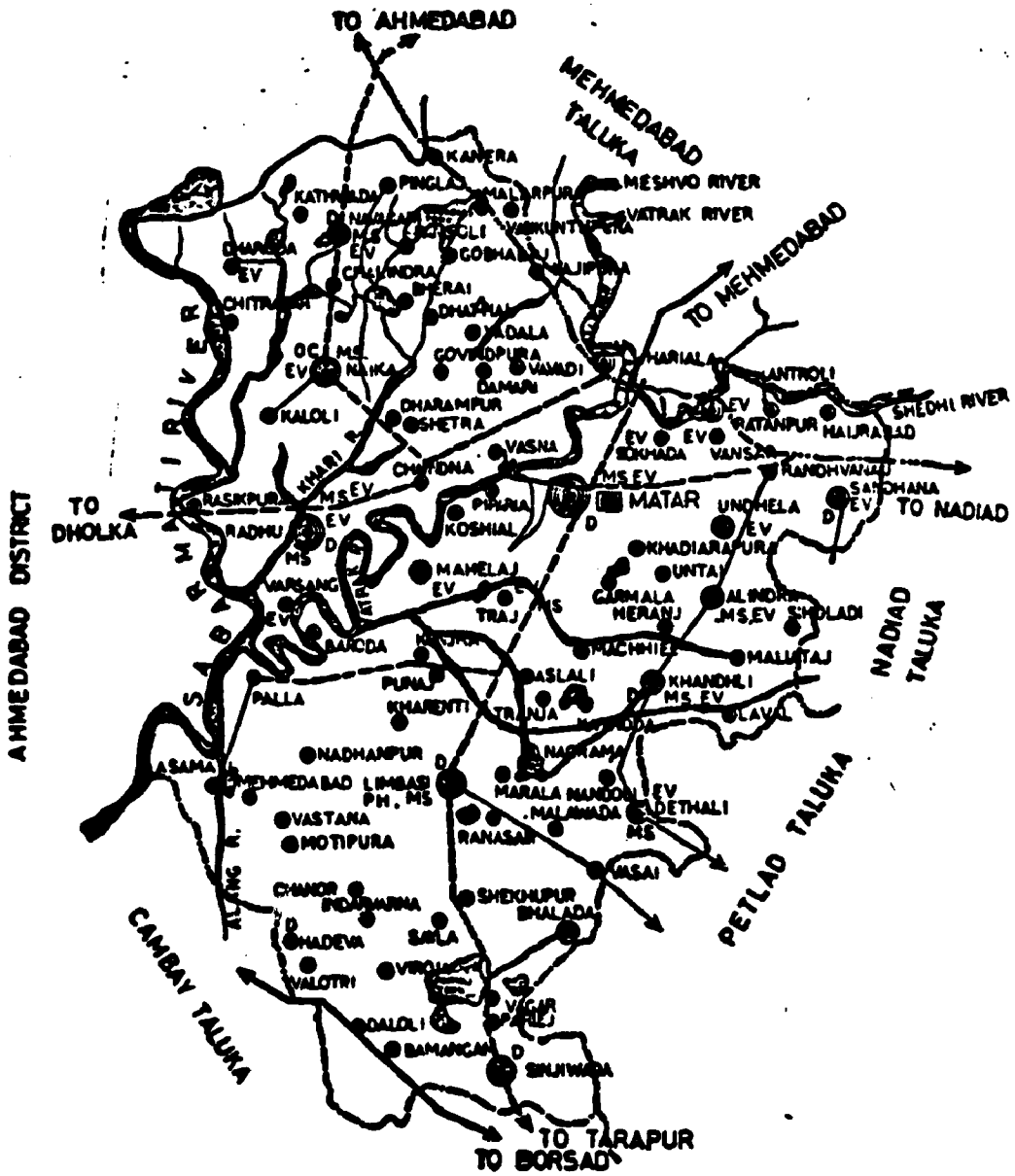
(b) Secondary Education

Year	No. of Schools	No. of Teachers	No. of Students Male	Female	Total
1960-61	6	50	948	232	1180
1965-66	9	83	1385	460	1845
1970-71	12	105	1975	721	2694
1972-73	14	182	2082	989	3017

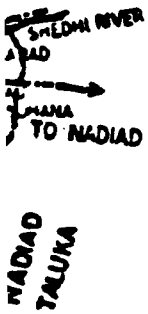
District Statistical Abstract, Kaira District

1963-62, 1972-73

Bureau of Economics & Statistics - AHMEDABAD


TO AHMEDABAD
MEHMEDABAD TALUKA
TO MEHMEDABAD
TO DHOLKA
AHMEDABAD DISTRICT
TO NADIAD
NADIAD TALUKA
PETLAD TALUKA
CAMBAY TALUKA
TO TARAPUR
TO BORSAD
MATAR
KANERA
MESHVO RIVER
VATRAK RIVER
SHEDHI RIVER
KALOLI
VASNA
KOSHIAL
MAHELAJ
UNDHELA
KHADIARAPURA
UNTAI
MALLATAJ
KHANDHLI
NADHANPUR
MEHMEDABAD
VASTANA
MOTIPURA
RANASAN
MASAI
SHEKHUPUR BHALADA
SINJWADA
BAMANGAM
DALOLI
VALOTRI
SARLA
CHANDOR
PALLA
RADHU
RASIKPURA
VARSANG
BAMODA
PUNAJ
KHARENTI
ASLALI
TRANJA
NAGRAMA
MARALA
MALAWADA
DETHALI
LIMBASI PH. MS
KHADEVA
VIRAMGAM
VIGAR
PARIEJ
DHARAMPUR
SHETRA
GOVINDPURA
VAMADI
DAMARI
HARIALA
ANTROLI
RATANPUR
HAJIRABAD
SAMOHANA
RANDHVANAJ
VANSAL
SOKHADA
PIPLIA
CHANDNA
KHARI R.
MAHI RIVER
SABARMATI RIVER
ALTING N.
KAIRA DISTRICT IN GUJARAT STATE
MATAR TALUKA IN KAIRA DISTRICT

MATAR TALUKA-KAIRA DISTRICT



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DISTRICT BOUNDARY	
TALUKA BOUNDARY	
NATIONAL HIGH WAY	
STATE HIGH WAY	
MAJOR DISTRICT ROAD	
OTHER DISTRICT ROAD	
RIVER	
CANAL	
TANK	
LOCATION OF VILLAGE	
LOCATION OF TOWN	
TALUKA HEAD QUARTER	
MIDDLE SCHOOL	M S
OIL CENTRE	O C
ELCTRIFIED VILLAGE	E V
PRIMARY HEALTH CENTRE	P H
GOVT. & OTHER DISPENSARIES	D
VILLAGE WITH POPULATION	
LESS THAN 2000	
2001 TO 3000	
3001 TO 4000	
4001 TO 5000	
ABOVE 5001	

MR TALUKA
A-RA
RICT

0 1 2 4 6 8 10 MILES

0 2.5 5.0 7.5 10 12.5 15.0 K.M.

MAP-2

APPENDIX II

Derivation of the Stock of Child-education Capital

I. Estimates of Direct Marginal Costs:

The measurement of child-educational stock required, among other things, estimates of money-costs of education.

(1) Data on cash expenditure on education in 1975 were regressed on the total number of children at different levels of education for the households with school-going age (3 to 25) children:

$$EXP = \underset{(3.44)}{27.31^{**}}\ NCP + \underset{(9.02)}{105.61^{**}}\ NCS + \underset{(12.84)}{513.30^{**}}\ NCC \qquad \text{....EQ. AII.1}$$

$R^2 = .41$ $F = 101.92$ $N = 453$

** significant at .01 level.
(t-values in parentheses.)

where

EXP = total expenditure on education

NCP = number of children in primary school

NCS = number of children in secondary school

NCC = number of children in college.

The estimated coefficients give direct marginal cost of schooling at primary, secondary and college level as Rs. 27, Rs. 106 and Rs. 513 respectively.

(2) An additional regression was run to see if the cost-coefficients were significantly different for boys and girls:

$$EXP = \underset{(1.98)}{18.61^{*}}\ NBP + \underset{(6.42)}{92.26^{**}}\ NBS + \underset{(12.53)}{515.93^{**}}\ NBC$$

$$+ \underset{(3.07)}{33.51^{**}}\ NGP + \underset{(5.71)}{136.81^{**}}\ NGS + \underset{(1.07)}{181.12}\ NGC$$

....EQ. AII.2

$R^2 = .42$ $F = 52.78$ $N = 453$

* Significant at .05 level

** Significant at .01 level
(t-value in parenthesis)

A F- test was made using EQ.AII.1 and EQ.AII.2 to test the hypothesis. Since the computed value of F-statistic (2.54) is less than the critical value of F (3,1000) = 2.61, we accept the null-hypothesis of no difference at .05 level. As a result, same cost figures are used for boys and girls

(3) To compute the total direct costs for a household, it is assumed that the costs are proportional to the number of children. i.e. if a household has three children in primary school then the total direct costs are simply Rs. 27 X 3 = Rs. 81. It is quite likely that there may be economies of scale due to "and-me-down" clothes, books etc. But the proportionality assumption is made for convenience.

II. Computation of Household Stock of Child-education:

The child-education stock is measured as the discounted present value of the schooling expenditures incurred to-date by the household head for educating children. The procedure is illustrated in Table AII.1

(1) For each person included (on the basis of relation to household head as described in Chapter IV) in the calculation the data on age and ED level in 1975 is obtained. Suppose that a child is 15 years old and his education code is 5 which corresponds to 9 years schooling (Talbe 4.4) - 7 years of primary and 2 years of secondary education. It is assumed that schooling begins at age 6 and continues without interruption. (i.e. . late starts, dropping out for a year or two and restart or repetition of grades are ignored.) Now, there is a need to go back and find out the year in which he must have started schooling (ISIX) and the year in which he completed schooling (IEND).

(2) For the purpose of calculation, the span of 46 years - from 1930 to 1975 is covered. Each year is numbered serially (JY) beginning from 1930. ISIX and IEND are given by:

ISIX = (75 - AGE) + 7

IEND = ISIX + ED YEARS - 1

In our example

ISIX = (75 - 15) +7 = 37

TABLE AII.1

Computation of Household Stock of Child-education: An Illustration

Serial No. (JY)	Year	Age	ED	ED $Cost_i$
36	1965	5		
ISIX→ 37	1966	6	P	$27\left(\frac{P.I.\ (75)}{P.I.\ (66)}\right)\cdot(1+R)^{75-66}$
38	1967	7	P	$27\left(\frac{P.I.\ (75)}{P.I.\ (67)}\right)\cdot(1+R)^{75-67}$
39	1968	8	P	
40	1969	9	P	
41	1970	10	P	
42	1971	11	P	
43	1972	12	P	
44	1973	13	S	$106\left(\frac{P.I.\ (75)}{P.I.\ (73)}\right)(1+R)^{75-73}$
IEND→ 45	1974	14	S	$106\left(\frac{P.I.\ (75)}{P.I.\ (74)}\right)(1+R)^{75-74}$
46	1975	15	-	
				$\sum_{i=ISIX}^{i=IEND} ED\ Cost_i$

The year corresponding to serial #37 is 1966 i.e. the child started schooling in the year 1966.

IEND = 37 + 9 - 1 = 45 which corresponds to year 1974.

(3) The next step is to obtain cumulative educational expendiutres. Using the appropriate cost-coefficient and rate of interest, for each year between ISIX and IEND, ED cost can be obtained by:

$$\text{ED COST} = \text{COEF (IS)} \; \frac{\text{Price-index (1975)}}{\text{Price-index (NYR)}} \left[1 + R(IR)\right]^{75 - NYR}$$

where

IS = 1, 3 (27, 106, 513)

IR = 1, 4 (0, .05, .10, .15)

NYR = 75 - IYR

IYR = 1929 + JY

The price-indices used in the computation are given in (Table AII.2). The sum of ED COST over the years of schooling gives total educaional expenditures for a child. The household stock of education capital is given by summing up total educational expenditures for all the persons included.

To calculate educational expenditures with opportunity cost, coefficients used are 27, 212, 2052.

In the above measures the cost-coefficients are assumed to represent nominal costs in 1975 which remain constant and past expenditures are inflated and discounted. By

TABLE AII.2

Consumer Price Index Numbers - 1930-1975

(1963 = 100)

YEAR	INDEX NO.	YEAR	INDEX NO.	YEAR	INDEX NO.
1930	29.3	1946	69.4	1962	100.8
1931	25.0	1947	72.7	1963	100.0
1932	25.4	1948	81.0	1964	127.3
1933	42.1	1949	82.6	1965	135.5
1934	23.7	1950	86.0	1966	154.3
1935	23.7	1951	86.8	1967	175.1
1936	23.7	1952	86.0	1968	171.9
1937	25.4	1953	91.7	1969	176.1
1938	23.6	1954	81.0	1970	183.4
1939	24.3	1955	71.9	1971	188.6
1940	26.4	1956	81.0	1972	206.3
1941	28.9	1957	85.9	1973	255.3
1942	38.0	1958	90.9	1974	317.8
1943	68.7	1959	103.3	1975	308.3
1944	70.5	1960	99.2		
1945	66.2	1961	100.0		

Sources:
1. For years 1930 to 1945 - Index No. of Cost of Living (Ahmedabad). ILO Yearbook 1941 and 1949-50.
2. For 1946-1965 - Consumer Price Index No. (Ahmedabad) - V.A.Kulkarni and Deshpande "Statistical Outline of Indian Economy".

Sources cont:

3. For 1966 to 1975 - Consumer Price - Index Working Class (Ahmedabad) - Reserve Bank of India Bulletin - V. 20, 1966.

dropping the term - $\frac{\text{Price-index (1975)}}{\text{Price-index (NYR)}}$

Uninflated measures of educational stock can be obtained which imply that the cost-coefficients represent real costs in 1975 which remain constant. Thus, with appropriate modifications, all the 16 measures of education stock (as described in Table [4.8]) cam be calculated.

(4) In this procedure, persons may be dropped from the calculation for any of the following reasons:

(i) inconsistencies in reported age and education level.

e.g. if Age = 0, education level = 0

or Age < (6 + ED years) -1

or IEND > 46. A person of given age is too young to have completed implied years of education.

(ii) A person is too old or too young.

If Age > 52, the individual must have started schooling before 1930.

If a child is less than 6 in 1975, the schooling has not began yet. i.e. ISIX > 46.

(iii) inconsistencies in reported sex and relation to household head.

e.g. Sex = F but relation to household head = son.

(5) A household may drop out in the procedure if:

(a) it has more than one or no household head

(b) number of husband wife > 1

c) due to incomplete or inconsistent information, the person dropped happes to be the household head.

APPENDIX III

Regression Results
for
The Sub-samples

TABLE NO. A111.1

REGRESSION RESULTS FOR THE

SAMPLE WITH POSITIVE ED STOCK

RECURSIVE MODEL — ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	ED	AGE	AGE^2	EMP	EMS	EP	ES	CULTIVATION	FARM LABOR	NO. OF EARNERS	FAMILY TYPE	R^2	F- Ratio (d.f. = 13,549)
ED1	-29129.90 -(1.60)	15.94** (11.60)	-0.16 -(.18)	231.02 (.31)	-1.22 -(.16)	4580.30 (1.56)	12347.70* (2.00)	5104.70 (1.34)	5114.70 (.46)	34470.70** (9.44)	10665.80* (2.39)	-2505.60** -(2.63)	3305.80 (1.20)	0.42	32.99
ED2	-26422.30 -(1.44)	16.20** (11.98)	-0.46 -(1.16)	64.60 (.09)	0.90 (.117)	5003.10 (1.71)	12844.40* (2.08)	5203.80 (1.37)	4909.60 (.44)	34443.20** (9.45)	10516.90* (2.36)	-2440.90* -(2.56)	3537.20 (1.28)	0.42	33.18
ED3	-23845.60 -(1.29)	16.13** (12.15)	-0.19 -(1.74)	-67.90 -(.09)	2.44 (.32)	5100.90 (1.75)	13367.10* (2.17)	4887.70 (1.29)	4938.96 (.45)	34538.40** (9.49)	10614.03* (2.38)	-2453.00** -(2.59)	3541.30 (1.29)	0.42	33.45
ED4	-24364.30 -(1.32)	15.98** (12.10)	-0.04 -(1.84)	-30.08 -(.04)	1.95 (.26)	4973.97 (1.71)	13342.20* (2.16)	4746.20 (1.25)	5045.70 (.46)	34582.50** (9.50)	10717.90* (2.41)	-2506.50** -(2.64)	3442.60 (1.25)	0.42	33.47
ED5	-28884.60 -(1.58)	15.70** (11.39)	0.86 (.44)	238.80 (.32)	-1.48 -(.20)	4300.70 (1.46)	12167.80* (1.97)	4798.60 (1.25)	5260.40 (.47)	34564.80** (9.46)	10837.10* (2.42)	-2521.60** -(2.65)	3167.50 (1.15)	0.42	33.02
ED6	-29172.90 -(1.60)	15.93** (11.58)	-0.18 -(.15)	234.20 (.32)	-1.26 -(.17)	4567.10 (1.55)	12350.00* (2.00)	5094.10 (1.34)	5123.90 (.46)	34472.90** (9.44)	10672.40* (2.38)	-2508.20** -(2.64)	3297.30 (1.19	0.42	32.99
ED7	-26720.90 -(1.45)	16.21** (11.94)	-0.64 -(1.08)	81.01 (.11)	0.696 (.09)	4975.20 (1.70)	12879.70* (2.08)	5212.30 (1.37)	4913.30 (.44)	34429.80** (9.44)	10515.20* (2.36)	-2444.30* -(2.57)	3524.20 (1.28)	0.42	33.16
ED8	-23438.00 -(1.27)	16.20** (12.16)	-0.34 -(1.79)	-93.04 -(.12)	2.74 (.35)	5141.60 (1.76)	13521.60* (2.19)	4906.80 (1.30)	4874.90 (.44)	34515.20** (9.48)	10581.30* (2.38)	-2430.60* -(2.56)	3579.20 (1.30)	0.42	33.45
ED9	-27781.10 -(1.51)	16.12** (11.80)	-0.26 -(.74)	154.60 (.21)	-0.33 -(.04)	4730.60 (1.62)	12391.10* (2.01)	5292.80 (1.39)	4865.30 (.44)	34473.80** (9.45)	10615.40* (2.38)	-2510.60** -(2.64)	3410.60 (1.24)	0.42	33.07
ED10	-23568.00 -(1.27)	16.34** (12.08)	-0.29 -(1.59)	-67.30 (.09)	2.22 (.29)	5013.60 (1.72)	12948.98* (2.10)	5268.30 (1.39)	4555.80 (.41)	34504.00** (9.47)	10581.40* (2.37)	-2479.50** -(2.61)	3587.00 (1.30)	0.42	33.35
ED11	-20767.60 -(1.12)	16.25** (12.23)	-0.13 -(.06)	-209.99 -(.28)	3.88 (.50)	5136.30 (1.77)	13777.50* (2.23)	4861.20 (1.29)	4610.70 (.42)	34572.80** (9.51)	10680.40* (2.40)	-2478.90** -(2.62)	3593.90 (1.31)	0.42	33.68
ED12	-22319.80 -(1.21)	16.04** (12.16)	-0.03* -(2.20)	-128.30 (.17)	3.00 (.39)	5037.80 (1.74)	13833.00* (2.24)	4654.00 (1.23)	4874.60 (.44)	34596.40** (9.52)	10765.00* (2.42)	-2518.20** -(2.66)	3482.96 (1.27)	0.42	33.60
ED13	-29215.60 -(1.60)	15.94** (11.66)	-0.14 -(.20)	236.20 (.32)	-1.29 -(.17)	4560.80 (1.56)	12314.00* (2.00)	5126.30 (1.34)	5093.00 (.46)	34483.30** (9.45)	10680.80* (2.39)	-2518.90** -(2.65)	3292.40 (1.19)	0.42	32.99
ED14	-28030.90 -(1.53)	16.13** (11.80)	-0.36 -(.78)	164.10 (.22)	-0.41 -(.05)	4745.70 (1.62)	12464.00* (2.02)	5305.90 (1.39)	4866.96 (.44)	34468.10** (9.45)	10608.10* (2.38)	-2513.80** -(2.65)	3409.50 (1.24)	0.42	33.07
ED15	-24183.40 -(1.31)	16.35** (12.10)	-0.40 -(1.60)	-41.50 -(.05)	1.96 (.26)	5013.70 (1.72)	13145.30* (2.13)	5264.20 (1.39)	4563.90 (.41)	34483.40** (9.47)	10572.98* (2.37)	-2462.20** -(2.61)	3573.40 (1.30)	0.42	33.36
ED16	-21119.50 -(1.14)	16.29** (12.24)	-0.20* -(2.21)	-196.90 -(.26)	3.75 (.49)	5120.40 (1.76)	14061.40* (2.27)	4855.00 (1.29)	4563.70 (.41)	34538.10** (9.50)	10664.90* (2.40)	-2462.60** -(2.60)	3504.00 (1.31)	0.42	33.30

