CHAPTER - 2
THEORETICAL FRAMEWORK

2.1 INTRODUCTION

In the present chapter, the study is related to the theoretical frame. The various determinants of demand for quality higher education are the main focus of the present study. There are two economic theories considered as the basic theorem for this study. They are demand theory and the economic theory of decision to invest in higher education. It has been discussed widely in the succeeding pages of this chapter.

2.2 THEORETICAL FRAMEWORK

"Students demand Higher Education," is the phase originating in economics as an outgrowth of Marshall’s demand theory. Demand is the rate at which consumers want to buy a product. Demand theory holds that quantity of a particular good or service demanded is a function of price, the money income of the buyer, the prices of other goods and services, and the buyer's tastes or preferences. The theory as applied to higher education has been used to suggest that

a) Enrollment rates will be negatively associated with prices charged on students, especially tuition prices.

b) Enrollment rates will be positively associated with amounts spent on student aid, since students aid can be viewed as reducing net prices or increasing student money income.

c) Enrollments in higher educational institutions or groups of institution will be associated positively with the tuition prices charged by competitors. For instance, public college enrollments with private college tuitions and vice versa as students exercise their preferences.
In an elaborate way, it can be explained as economic theory holds, that demand consists of two