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.2

REGRESSION RESULTS FOR THE

SAMPLE WITH POSITIVE ED STOCK

SIMULTANEOUS MODEL

ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ED}$	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	NO. OF EARNERS	FAMILY TYPE	R^2	F- Ratio (d.f. = 13,549)
ED1	-30899.40	14.99**	2.09	410.70	-3.91	3385.30	11566.90	4084.60	5726.20	34800.60**	11357.90*	-2716.20**	2702.70	0.42	32.63
	-(1.67)	(7.79)	(.63)	(.52)	-(.46)	(.99)	(1.83)	(1.00)	(.51)	(9.39)	(2.46)	-(2.69)	(.93)		
ED2	-37214.00	14.93**	1.29	747.80	-7.89	3062.60	10729.40	4546.40	5849.90	34642.50**	11280.50*	-2756.40**	2498.90	0.41	31.98
	-(1.75)	(8.16)	(.76)	(.75)	-(.69)	(.87)	(1.62)	(1.16)	(.52)	(9.32)	(2.45)	-(2.70)	(.84)		
ED3	-47041.80	15.01**	0.63	1270.80	-14.08	2484.40	8772.20	5494.98	5858.60	34365.50**	11075.40*	-2781.10**	2368.10	0.40	30.04
	-(1.63)	(8.67)	(.82)	(.87)	-(.81)	(.64)	(1.12)	(1.37)	(.50)	(8.97)	(2.35)	-(2.65)	(.77)		
ED4	-53776.20	15.32**	0.20	1626.30	-18.28	2010.10	6872.50	6412.70	5631.80	34124.70**	10825.40*	-2761.60*	2453.60	0.37	27.22
	-(1.46)	(9.41)	(.76)	(.82)	-(.77)	(.44)	(.70)	(1.41)	(.46)	(8.42)	(2.20)	-(2.52)	(.76)		
ED5	-27901.00	15.21**	3.30	235.80	-1.76	3677.98	11683.50	4100.30	5486.10	34817.50**	11275.00*	-2649.30**	2960.50	0.42	32.92
	-(1.50)	(7.44)	(.42)	(.32)	-(.23)	(1.05)	(1.84)	(.93)	(.49)	(9.32)	(2.42)	-(2.64)	(1.04)		
ED6	-30506.10	15.01**	2.75	388.30	-3.65	3414.20	11424.30	4098.40	5676.90	34813.70**	11355.20*	-2703.90**	2742.20	0.42	32.67
	-(1.65)	(7.57)	(.58)	(.50)	-(.44)	(.99)	(1.79)	(.99)	(.51)	(9.38)	(2.46)	-(2.68)	(.94)		
ED7	-36308.80	14.93**	1.78	697.10	-7.28	3156.10	10651.30	4528.50	5836.40	34676.20**	11276.00*	-2739.20**	2539.10	0.41	32.11
	-(1.72)	(7.85)	(.70)	(.70)	-(.65)	(.90)	(1.60)	(1.16)	(.52)	(9.34)	(2.45)	-(2.70)	(.85)		
ED8	-44705.80	14.98**	0.90	1137.99	-12.43	2781.60	9034.00	5366.20	5915.50	34435.50**	11065.30*	-2751.70**	2417.90	0.40	30.83
	-(1.60)	(8.29)	(.75)	(.80)	-(.75)	(.74)	(1.17)	(1.36)	(.51)	(9.11)	(2.38)	-(2.66)	(.80)		
ED9	-33904.10	15.22**	0.66	479.50	-4.24	3851.70	11967.50	4342.96	5878.02	34574.50**	11020.30*	-2612.70**	2916.50	0.42	32.62
	-(1.59)	(7.11)	(.39)	(.50)	-(.41)	(1.15)	(1.91)	(1.03)	(.52)	(9.40)	(2.42)	-(2.64)	(1.00)		
ED10	-39383.20	15.04**	0.51	801.20	-7.89	3541.80	11063.70	4596.70	6195.80	34501.90**	10996.20*	-2653.60**	2718.60	0.41	32.02
	-(1.47)	(7.22)	(.52)	(.61)	-(.54)	(1.02)	(1.65)	(1.17)	(.54)	(9.31)	(2.41)	-(2.65)	(.91)		
ED11	-47545.30	15.05**	0.28	1225.80	-12.85	3076.10	9022.90	5379.40	6297.30	34355.80**	10843.10*	-2683.40**	2588.80	0.40	30.64
	-(1.30)	(7.70)	(.59)	(.67)	-(.61)	(.79)	(1.06)	(1.35)	(.54)	(9.05)	(2.34)	-(2.61)	(.84)		
ED12	-49375.70	15.37**	0.09	1331.20	-14.20	2850.40	7696.10	6086.60	5905.40	34256.90**	10672.10*	-2666.40*	2698.70	0.39	29.38
	-(1.14)	(9.05)	(.52)	(.60)	-(.55)	(.64)	(.70)	(1.35)	(.50)	(8.79)	(2.25)	-(2.54)	(.87)		
ED13	-29475.10	15.54**	0.68	284.20	-2.01	4155.80	12150.60	4562.90	5460.30	34561.30**	10906.30*	-2561.20**	3134.50	0.42	32.91
	-(1.61)	(7.13)	(.192)	(.37)	-(.25)	(1.22)	(1.95)	(1.01)	(.49)	(9.41)	(2.38)	-(2.61)	(1.11)		
ED14	-32243.00	15.24**	0.86	441.70	-3.85	3853.50	11804.60	4355.20	5821.10	34586.50**	11024.00*	-2607.90**	2946.96	0.42	32.63
	-(1.61)	(6.70)	(.37)	(.48)	-(.39)	(1.13)	(1.86)	(1.03)	(.51)	(9.40)	(2.41)	-(2.64)	(1.02)		
ED15	-38521.70	15.00**	0.73	768.30	-7.59	3518.90	10678.60	4593.80	6209.50	34538.20**	11016.30*	-2652.30**	2727.60	0.41	31.97
	- (1.48)	(6.92)	(.51)	(.60)	-(.53)	(1.00)	(1.52)	(1.16)	(.54)	(9.31)	(2.41)	-(2.64)	(.91)		
ED16	-47585.50	14.93**	0.45	1238.50	-13.03	3069.00	8275.50	5420.90	6479.10	34409.60**	10852.80*	-2684.80**	2557.20	0.40	30.46
	-(1.30)	(7.07)	(.59)	(.67)	-(.61)	(.79)	(.88)	(1.35)	(.55)	(9.05)	(2.33)	-(2.60)	(.82)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.1

BACKRESSION RESULTS FOR THE

SAMPLE WITH POSITIVE ED STOCK

| | | |

TABLE NO. A111.4

REGRESSION RESULTS FOR THE

SAMPLE WITH POSITIVE ED STOCK

SIMULTANEOUS MODEL

ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ASSET}$	AGE	AGE^2	BMP	BMS	EP	ES	ES SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	FAMILY TYPE	R^2	F-Ratio (d.f. = 16,546)
ED1	256.00 (.39)	0.37** (3.62)	-0.004 -(.90)	-86.50* -(2.41)	1.17** (3.25)	552.00** (4.08)	579.00 (1.93)	482.00** (2.74)	-76.00 -(.15)	146.00** (4.93)	-388.00** -(4.38)	46.00 (.98)	-264.00** -(2.64)	-112.00 -(1.40)	500.00* (2.11)	181.00 (1.48)	0.29	14.77
ED2	4680.30* (2.48)	0.60** (2.61)	-0.005 -(.54)	-380.60** -(4.75)	4.73** (5.86)	1095.80** (3.65)	1591.80* (2.39)	424.00 (1.06)	-306.00 -(.26)	314.00** (4.77)	-720.00** -(3.64)	-49.00 -(.28)	-532.00* -(2.20)	-320.00 -(1.85)	1083.90* (2.05)	451.00 (1.63)	0.203	15.10
ED3	245889.00** (3.21)	0.94 (1.08)	-0.004 -(.09)	-1594.00** -(5.27)	19.38** (6.35)	3082.50** (2.71)	6286.00* (2.50)	-714.00 -(.40)	-770.00 -(.17)	710.00** (2.88)	-1374.00 -(1.04)	-115.70 -(.17)	-1249.00 -(1.40)	-962.00 -(1.48)	3343.00 (1.63)	1077.00 (.88)	0.214	9.09
ED4	-111346.00** -(3.93)	1.06 (.25)	0.019 (.095)	-6841.00** -(4.56)	82.76** (5.42)	11905.00* (2.11)	27816.00* (2.22)	-7133.00 -(.95)	-1080.00 -(.05)	1787.00 (1.05)	-2966.00 -(.81)	772.80 (.23)	-3821.60 -(.915)	-2867.00 -(.86)	12561.00 (1.27)	3313.00 (.61)	0.130	5.06
ED5	-516.00 -(3.22)	0.19** (3.92)	-0.002 -(1.01)	-6.06 -(.36)	0.16 (.98)	278.60** (4.32)	288.60* (2.06)	303.00** (3.65)	29.00 (.12)	49.00** (2.50)	-131.18** -(2.42)	73.16 (1.99)	-97.40* -(2.10)	-21.90 -(.39)	224.60* (2.04)	62.00 (1.03)	0.261	12.00
ED6	230.10 (.21)	0.28** (3.75)	-0.003 -(.93)	-50.36* -(2.22)	0.81** (3.06)	413.20** (4.18)	482.00* (2.20)	360.60** (2.81)	-36.00 -(.08)	109.60** (4.64)	-266.96** -(4.11)	49.96 (.85)	-170.60* -(2.44)	-77.30 -(1.32)	308.00* (2.13)	131.00 (1.30)	0.267	14.06
ED7	3041.60* (2.24)	0.45** (2.92)	-0.004 -(.61)	-268.00** -(4.63)	3.11** (5.74)	750.50** (3.72)	1188.00** (2.65)	320.00 (1.19)	-211.00 -(.27)	208.30** (4.72)	-472.00** -(3.56)	-15.00 -(.13)	-348.20* -(2.27)	-226.00 -(1.98)	736.00* (2.07)	292.00 (1.88)	0.280	15.30
ED8	-14503.70** -(3.38)	0.74 (1.53)	-0.006 -(.18)	-953.50** -(5.63)	11.50** (6.78)	1825.80** (2.07)	4093.80** (2.84)	-340.00 -(.69)	-630.00 -(.36)	452.30** (3.24)	-909.00* -(2.03)	-186.40 -(.28)	-727.00 -(1.54)	-433.00 -(1.60)	1830.70 (1.74)	717.00 (1.17)	0.247	11.94
ED9	5299.20* (2.27)	0.88** (3.33)	-0.003 -(.39)	-362.00** -(3.92)	4.12** (4.42)	971.20** (2.88)	882.30 (1.11)	1060.60* (2.38)	-885.70 -(.66)	262.20** (3.46)	-981.70** -(3.96)	-60.90 -(.38)	-655.90* -(2.55)	-252.70 -(1.33)	1896.00 (1.64)	388.70 (1.05)	0.222	10.37
ED10	10440.20** (4.87)	1.40** (2.73)	-0.004 -(.19)	-1086.00** -(6.06)	12.20** (6.79)	1811.60** (2.70)	2978.60* (2.00)	856.60 (.97)	-1823.30 -(.78)	502.90** (3.41)	-1666.20** -(3.32)	-302.40 -(.51)	-1131.00* -(2.27)	-501.10 -(1.40)	1954.20 (1.08)	771.70 (1.19)	0.266	11.72
ED11	40487.00** (4.48)	2.27 (1.45)	-0.003 -(.04)	-3443.00** -(6.33)	39.40** (7.19)	4790.60* (2.35)	12423.00** (2.74)	-1295.00 -(.48)	-3840.00 -(.46)	1031.60* (2.30)	-2488.00 -(1.08)	-176.50 -(.15)	-2227.00 -(1.80)	-1475.00 -(1.22)	5212.70 (1.40)	1679.00 (.95)	0.206	9.28
ED12	-208011.00** -(3.98)	3.34 (.51)	0.015 -(.05)	-11990.00** -(8.21)	140.16** (6.03)	17388.60* (2.01)	51886.10** (2.70)	-12102.50 -(1.05)	-6427.00 -(.19)	2429.00 (1.28)	-6804.00 -(.88)	1400.90 (.208)	-5888.70 -(.93)	-4314.00 -(.86)	18474.00 (1.22)	5320.00 (.64)	0.143	6.00
ED13	232.02 (.20)	0.44** (3.34)	-0.002 -(.28)	-70.10 -(1.52)	0.80 (1.90)	516.14** (2.97)	383.10 (1.00)	701.30** (3.04)	-281.30 -(.42)	104.00** (2.75)	-429.70** -(2.76)	42.70 (.42)	-314.60* -(2.44)	-85.00 -(.83)	588.40 (1.64)	111.00 (.63)	0.204	8.74
ED14	3136.30 (1.79)	0.66** (3.36)	-0.003 -(.31)	-337.00** -(3.44)	2.76** (3.97)	753.13** (2.91)	832.70 (1.45)	883.90* (2.36)	-306.00 -(.58)	184.40** (3.25)	-645.70** -(3.08)	-13.30 -(.08)	-477.40* -(2.49)	-174.35 -(1.14)	767.70 (1.08)	346.00* (.98)	0.216	10.14
ED15	11611.00** (3.58)	1.05** (2.82)	-0.004 -(.25)	-713.00** -(5.51)	8.16** (6.26)	1306.70** (2.69)	2607.90* (2.42)	613.60 (.95)	-1251.60 -(.66)	336.25** (3.15)	-982.40** -(3.07)	-100.00 -(.35)	-770.00** -(2.14)	-385.00 -(1.38)	1404.00 (1.46)	535.00 (1.14)	0.234	11.10
ED16	37388.30** (4.15)	1.74 (1.11)	-0.006 -(.12)	-2165.00** -(6.09)	24.96** (6.98)	3017.30* (2.26)	9436.70** (3.18)	-875.70 -(.49)	-2647.00 -(.51)	645.30* (2.30)	-1500.00 -(1.71)	-100.00 -(.14)	-1387.00 -(1.41)	-829.90 -(1.18)	3264.00 (1.43)	1340.00 (.97)	0.204	9.36

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.5

REGRESSION RESULTS FOR THE

SAMPLE WITH EXISTENCE OF CHILDREN

RECURSIVE MODEL

ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	ED	AGE	AGE^2	EMP	EMS	EP	ES	CULTIVATION	FARM LABOR	NO. OF EARNERS	FAMILY TYPE	R^2	F- Ratio (d.f. - 13,750)
ED1	-20750.70	16.55**	-0.24	-149.85	2.80	4966.50*	11552.67*	4530.33	5388.12	31788.02**	10617.72**	-1935.96*	2349.09	0.45	51.34
	-(1.89)	(14.18)	-(.32)	-(.33)	(.60)	(2.19)	(2.23)	(1.42)	(.58)	(10.97)	(3.21)*	-(2.00)	(1.12)		
ED2	-20110.10	16.82**	-0.47	-221.41	3.82	5305.12*	11982.83*	4628.99	5308.77	31837.76**	10602.81**	-1878.53**	2520.45	0.45	51.62
	-(1.83)	(14.66)	-(1.41)	-(.49)	(.81)	(2.35)	(2.31)	(1.46)	(.57)	(11.00)	(3.21)	-(2.62)	(1.21)		
ED3	-18880.90	16.75**	-0.19*	-289.65	4.64	5352.77*	12416.42*	4344.79	5354.53	31974.43**	10722.14**	-1881.02**	2497.62	0.45	51.97
	-(1.72)	(14.91)	-(2.07)	-(.64)	(.99)	(2.38)	(2.39)	(1.37)	(.57)	(11.06)	(3.25)	-(2.63)	(1.20)		
ED4	-18796.90	16.59**	-0.04*	-277.96	4.44	5235.01*	12393.09*	4200.81	5409.17	31964.67**	10775.94**	-1922.01**	2413.08	0.45	52.00
	-(1.71)	(14.87)	-(2.12)	-(.61)	(.95)	(2.34)	(2.40)	(1.32)	(.58)	(11.06)	(3.26)	-(2.68)	(1.16)		
ED5	-20166.50	16.29**	0.71	-154.43	2.70	4705.36*	11375.90*	4230.02	5473.32	31839.05**	10719.40**	-1955.67**	2217.06	0.45	51.35
	-(1.83)	(13.91)	(.43)	-(.34)	(.58)	(2.08)	(2.19)	(1.32)	(.59)	(10.99)	(3.24)	-(2.73)	(1.06)		
ED6	-20740.90	16.54**	-0.29	-148.30	2.77	4952.67*	11558.82*	4518.12	5395.02	31787.68**	10620.67**	-1930.82**	2340.17	0.45	51.34
	-(1.89)	(14.15)	-(.28)	-(.33)	(.60)	(2.18)	(2.23)	(1.41)	(.58)	(10.97)	(3.21)	-(2.71)	(1.12)		
ED7	-20226.60	16.82**	-0.66	-213.57	3.72	5284.50*	12021.73*	4636.58	5307.48	31821.94*	10594.15**	-1881.91**	2511.22	0.45	51.89
	-(1.84)	(14.60)	-(1.32)	-(.47)	(.79)	(2.34)	(2.32)	(1.46)	(.57)	(11.00)	(3.20)	-(2.63)	(1.20)		
ED8	-18822.70	16.82**	-0.34*	-299.12	4.77	5387.71*	12553.05*	4368.72	5318.18	31938.35**	10709.64**	-1864.22**	2525.43	0.45	51.98
	-(1.71)	(14.91)	-(2.08)	-(.65)	(1.01)	(2.40)	(2.42)	(1.38)	(.57)	(11.05)	(3.24)	-(2.61)	(1.21)		
ED9	-20323.60	16.72**	-0.27	-184.12	3.22	5066.45*	11584.34*	4690.81	5209.36	31821.77**	10630.55**	-1940.32**	2408.51	0.45	51.45
	-(1.85)	(14.44)	-(.91)	-(.40)	(.69)	(2.25)	(2.24)	(1.47)	(.56)	(10.99)	(3.21)	-(2.71)	(1.15)		
ED10	-18815.00	16.94**	-0.29	-285.70	4.46	5282.83*	12088.48*	4676.09	5042.95	31910.12**	10689.06**	-1908.06**	2518.46	0.45	51.85
	-(1.71)	(14.79)	-(1.87)	-(.62)	(.95)	(2.35)	(2.33)	(1.47)	(.54)	(11.04)	(3.24)	-(2.67)	(1.21)		
ED11	-17550.70	16.86**	-0.13*	-355.90	5.32	5355.53*	12790.01*	4320.62	5121.93	31999.51**	10801.15	-1889.48**	2301.67	0.45	52.28
	-(1.60)	(14.98)	-(2.52)	-(.77)	(1.13)	(2.39)	(2.47)	(1.36)	(.55)	(11.09)	(3.28)	-(2.66)	(1.20)		
ED12	-17943.90	16.65**	-0.03*	-323.88	4.94	5270.81*	12830.64*	4125.04	5293.60	31996.01**	10832.31**	-1928.32**	2423.81	0.45	52.28
	-(1.63)	(14.93)	-(2.51)	-(.71)	(1.05)	(2.36)	(2.47)	(1.30)	(.57)	(11.09)	(3.28)	-(2.71)	(1.17)		
ED13	-20707.70	16.52**	-0.16	-147.10	2.73	4914.94*	11500.70*	4519.65	5370.31	31799.55**	10639.17**	-1950.77**	2317.13	0.45	51.33
	-(1.88)	(14.27)	-(.26)	-(.32)	(.59)	(2.18)	(2.22)	(1.41)	(.57)	(10.98)	(3.21)	-(2.73)	(1.11)		
ED14	-20462.60	16.72**	-0.37	-178.41	3.16	5075.46*	11649.68*	4699.56	5211.51	31816.28**	10626.33**	-1942.66**	2405.88	0.45	51.45
	-(1.86)	(14.44)	-(.93)	-(.38)	(.68)	(2.25)	(2.25)	(1.47)	(.56)	(10.99)	(3.21)	-(2.72)	(1.15)		
ED15	-19090.70	16.94**	-0.40	-273.50	4.34	5281.65*	12261.57*	4673.32	5039.74	31890.31**	10680.45**	-1908.84**	2507.78	0.45	51.86
	-(1.74)	(14.78)	-(1.08)	-(.60)	(.92)	(2.35)	(2.37)	(1.47)	(.54)	(11.03)	(3.23)	-(2.67)	(1.20)		
ED16	-17720.50	16.88**	-0.19*	-350.48	5.26	5343.44*	13046.10*	4316.22	5077.67	31972.07**	10789.94**	-1888.46**	2492.03	0.45	52.29
	-(1.61)	(15.00)	-(2.53)	-(.76)	(1.11)	(2.39)	(2.51)	(1.36)	(.55)	(11.08)	(3.27)	-(2.65)	(1.20)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.6

REGRESSION RESULTS FOR THE

SAMPLE WITH EXISTENCE OF CHILDREN

SIMULTANEOUS MODEL — ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ED}$	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	NO. OF EARNERS	FAMILY TYPE	R^2	F- Ratio (d.f. - 13,759)
ED1	-19351.30	15.44**	2.21	-100.26	1.59	3804.73	10775.69*	3407.45	5754.97	31940.20**	11007.73**	-2116.33**	1764.42	0.45	50.65
	-(1.73)	(8.41)	(.69)	-(.22)	(.32)	(1.40)	(2.03)	(.97)	(.61)	(10.92)	(3.26)	-(2.78)	(.79)		
ED2	-22013.90	15.37**	1.33	68.28	-0.52	3588.47	10073.82*	3837.10	5759.90	31694.78**	10790.72**	-2142.84**	1632.05	0.44	49.62
	-(1.95)	(8.76)	(.80)	(.13)	-(.08)	(1.29)	(1.81)	(1.16)	(.60)	(10.74)	(3.20)	-(2.79)	(.72)		
ED3	-25639.90*	15.54**	0.55	273.86	-3.01	3409.80	8768.89	4647.22	5640.67	313618.78**	10443.47**	-2136.12**	1672.32	0.43	47.54
	-(1.96)	(9.57)	(.79)	(.39)	-(.35)	(1.15)	(1.37)	(1.40)	(.58)	(10.24)	(3.03)	-(2.74)	(.73)		
ED4	-27498.30	15.08**	0.15	360.47	-4.00	3389.27	7978.56	5239.38	5467.61	31205.16**	10223.18**	-2102.80**	1851.31	0.42	45.53
	-(1.75)	(10.88)	(.65)	(.40)	-(.35)	(1.04)	(1.04)	(1.45)	(.55)	(9.72)	(2.86)	-(2.64)	(.80)		
ED5	-18659.90	15.76**	3.20	-178.90	2.71	4136.64	10920.00*	3534.46	5604.56	32007.40**	11005.23**	-2054.31**	2013.04	0.45	51.20
	-(1.57)	(8.27)	(.44)	-(.39)	(.58)	(1.49)	(2.04)	(.94)	(.60)	(10.89)	(3.23)	-(2.71)	(.92)		
ED6	-19256.40	15.48**	2.84	-111.61	1.75	3853.65	10653.56*	3443.84	5712.75	31956.10**	11009.39**	-2104.03**	1810.82	0.45	50.74
	-(1.71)	(8.19)	(.63)	-(.24)	(.36)	(1.40)	(1.48)	(.97)	(.61)	(10.93)	(3.26)	-(2.77)	(.81)		
ED7	-21655.70	15.39**	1.81	40.89	-0.15	3680.04	10006.40	3832.48	5754.47	31740.85**	10810.37**	-2127.79**	1675.09	0.44	49.88
	-(1.93)	(8.42)	(.73)	(.08)	-(.02)	(1.32)	(1.78)	(1.15)	(.61)	(10.79)	(3.21)	-(2.78)	(.74)		
ED8	-24765.50	15.55**	0.79	210.90	-2.17	3627.04	9012.21	4553.93	5694.96	31463.91**	10496.82**	-2113.33**	1772.67	0.43	48.57
	-(1.95)	(9.13)	(.71)	(.23)	-(.26)	(1.26)	(1.42)	(1.39)	(.59)	(10.43)	(3.08)	-(2.74)	(.75)		
ED9	-21169.70	15.92**	0.51	-69.75	1.66	4439.87	11245.75*	3909.58	5810.45	31780.26**	10721.83**	-2005.43**	2091.87	0.45	50.93
	-(1.88)	(7.81)	(.30)	-(.13)	(.29)	(1.69)	(2.14)	(1.08)	(.61)	(10.72)	(3.22)	-(2.70)	(.96)		
ED10	-23138.10	15.75**	0.40	53.22	0.17	4242.19	10604.38	4057.53	5951.11	31659.42**	10619.47**	-2031.48**	1983.14	0.44	50.24
	-(1.84)	(7.92)	(.42)	(.08)	(.02)	(1.58)	(1.88)	(1.22)	(.62)	(10.74)	(3.17)	-(2.71)	(.89)		
ED11	-25037.00	15.84**	0.19	160.78	-1.15	4121.70	9570.34	4562.77	5860.54	31519.78**	10448.09**	-2035.27**	1989.30	0.44	49.34
	-(1.63)	(8.71)	(.42)	(.19)	-(.11)	(1.44)	(1.38)	(1.40)	(.61)	(10.40)	(3.06)	-(2.68)	(.89)		
ED12	-24632.20	16.13**	0.05	125.39	-0.74	4213.00	9421.80	4856.43	5610.93	31522.49**	10405.48**	-2011.96**	2107.30	0.44	49.20
	-(1.42)	(10.52)	(.30)	(.13)	-(.06)	(1.35)	(1.10)	(1.37)	(.59)	(10.18)	(2.99)	-(2.65)	(.95)		
ED13	-20453.80	16.31**	0.27	-140.87	2.58	4741.99	11429.20*	4247.23	5514.71	31810.93**	10688.23**	-1962.90**	2250.58	0.45	51.30
	-(1.83)	(8.01)	(.08)	-(.31)	(.54)	(1.78)	(2.19)	(1.09)	(.59)	(10.97)	(3.20)	-(2.66)	(1.05)		
ED14	-20873.90	15.98**	0.60	-88.75	1.88	4479.30	11168.28*	3963.64	5753.10	31793.70**	10722.07**	-1998.17**	2125.36	0.45	51.00
	-(1.89)	(7.73)	(.26)	-(.18)	(.34)	(1.68)	(2.09)	(1.09)	(.61)	(10.94)	(3.22)	-(2.69)	(.97)		
ED15	-22617.30	15.78**	0.53	24.65	0.49	4282.87	10433.89	4084.33	5923.01	31693.66**	10631.96**	-2023.96**	2015.46	0.44	50.32
	-(1.84)	(7.65)	(.38)	(.04)	(.07)	(1.58)	(1.77)	(1.22)	(.62)	(10.78)	(3.18)	-(2.70)	(.91)		
ED16	-24441.90	15.84**	0.26	126.40	-0.74	4208.48	9409.07	4561.80	5891.04	31571.82**	10468.19**	-2025.35**	2015.95	0.44	49.51
	-(1.62)	(8.16)	(.38)	(.15)	-(.07)	(1.47)	(1.24)	(1.40)	(.61)	(10.48)	(3.07)	-(2.68)	(.90)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.7

REGRESSION RESULTS FOR THE

SAMPLE WITH EXISTENCE OF CHILDREN

RECURSIVE MODEL

SD EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	AGE	AGE^2	HHP	HHS	HP	HS	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	FAMILY TYPE	R^2	F- Ratio (d.f. = 15,757)
SD1	-880.36	0.36**	-21.75	0.441	458.96**	406.57	470.33**	-12.99	107.21**	-311.30**	77.28	-190.60**	-93.86	377.88*	104.04	0.29	21.90
	-(1.65)	(6.90)	-(.99)	(1.95)	(4.40)	(1.68)	(3.13)	-(.03)	(4.70)	-(4.55)	(1.24)	-(2.60)	-(1.56)	(2.25)	(1.88)		
SD2	61.20	0.64**	-147.26**	2.14**	878.83**	1234.20*	428.62	-182.40	241.25**	-565.88**	-13.16	-375.53*	-200.40*	861.70*	306.89	0.26	18.55
	(.06)	(5.16)	-(2.90)	(4.20)	(3.82)	(2.26)	(1.27)	-(.18)	(4.79)	-(3.67)	-(.08)	-(2.25)	-(2.07)	(2.29)	(1.76)		
SD3	9994.09	1.21*	-699.27**	9.44**	2336.40**	5216.44**	543.00	-657.80	580.79**	-1066.60	-222.93	-880.48	-846.20	2642.10	980.85	0.16	10.56
	(1.36)	(2.71)	-(3.83)	(5.02)	(2.75)	(2.90)	-(.44)	-(.108)	(3.12)	-(1.89)	-(.43)	-(1.30)	-(1.69)	(1.90)	(1.11)		
SD4	35389.13	2.96	-3196.40**	41.67**	8549.15*	23570.44*	-6130.03	-1893.20	1593.42	-3327.15	-382.41	-2229.13	-2758.40	10222.30	2480.96	0.10	5.87
	(1.63)	(1.16)	-(3.98)	(4.56)	(2.00)	(2.41)	-(1.01)	-(.10)	(1.76)	-(.86)	-(.16)	-(.74)	-(1.13)	(1.51)	(.63)		
SD5	-675.30**	0.17**	5.00	0.13	227.30**	204.34	287.82**	46.86	34.50**	-125.10**	82.56**	-70.30*	-20.01	150.73*	60.42	0.20	21.87
	-(2.76)	(6.96)	(.90)	(.13)	(4.87)	(1.86)	(4.21)	-(.23)	(3.39)	-(4.01)	(2.90)	-(2.32)	-(.73)	(2.00)	(1.53)		
SD6	-780.60	0.27**	-13.66	0.30	342.70**	350.10*	353.41**	6.01	73.64**	-215.41**	69.74	-135.80*	-46.13	275.47*	132.35	0.20	22.25
	-(1.78)	(6.77)	-(.86)	(1.81)	(4.58)	(1.97)	(3.22)	(.02)	(4.50)	-(4.30)	(1.53)	-(2.30)	-(1.80)	(2.25)	(1.85)		
SD7	-101.00	0.47**	-94.50**	1.30**	682.21**	930.02*	321.03	-121.55	150.80**	-372.81**	8.96	-240.51*	-194.96*	500.46*	240.92	0.27	19.98
	-(.12)	(9.63)	-(2.00)	(4.07)	(3.40)	(2.54)	(1.42)	-(1.02)	(4.72)	-(3.60)	(.10)	-(2.14)	-(2.16)	(2.20)	(1.88)		
SD8	3354.10	0.80**	-412.06**	5.60**	1300.10**	3335.75**	-243.75	-506.95	365.56**	-660.50*	-140.05	-653.96	-566.26*	1561.60*	599.10	0.30	12.60
	(1.20)	(3.46)	-(4.00)	(5.27)	(2.80)	(2.93)	-(.35)	-(.24)	(3.40)	-(2.06)	-(.51)	-(1.33)	-(2.00)	(2.01)	(1.30)		
SD9	470.70	0.60**	-120.07*	1.77**	760.45**	653.22	977.61**	-675.61	195.14**	-704.40**	-17.90	-496.14*	-202.40	800.04	202.96	0.21	14.23
	(.38)	(5.51)	-(2.52)	(3.11)	(2.90)	(1.07)	(2.90)	-(.61)	(3.67)	-(4.10)	-(.12)	-(2.44)	-(1.33)	(1.92)	(1.10)		
SD10	4644.97	1.30**	-480.00**	5.44**	1379.30**	2500.94*	815.12	-1414.52	309.01**	-1124.00**	-180.27	-720.10*	-807.03	1844.22*	807.30	0.20	13.60
	(1.75)	(5.54)	-(4.23)	(5.06)	(2.73)	(2.00)	(1.10)	-(.65)	(3.52)	-(3.33)	-(.61)	-(1.99)	-(1.70)	(1.90)	(1.33)		
SD11	19131.21*	2.00**	-1536.66**	19.06**	3450.05*	10717.70**	-1087.01	-3066.05	840.62*	-1883.10	-476.39	-1319.13	-1604.46	642.33	1323.61	0.15	9.50
	(2.30)	(3.32)	-(4.60)	(9.60)	(2.37)	(2.97)	-(.09)	-(.47)	(2.55)	-(1.86)	-(.51)	-(1.19)	-(1.96)	(1.77)	(.92)		
SD12	72386.70*	5.17	-5503.06**	69.75**	12176.22	64755.92**	-10636.90	-6736.53	2171.82	-3657.00	-537.60	-3161.24	-4606.46	15303.86	3613.20	0.10	5.96
	(2.17)	(1.52)	-(4.06)	(4.96)	(1.92)	(2.97)	-(1.14)	-(.25)	(1.56)	-(.85)	-(.14)	-(.60)	-(2.10)	(1.67)	(.95)		
SD13	-743.06	0.44**	-18.57	0.121	415.94**	275.83	646.37**	-223.02	75.00**	-345.13**	61.43	-231.73*	-61.00	377.01	103.77	0.30	13.53
	-(1.11)	(6.65)	-(.60)	(1.14)	(3.27)	(.91)	(3.47)	-(.41)	(2.72)	-(6.06)	-(1.70)	-(2.51)	-(.82)	(1.81)	(.85)		
SD14	5.50	0.67**	-80.10*	1.10**	503.60**	652.42	742.29**	-665.43	137.00**	-500.90**	12.77	-334.55*	-160.02	607.76	200.76	0.21	14.20
	(.01)	(6.90)	-(2.17)	(2.79)	(3.30)	(1.44)	(2.64)	-(.56)	(3.27)	-(3.90)	-(.11)	-(2.41)	-(1.25)	(1.94)	(1.12)		
SD15	2603.80	1.00**	-290.95**	3.77**	986.50**	2193.95*	570.31	-994.20	250.70**	-763.23**	-97.54	-600.14	-345.11	1164.50	600.60	0.20	13.20
	(1.41)	(5.90)	-(3.06)	(4.60)	(2.71)	(2.56)	(1.08)	-(.63)	(3.26)	-(3.14)	-(.44)	-(1.80)	-(1.61)	(1.96)	(1.30)		
SD16	11547.77*	1.91**	-964.27**	12.04**	2151.15*	8152.94**	-741.69	-2247.01	520.74*	-1153.69	-297.18	-797.54	-916.21	3037.80	802.26	0.15	9.62
	(2.21)	(3.62)	-(4.51)	(5.46)	(2.16)	(3.45)	-(.51)	-(.52)	(2.42)	-(1.73)	-(.60)	-(1.10)	-(1.96)	(1.74)	(.90)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.8

REGRESSION RESULTS FOR THE

SAMPLE WITH EXISTENCE OF CHILDREN

SIMULTANEOUS MODEL

ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ASSET}$	AGE	AGE^2	EHP	EHS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD SURVIVAL	FAMILY TYPE	R^2	F- Ratio (d.f. = 16,756)
ED1	-918.20	0.40**	-0.002	-22.60	0.45*	471.80**	438.80	476.20**	-8.87	109.43**	-307.83**	72.68	-200.90**	-88.08	383.96*	187.17	0.20	20.51
	-(1.70)	(4.05)	-(.51)	-(1.02)	(1.99)	(4.67)	(1.75)	(3.16)	-(.02)	(4.79)	-(4.07)	(1.15)	-(2.70)	-(1.44)	(2.20)	(1.30)		
ED2	47.34	0.65**	-0.001	-147.66**	2.15**	884.80**	1249.20*	431.38	-180.49	242.29**	-563.46**	-15.32	-376.23*	-277.70*	854.55*	388.35	0.26	17.31
	(.04)	(3.26)	-(.10)	-(2.98)	(4.19)	(3.73)	(2.22)	(1.28)	-(.18)	(4.72)	-(3.64)	-(.11)	-(2.25)	-(2.01)	(2.29)	(1.76)		
ED3	6101.75	1.10	0.007	-686.15**	9.38**	2289.70**	5098.97*	-564.58	-672.78	572.68**	-1079.30	-206.11	-795.02	-857.28	2419.88	889.38	0.14	9.87
	(1.38)	(1.40)	(.22)	-(3.79)	(4.95)	(2.61)	(2.64)	-(.45)	-(.18)	(3.02)	-(1.88)	-(.30)	-(1.20)	-(1.78)	(1.87)	(1.69)		
ED4	26162.11	1.66	0.050	-3135.20**	41.33**	8329.50	22768.40*	-6277.20	-1905.70	1538.16	-2413.88	-277.68	-2191.98	-2882.18	18878.96	2388.72	0.10	5.45
	(1.65)	(.45)	(.31)	-(3.51)	(4.47)	(2.95)	(2.24)	-(1.03)	-(.11)	(1.66)	-(.87)	-(.11)	-(.72)	-(1.17)	(1.408)	(.660)		
ED5	-895.28**	0.28 **	-0.001	5.31	0.023	235.85**	225.79*	291.76**	48.38	36.06**	-122.86**	79.68**	-79.38*	-16.17	163.78*	78.51	0.20	20.32
	-(2.81)	(4.85)	-(.76)	(.53)	(.21)	(4.89)	(1.97)	(4.24)	(.24)	(3.46)	-(3.91)	(2.76)	-(2.33)	-(.588)	(2.13)	(1.57)		
ED6	-724.24	0.38**	-0.002	-14.34	0.31	352.91**	376.50*	358.07**	18.06	75.38**	-212.66**	66.11	-137.07*	-61.58	288.26*	134.84	0.20	20.78
	-(1.83)	(4.68)	-(.55)	-(.89)	(1.86)	(4.57)	(2.08)	(3.25)	(.03)	(4.52)	-(4.23)	(1.63)	-(2.52)	-(1.37)	(2.28)	(1.88)		
ED7	-177.23	0.48**	-0.001	-94.95**	1.60**	608.22**	947.53*	324.25	-119.31	161.18**	-370.92**	6.65	-241.32*	-191.82*	583.77*	271.63	0.27	18.38
	-(.16)	(3.61)	-(.18)	-(2.88)	(4.07)	(3.82)	(2.58)	(1.43)	-(.18)	(4.67)	-(3.57)	(.07)	-(2.15)	-(2.07)	(2.38)	(1.68)		
ED8	3389.42	0.84*	0.003	-411.57**	5.58**	1368.11**	3387.96**	-252.53	-513.06	352.26**	-665.67*	-141.21	-661.73	-574.03*	1573.66*	594.43	0.20	11.89
	-(1.30)	(2.00)	(.16)	-(3.97)	(5.20)	(2.76)	(2.88)	-(.36)	-(.25)	(3.38)	-(2.05)	(.68)	-(1.32)	-(2.08)	(1.98)	(1.39)		
ED9	672.39	0.89**	0.001	-139.02*	1.77**	76.76**	658.58	977.29**	-675.84	195.82**	-384.59**	-17.75	-455.08*	-282.81	828.51	282.78	0.21	13.26
	(.38)	(3.98)	(.18)	-(2.51)	(3.68)	(2.98)	(1.03)	(2.58)	-(.61)	(3.48)	-(4.08)	-(.11)	-(2.44)	-(1.32)	(1.93)	(1.39)		
ED10	6606.66	1.44**	0.003	-457.58**	5.63**	1357.73**	2467.36*	885.27	-1421.38	385.31**	-1130.64**	-181.60	-726.61*	-516.63	163.18*	582.12	0.20	12.66
	(1.76)	(3.27)	(.17)	-(4.19)	(5.00)	(2.46)	(1.97)	(1.06)	-(.65)	(3.41)	-(3.32)	-(.58)	-(1.98)	-(1.78)	(1.96)	(1.22)		
ED11	1936.78*	2.41	0.016	-1529.98**	18.95**	3358.13*	10462.72**	-1134.66	-3088.68	832.03*	-1910.40	-438.88	-1387.28	-1489.28	4773.15	1287.71	0.15	8.98
	(2.48)	(1.82)	(.27)	-(4.65)	(5.56)	(2.13)	(2.79)	-(.50)	-(.47)	(2.44)	-(1.86)	-(.47)	-(1.18)	-(1.88)	(1.78)	(.88)		
ED12	71385.41*	3.98	0.07	-5502.28**	68.28**	11746.70	43679.24**	-18834.78	-6874.29	2087.54	-3773.98	-383.48	-3111.22	-4880.58	15188.41	3388.13	0.10	5.54
	(2.18)	(.72)	(.27)	-(4.81)	(4.68)	(1.79)	(2.88)	-(1.16)	-(.25)	(1.40)	-(.88)	-(.10)	-(.67)	-(1.20)	(1.44)	(.54)		
ED13	-750.53	0.45**	-0.001	-18.76	0.32	418.76**	282.91	647.67**	-232.91	76.28**	-344.37**	60.42	-232.06*	-60.61	370.15	104.45	0.20	12.61
	-(1.12)	(4.04)	-(.89)	-(.68)	(1.14)	(3.19)	(.91)	(3.66)	-(.41)	(2.68)	-(4.03)	(.77)	-(2.51)	-(.79)	(1.81)	(.85)		
ED14	2.19	0.67**	-0.001	-88.20*	1.18**	585.14**	656.07	742.95**	-464.96	137.31**	-500.58**	12.24	-334.72*	-148.16	688.44	285.12	0.21	13.32
	(.002)	(4.02)	-(.03)	-(2.16)	(2.77)	(3.01)	(1.48)	(2.64)	-(.98)	(3.21)	-(3.96)	(.18)	-(2.41)	-(1.22)	(1.88)	(1.13)		
ED15	2781.57	1.86**	0.001	-299.44**	3.76**	978.98**	2174.87*	574.88	-996.72	258.38**	-765.38**	-94.88	-487.25	-348.53	1168.98	487.61	0.20	12.38
	(1.41)	(3.37)	(.08)	-(3.82)	(4.63)	(2.61)	(2.44)	(1.07)	-(.63)	(3.19)	-(3.13)	-(.42)	-(1.88)	-(1.60)	(1.96)	(1.17)		
ED16	11647.16*	1.81*	0.007	-961.43**	11.99**	2108.40*	8045.78**	-761.37	-2368.72	521.35*	-1165.29	-281.83	-782.56	-933.64	2817.54	881.78	0.15	9.13
	(2.21)	(2.08)	(.17)	-(4.47)	(5.40)	(2.05)	(3.38)	-(.51)	-(.52)	(2.34)	-(1.74)	-(.66)	-(1.88)	-(1.56)	(1.72)	(.88)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.9

REGRESSION RESULTS FOR THE

JOINT SAMPLE

RECURSIVE MODEL													ASSET EQUATION	
DEP. VAR.	CONSTANT	PERMANENT INCOME	ED	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	No. of EARNERS	R^2	F-Ratio (d.f.=12, 532)
ED1	-19531.3 -(1.73)	17.88** (11.91)	-0.92 -(1.06)	-282.60 -(.60)	5.07 (1.03)	6405.80* (2.21)	21325.35* (2.34)	2859.17 (.64)	3739.56 (.32)	33609.99** (8.78)	11922.86** (2.72)	-2582.1** -(3.12)	0.45	39.97
ED2	-18839.9 -(1.68)	18.23** (12.46)	-0.91* -(2.35)	-372.34 -(.80)	6.40 (1.30)	6781.90* (2.34)	21968.23** (3.66)	2757.17 (.62)	3508.55 (.30)	33752.80** (8.84)	12025.59** (2.76)	-2529.11** -(3.07)	0.46	40.70
ED3	-17559.9 -(1.57)	17.92** (12.55)	0.28** -(2.79)	-437.63 -(.94)	7.13 (1.44)	6782.72* (2.35)	22710.13** (3.78)	2124.05 (.49)	3559.78 (.30)	33964.06** (8.93)	12226.36** (2.81)	-2535.58** -(3.08)	0.46	41.07
ED4	-17405.3 -(1.56)	17.61** (12.42)	0.05* -(2.57)	-419.15 -(.90)	6.77 (1.37)	6622.52* (2.30)	22677.45** (3.77)	1936.93 (.44)	3696.15 (.32)	33987.14** (8.92)	12262.12** (2.81)	-2575.1** -(3.13)	0.46	40.88
ED5	-18424.2 -(1.63)	17.27** (11.40	0.42 (.20)	-293.13 -(.62)	4.87 (.99)	6031.43* (2.08)	21357.78** (3.54)	2254.03 (.51)	4058.73 (.35)	33708.6** (8.80)	12038.78** (2.75)	-2588.61** -(3.12)	0.45	39.79
ED6	-19524.3 -(1.73)	17.83** (11.85)	-1.18 -(.94)	-278.97 -(.60)	5.00 (1.02)	6372.50* (2.19)	21380.15** (3.55)	2800.56 (.63)	3752.95 (.32)	33616.42** (8.78)	11932.05** (2.72)	-2588.28** -(3.13)	0.45	39.93
ED7	-19042 -(1.70)	18.26** (12.41)	-1.29* -(2.25)	-360.33 -(.77)	6.25 (1.27)	6743.19* (2.33)	22029.81** (3.67)	2756.28 (.63)	3464.13 (.30)	33728.15** (8.85)	12013.61** (2.75)	-2534.99** -(3.07)	0.46	40.62
ED8	-17605.3 -(1.58)	18.07** (12.60)	-0.51** -(2.88)	-447.92 -(.96)	7.30 (1.48)	6817.09* (2.37)	22900.8** (3.81)	2118.14 (.48)	3421.87 (.29)	33955.54** (8.93)	12230.05** (2.81)	-2520.10** -(3.07)	0.46	41.16
ED9	-18608.8 -(1.66)	17.91** (12.02	-0.44** -(1.22)	-326.28 -(.70)	5.47 (1.11)	6332.49* (2.19)	21242.21** (3.53)	2904.24 (.66)	3527.19 (.30)	33661.84** (8.80)	12009.86** (2.74)	-2619.26** -(3.17)	0.46	40.03
ED10	-17170.4 -(1.53)	18.28** (12.49)	0.44** -(2.47)	-442.87 -(.94)	7.00 (1.41)	6600.11* (2.29)	21944.67** (3.66)	2827.51 (.64)	3075.73 (.26)	33796.57** (8.87)	12167.99** (2.79)	-2599.07** -(3.16)	0.46	40.79
ED11	-16215.3 -(1.45)	18.06** (12.64)	-0.17** -(3.09)	-505.28 -(1.08)	7.80 (1.57)	6704.74* (2.33)	23058.31** (3.84)	2135.50 (.49)	3108.14 (.27)	33982.55** (8.95)	12353.36** (2.84)	-2578.37** -(3.14)	0.46	41.36
ED12	-16639.4 -(1.49)	17.71** (12.49)	0.04** -(2.93)	-465.08 -(.99)	7.30 (1.48)	6630.71* (2.31)	23182.73** (3.86)	1833.89 (.42)	3417.84 (.29)	34014.70** (8.95)	12361.77** (2.84)	-2593.03** -(3.16)	0.46	41.21
ED13	-18762.1 -(1.67)	17.41** (11.64)	0.07** -(.09)	-285.01 -(.61)	4.84 (.99)	6610.45* (2.11)	21330.15** (3.54)	2427.72 (.55)	3966.61 (.34)	33677.76** (8.79)	12007.58** (2.74)	-2597.10** -(3.13)	0.45	39.78
ED14	-18814.7 -(1.67)	17.89** (11.99)	0.57** -(1.15)	-315.61 -(.68)	5.36 (1.09)	6330.34* (2.19)	21351.33** (3.55)	2858.19 (.65)	3542.49 (.30)	33657.77** (8.80)	12007.22** (2.74)	-2622.36** -(3.17)	0.45	40.00
ED15	-17610.3 -(1.57)	18.27** (12.47)	0.59** -(2.41)	-421.55 -(.90)	6.77 (1.37)	6575.84* (2.28)	22191.09** (3.70)	2760.81 (.63)	3055.27 (.26)	33764.55** (8.86)	12154.47** (2.79)	-2601.44** -(3.16)	0.46	40.74
ED16	-16478.4 -(1.48)	18.12** (12.65)	0.27** -(3.09)	-496.07 -(1.06)	7.71 (1.56)	6660.58* (2.32)	22338.87** (3.89)	2081.72 (.48)	2981.50 (.26)	33930.10** (8.94)	12343.21** (2.84)	-2568.19** -(3.13)	0.46	41.37

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.10

REGRESSION RESULTS FOR THE

JOINT SAMPLE

SIMULTANEOUS MODEL — ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ED}$	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	No. of EARNERS	R^2	F Ratio (d.f. 12, 532)
ED1	-13528.80	14.25**	6.08	-262.26	3.01	3810.93	20951.67**	-807.55	5386.32	34562.35**	13039.85**	-3159.63**	0.43	35.96
	-(1.08)	(5.08)	(1.32)	-(.53)	(.56)	(1.09)	(3.29)	-(.15)	(.43)	(8.45)	(2.78)	-(3.25)		
ED2	-18336.90	15.00**	2.56	-11.35	0.15	3925.36	19215.90**	1194.70	5205.77	33787.02**	12308.94**	-3130.25**	0.42	35.00
	-(1.53)	(6.04)	(1.21)	-(.02)	(.02)	(1.10)	(2.88)	(.25)	(.41)	(8.26)	(2.63)	-(3.16)		
ED3	-21934.60	15.88**	0.80	166.65	-1.83	3965.43	17196.03*	2995.80	5084.36	33147.43**	11692.53*	-3055.69**	0.41	33.39
	-(1.73)	(7.56)	(1.05)	(.25)	-(.22)	(1.06)	(2.24)	(.62)	(.40)	(7.86)	(2.44)	-(3.04)		
ED4	-26636.20	16.50**	0.20	248.35	-2.75	3872.86	15946.9	3937.04	4975.76	32822.27**	11388.22*	-3004.39**	0.39	31.43
	-(1.73)	(8.93)	(.95)	(.32)	-(.28)	(.97)	(1.80)	(.75)	(.38)	(.745)	(2.29)	-(2.92)		
ED5	-10115.40	14.26**	12.93	-479.25	5.69	3921.35	21152.38**	-1549.77	5462.67	34954.14**	13384.35**	-3041.36**	0.44	37.38
	-(.75)	(4.88)	(1.23)	-(.94)	(1.11)	(1.13)	(3.39)	-(.28)	(.45)	(8.54)	(2.87)	-(3.27)		
ED6	-12990.90	14.22**	8.23	-289.64	3.32	3816.51	20575.15**	-742.15	5475.21	34574.55**	13044.67**	-3130.25**	0.43	36.14
	-(1.03)	(4.89)	(1.27)	-(.59)	(.63)	(1.08)	(3.23)	-(.14)	(.44)	(8.46)	(2.79)	-(3.23)		
ED7	-17776.60	14.95**	3.61	-49.54	0.65	4069.97	19088.38**	1216.65	5325.98	33838.39**	12320.71**	-3088.33**	0.42	35.44
	-(1.49)	(5.68)	(1.12)	-(.09)	(.10)	(1.15)	(2.85)	(.25)	(.43)	(8.32)	(2.64)	-(3.14)		
ED8	-21132.30	15.87**	1.14	90.43	-0.76	4356.30	17686.15*	2876.10	5155.17	33277.28**	11747.82*	-2982.62**	0.42	34.91
	-(1.72)	(7.12)	(.92)	(.14)	-(.10)	(1.20)	(2.34)	(.61)	(.41)	(8.08)	(2.50)	-(3.04)		
ED9	-19307.80	14.18**	2.71	5.33	0.59	4304.09	21407.89**	-978.14	6587.97	34265.88**	12531.02**	-2973.11**	0.42	35.13
	-(1.61	(4.12)	(1.03)	(.01)	(.09)	(1.22)	(3.33)	-(.17)	(.52)	(8.32)	(2.67)	-(3.11)		
ED10	-22885.40	14.94**	1.20	175.01	-1.34	4471.14	19312.88**	1030.56	6325.98	33694.96**	11944.76*	-2958.00**	0.42	34.97
	-(1.78)	(4.92)	(.92)	(.25)	-(.16)	(1.26)	(2.83)	(.21)	(.49)	(8.22)	(2.55)	-(3.05)		
ED11	-24148.90	15.91**	0.38	216.78	-1.84	4584.03	17317.78*	2819.15	5805.26	33262.75**	11528.01*	-2902.81**	0.42	34.33
	-(1.72)	(6.53)	(.77)	(.26)	-(.18)	(1.25)	(2.08)	(.59)	(.45)	(7.99)	(2.42)	-(2.97)		
ED12	-23836.40	16.57**	0.10	181.55	-1.46	4592.13	16512.09	3641.95	5308.08	33086.08**	11395.40*	-2859.77**	0.41	33.85
	-(1.66)	(8.54)	(.68)	(.21)	-(.14)	(1.20)	(1.71)	(.71)	(.41)	(7.79)	(2.35)	-(2.92)		
ED13	-14299.60	14.11**	5.71	-254.74	3.51	4165.44	21819.74**	-1848.92	6393.20	34640.14**	12946.2 **	-2907.59**	0.43	36.13
	-(1.13)	(3.95)	(1.00)	-(.52)	(.66)	(1.16)	(3.44)	-(.30)	(.51)	(8.38)	(2.76)	-(3.14)		
ED14	-18009.30	14.08**	3.73	-42.26	1.01	4184.61	20717.4 **	-943.79	6106.99	34324.95**	12573.76**	-2965.95**	0.42	35.02
	-(1.50)	(3.96)	(1.02)	-(.07)	(.16)	(1.16)	(3.21)	-(.17)	(.52)	(8.30)	(2.67)	-(3.10)		
ED15	-21926.80	14.81**	1.75	143.96	-1.09	4441.85	18473.27*	1136.45	6576.36	33763.25**	11949.91*	-2946.6 **	0.42	34.49
	-(1.74)	(4.57)	(.90)	(.21)	-(.13)	(1.23)	(2.56)	(.23)	(.51)	(8.20)	(2.54)	-(3.03)		
ED16	-23369.40	15.84**	0.56	172.92	-1.33	4766.75	16841.86	2926.81	6017.68	33353.02**	11527.12*	-2866.08**	0.42	34.61
	-(1.70)	(5.96)	(.70)	(.21)	-(.13)	(1.31)	(1.85)	(.61)	(.47)	(8.06)	(2.43)	-(2.96)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.11

REGRESSION RESULTS FOR THE

JOINT SAMPLE

RECURSIVE MODEL										ED EQUATION										
EP. AR.	CONSTANT	PERMANENT INCOME	AGE	AGE^2	EXP	AGE	AGE^2	EXP	EXS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	R^2	F-Ratio (d.f.=14, 530)
01	-1319.69*	0.40**	-4.82	0.32	357.18*	-4.82	0.32	357.18**	156.22	527.50**	-357.62	84.71**	-285.12**	106.67	-73.04	-15.30	354.69	0.26	14.08
	-(2.46)	(5.81)	-(.22)	(1.34)	(2.71)	-(.22)	(1.34)	(2.71)	(.56)	(2.58)	-(.65)	(3.09)	-(3.20)	(1.32)	-(.74)	-(.20)	(1.79)		
02	-1369.41	0.68**	-96.08	1.72**	753.96*	-96.08	1.72**	753.96*	995.69	447.00	-869.94	231.75**	-574.87**	58.83	-207.20	-186.21	853.77	0.22	11.35
	-(1.08)	(4.16)	-(1.82)	(3.10)	(2.43)	-(1.82)	(3.10)	(2.43)	(1.51)	(.93)	-(.67)	(3.69)	-(2.73)	(.31)	-(.89)	-(1.03)	(1.83)		
03	447.68	1.21	-516.40*	7.86**	2313.82	-516.40*	7.86**	2313.82	5457.95*	-929.62	-2601.60	679.28**	-1313.06	4.42	-776.50	-820.40	2860.46	0.14	6.72
	(.09)	(1.94)	-(2.57)	(3.71)	(1.95)	-(2.57)	(3.71)	(1.95)	(2.17)	-(.51)	-(.53)	(2.76)	-(1.64)	(.06)	-(.88)	-(1.19)	(1.61)		
04	11903.45	2.08	-2436.01*	35.43**	9528.27	-2436.01*	35.43**	9528.27	26692.71*	-8581.12	-9116.83	2284.19	-3867.07	524.44	-3597.84	-3281.28	11894.64	0.09	4.07
	(.51)	(.68)	-(2.48)	(3.42)	(1.64)	-(2.48)	(3.42)	(1.64)	(2.17)	-(.96)	-(.38)	(1.89)	-(.99)	(.15)	-(.83)	-(.97)	(1.37)		
05	-798.53**	0.28**	11.20	-0.02	173.37*	11.20	-0.02	173.37**	51.42	305.34**	-129.62	19.43	-103.38**	92.60**	-16.88	22.79	151.80	0.27	15.04
	-(3.41)	(6.54)	(1.15)	-(.22)	(3.01)	(1.15)	-(.22)	(3.01)	(.42)	(3.42)	-(.54)	(1.62)	-(2.65)	(2.63)	-(.39)	(.68)	(1.75)		
06	-1018.79**	0.31**	-1.04	0.20	267.23*	-1.04	0.20	267.23**	157.76	380.98	-259.65	55.89**	-192.69**	89.53	-42.70	-8.65	262.59	0.26	14.34
	-(2.61)	(6.04)	-(.06)	(1.19)	(2.79)	-(.06)	(1.19)	(2.79)	(.77)	(.78)	-(.65)	(2.80)	-(2.96)	(1.52)	-(.59)	-(.15)	(1.82)		
07	-1073.50	0.51**	-58.78	1.09**	504.66*	-58.78	1.09**	504.66*	736.58	312.65	-615.82	147.98**	-366.49**	54.00	-110.37	-128.57	578.99	0.23	11.95
	-(1.27)	(4.64)	-(1.66)	(2.94)	(2.42)	-(1.66)	(2.94)	(2.42)	(1.67)	(.97)	-(.71)	(3.41)	-(2.60)	(.42)	-(.71)	-(1.06)	(1.85)		
08	-111.05	0.92**	-297.21**	4.59**	1316.72*	-297.21**	4.59**	1316.72*	3382.27*	-519.96	-1744.71	604.67**	-761.45	-19.99	-365.06	-542.83	1703.97	0.17	8.04
	-(.04)	(2.62)	-(2.62)	(3.84)	(1.97)	-(2.62)	(3.84)	(1.97)	(2.38)	-(.50)	-(.63)	(2.91)	-(1.68)	-(.05)	-(.73)	-(1.40)	(1.70)		
09	-750.32	1.01**	-97.47	1.46*	609.69	-97.47	1.46*	609.69	141.61	1238.37*	-1335.13	151.34*	-626.83**	36.53	-153.06	-62.18	679.91	0.19	9.70
	-(.56)	(5.04)	-(1.74)	(2.47)	(1.85)	-(1.74)	(2.47)	(1.85)	(.20)	(2.42)	-(.97)	(2.21)	-(2.81)	(.18)	-(.63)	-(.32)	(1.37)		
010	1367.72	1.65**	-351.52**	4.81**	1180.65	-351.52**	4.81**	1180.65	1954.97	1077.22	-2766.50	362.25*	-1073.49*	-55.15	-296.44	-354.50	1497.36	0.18	8.84
	(.50)	(4.63)	-(3.06)	(3.97)	(1.74)	-(3.06)	(3.97)	(1.74)	(1.36)	(1.03)	-(.98)	(2.57)	-(2.34)	-(.13)	-(.59)	-(.98)	(1.47)		
011	8710.96	2.84*	-1213.42**	16.44**	3379.13	-1213.42**	16.44**	3379.13	10836.32*	-1446.11	-6779.96	961.57*	-2087.42	-68.24	-926.67	-1393.69	4597.07	0.13	6.29
	(1.01)	(2.54)	-(3.37)	(4.33)	(1.59)	-(3.37)	(4.33)	(1.59)	(2.41)	-(.44)	-(.77)	(2.18)	-(1.45)	-(.03)	-(.58)	-(1.13)	(1.44)		
012	34522.22	4.93	-4424.44**	60.77**	13227.32	-4424.44**	60.77**	13227.32	48980.65**	-14297.4	-19550.10	3023.28	-5379.85	973.39	-4201.17	-5311.31	17702.49	0.09	4.20
	(.95)	(1.05)	-(2.92)	(3.81)	(1.48)	-(2.92)	(3.81)	(1.48)	(2.58)	-(1.03)	-(.53)	(1.63)	-(.89)	(.18)	-(.63)	-(1.02)	(1.32)		
013	-1143.18	0.51**	-4.92	0.23	334.20*	-4.92	0.23	334.20*	-12.70	741.36**	-549.49	44.35	-286.47**	81.34	-79.35	18.94	322.06	0.20	9.86
	-(1.80)	(6.18)	-(.19)	(.81)	(2.14)	-(.19)	(.81)	(2.14)	-(.04)	(3.06)	-(.85)	(1.37)	-(2.71)	(.85)	-(.68)	(.21)	(1.37)		
014	-884.14	0.76**	-59.11	0.76*	480.32*	-59.11	0.76*	480.32*	282.02	885.67*	-985.74	101.36*	-443.41**	50.61	-113.20	-37.59	527.33	0.19	9.82
	-(.89)	(5.91)	-(1.42)	(2.19)	(1.96)	-(1.42)	(2.19)	(1.96)	(.54)	(2.33)	-(.97)	(1.99)	-(2.68)	(.34)	-(.62)	-(.26)	(1.43)		
015	397.00	1.22**	-225.13**	3.18**	839.18	-225.13**	3.18**	839.18	1813.65	673.60	-2019.07	231.29*	-702.74*	-9.92	-184.98	-234.99	1089.54	0.18	8.63
	(.20)	(4.74)	-(2.72)	(3.64)	(1.72)	-(2.72)	(3.64)	(1.72)	(1.75)	(.89)	-(.99)	(2.28)	-(2.12)	-(.03)	-(.51)	-(.83)	(1.68)		
016	4816.38	2.11**	-753.08**	10.33**	2027.06	-753.08**	10.33**	2027.06	8189.79**	-1167.90	-4841.24	565.65*	-1191.71	-49.29	-451.11	-891.62	2979.11	0.14	6.44
	(.85)	(2.88)	-(3.20)	(4.16)	(1.46)	-(3.20)	(4.16)	(1.46)	(2.78)	-(.54)	-(.84)	(1.96)	-(1.27)	-(.06)	-(.44)	-(1.10)	(1.43)		

* Significant at .05 level ** Significant at .01 level ** Significant at .01 level

TABLE NO. AIII.12

REGRESSION RESULTS FOR THE

JOINT SAMPLE

SIMULTANEOUS MODEL

ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ASSET}$	AGE	AGE^2	EHP	EHS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURIVAL	R^2	F-Ratio (d.f.=15, 529)
ED1	-1341.44*	0.49**	-.01	-9.35	0.38	389.03**	271.61	531.27**	-338.37	87.61**	-270.45**	94.48	-83.76	9.43	375.52	0.26	13.12
	-(2.50)	(4.10)	-(.92)	-(.41)	(1.54)	(2.85)	(.89)	(2.60)	-(.62)	(3.18)	-(2.98)	(1.15)	-(.84)	(.12)	(1.88)		
ED2	-1394.15	0.78**	-.01	-101.17	1.79**	790.20*	1126.94	451.29	-848.05	235.04**	-558.19**	44.97	-219.39	-158.07	877.51	0.22	10.63
	-(1.11)	(2.77)	-(.45)	-(1.88)	(3.11)	(2.47)	(1.56)	(.94)	-(.66)	(3.63)	-(2.62)	(.23)	-(.94)	-(.83)	(1.87)		
ED3	449.28	1.21	.01	-516.07*	7.86**	2311.47	5449.49*	-929.90	-2603.02	679.07**	-1314.14	5.31	-775.71	-822.21	2858.92	0.14	6.23
	(.09)	(1.11)	(.008)	-(2.51)	(3.57)	(1.88)	(1.98)	-(.51)	-(.53)	(2.74)	-(1.61)	(.007)	-(.87)	-(1.13)	(1.59)		
ED4	12100.54	1.26	.04	-2395.47*	34.87**	9239.53	25646.91	-8615.33	-9291.29	2257.98	-3999.99	634.94	-3508.68	-3505.48	11705.45	0.09	3.75
	(.51)	(.24)	(.19)	-(2.37)	(3.22)	(1.54)	(1.90)	-(.96)	-(.38)	(1.85)	-(1.00)	(.18)	-(.88)	-(.98)	(1.33)		
ED5	-810.42**	0.25**	-.01	8.75	0.01	190.80**	114.54	307.40**	-119.09	21.01	-95.36*	85.93*	-22.74	36.32	163.22	0.27	13.79
	-(3.42)	(4.67)	-(1.14)	(.87)	(.11)	(3.17)	(.85)	(3.41)	-(.49)	(1.73)	-(2.38)	(2.38)	-(.52)	(1.82)	(1.85)		
ED6	-1034.85**	0.37**	-.01	-4.35	0.25	290.77**	243.02	383.77*	-245.43	58.03**	-181.85**	80.53	-50.62	9.63	278.82	0.26	13.35
	-(2.64)	(4.24)	-(.93)	-(.26)	(1.40)	(2.92)	(1.09)	(2.57)	-(.61)	(2.88)	-(2.75)	(1.35)	-(.70)	(.16)	(1.91)		
ED7	-1092.30	0.59**	-.03	-62.65	1.15**	532.20*	836.33	315.91	-599.17	150.48**	-353.82	43.47	-199.64	-187.19	597.03	0.23	11.19
	-(1.29)	(3.10)	-(.51)	-(1.74)	(2.98)	(2.48)	(1.73)	(.98)	-(.69)	(3.46)	-(.34)	(.34)	-(.77)	-(.84)	(1.91		
ED8	-118.84	0.96	-.01	-298.82**	4.61**	1328.14	3423.61*	-518.50*	-1737.81	405.70**	-756.19	-24.35	-368.90	-533.97	1711.45	0.17	7.47
	-(.04)	(1.57)	-(.07)	-(2.58)	(3.71)	(1.92)	(2.20)	-(2.20)	-(.63)	(2.90)	-(1.64)	-(.06)	-(.73)	-(1.30)	(1.69)		
ED9	-782.99	1.15**	-.01	-104.19	1.55*	657.55	314.96	1244.04*	-1306.21	155.69*	-604.80**	18.21	-169.17	-25.09	711.27	0.19	9.04
	-(.58)	(3.82)	-(.55)	-(1.82)	(2.53)	(1.93)	(.41)	(2.44)	-(.95)	(2.26)	-(2.67)	(.09)	-(.69)	-(.12)	(1.63)		
ED10	-1328.15	1.82**	-.01	-359.66**	4.93**	1238.62	2164.94	1084.09	-2731.47	367.52**	-1046.80*	-77.33	-315.95	-309.48	1535.35	0.18	8.26
	-(.48)	(2.95)	-(.33)	-(3.07)	(3.92)	(1.77)	(1.38)	(1.04)	-(.97)	(2.60)	-(2.25)	-(.19)	-(.62)	-(.74)	(1.50)		
ED11	8691.47	2.92	-.01	-1217.43**	16.50**	3407.69	10939.75*	-1442.72	-6762.7	964.16	-2074.27	-79.17	-936.28	-1371.52	4615.78	0.13	5.84
	(1.01)	(1.51)	-(.05)	-(3.31)	(4.18)	(1.55)	(2.22)	-(.44)	-(.77)	(2.17)	-(1.42)	-(.06)	-(.59)	-(1.05)	(1.44)		
ED12	34692.73	4.22	.04	-4389.36**	60.28**	12977.50	48015.82*	-14327.0	-19701.10	3000.60	-5494.86	1068.99	-4117.11	-5505.29	17538.81	0.09	3.88
	(.95)	(.51)	(.11)	-(2.83)	(3.62)	(1.40)	(2.31)	-(1.03)	-(.53)	(1.60)	-(.89)	(.19)	-(.61)	-(1.08)	(1.29)		
ED13	-1161.20	0.58**	-.01	-8.63	0.28	360.60*	82.93	744.49**	-533.53	46.75	-274.32*	71.23	-88.24	39.44	339.36	0.19	9.12
	-(1.82)	(4.08)	-(.64)	-(.32)	(.96)	(2.22)	(.23)	(3.06)	-(.82)	(1.43)	-(2.53)	(.73)	-(.75)	(.41)	(1.43)		
ED14	-909.37	0.87**	-.01	-64.30	1.03*	517.27*	415.87	890.04*	-963.41	104.72*	-426.39*	36.46	-125.64	-8.89	531.54	0.20	9.14
	-(.91)	(3.88)	-(.58)	-(1.51)	(2.27)	(2.04)	(.73)	(2.35)	-(.95)	(2.04)	-(2.53)	(.24)	-(.68)	-(.06)	(1.49)		
ED15	363.49	1.36**	-.01	-232.02**	3.28**	888.28	1991.48	679.42	-1989.41	235.75*	-680.14*	-28.71	-201.58	-196.87	1121.71	0.18	8.07
	(.18)	(3.05)	-(.38)	-(2.74)	(3.62)	(1.76)	(1.76)	(.90)	-(.98)	(2.31)	-(2.03)	-(.09)	-(.55)	-(.66)	(1.52)		
ED16	4780.11	2.26	-.01	-760.54**	10.44**	2080.19	8382.23**	-1161.61	-4809.14	570.47*	-1167.25	-69.63	-468.99	-850.37	3013.92	0.14	5.99
	(.85)	(1.78)	-(.15)	-(3.16)	(4.05)	(1.45)	(2.60)	-(.54)	-(.83)	(1.96)	-(1.22)	-(.08)	-(.45)	-(1.00)	(1.44)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.13

REGRESSION RESULTS FOR THE

NUCLEAR SAMPLE

RECURSIVE MODEL

ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	ED	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	NO. of EARNERS	R^2	F-Ratio (d.f.=13, 481)
ED1	-7460.30	13.13**	0.72	-348.06	5.53	4821.13*	2109.57	638.69	13456.22	23479.14**	3166.83	-987.61	0.46	36.78
	-(.87)	(10.90)	(.67)	-(.91)	(1.35)	(2.30)	(.52)	(.22)	(1.83)	(9.72)	(1.18)	-(1.09)		
ED2	-6715.35	12.88**	0.98	-340.76	5.25	4626.96*	2037.45	425.31	13580.86	23269.71**	3196.89	-1159.72	0.46	37.12
	-(.79)	(10.72)	(1.58)	-(.89)	(1.28)	(2.22)	(.50)	(.15)	(1.85)	(9.64)	(1.20)	-(1.28)		
ED3	-7399.65	12.77**	0.61*	-284.72	4.51	4676.94*	2176.90	352.51	13641.96	23138.02**	3174.75	-1226.47	0.46	37.47
	-(.88)	(10.70)	(2.14)	-(.75)	(1.10)	(2.25)	(.54)	(.12)	(1.86)	(9.61)	(1.19)	-(1.36)		
ED4	-8666.74	12.96**	0.17	-253.82	4.29	4918.88*	2346.96	511.01	13558.81	23257.71**	3119.50	-1075.32	0.46	37.26
	-(1.03)	(10.95)	(1.86)	-(.66)	(1.04)	(2.37)	(.58)	(.18)	(1.85)	(9.66)	(1.17)	-(1.20)		
ED5	-8988.96	13.43**	-0.78	-315.39	5.35	5124.53*	2338.95	948.34	13355.14	23677.39**	3117.72	-833.24	0.46	36.73
	-(1.05)	(11.16)	-(.38)	-(.82)	(1.30)	(2.44)	(.58)	(.33)	(1.81)	(9.80)	(1.17)	-(.92)		
ED6	-7842.11	13.21**	0.57	-341.39	5.50	4900.37*	2159.66	708.04	13420.15	23537.18**	3155.66	-941.28	0.46	36.73
	-(.92)	(10.96)	(.40)	-(.89)	(1.34)	(2.34)	(.53)	(.25)	(1.82)	(9.74)	(1.18)	-(1.03)		
ED7	-6930.79	12.94**	1.17	-342.24	5.32	4677.76*	2044.33	464.91	13530.84	23336.79**	3191.52	-1112.42	0.46	36.99
	-(.81)	(10.75)	(1.31)	-(.90)	(1.30)	(2.24)	(.51)	(.16)	(1.84)	(9.67)	(1.20)	-(1.23)		
ED8	-7241.28	12.77**	0.93*	-292.05	4.60	4637.30*	2120.78	322.85	13605.57	23165.48**	3186.05	-1239.88	0.46	37.39
	-(.86)	(10.67)	(2.03)	-(.77)	(1.12)	(2.23)	(.53)	(.11)	(1.86)	(9.62)	(1.20)	-(1.37)		
ED9	-8926.20	13.44**	-0.25	-322.94	5.44	5127.85*	2308.18	934.58	13326.21	23720.2**	3132.58	-819.81	0.46	36.75
	-(1.05)	(11.28)	-(.53)	-(.85)	(1.33)	(2.45)	(.57)	(.33)	(1.81)	(9.81)	(1.17)	-(.91)		
ED10	-8180.18	13.26**	0.08	-331.08	5.42	4961.27*	2221.05	779.55	13415.10	23553.70**	3138.26	-915.41	0.46	36.72
	-(.96)	(11.12)	(.28)	-(.87)	(1.32)	(2.38)	(.55)	(.27)	(1.82)	(9.74)	(1.17)	-(1.02)		
ED11	-7846.59	13.07**	0.18	-316.00	5.11	4853.86*	2208.94	661.41	13521.54	23369.32**	3136.38	-1020.32	0.46	36.90
	-(.93)	(10.97)	(1.09)	-(.83)	(1.24)	(2.33)	(.55)	(.23)	(1.84)	(9.67)	(1.17)	-(1.13)		
ED12	-8347.57	13.00**	0.11	-278.54	4.62	4901.25*	2301.63	612.14	13563.51	23279.76**	3113.81	-1043.11	0.46	37.10
	-(.99)	(10.95)	(1.53)	-(.72)	(1.12)	(2.36)	(.57)	(.22)	(1.85)	(9.65)	(1.17)	-(1.16)		
ED13	-9809.2	13.61**	-1.14	-303.67	5.32	5304.54*	2432.79	1184.83	13280.04	23866.20**	3123.13	-746.15	0.46	37.03
	-(1.15)	(11.47)	-(1.39)	-(.79)	(1.30)	(2.54)	(.60)	(.42)	(1.81)	(9.90)	(1.17)	-(.83)		
ED14	-9227.32	13.51**	-0.51	-317.81	5.42	5189.37*	2347.34	1018.68	13303.21	23776.39**	3127.99	-787.69	0.46	36.82
	-(1.08)	(11.35)	-(.83)	-(.83)	(1.32)	(2.48)	(.58)	(.36)	(1.81)	(9.84)	(1.17)	-(.88)		
ED15	-8460.5	13.34**	-0.02	-329.70	5.45	5026.28*	2250.75	839.12	13374.94	23625.42**	3135.90	-872.95	0.46	36.70
	-(1.00)	(11.18)	-(.06)	-(.86)	(1.33)	(2.41)	(.56)	(.29)	(1.82)	(9.77)	(1.17)	-(.97)		
ED16	-7928.93	13.13**	0.21	-321.61	5.22	4880.64*	2203.64	679.94	13477.89	23432.85**	3139.82	-991.24	0.46	36.87
	-(.93)	(11.00)	(.80)	-(.84)	(1.27)	(2.34)	(.54)	(.24)	(1.83)	(9.69)	(1.18)	-(1.09)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.14

REGRESSION RESULTS FOR THE

NUCLEAR SAMPLE

SIMULTANEOUS MODEL — ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ED}$	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	NO. of EARNERS	R^2	F-Ratio (d.f.=13, 482)
ED1	-3265.03	12.22**	3.87	-452.20	6.14	4101.50	1697.86	-136.59	14045.89	22823.62**	3141.84	-1146.89	0.45	36.15
	-(.32)	(7.25)	(.91)	-(1.18)	(1.46)	(1.77)	(.41)	-(.04)	(1.88)	(8.85)	(1.17)	-(1.21)		
ED2	-2624.90	11.70**	3.30	-412.27	5.29	3940.19	1875.87	-436.46	14532.61	22329.39**	3052.04	-1256.32	0.45	35.96
	-(.27)	(6.56)	(1.22)	-(1.05)	(1.27)	(1.43)	(.46)	-(.14)	(1.94)	(8.41)	(1.05)	-(1.32)		
ED3	-4863.60	11.27**	2.09	-236.88	2.92	4172.66	2455.26	-672.02	14912.48	21821.5**	2881.43	-1305.01	0.45	35.21
	-(.54)	(5.76)	(1.33)	-(.60)	(.63)	(1.88)	(.59)	-(.22)	(1.96)	(7.76)	(1.05)	-(1.35)		
ED4	-9320.79	11.83**	0.65	-81.01	1.49	4850.51*	2911.86	-290.80	14459.44	22162.03**	2827.15	-1136.12	0.45	35.08
	-(1.07)	(5.73)	(.89)	-(.17)	(.24)	(2.27)	(.69)	-(.09)	(1.89)	(7.49)	(1.03)	-(1.19)		
ED5	-5321.33	12.74**	4.17	-416.59	6.09	4475.86	1809.38	202.05	13612.03	23248.32**	3181.14	-1022.75	0.45	36.31
	-(.51)	(7.78)	(.51)	-(.99)	(1.41)	(1.91)	(.43)	(.07)	(1.84)	(9.21)	(1.18)	-(1.09)		
ED6	-3110.55	12.33**	4.71	-444.35	6.13	4181.17	1694.02	-111.17	13917.96	22931.22**	3162.91	-1123.11	0.45	36.15
	-(.36)	(7.32)	(.83)	-(1.09)	(1.45)	(1.80)	(.41)	-(.04)	(1.87)	(8.94)	(1.17)	-(1.19)		
ED7	-2849.24	11.81**	4.35	-416.42	5.42	3969.76	1793.52	-437.95	14362.85	22474.08**	3084.57	-1238.99	0.45	35.99
	-(.29)	(6.69)	(1.16)	-(1.06)	(1.31)	(1.73)	(.44)	-(.14)	(1.92)	(8.55)	(1.14)	-(1.30)		
ED8	-4433.14	11.33**	3.08	-265.33	3.29	4072.05	2274.07	-726.04	14765.29	21958.07**	2916.37	-1318.87	0.45	35.51
	-(.49)	(5.99)	(1.36)	-(.68)	(.73)	(1.83)	(.55)	-(.23)	(1.95)	(8.00)	(1.07)	-(1.37)		
ED9	-5587.94	12.65**	1.33	-385.19	5.67	4486.50	2023.46	279.65	13854.36	22987.76**	3052.77	-1002.65	0.45	35.90
	-(.56)	(7.48)	(.56)	-(.97)	(1.36)	(1.95)	(.49)	(.09)	(1.85)	(8.58)	(1.13)	-(1.08)		
ED10	-4969.72	12.31**	1.22	-373.72	5.31	4367.43	2092.45	177.37	14172.25	22657.35**	2986.66	-1051.95	0.45	35.66
	-(.51)	(6.94)	(.77)	-(.95)	(1.27)	(1.92)	(.51)	(.06)	(1.88)	(8.26)	(1.10)	-(1.13)		
ED11	-5662.86	12.03**	0.87	-301.04	4.27	4439.18*	2345.43	111.21	14444.72	22345.88**	2898.47	-1081.62	0.45	35.60
	-(.62)	(6.35)	(.88)	-(.77)	(.97)	(2.01)	(.57)	(.04)	(1.91)	(7.87)	(1.06)	-(1.16)		
ED12	8164.90	12.20**	0.36	-195.39	3.14	4803.49*	2640.91	199.21	14274.57	22465.81**	2876.74	-1032.64	0.45	36.06
	-(.96)	(6.08)	(.69)	-(.45)	(.59)	(2.27)	(.64)	(.07)	(1.89)	(7.63)	(1.06)	-(1.11)		
ED13	-6904.67	13.00**	1.22	-364.87	5.66	4738.73*	2092.34	458.56	13558.94	23324.65**	3109.02	-941.87	0.45	36.24
	-(.70)	(8.07)	(.29)	-(.90)	(1.35)	(2.07)	(.51)	(.15)	(1.82)	(8.91)	(1.16)	-(1.02)		
ED14	-5909.58	12.74**	1.54	-381.03	5.68	4555.46*	2034.96	274.66	13763.35	23080.13**	3074.97	-990.19	0.45	35.95
	-(.60)	(7.65)	(.50)	-(.95)	(1.36)	(1.99)	(.49)	(.09)	(1.84)	(8.69)	(1.14)	-(1.07)		
ED15	-5104.13	12.39**	1.59	-376.90	5.40	4394.54	2060.64	114.44	14064.41	22751.14**	3014.10	-1048.18	0.45	35.67
	-(.53)	(7.11)	(.73)	-(.96)	(1.30)	(1.93)	(.50)	(.04)	(1.87)	(8.38)	(1.11)	-(1.13)		
ED16	-5347.15	12.03**	1.30	-315.88	4.44	4371.90*	2262.35	-16.35	14383.0		2917.06	-1100.52	0.45	35.50
	-(.58)	(6.52)	(.92)	-(.81)	(1.05)	(1.96)	(.55)	-(.01)	(1.91)	22382.48**	(1.07)	-(1.17)		
										(8.01)				

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.15

REGRESSION RESULTS FOR THE

NUCLEAR SAMPLE

RECURSIVE MODEL — ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	AGE	AGE^2	EHP	EHS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	R^2	F-Ratio (d.f.=14, 480)
ED1	-1455.27**	0.20**	32.56	-0.19	249.29**	126.92	232.64	-41.69	49.13**	-114.50	177.23**	-139.04*	-23.20	241.45*	0.25	12.49
	-(3.94)	(3.85)	(1.93)	-(1.02)	(2.95)	(.76)	(1.95)	-(.14)	(2.78)	-(1.84)	(2.93)	-(2.12)	-(.39)	(2.23)		
ED2	-2167.03**	0.37**	33.35	-0.03	335.34*	109.58	331.53	-227.78	98.85**	-192.80	165.24	-235.26*	-54.34	453.28*	0.24	11.56
	-(3.37)	(4.05)	(1.13)	-(.08)	(2.28)	(.38)	(1.60)	-(.42)	(3.22)	-(.178)	(1.57)	-(2.06)	-(.52)	(2.41)		
ED3	-2760.81*	0.79**	-21.55	1.02	393.63	-43.98	567.16	-775.20	193.77**	-263.31	25.04	-334.67	-127.10	996.39*	0.20	9.21
	-(1.97)	(4.00)	-(.34)	(1.48)	(1.23)	-(.07)	(1.26)	-(.66)	(2.90)	-(1.11)	(.11)	-(1.35)	-(.57)	(2.44)		
ED4	-1092.24	2.05**	-341.27	5.89	188.20	-741.23	1285.34	-2518.12	352.50	-79.71	-538.48	-165.32	-275.06	2623.35*	0.13	5.70
	-(.25)	(3.32)	-(1.72)	(2.15)	(.19)	-(.38)	(.92)	-(.69)	(1.70)	-(.11)	-(.76)	-(.21)	-(.39)	(2.07)		
ED5	-731.84**	0.09**	18.39*	-0.13	139.59**	93.90	149.03*	29.99	17.16	-43.47	124.34**	-55.43	-7.59	110.65*	0.25	12.48
	-(3.90)	(3.62)	(2.14)	-(1.39)	(3.26)	(1.11)	(2.47)	(.19)	(1.91)	-(1.38)	(4.05)	-(1.66)	-(.25)	(2.02)		
ED6	1063.80**	0.15**	23.77	-0.14	188.03**	105.79	189.80*	-10.76	33.98**	-77.59	144.03**	-96.24*	-16.38	177.01*	0.26	12.68
	-(3.89)	(3.84)	(1.90)	-(1.01)	(3.07)	(.86)	(2.15)	-(.05)	(2.60)	-(1.68)	(3.22)	-(1.98)	-(.37)	(2.21)		
ED7	-1525.01**	0.26**	23.89	-0.03	248.43*	99.01	259.43	-123.11	67.39**	-129.39	142.17	-161.70*	-38.03	314.74*	0.25	12.17
	-(3.43)	(4.06)	(1.17)	-(.13)	(2.44)	(.50)	(1.81)	-(.33)	(3.17)	-(1.73)	(1.95)	-(2.04)	-(.53)	(2.41)		
ED8	-1947.46*	0.51**	-7.67	0.59	301.37	16.37	415.34	-430.08	132.67**	-186.55	66.86	-246.79	-85.57	644.51*	0.22	10.49
	-(2.23)	(4.09)	-(.19)	(1.38)	(1.50)	(.04)	(1.48)	-(.59)	(3.18)	-(1.27)	(.47)	-(1.59)	-(.60)	(2.52)		
ED9	-2764.16**	0.41**	65.09	-0.41	404.48*	132.77	350.56	-221.99	93.87*	-335.55*	185.97	-383.27*	-74.38	512.16*	0.16	7.16
	-(3.24)	(3.39)	(1.67)	-(.96)	(2.07)	(.35)	(1.27)	-(.31)	(2.30)	-(2.33)	(1.33)	-(2.52)	-(.54)	(2.05)		
ED10	-4095.77**	0.70**	80.78	-0.34	525.00	111.48	408.25	-583.77	166.33**	-495.63*	96.53	-585.75*	-135.97	866.62*	0.16	7.01
	-(3.04)	(3.64)	(1.31)	-(.51)	(1.70)	(.18)	(.94)	-(.52)	(2.58)	-(2.18)	(.44)	-(2.44)	-(.62)	(2.20)		
ED11	-5694.63**	1.32**	49.82	0.56	622.65	-50.93	555.65	-1450.02	298.43**	-688.10	-200.14	-852.29*	-262.15	1644.73*	0.16	6.78
	-(2.37)	(3.88)	(.45)	(.48)	(1.13)	-(.05)	(.72)	-(.72)	(2.60)	-(1.70)	-(.51)	-(2.00)	-(.67)	(2.34)		
ED12	-5663.11	2.91**	-231.45	5.20	458.80	-765.35	1105.45	-3758.19	518.95*	-688.22	-1060.67	-947.20	-505.61	3658.81*	0.14	5.84
	-(1.03)	(3.75)	-(.92)	(1.92)	(.37)	-(.31)	(.63)	-(.82)	(1.98)	-(.75)	-(1.18)	-(.97)	-(.57)	(2.28)		
ED13	-1465.10**	0.20**	37.33	-0.27	238.12*	95.79	280.46	-25.14	40.23	-178.74*	169.84*	-197.87*	-25.20	255.83	0.15	6.70
	-(3.04)	(2.97)	(1.69)	-(1.11)	(2.16)	(.44)	(1.81)	-(.06)	(1.75)	-(2.20)	(2.15)	-(2.31)	-(.32)	(1.82)		
ED14	-2053.20**	0.30**	48.86	-0.31	307.61*	106.57	317.26	-122.07	66.77*	-251.89*	171.90	-284.96*	-44.99	379.16*	0.16	7.19
	-(3.18)	(3.28)	(1.65)	-(.97)	(2.08)	(.37)	(1.52)	-(.22)	(2.16)	-(2.31)	(1.63)	-(2.48)	-(.43)	(2.01)		
ED15	-2907.98**	0.48**	58.39	-0.26	392.75	96.76	368.83	-336.72	115.19*	-358.92*	128.36	-419.38*	-84.81	606.49*	0.17	7.43
	-(3.08)	(3.59)	(1.35)	-(.56)	(1.82)	(.23)	(1.21)	-(.43)	(2.55)	-(2.26)	(.83)	-(2.50)	-(.55)	(2.20)		
ED16	-3944.17*	0.85**	41.32	0.27	473.90	7.93	482.07	-825.14	204.17**	-495.40	-31.99	-608.70*	-163.48	1078.55*	0.17	7.49
	-(2.55)	(3.87)	(.58)	(.36)	(1.34)	(.01)	(.97)	-(.64)	(2.76)	-(1.90)	-(.13)	-(2.21)	-(.65)	(2.39)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.16

REGRESSION RESULTS FOR THE

NUCLEAR SAMPLE

SIMULTANEOUS MODEL

ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	ASSET	AGE	AGE^2	EMP	EMS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	R^2	F-Ratio (d.f.=15, 479)
ED1	-1378.29**	0.12	0.006	32.89	-0.21	205.17*	103.00	241.49*	-122.76	38.71*	-102.46	181.52**	-141.68*	-16.55	267.93*	0.25	11.66
	-(3.68)	(1.59)	(1.65)	(1.93)	-(1.13)	(2.30)	(.61)	(2.01)	-(.39)	(2.05)	-(1.65)	(2.98)	-(2.14)	-(.27)	(2.44)		
ED2	-2015.15**	0.20	0.01	33.99	-0.07	248.29	62.51	348.99	-387.72	78.29*	-169.06	173.71	-240.47*	-41.23	505.53**	0.24	10.96
	-(3.11)	(1.59)	(1.88)	(1.15)	-(.21)	(1.61)	(.21)	(1.68)	-(.71)	(2.40)	-(1.55)	(1.65)	-(2.10)	-(.39)	(2.66)		
ED3	-2607.76	0.40	0.03*	-20.04	0.93	191.30	-153.42	607.76	-1146.98	145.97*	-208.12	44.72	-346.79	-96.62	1117.83**	0.21	8.89
	-(1.71)	(1.46)	(2.02)	-(.31)	(1.34)	(.57)	-(.24)	(1.35)	-(.97)	(2.06)	-(.88)	(.20)	-(1.40)	-(.43)	(2.71)		
ED4	-104.99	0.96	0.08	-337.05	5.62**	-377.63	-1047.26	1398.85	-3557.77	218.83	74.61	-483.47	-199.19	-189.82	2962.96*	0.14	5.55
	-(.02)	(1.12)	(1.82)	-(1.70)	(2.62)	-(.36)	-(.54)	(1.00)	-(.97)	(1.00)	(.10)	-(.69)	-(.26)	-(.27)	(2.32)		
ED5	-693.67**	0.06	0.003	18.53*	-0.14	120.59**	83.62	152.84*	-4.93	12.67	-38.29	126.19**	-56.57	-4.73	122.06*	0.25	11.51
	-(3.66)	(1.59)	(1.40)	(2.14)	-(1.47)	(2.66)	(.98)	(2.50)	-(.03)	(1.32)	-(1.19)	(4.67)	-(1.68)	-(.15)	(2.18)		
ED6	-1009.18**	0.09	0.004	23.99	-0.15	156.72*	88.86	196.08*	-68.28	26.58	-69.06	147.07**	-98.12*	-11.66	195.80*	0.26	11.79
	-(3.64)	(1.63)	(1.58)	(1.90)	-(1.11)	(2.37)	(.71)	(2.21)	-(.29)	(1.90)	-(1.48)	(3.26)	-(2.00)	-(.26)	(2.41)		
ED7	-1424.58	0.15	0.008	24.32	-0.05	190.87	67.88	270.98	-228.87	53.77*	-113.69	147.77*	-165.15*	-29.36	349.29**	0.25	11.46
	-(3.17)	(1.65)	(1.80)	(1.19)	-(.25)	(1.78)	(.34)	(1.88)	-(.61)	(2.38)	-(1.50)	(2.02)	-(2.08)	-(.40)	(2.65)		
ED8	-1733.40*	0.27	0.02*	-6.76	0.54	178.69	-49.98	439.95	-655.50	103.69*	-153.09	78.79	-254.13	-67.08	718.15**	0.23	10.84
	-(1.97)	(1.57)	(1.96)	-(.17)	(1.24)	(.86)	-(.13)	(1.56)	-(.89)	(2.34)	-(1.03)	(.55)	-(1.64)	-(.47)	(2.78)		
ED9	-2579.15**	0.21	0.01	65.89	-0.46	298.45	75.43	371.83	-416.82	68.82	-306.63*	196.28	-389.62*	-58.41	575.86*	0.16	6.68
	-(2.96)	(1.20)	(1.70)	(1.66)	-(1.06)	(1.44)	(.19)	(1.33)	-(.56)	(1.57)	-(2.09)	(1.39)	-(2.53)	-(.42)	(2.25)		
ED10	-3777.52**	0.35	0.03	82.14	-0.43	342.60	12.83	444.85	-918.92	123.24	-445.89	114.26	-596.67*	-108.50	976.09*	0.16	6.63
	-(2.75)	(1.28)	(1.87)	(1.31)	-(.63)	(1.05)	(.02)	(1.01)	-(.80)	(1.78)	-(1.93)	(.51)	-(2.47)	-(.49)	(2.42)		
ED11	-5076.23**	0.64	0.05*	52.47	-0.40	268.22	-242.62	626.76	-2101.25	214.70	-591.43	-165.68	-873.50*	-208.76	1857.45**	0.16	6.53
	-(2.08)	(1.34)	(2.04)	(.48)	(.33)	(.46)	-(.22)	(.80)	-(1.03)	(1.75)	-(1.44)	-(.42)	-(2.03)	-(.53)	(2.60)		
ED12	-4242.69	1.35	0.11*	-225.38	4.81	-355.28	-1205.65	1268.77	-5254.01	326.63	-466.20	-981.52	-995.94	-382.97	4147.42*	0.14	5.71
	-(.77)	(1.24)	(2.07)	-(.90)	(1.77)	-(.27)	-(.49)	(.72)	-(1.13)	(1.17)	-(.50)	-(1.09)	-(1.02)	-(.43)	(2.56)		
ED13	-1373.57**	0.10	0.007	37.72	-0.29	185.66	67.42	290.98	-121.52	27.84	-164.44*	174.94*	-201.01*	-17.30	287.31*	0.15	6.18
	-(2.78)	(1.05)	(1.49)	(1.68)	-(1.19)	(1.58)	(.31)	(1.86)	-(.29)	(1.12)	-(1.98)	(2.18)	-(2.31)	-(.22)	(1.99)		
ED14	-1917.91**	0.15	0.01	49.44	-0.35	230.08	64.64	332.82	-264.54	48.46	-230.75*	179.44	-289.60*	-33.36	425.69*	0.16	6.67
	-(2.90)	(1.16)	(1.65)	(1.65)	-(1.07)	(1.46)	(.22)	(1.57)	-(.48)	(1.46)	-(2.07)	(1.67)	-(2.48)	-(.31)	(2.20)		
ED15	-2690.83**	0.24	0.02	59.32	-0.32	268.81	29.46	393.80	-565.39	85.79	-324.98*	140.45	-426.83*	-66.06	681.18*	0.17	6.97
	-(2.80)	(1.27)	(1.82)	(1.36)	-(.68)	(1.17)	(.07)	(1.28)	-(.70)	(1.77)	-(2.01)	(.90)	-(2.51)	-(.43)	(2.41)		
ED16	-3554.47*	0.42	0.03*	42.99	0.17	250.55	-112.87	526.88	-1235.52	151.41	-434.49	-10.29	-622.07*	-129.83	1212.60**	0.17	7.14
	-(2.27)	(1.36)	(1.99)	(.60)	(.22)	(.67)	-(.16)	(1.05)	-(.94)	(1.92)	-(1.64)	-(.04)	-(2.24)	-(.51)	(2.63)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.17

REGRESSION RESULTS FOR THE

SAMPLE OF YOUNG HOUSEHOLD HEADS

RECURSIVE MODEL — ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	ED	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	FAMILY TYPE	NO. of EARNERS	R^2	F-Ratio (d.f.=13, 744)
ED1	-12084.40	14.49**	-0.08	-523.82	9.81	5762.60**	10815.59**	1590.71	16974.20**	30449.25**	8227.72**	2403.04	-2093.40**	0.50	61.62
	-(1.38)	(14.22)	-(.09)	-(1.07)	(1.39)	(3.08)	(3.12)	(.63)	(2.62)	(13.68)	(3.33)	(1.42)	-(3.40)		
ED2	-12337.20	14.46**	0.04	-503.39	9.47	5737.56**	10809.40**	1554.69	16973.87**	30453.51**	8252.02**	2384.39	-2099.03**	0.50	61.62
	-(1.39)	(14.23)	(.08)	-(1.01)	(1.32)	(3.07)	(3.12)	(.62)	(2.62)	(13.68)	(3.34)	(1.41)	-(3.40)		
ED3	-12775.00	14.44**	0.06	-473.88	9.02	5724.54**	10823.90**	1535.14	16978.02**	30452.85**	8271.90**	2367.52	-2106.65**	0.50	61.63
	-(1.45)	(14.26)	(.24)	-(.93)	(1.24)	(3.07)	(3.12)	(.61)	(2.62)	(13.68)	(3.35)	(1.40)	-(3.41)		
ED4	-13177.60	14.43**	0.04	-449.84	8.69	5727.04**	10847.56**	1535.79	16984.23**	30447.67**	8277.97**	2359.59	-2210.78**	0.50	61.64
	-(1.45)	(14.29)	(.35)	-(.88)	(1.19)	(3.07)	(3.13)	(.61)	(2.62)	(13.68)	(3.36)	(1.39)	-(3.42)		
ED5	-12109.60	14.51**	-0.30	-524.81	9.86	5777.40**	10830.40**	1612.67	16976.30**	30446.28**	8218.39**	2409.09	-2094.37**	0.50	61.62
	-(1.39)	(14.20)	-(.16)	-(1.08)	(1.42)	(3.09)	(3.12)	(.64)	(2.62)	(13.68)	(3.33)	(1.42)	-(3.40)		
ED6	-12090.30	14.49**	-0.12	-523.66	9.81	5764.06**	10817.34**	1593.00	16974.22**	30449.03**	8226.93**	2403.60	-2093.77**	0.50	61.62
	-(1.38)	(14.21)	-(.09)	-(1.07)	(1.40)	(3.08)	(3.12)	(.63)	(2.62)	(13.68)	(3.33)	(1.42)	-(3.40)		
ED7	-12254.70	14.47**	0.02	-509.59	9.57	5743.10**	10809.06**	1562.55	16973.68**	30452.71**	8245.86**	2389.13	-2097.14**	0.50	61.62
	-(1.39)	(14.22)	(.04)	-(1.02)	(1.34)	(3.07)	(3.12)	(.62)	(2.62)	(13.68)	(3.34)	(1.41)	-(3.40)		
ED8	-12612.00	14.45**	0.08	-485.19	9.20	5730.27**	10818.61**	1542.93	16977.12**	30452.63**	8263.21**	2373.97	-2102.85**	0.50	61.62
	-(1.40)	(14.25)	(.18)	-(.96)	(1.27)	(3.07)	(3.12)	(.61)	(2.62)	(13.68)	(3.35)	(1.40)	-(3.41)		
ED9	-10647.10	14.61**	-0.36	-625.50	11.38	5835.27**	10828.05**	1731.17	16931.69**	30447.42**	8143.25**	2456.50	-2079.62**	0.50	61.76
	-(1.21)	(14.43)	-(.93)	-(1.27)	(1.62)	(3.13)	(3.13)	(.69)	(2.61)	(13.69)	(3.30)	(1.45)	-(3.38)		
ED10	-10542.90	14.58**	-0.17	-624.69	11.29	5796.94**	10781.61**	1673.98	16932.56**	30452.85**	8167.32**	2444.81	-2079.24**	0.50	61.71
	-(1.18)	(14.41)	-(.75)	-(1.24)	(1.58)	(3.11)	(3.11)	(.67)	(2.61)	(13.69)	(3.31)	(1.44)	-(3.37)		
ED11	-10870.70	14.54**	-0.06	-598.77	10.87	5767.08**	10765.21**	1622.06	16942.82**	30456.91**	8197.44**	2426.68	-2083.54**	0.50	61.66
	-(1.20)	(14.39)	-(.50)	-(1.78)	(1.50)	(3.10)	(3.11)	(.65)	(2.61)	(13.69)	(3.32)	(1.43)	-(3.38)		
ED12	-11398.90	14.51**	-0.01	-563.47	10.34	5752.16**	10775.17**	1589.85	16956.09**	30457.09**	8221.15**	2410.37	-2089.26**	0.50	61.63
	-(1.25)	(14.37)	-(.27)	-(1.10)	(1.42)	(3.08)	(3.11)	(.63)	(2.61)	(13.68)	(3.33)	(1.42)	-(3.39)		
ED13	-11427.60	14.60**	-0.65	-580.96	10.79	5856.62**	10880.85**	1750.60	16943.77**	30449.09**	8150.37**	2443.33	-2087.58**	0.50	61.75
	-(1.31)	(14.42)	-(.90)	-(1.20)	(1.56)	(3.14)	(3.14)	(.69)	(2.61)	(13.69)	(3.30)	(1.44)	-(3.39)		
ED14	-10912.80	14.61**	-0.46	-610.01	11.17	5841.33**	10843.02**	1735.74	16934.54**	30448.39**	8145.69**	2452.41	-2082.25**	0.50	61.75
	-(1.24)	(14.42)	-(.91)	-(1.24)	(1.60)	(3.13)	(3.13)	(.69)	(2.61)	(13.69)	(3.30)	(1.45)	-(3.38)		
ED15	-10615.00	14.59**	-0.25	-622.16	11.28	5808.58**	10795.53**	1690.08	16932.01**	30452.22**	8161.09**	2448.33	-2080.09**	0.50	61.72
	-(1.19)	(14.40)	-(.78)	-(1.25)	(1.59)	(3.12)	(3.12)	(.67)	(2.61)	(13.69)	(3.31)	(1.45)	-(3.38)		
ED16	-10754.50	14.55**	-0.10	-607.21	11.00	5775.50**	10768.04**	1636.62	16939.21**	30456.78**	8189.22**	2433.25	-2082.81**	0.50	61.67
	-(1.19)	(14.39)	-(.57)	-(1.20)	(1.53)	(3.10)	(3.11)	(.65)	(2.61)	(13.69)	(3.32)	(1.44)	-(3.38)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. A111.18

REGRESSION RESULTS FOR THE

SAMPLE OF YOUNG HOUSEHOLD HEADS

SIMULTANEOUS MODEL — ASSET EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	$\hat{ED}$	AGE	AGE^2	EHP	EHS	EP	ES	CULTIVATION	FARM LABOR	NO. of EARNERS	FAMILY TYPE	R^2	F-Ratio (d.f.=13,744)
ED1	-19057.40	13.45**	5.32	91.10	-0.87	4793.00*	10384.32**	214.09	16881.01*	30651.75**	9110.83**	-2324.50**	1799.06	0.49	59.10
	-(1.75)	(9.66)	(1.09)	(.12)	-(.07)	(2.29)	(2.92)	(.08)	(2.55)	(13.43)	(3.45)	-(3.50)	(.99)		
ED2	-31521.00*	12.75**	5.75	953.42	-14.17	4336.40*	10769.39**	-456.01	17020.97*	30657.84**	9748.50**	-2518.63**	1223.66	0.47	53.99
	-(2.14)	(8.61)	(1.69)	(.95)	-(.90)	(2.00)	(2.90)	-(.16)	(2.54)	(12.85)	(3.50)	-(3.57)	(.63)		
ED3	-50177.80*	12.21**	4.52*	2118.17	-30.91	4264.32	11818.34**	-650.82	17351.31*	30464.87**	10201.97**	-2674.00**	658.64	0.43	46.84
	-(2.41)	(7.70)	(2.07)	(1.53)	-(1.47)	(1.89)	(2.95)	-(.21)	(2.32)	(11.89)	(3.41)	-(3.51)	(.31)		
ED4	-66401.90*	12.12**	2.60*	3022.50	-42.72	4686.39*	13045.37**	-228.72	17719.51*	30133.11**	10160.28**	-2684.87**	427.33	0.40	42.10
	-(2.44)	(7.42)	(2.16)	(1.74)	-(1.67)	(2.02)	(3.00)	-(.07)	(2.25)	(11.12)	(3.25)	-(3.37)	(.19)		
ED5	-12919.30	14.19**	2.69	-418.77	7.77	5466.11**	10595.03**	1168.72	16922.09**	30517.44**	8464.42**	-2147.44**	2268.73	0.50	61.41
	-(1.44)	(10.57)	(.32)	-(.74)	(.86)	(2.64)	(3.00)	(.41)	(2.60)	(13.63)	(3.30)	-(3.36)	(1.30)		
ED6	-16894.70	13.65**	5.56	-80.99	1.99	4975.77*	10402.83**	470.01	16889.75*	30615.65**	8923.09**	-2267.59**	1946.97	0.49	60.06
	-(1.64)	(9.85)	(.87)	-(.12)	(.18)	(2.39)	(2.94)	(.17)	(2.57)	(13.53)	(3.41)	-(3.46)	(1.09)		
ED7	-27755.40*	12.94**	6.94	685.87	-9.95	4474.54*	10625.13**	-270.25	16989.77*	30648.69**	9543.79**	-2448.23**	1404.85	0.47	55.86
	-(2.00)	(8.76)	(1.48)	(.72)	-(.66)	(2.09)	(2.91)	-(.09)	(2.49)	(13.07)	(3.49)	-(3.55)	(.74)		
ED8	-47350.50*	12.25**	6.24	1927.94	-27.97	4275.03	11592.07**	-668.18	17311.69*	30487.74**	10093.35**	-2626.84**	758.95	0.44	48.14
	-(2.29)	(7.58)	(1.93)	(1.40)	-(1.33)	(1.90)	(2.93)	-(.22)	(2.35)	(12.06)	(3.41)	-(3.50)	(.36)		
ED9	-25533.60	13.30**	3.10	447.51	-5.35	4978.78*	10624.93**	162.89	17309.45*	30504.94**	9104.23**	-2273.93**	1865.54	0.47	55.70
	-(1.56)	(8.36)	(.99)	(.41)	-(.32)	(2.36)	(2.91)	(.05)	(2.53)	(13.02)	(3.32)	-(3.38)	(1.00)		
ED10	-41732.60	12.62**	3.09	1060.36	-19.85	4878.86*	11320.42**	-290.85	17714.52*	30432.17**	9549.12**	-2382.34**	1462.12	0.44	48.85
	-(1.76)	(7.16)	(1.37)	(.95)	-(.87)	(2.23)	(2.89)	-(.09)	(2.42)	(12.15)	(3.26)	-(3.29)	(.72)		
ED11	-58446.40	12.24**	2.22	2432.76	-33.03	5123.10*	12427.04**	-226.78	18108.28*	30246.90**	9705.23**	-2436.58**	1172.42	0.41	43.26
	-(1.87)	(6.58)	(1.57)	(1.24)	-(1.16)	(2.26)	(2.91)	-(.07)	(2.32)	(11.35)	(3.14)	-(3.17)	(.54)		
ED12	-67302.90	12.32**	1.21	2885.67	-38.47	5527.23*	13301.62**	227.10	18278.92*	30045.96**	9521.89**	-2412.75**	1122.38	0.40	41.79
	-(1.88)	(6.80)	(1.61)	(1.32)	-(1.24)	(2.43)	(2.96)	(.07)	(2.30)	(11.04)	(3.07)	-(3.11)	(.51)		
ED13	-14508.80	14.08**	1.99	-310.22	6.17	5403.39**	10570.42**	1007.57	17042.85**	30472.11**	8533.95**	-2152.54**	2256.76	0.49	60.61
	-(1.38)	(9.96)	(.40)	-(.44)	(.56)	(2.61)	(2.98)	(.35)	(2.60)	(13.57)	(3.29)	-(3.38)	(1.30)		
ED14	-21175.70	13.55**	3.28	160.19	-1.08	5072.71*	10543.62**	387.29	17216.95*	30493.59**	8934.75**	-2237.03**	2000.21	0.48	57.64
	-(1.50)	(8.85)	(.83)	(.17)	-(.07)	(2.42)	(2.93)	(.13)	(2.56)	(13.24)	(3.33)	-(3.39)	(1.10)		
ED15	-35388.30	12.84**	3.82	107.92	-14.35	4849.33*	11002.70**	-206.12	17568.82*	30456.39**	9424.71**	-2350.51**	1593.44	0.45	51.42
	-(1.70)	(7.52)	(1.25)	(.78)	-(.70)	(2.24)	(2.89)	-(.07)	(2.47)	(12.48)	(3.29)	-(3.30)	(.81)		
ED16	-54460.20	12.28**	3.20	2211.37	-30.11	4962.04*	12063.63**	-377.72	18011.30*	30294.94**	9730.46**	-2435.80**	1191.57	0.42	44.30
	-(1.83)	(6.55)	(1.51)	(1.17)	-(1.09)	(2.19)	(2.89)	-(.12)	(2.34)	(11.51)	(3.16)	-(3.20)	(.55)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIII.19

REGRESSION RESULTS FOR THE

SAMPLE OF YOUNG HOUSEHOLD HEADS

RECURSIVE MODEL

ED EQUATION

DEP. VAR.	CONSTANT	PERMANENT INCOME	AGE	AGE^2	EHP	EHS	EP	ES	HH. SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	FAMILY TYPE	R^2	F-Ratio (d.f.= 15, 742)
ED1	1085.86**	0.15**	-114.41**	1.95**	200.92**	111.62	266.70**	111.16	21.60	-87.64	177.49**	-38.87	-12.17	210.80*	88.89	0.25	17.72
	(3.25)	(3.85)	-(6.13)	(7.41)	(2.87)	(.85)	(2.79)	(.45)	(1.48)	-(1.90)	(3.91)	-(.79)	-(.27)	(2.14)	(1.37)		
ED2	2933.26**	0.24**	-257.05**	4.16**	265.37*	76.89	360.98*	98.62	58.21*	-174.60*	187.81*	-70.05	-59.06	378.56*	158.80	0.24	16.47
	(5.08)	(3.48)	-(7.98)	(7.13)	(2.20)	(.34)	(2.18)	(.23)	(2.30)	-(2.20)	(2.40)	-(.82)	-(.77)	(2.22)	(1.41)		
ED3	7541.21**	0.41**	-589.26**	9.12**	338.43	-66.40	485.95	12.39	136.16**	-332.56*	134.36	-104.70	-178.52	709.89*	299.07	0.22	14.89
	(6.79)	(3.08)	-(9.52)	(10.42)	(1.46)	-(.15)	(1.53)	(.02)	(2.81)	-(2.18)	(.89)	-(.64)	-(1.21)	(2.18)	(1.39)		
ED4	19117.02**	0.76**	-1381.20**	20.66**	389.88	-503.02	642.04	-274.43	299.01**	-611.25	-91.69	-102.41	-469.15	1384.92*	597.37	0.20	13.48
	(8.15)	(2.72)	-(10.58)	(11.18)	(.79)	-(.54)	(.96)	-(.16)	(2.92)	-(1.89)	-(.29)	-(.30)	-(1.51)	(2.01)	(1.31)		
ED5	209.72	0.08**	-36.04**	0.67**	121.53**	90.60	158.37**	81.03	1.55	-25.71	121.04**	-10.59	6.76	91.85	38.65	0.25	17.82
	(1.25)	(4.20)	-(3.56)	(5.12)	(3.47)	(1.38)	(3.30)	(.65)	(.21)	-(1.11)	(5.35)	-(.43)	(.30)	(1.86)	(1.19)		
ED6	712.17**	0.12**	-78.57**	1.36**	157.42**	95.16	207.79**	90.89	12.12	-55.97	144.51**	-23.62	-3.87	150.85*	65.00	0.25	17.69
	(2.87)	(3.99)	-(5.68)	(6.94)	(3.04)	(.98)	(2.93)	(.50)	(1.12)	-(1.64)	(4.30)	-(.65)	-(.12)	(2.07)	(1.35)		
ED7	1968.95**	0.18**	-174.54**	2.83**	202.09**	73.62	273.42*	84.40	34.92*	-109.82*	156.56**	-40.78	-33.85	260.36*	113.44	0.24	16.57
	(4.84)	(3.65)	-(7.70)	(8.82)	(2.38)	(.46)	(2.35)	(.28)	(1.97)	-(1.96)	(2.84)	-(.68)	-(.63)	(2.17)	(1.44)		
ED8	5094.94**	0.29**	-396.55**	6.12**	250.26	-22.08	358.06	28.63	82.47*	-203.28*	130.13	-53.71	-109.87	471.68*	208.51	0.22	14.87
	(6.76)	(3.23)	-(9.44)	(10.31)	(1.59)	-(.07)	(1.66)	(.05)	(2.51)	-(1.96)	(1.27)	-(.48)	-(1.10)	(2.13)	(1.42)		
ED9	3751.87**	0.35**	-306.09**	4.79**	272.86	128.31	457.61	-21.94	43.53	-239.98*	194.71	-98.38	-68.79	449.48	135.59	0.15	9.65
	(4.54)	(3.52)	-(6.64)	(7.34)	(1.58)	(.40)	(1.93)	-(.03)	(1.21)	-(2.11)	(1.74)	-(.81)	-(.63)	(1.85)	(.84)		
ED10	8624.53**	0.55**	-638.63**	9.61**	303.34	-18.66	591.09	-173.87	96.17	-375.81*	151.84	-105.00	-176.06	764.89	241.62	0.16	10.06
	(6.28)	(3.38)	-(8.35)	(8.88)	(1.06)	-(.03)	(1.51)	-(.17)	(1.60)	-(1.99)	(.82)	-(.52)	-(.97)	(1.89)	(.98)		
ED11	19248.38**	0.94**	-1340.26**	19.61**	292.12	-421.86	762.76	-523.75	200.90	-598.88	-7.73	-66.31	-406.87	1350.12	447.66	0.16	10.30
	(7.69)	(3.14)	-(9.60)	(9.94)	(.56)	-(.43)	(1.06)	-(.28)	(1.83)	-(1.73)	(.02)	-(.78)	-(1.23)	(1.83)	(.92)		
ED12	42643.38**	1.68**	-2846.63**	40.79**	162.47	-1409.99	971.49	-1300.30	408.54	-960.71	-435.56	115.58	-900.57	2466.60	871.32	0.17	10.43
	(8.69)	(2.86)	-(10.40)	(10.54)	(.16)	-(.73)	(.69)	-(.36)	(1.90)	-(1.42)	(.66)	(.16)	-(1.38)	(1.71)	(.91)		
ED13	925.23*	0.18**	-98.64**	1.67**	194.26*	139.52	291.41*	39.09	9.98	-119.88*	167.23**	-69.28	-3.37	207.15	53.93	0.14	8.70
	(2.11)	(3.47)	-(4.04)	(4.84)	(2.12)	(.81)	(2.32)	(.12)	(.52)	-(1.99)	(2.81)	-(1.07)	-(.06)	(1.61)	(.63)		
ED14	2352.34**	0.26**	-201.98**	3.21**	228.62	125.17	366.00*	5.44	26.98	-175.65*	177.09*	-82.82	-33.37	323.54	95.14	0.15	9.36
	(3.81)	(3.52)	-(5.88)	(6.61)	(1.77)	(.52)	(2.08)	(.01)	(1.00)	-(2.07)	(2.12)	-(.91)	-(.41)	(1.75)	(.79)		
ED15	5447.44**	0.39**	-414.44**	6.30**	258.01	43.29	463.83	-83.71	60.81	-262.96*	159.32	-88.16	-99.08	526.81	168.47	0.16	9.90
	(5.69)	(3.44)	-(7.76)	(8.34)	(1.29)	(.12)	(1.69)	-(.12)	(1.44)	-(2.00)	(1.23)	-(.62)	-(.78)	(1.87)	(.90)		
ED16	12167.27**	0.63**	-858.47**	12.63**	263.33	-196.78	585.45	-292.80	124.59	-399.58	73.14	-60.79	-239.89	894.41	307.41	0.16	10.25
	(7.34)	(3.21)	-(9.29)	(9.67)	(.76)	-(.30)	(1.23)	-(.24)	(1.72)	-(1.75)	(.32)	-(.25)	-(1.09)	(1.83)	(.96)		

* Significant at .05 level ** Significant at .01 level

SIMULTANEOUS MODEL

REGRESSION RESULTS FOR

SAMPLE OF YOUNG HOUSEHOLD HEADS

DEP. VAR.	CONSTANT	PERMANENT INCOME	ASSET	AGE	AGE^2	EHP	EHS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	FAMILY TYPE	R^2	F- Ratio (d.f. = 16, 741)
ED1	1086.35**	0.149**	0.001	-114.16**	1.95**	199.33	108.60	266.60**	107.37	21.25	-87.64	177.85**	-38.72	-12.21	210.85*	88.54	0.25	16.52
	(3.25)	(2.60)	(.10)	-(6.06)	(7.29)	(2.77)	(.80)	(2.78)	(.43)	(1.41)	-(1.90)	(3.91)	-(.78)	-(.28)	(2.15)	(1.36)		
ED2	2935.59**	0.22*	0.001	-255.83**	4.13**	257.67	62.36	360.49*	80.34	56.50*	-174.58*	189.51**	-69.32	-59.24	378.82*	157.11	0.24	15.35
	(5.07)	(2.23)	(.26)	-(7.86)	(8.94)	(2.07)	(.27)	(2.18)	(.19)	(2.17)	-(2.19)	(2.41)	-(.81)	-(.77)	(2.22)	(1.40)		
ED3	7548.73**	0.35	0.008	-585.32**	9.06**	313.61	-113.23	484.34	-46.54	130.65**	-332.49*	139.83	-102.36	-179.10	710.72*	293.61	0.22	13.88
	(6.79)	(1.82)	(.44)	-(9.35)	(10.19)	(1.31)	-(.25)	(1.52)	-(.06)	(2.60)	-(2.17)	(.72)	-(.62)	-(1.21)	(2.17)	(1.36)		
ED4	19138.00**	0.59	0.01	-1370.22**	20.48**	320.60	-633.76	637.54	-438.93	283.63**	-611.05	-76.40	-95.87	-470.79	1387.22*	582.14	0.20	12.57
	(8.15)	(1.47)	(.59)	-(10.36)	(10.91)	(.64)	-(.67)	(.95)	-(.25)	(2.68)	-(1.89)	-(.24)	-(.28)	-(1.51)	(2.00)	(1.27)		
ED5	209.67	0.08**	-0.001	-36.07**	.68**	121.69	90.89	158.38**	81.39	1.58	-25.71	121.36**	-10.61	6.76	91.85	38.68	0.25	16.61
	(1.25)	(2.94)	-(.02)	-(3.82)	(5.04)	(3.37)	(1.34)	(3.30)	(.65)	(.21)	-(1.11)	(5.31)	-(.43)	(.30)	(1.86)	(1.18)		
ED6	712.47**	0.12**	0.001	-78.41**	1.35**	156.40	93.25	207.72**	88.47	11.89	-55.97	144.74**	-23.52	-3.89	150.89*	64.78	0.25	16.49
	(2.87)	(2.71)	(.08)	-(5.61)	(6.82)	(2.93)	(.93)	(2.93)	(.48)	(1.06)	-(1.64)	(4.29)	-(.64)	-(.12)	(2.07)	(1.34)		
ED7	1970.47**	0.16*	0.001	-173.74**	2.81**	197.10	64.20	273.10*	72.55	33.81	-109.80*	157.66**	-40.36	-33.97	260.53*	112.34	0.24	15.44
	(4.84)	(2.36)	(.24)	-(7.58)	(8.65)	(2.25)	(.39)	(2.34)	(.24)	(1.84)	-(1.96)	(2.85)	-(.67)	-(.63)	(2.17)	(1.42)		
ED8	5099.81**	0.25*	0.002	-393.99**	6.08**	234.16	-52.47	357.01	-9.59	78.90*	-203.24*	133.69	-52.19	-110.25	472.22*	204.97	0.22	13.86
	(6.76)	(1.99)	(.42)	-(9.27)	(10.08)	(1.44)	-(.17)	(1.66)	-(.01)	(2.32)	-(1.96)	(1.30)	-(.47)	-(1.10)	(2.13)	(1.40)		
ED9	3757.67**	0.30*	0.003	-303.05**	4.73**	253.70	92.16	456.36	-67.44	39.28	-239.93*	198.93	-96.57	-69.25	450.11	131.38	0.15	8.98
	(4.54)	(2.11)	(.46)	-(6.50)	(7.14)	(1.42)	(.28)	(1.92)	-(.11)	(1.05)	-(2.10)	(1.76)	-(.79)	-(.63)	(1.85)	(.81)		
ED10	8634.94**	0.47*	0.005	-633.18**	9.52**	268.95	-83.56	589.45	-255.53	88.54	-375.71*	159.43	-101.76	-176.87	766.03	234.06	0.16	9.36
	(6.28)	(1.99)	(.50)	-(8.17)	(8.65)	(.91)	-(.15)	(1.49)	-(.25)	(1.42)	-(1.99)	(.85)	-(.50)	-(.97)	(1.89)	(.87)		
ED11	19269.27**	0.77	0.01	-1329.33**	19.43**	223.16	-551.99	758.27	-687.49	185.59	-598.69	7.48	-59.80	-408.50	1352.42	432.51	0.16	9.56
	(7.68)	(1.78)	(.55)	-(9.41)	(9.68)	(.41)	-(.55)	(1.06)	-(.37)	(1.64)	-(1.73)	(.02)	-(.16)	-(1.22)	(1.83)	(.89)		
ED12	42687.75**	1.32	0.02	-2823.40**	40.40**	15.93	-1686.54	961.97	-1648.27	376.00	-960.30	-403.23	129.41	-904.04	2471.48	839.11	0.17	9.72
	(8.67)	(1.56)	(.59)	-(10.91)	(10.27)	(.02)	-(.83)	(.68)	-(.45)	(1.69)	-(1.42)	-(.60)	(.18)	-(1.39)	(1.71)	(.88)		
ED13	928.54*	0.15*	0.002	-96.91**	1.64**	183.32	118.90	290.70*	13.13	7.56	-119.85*	169.64**	-68.25	-3.63	207.52	51.53	0.14	8.10
	(2.11)	(2.05)	(.49)	-(3.92)	(4.68)	(1.94)	(.67)	(2.31)	(.04)	(.38)	-(1.98)	(2.84)	-(1.05)	-(.06)	(1.60)	(.60)		
ED14	2356.88**	0.22*	0.002	-199.60**	3.17**	213.60	96.84	366.02*	-30.21	23.64	-175.60*	180.40*	-81.40	-33.72	324.04	91.84	0.15	8.71
	(3.81)	(2.09)	(.48)	-(5.73)	(6.42)	(1.61)	(.39)	(2.07)	-(.07)	(.85)	-(2.06)	(2.14)	-(.89)	-(.41)	(1.78)	(.76)		
ED15	5454.82**	0.33*	0.003	-410.58**	6.23**	233.63	-2.70	462.25	-141.57	54.77	-262.90*	164.70	-85.86	-99.65	527.70	163.11	0.16	9.22
	(5.68)	(2.02)	(.50)	-(7.59)	(8.11)	(1.13)	-(.07)	(1.68)	-(.20)	(1.26)	-(1.99)	(1.26)	-(.61)	-(.78)	(1.87)	(.87)		
ED16	12181.06**	0.53	0.007	-851.25**	12.51**	217.78	-288.73	582.49	-400.95	114.48	-399.46	83.19	-56.49	-240.96	895.92	297.40	0.16	9.54
	(7.34)	(1.84)	(.54)	-(9.10)	(9.42)	(.61)	-(.43)	(1.23)	-(.32)	(1.53)	-(1.75)	(.37)	-(.23)	-(1.09)	(1.83)	(.42)		

* Significant at .05 level ** Significant at .01 level

APPENDIX IV

Regression Results
Excluding
Permanent Income

TABLE NO. AIV.1

REGRESSION RESULTS EXCLUDING PERMANENT INCOME

RECURSIVE MODEL — ASSET EQUATION

DEP. VAR.	Constant	ED	AGE	AGE^2	EHP	EHS	EP	ES	Cultivation	Farm-labor	Family Type	Existence of Children	No. of Earners	R^2	F (d.f.=13, 1025)
ED1	-5557.59	2.75**	-78.18	2.80	7964.37*	20878.87**	7987.65**	24914.95**	31887.88*	3483.55	4182.36*	2629.16	-1323.75*	0.31	37.96
	(-.68)	(3.70)	-(.21)	(.72)	(3.87)	(5.09)	(2.72)	(3.23)	(12.51)	(1.22)	(2.18)	(1.10)	-(1.96)		
ED2	-7180.47	0.65	-51.18	2.74	8593.12**	21390.28**	8940.21**	25227.59**	31962.18**	3137.21	4543.86*	3675.57	-1264.66	0.30	36.76
	-(.86)	(1.92)	-(.14)	(.69)	(4.16)	(5.19)	(3.04)	(3.25)	(12.47)	(1.09)	(2.36)	(1.54)	-(1.88)		
ED3	-6813.19	0.01	-133.92	3.97	9168.44**	22149.51**	9342.00**	25489.37**	32170.87**	2987.70	4887.67*	4615.30	-1162.37	0.30	36.33
	-(.82)	-(.13)	-(.36)	(1.00)	(4.46)	(5.36)	(3.18)	(3.28)	(12.53)	(1.04)	(2.53)	(1.95)	-(1.71)		
ED4	-6315.44	-0.02	-178.53	4.55	9306.37**	22446.47**	9285.88**	25523.12**	32257.56**	3019.32	4955.69*	4800.49*	-1148.44	0.30	36.48
	-(.76)	-(1.12)	-(.48)	(1.16)	(4.53)	(5.44)	(3.16)	(3.29)	(12.57)	(1.06)	(2.57)	(2.04)	-(1.69)		
ED5	-3603.91	7.46**	-171.24	3.77	7656.38**	20498.19**	7272.32*	24751.42**	31939.44**	3713.41	4095.74*	2154.55	-1256.36	0.31	38.84
	-(.44)	(4.60)	-(.46)	(.98)	(3.73)	(5.01)	(2.47)	(3.22)	(12.58)	(1.31)	(2.14)	(.91)	-(1.87)		
ED6	-5342.67	3.89**	-85.71	2.86	7910.55**	20709.40**	7902.81**	24877.78**	31885.65**	3513.10	4163.74*	2531.98	-1315.08	0.31	38.07
	-(.65)	(3.83)	-(.23)	(.74)	(3.84)	(5.05)	(2.69)	(3.22)	(12.51)	(1.24)	(2.17)	(1.06)	-(1.95)		
ED7	-7034.97	1.12*	-43.53	2.60	8491.79**	21193.24**	8834.50**	25175.83**	31935.36**	3178.94	4481.42*	3488.21	-1280.54	0.30	36.92
	-(.85)	(2.23)	-(.12)	(.66)	(4.11)	(5.14)	(3.00)	(3.25)	(12.47)	(1.11)	(2.33)	(1.46)	-(1.89)		
ED8	-6996.02	0.05	-112.72	3.68	9079.83**	21987.61**	9322.84**	25455.16**	32127.84**	2993.64	4836.58*	4474.16	-1178.67	0.30	36.34
	-(.85)	(.28)	-(.30)	(.93)	(4.40)	(5.32)	(3.17)	(3.27)	(12.46)	(1.05)	(2.51)	(1.89)	-(1.73)		
ED9	7194.41	0.88**	-45.14	2.69	8470.76**	21416.52**	8393.40**	25293.26**	31867.84**	3210.16	4454.58*	3427.84	-1206.03	0.30	37.31
	(.88)	(2.88)	-(.12)	(.69)	(4.12)	(5.22)	(2.85)	(3.27)	(12.46)	(1.13)	(2.32)	(1.45)	-(1.78)		
ED10	-7591.78	0.24	-52.70	2.89	8813.20**	21603.40**	9039.23**	25403.13**	31984.00**	3050.02	4661.47*	3987.32	-1201.85	0.30	36.59
	-(.92)	(1.50)	-(.14)	(.73)	(4.28)	(5.24)	(3.07)	(3.27)	(12.47)	(1.07)	(2.43)	(1.68)	-(1.77)		
ED11	-6678.50	0.02	-144.20	4.09	9194.15**	22220.01**	9349.07**	25487.42**	32189.85**	2990.45	4904.11*	4664.20*	-1160.80	0.30	36.34
	-(.81)	-(.29)	-(.38)	(1.03)	(4.47)	(5.38)	(3.18)	(3.28)	(12.56)	(1.05)	(2.54)	(1.97)	-(1.71)		
ED12	-6095.79	-0.02	-191.94	4.71	9320.55**	22582.70**	9273.97**	25494.88**	32276.35**	3034.78	4967.69**	4845.57	-1153.18	0.30	36.53
	-(.74)	-(1.30)	-(.51)	(1.19)	(4.54)	(5.47)	(3.16)	(3.28)	(12.58)	(1.06)	(2.58)	(2.06)	-(1.70)		
ED13	-5889.32	2.16**	-106.70	3.32	8308.59**	21326.12**	7950.56**	25226.04**	31860.10**	3304.98	4429.64*	3292.90	-1166.12	0.31	37.78
	-(.72)	(3.49)	-(.29)	(.86)	(4.05)	(5.21)	(2.70)	(3.26)	(12.49)	(1.16)	(2.31)	(1.40)	-(1.73)		
ED14	-6931.16	1.19**	-57.35	2.81	8457.35**	21298.49**	8373.84**	25292.60**	31872.19**	3211.14	4462.87*	3434.95	-1199.75	0.30	37.32
	-(.84)	(2.89)	-(0.15)	(.72)	(4.12)	(5.19)	(2.84)	(3.27)	(12.47)	(1.13)	(2.32)	(1.45)	-(1.77)		
ED15	-7462.52	0.33	-58.37	2.95	8809.75**	21514.40**	9030.39**	25409.36**	31988.88**	3052.10	4663.98*	3986.39	-1201.38	0.30	36.60
	-(.90)	(1.52)	-(.16)	(.75)	(4.28)	(5.22)	(3.07)	(3.27)	(12.47)	(.107)	(2.42)	(1.68)	-(1.77)		
ED16	-6786.58	-0.01	-135.14	3.98	9166.47**	22167.12**	9344.14**	25482.08**	32172.33**	2989.21	4887.57*	4618.10	-1163.57	0.30	36.33
	-(.82)	-(.14)	-(.36)	(1.00)	(4.46)	(5.34)	(3.18)	(3.28)	(12.53)	(1.05)	(2.54)	(1.95)	-(1.71)		

* Significant at .05 level ** Significant at .01 level

TABLE NO. AIV,2

REGRESSION RESULTS EXCLUDING

PERMANENT INCOME

SIMULTANEOUS MODEL

ASSET EQUATION

DEP. VAR.	Constant	ED	AGE	AGE^2	EMP	EMS	EF	ES	Cultivation	Farm-labor	Family type DF	Existence of Children DF	No. of Earners V20	R^2	F-ratio (d.f.=13, 1025)
ED1	469.70 (.05)	15.38** (5.00)	147.63 (.35)	-2.16 -(.47)	2562.82 (.97)	15263.93** (3.16)	1793.57 (.49)	22325.78* (2.55)	30651.4** (10.57)	5754.03 (1.67)	1015.33 (.44)	-6294.42 -(1.84)	-2043.12** -(2.61)	0.27	30.81
ED2	-9725.73 -(.98)	7.85** (4.55)	790.54 (1.61)	-9.82 -(1.77)	2534.43 (.89)	13522.26* (2.57)	4549.40 (1.24)	22447.72* (2.41)	29806.40** (9.57)	4777.86 (1.39)	912.52 (.37)	-6248.87 -(1.70)	-2343.18** -(2.75)	0.24	27.09
ED3	-20912.9 -(1.72)	2.97** (3.59)	1441.20* (2.12)	-17.50* -(2.17)	2724.72 (.81)	10852.51 (1.66)	8338.99* (2.03)	23065.02* (2.12)	28913.56** (7.83)	3212.40 (.80)	1269.92 (.44)	-5292.87 -(1.24)	-2267.31* -(2.28)	0.19	19.73
ED4	-27949.0 -(1.76)	0.85** (2.74)	1810.36 (1.92)	-21.84 -(1.91)	2903.82 (.70)	9076.20 (1.08)	11308.28* (2.26)	23820.11 (1.82)	28360.73** (6.25)	1825.22 (.38)	1727.72 (.50)	-3997.85 (.79)	-1868.07* -(1.59)	0.14	13.42
ED5	7336.98 (.77)	32.45** (5.06)	-318.00 -(.77)	3.43 (.80)	2682.59 (1.04)	15125.24** (3.20)	356.12 (.10)	22314.04** (2.61)	31209.6** (11.05)	6140.24 (1.92)	1494.12 (.67)	-5948.33 -(1.80)	-1555.8* -(2.08)	0.27	32.24
ED6	1509.30 (.16)	21.33** (5.03)	101.16 (.24)	-1.69 -(.37)	2391.99 (.90)	14464.02** (2.97)	1470.88 (.40)	22181.56* (2.53)	30667.59** (10.55)	5863.79 (1.80)	986.06 (.43)	-6621.98 -(1.92)	-1979.06* -(2.53)	0.27	30.72
ED7	-8573.02 -(.87)	11.65** (4.61)	745.45 (1.55)	-9.37 -(1.71)	2377.88 (.84)	12637.90* (2.34)	4100.1 (1.11)	22321.01* (2.40)	29846.87** (9.63)	4968.94 (1.44)	800.89 (.32)	-6727.67 -(1.81)	-2349.08** -(2.77)	0.24	27.33
ED8	-19647.3 -(1.71)	4.79** (3.77)	1378.89* (2.16)	-16.75* -(2.21)	2784.45 (.87)	10285.43 (1.63)	7797.99* (1.98)	22998.25* (2.21)	29042.97** (8.25)	3502.91 (.92)	1163.26 (.42)	-5701.71 -(1.37)	-2370.79* -(2.47)	0.20	21.62
ED9	-9517.51 -(.97)	7.22** (4.33)	546.66 (1.17)	-5.85 -(1.14)	3643.78 (1.33)	16479.82** (3.26)	1599.84 (.41)	23954.75** (2.60)	29784.9** (9.63)	4803.65 (1.40)	1446.64 (.60)	-4819.14 -(1.37)	-1487.21 -(1.84)	0.24	27.37
ED10	-19141.1 -(1.78)	4.01** (4.01)	1145.21* (2.04)	-12.86* -(2.01)	3544.46 (1.26)	13595.87* (2.45)	4251.28 (1.10)	24181.13* (2.49)	29203.59** (8.89)	4034.37 (1.13)	1274.32 (.50)	-5424.84 -(1.41)	-1761.6* -(2.05)	0.22	24.66
ED11	-27744.99* -(2.09)	1.71** (3.30)	1688.81* (2.22)	-19.45* -(2.17)	3480.85 (1.03)	9427.53 (1.35)	8125.18 (1.94)	24606.56* (2.23)	28648.2** (7.57)	2736.95 (.68)	1477.31 (.51)	-5144.55 -(1.16)	-1830.22 -(1.87)	0.18	19.01
ED12	-31286.3 -(1.89)	0.53** (2.61)	1903.91 (1.92)	-22.26 -(1.87)	3515.86 (.88)	6998.35 (.78)	11348.96* (2.31)	24990.54 (1.95)	28413.54** (6.35)	1536.02 (.32)	1883.55 (.56)	-3962.33 -(.78)	-1599.82 -(1.41)	0.14	13.89
ED13	-412.81 -(.04)	41.21** (4.36)	8.77 (.02)	0.23 (.05)	3662.36 (1.36)	16995.0** (.345)	214.66 (.05)	23813.54** (2.63)	30202.23** (10.00)	5069.01 (1.51)	1958.89 (.84)	-3852.78 (1.15)	-1161.55 -(1.47)	0.25	28.41
ED14	-7365.7 -(.75)	9.80** (4.34)	452.43 (.98)	-4.94 -(.98)	3476.63 (1.26)	15445.43** (3.01)	1358.82 (.34)	23933.68** (2.58)	29796.71** (9.60)	4830.3 (1.41)	1480.43 (.61)	-4856.33 (1.37)	-1438.51 -(1.77)	0.24	27.18
ED15	-17232.7 -(1.59)	5.85** (4.00)	1082.84 (1.93)	-12.37 -(1.93)	3320.82 (1.11)	11787.88* (2.02)	3948.08 (.99)	24252.45* (2.45)	29203.11** (8.74)	4101.24 (1.13)	1213.55 (.47)	-5732.33 -(1.46)	-1770.8* -(2.02)	0.22	23.84
ED16	-26718.50* -(2.00)	2.70** (3.26)	1679.99* (2.18)	-19.52* -(2.14)	3376.98 (.98)	6928.65 (.92)	7868.00 (1.85)	24839.54* (2.22)	28668.02** (7.46)	2850.86 (.69)	1401.85 (.47)	-5655.5 -(1.23)	-1954.89 -(1.94)	0.18	18.41

* Significant at .05 level ** Significant at .01 level

REGRESSION RESULTS EXCLUDING PERMANENT INCOME

RECURSIVE MODEL

DEP. VAR.	Constant	AGE	AGE^2	EMP	RHS	EP	ES	HH Size	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	FAMILY TYPE
ED1	-909.30**	-16.03	0.36*	418.53**	471.10**	458.28**	209.37	102.00**	-295.94**	121.86*	-194.09**	-63.51	184.98	159.20*
	-(2.67)	-(1.05)	(2.29)	(5.21)	(2.88)	(3.89)	(.67)	(6.29)	-(5.05)	(2.29)	-(3.06)	-(1.23)	(1.61)	(2.06)
ED2	-704.46	-100.56**	1.56**	767.48**	1120.91**	514.04*	222.66	235.37**	-564.02**	58.56	-393.27**	-242.21*	429.24	345.65*
	-(.94)	-(2.98)	(4.41)	(4.20)	(3.10)	(1.97)	(.32)	(6.55)	-(4.34)	(.49)	-(2.80)	-(2.11)	(1.69)	(2.02)
ED3	1738.64	-465.21**	6.53**	1871.48**	3771.09**	32.91	46.22	602.37**	-1179.01*	-148.52	-966.35	-863.27*	1406.84	856.42
	(.64)	-(3.83)	(5.11)	(2.92)	(2.89)	(.04)	(.02)	(6.65)	-(2.52)	-(.35)	-(1.91)	-(2.09)	(1.54)	(1.39)
ED4	15257.51	-2071.32**	28.00**	6357.44*	15125.63*	-3369.85	-1011.02	1780.73**	-3019.30	-586.10	-3132.10	-3212.19	5769.47	2525.73
	(1.17)	-(3.55)	(4.58)	(2.06)	(2.42)	-(.75)	-(.08)	(2.87)	-(1.34)	-(.29)	-(1.29)	-(1.62)	(1.31)	(.85)
ED5	-573.41**	3.45	0.03	208.98**	231.08**	270.47**	139.31	33.99**	-116.58**	102.32**	-75.31**	-6.06	82.18	59.19
	-(3.68)	(.58)	(.51)	(5.69)	(3.10)	(5.04)	(.98)	(4.59)	-(4.36)	(4.20)	-(2.60)	-(.26)	(1.58)	(1.68)
ED6	-695.59**	-18.16	0.25*	313.08**	378.11**	347.53**	167.44	71.38**	-205.63**	102.28**	-133.86**	-44.48	137.30	115.03*
	-(2.79)	-(.91)	(2.15)	(5.32)	(3.16)	(4.03)	(.73)	(5.99)	-(4.79)	(2.62)	-(2.88)	-(1.17)	(1.64)	(2.03)
ED7	-575.35	-64.64**	1.02**	533.23**	831.41**	386.91*	173.78	158.20**	-373.13**	61.51	-254.63**	-167.28*	298.57	241.29*
	-(1.12)	-(2.84)	(4.27)	(4.43)	(3.40)	(2.20)	(.37)	(6.51)	-(4.26)	(.77)	-(2.68)	-(2.16)	(1.69)	(2.09)
ED8	788.57	-275.34**	3.89**	1146.66**	2462.13**	136.01	52.62	382.15**	-727.38**	-79.12	-564.59*	-562.52*	832.93	564.52
	(.51)	-(3.98)	(5.35)	(3.14)	(3.32)	(.25)	(.04)	(5.18)	-(2.73)	-(.33)	-(1.96)	-(2.39)	(1.60)	(1.61)
ED9	-578.47	-85.36*	1.24**	761.99**	982.28*	1012.02**	176.40	284.63**	-660.15**	91.75	-423.86**	-165.89	366.05	278.79
	-(.69)	-(2.27)	(3.14)	(3.83)	(2.24)	(3.48)	(.23)	(5.10)	-(4.56)	(.70)	-(2.70)	-(1.38)	(1.29)	(1.46)
ED10	1088.61	-286.18**	3.82**	1306.73**	2279.69**	1111.92*	19.56	414.47**	-1094.09**	-34.63	-722.72*	-490.16*	751.40	582.96
	(.66)	-(3.89)	(4.94)	(3.36)	(2.89)	(1.96)	(.01)	(5.28)	-(3.06)	-(.13)	-(2.35)	-(1.96)	(1.36)	(1.56)
ED11	7495.72	-967.94**	12.64**	2937.83*	7574.48**	2561.41	-687.72	949.15**	-1995.41*	-322.43	-1510.29	-1541.28*	2193.41	1368.73
	(1.53)	-(4.44)	(5.51)	(2.55)	(3.24)	(.15)	-(.15)	(4.08)	-(2.38)	-(.42)	-(1.66)	-(2.05)	(1.33)	(1.24)
ED12	32066.93	-3512.19**	45.98**	8215.73	28232.28**	-5259.17	-3389.12	2588.14**	-4503.68	-772.88	-4335.48	-5386.89	8266.63	3798.22
	(1.59)	-(3.91)	(4.86)	(1.96)	(2.93)	-(.76)	-(.18)	(2.69)	-(1.38)	-(.25)	-(1.16)	-(1.76)	(1.22)	(.83)
ED13	-823.25*	-10.65	0.26	408.19**	425.67*	624.38**	163.14	81.19**	-318.38**	118.48	-213.68**	-37.42	185.21	181.91
	-(1.98)	-(.57)	(1.31)	(4.16)	(2.14)	(4.35)	(.43)	(4.18)	-(4.45)	(1.82)	-(2.75)	-(.68)	(1.32)	(1.08)
ED14	-624.45	-54.66	0.84**	582.99**	767.97*	771.63*	147.60	145.78**	-478.67**	90.99	-315.03**	-113.07	285.64	199.02
	-(.99)	-(1.95)	(2.84)	(3.93)	(2.55)	(3.56)	(.26)	(4.87)	-(4.43)	(.97)	-(2.69)	-(1.19)	(1.35)	(1.40)
ED15	423.27	-186.91**	2.55**	936.78**	1865.89**	813.94*	15.90	282.43**	-744.83**	17.24	-501.40*	-331.94	549.45	406.36
	(.36)	-(3.54)	(4.59)	(3.35)	(3.29)	(1.99)	(.02)	(5.01)	-(3.66)	(.09)	-(2.27)	-(1.85)	(1.30)	(1.51)
ED16	4300.75	-405.63**	7.99**	1871.88*	5670.19**	246.45	-535.77	607.88**	-1238.58*	-165.67	-934.15	-997.44*	1424.54	989.27
	(1.34)	-(4.24)	(5.32)	(2.48)	(2.70)	(.22)	-(.18)	(3.99)	-(2.24)	-(.33)	-(1.57)	-(2.05)	(1.32)	(1.25)

ED EQUATION

DEP. VAR.	EXISTENCE of CHILDREN	R^2	F-Ratio (d.f.=15, 1023)
ED1	666.27** (6.16)	0.25	24.30
ED2	1341.87** (5.60)	0.22	20.40
ED3	3223.39** (3.73)	0.14	11.40
ED4	9563.28* (2.38)	0.08	6.16
ED5	285.03** (5.77)	0.25	24.28
ED6	485.53** (6.13)	0.25	24.45
ED7	929.29** (5.74)	0.23	21.26
ED8	2073.85** (4.21)	0.16	13.78
ED9	1346.54** (5.03)	0.16	13.63
ED10	2561.87** (4.91)	0.15	13.16
ED11	5715.97** (3.69)	0.12	9.51
ED12	15450.49* (2.42)	0.08	5.96
ED13	680.39** (4.54)	0.15	13.14
ED14	982.52** (4.93)	0.16	13.71
ED15	1789.38** (4.76)	0.15	12.76
ED16	3768.71** (3.69)	0.12	9.51

* Significant at .05 level ** significant at .01 level

TABLE NO. AIV.4

RECRESSION RESULTS EXCLUDING

PERMANENT INCOME

SIMULTANEOUS MODEL

ED EQUATION

DEP. VAR.	CONSTANT	$\hat{ASSET}$	AGE	AGE^2	EMP	EDS	EP	ES	HH SIZE	MALE 6-12	MALE 13-19	FEMALE 6-12	FEMALE 13-19	CHILD-SURVIVAL	EXISTENCE OF CHILDREN	R^2	F-Ratio (d.f.=16, 1022)
ED1	-882.18**	0.01	-14.16	0.33*	370.41**	357.05*	421.69**	89.76	90.44**	-300.73**	120.28*	-189.09**	-75.86	178.63	664.69**	0.25	23.01
	-(2.59)	(1.64)	-(.93)	(2.03)	(4.35)	(2.02)	(3.53)	(.28)	(5.12)	-(5.14)	(2.26)	-(2.98)	-(1.46)	(1.56)	(6.16)		
ED2	-658.45	0.01	-97.05**	1.49**	677.92**	906.38*	445.23	-2.34	213.47**	-573.03**	55.61	-383.87**	-265.44*	417.31	1330.91**	0.22	19.13
	-(.87)	(1.39)	-(3.87)	(4.15)	(3.57)	(2.30)	(1.68)	-(.003)	(5.43)	-(4.40)	(.47)	-(2.72)	-(2.29)	(1.64)	(5.58)		
ED3	1874.77	0.02	-455.83**	6.35**	1632.45*	3199.34*	-150.74	-554.25	543.94**	-1203.05*	-156.40	-941.26	-925.26*	1374.97	3215.69**	0.14	10.68
	(.69)	(1.03)	-(3.73)	(4.08)	(2.30)	(2.25)	-(.16)	-(.22)	(3.83)	-(2.56)	-(.37)	-(1.05)	-(2.21)	(1.50)	(3.71)		
ED4	15769.97	0.08	-2036.00**	27.35**	5457.63	12969.37	-4061.19	-3271.41	1568.78*	-3109.80	-615.78	-3037.64	-3445.57	5650.00	9533.35*	0.08	5.75
	-(1.20)	(.08)	-(3.47)	(4.39)	(1.66)	(1.90)	-(.88)	-(.27)	(2.30)	-(1.30)	-(.30)	-(1.24)	-(1.71)	(1.20)	(2.29)		
ED5	-559.32**	0.01	4.42	0.02	184.24**	171.73*	251.46**	77.16	27.95**	-119.07**	101.50**	-72.71*	-12.68	79.40	284.22**	0.25	23.11
	-(3.61)	(1.00)	(.64)	(.24)	(4.75)	(2.13)	(4.63)	(.53)	(3.48)	-(4.47)	(4.19)	-(2.52)	-(.53)	(1.53)	(5.79)		
ED6	-675.03**	0.01	-8.74	0.22	276.47**	291.62*	317.78**	76.73	62.47**	-209.07**	101.09**	-130.07**	-53.85	132.49	484.34**	0.25	23.15
	-(2.71)	(1.70)	-(.79)	(1.00)	(4.44)	(2.25)	(3.66)	(.33)	(4.83)	-(4.88)	(2.59)	-(2.80)	-(1.41)	(1.50)	(6.13)		
ED7	-540.01	0.01	-62.21**	0.97**	471.10**	682.70*	339.23	17.90	143.04**	-379.37**	59.46	-248.11**	-183.30*	282.30	927.24**	0.23	19.94
	-(1.06)	(1.43)	-(2.72)	(4.02)	(3.60)	(2.57)	(1.09)	(.04)	(5.39)	-(4.32)	(.74)	-(2.61)	-(2.34)	(1.64)	(5.72)		
ED8	870.09	0.01	-269.73**	3.70**	1003.52*	2119.27**	26.03	-306.47	347.16**	-741.70**	-83.04	-549.56	-599.64*	813.84	2069.12**	0.16	12.04
	(.56)	(1.00)	-(3.00)	(5.11)	(2.57)	(2.62)	(.05)	-(.21)	(4.30)	-(2.70)	-(.34)	-(1.09)	-(2.51)	(1.55)	(4.19)		
ED9	-495.03	0.01*	-79.64*	1.12**	616.19**	553.07	900.00**	-189.85	168.99**	-674.82**	85.94	-400.56**	-203.71	346.62	1341.72**	0.16	13.01
	-(.59)	(2.03)	-(2.11)	(2.01)	(2.92)	(1.26)	(3.04)	-(.24)	(3.06)	-(4.65)	(.66)	-(2.60)	-(1.50)	(1.22)	(5.02)		
ED10	1220.24	0.02	-276.55*	3.62**	1061.57*	1692.45*	923.55	-596.33	354.54**	-1118.75**	-42.51	-696.90*	-553.74*	718.71	2559.77**	0.15	12.14
	(.74)	(1.74)	-(3.73)	(4.61)	(2.56)	(1.97)	(1.59)	-(.30)	(4.13)	-(3.93)	-(.16)	-(2.26)	-(2.10)	(1.29)	(4.80)		
ED11	7787.90	0.05	-947.81**	12.22**	2424.67*	6345.26*	-137.86	-1976.82	823.72**	-2047.02*	-339.36	-1456.52	-1674.30*	2125.00	5699.04**	0.12	8.80
	(1.50)	(1.23)	-(4.31)	(5.24)	(1.97)	(2.40)	-(.00)	-(.43)	(3.22)	-(2.42)	-(.44)	-(1.59)	-(2.22)	(1.29)	(3.65)		
ED12	32913.77	0.14	-3453.83**	44.60**	7728.00	24670.60*	-6402.22	-7124.43	2216.67*	-4652.17	-821.93	-4179.38	-5692.56	8060.30	13401.35*	0.08	5.56
	(1.63)	(.06)	-(3.02)	(4.66)	(1.52)	(2.34)	-(.90)	-(.37)	(2.11)	-(1.36)	-(.26)	-(1.11)	-(1.04)	(1.19)	(2.40)		
ED13	-779.64	0.01*	-7.63	0.19	331.30**	241.51	565.20**	-30.01	62.40**	-326.15**	115.93	-205.53**	-57.36	174.96	597.04**	0.16	12.66
	-(1.00)	(2.17)	-(.41)	(.99)	(3.10)	(1.12)	(3.00)	-(.00)	(2.09)	-(4.57)	(1.70)	-(2.66)	-(.90)	(1.25)	(4.54)		
ED14	-562.19	0.01*	-50.30	0.75*	473.69**	506.10	687.63**	-127.04	199.06**	-489.67**	91.39	-303.55**	-141.42	271.07	978.91**	0.16	13.09
	-(.89)	(2.04)	-(1.79)	(2.51)	(3.00)	(1.55)	(3.12)	-(.22)	(3.65)	-(4.53)	(.93)	-(2.59)	-(1.47)	(1.20)	(4.91)		
ED15	519.91	0.02	-186.25**	2.41**	167.10*	1459.46*	683.57	-410.35	240.96**	-761.90**	11.64	-483.59*	-375.95*	526.83	1783.77**	0.15	12.03
	(.44)	(1.67)	-(3.39)	(4.20)	(2.57)	(2.36)	(1.64)	-(.37)	(3.90)	-(3.73)	(.06)	-(2.10)	-(2.00)	(1.32)	(4.73)		
ED16	6470.39	0.03	-593.39**	7.73**	1559.96	4923.00**	6.00	-1319.32	531.63**	-1261.95*	-175.96	-901.41	-1078.34*	1302.95	3730.40**	0.12	8.09
	(1.39)	(1.14)	-(4.13)	(5.07)	(1.93)	(2.94)	(.006)	-(.44)	(3.10)	-(2.82)	-(.35)	-(1.30)	-(2.19)	(1.20)	(3.66)		

* Significant at .05 level ** Significant at .01 level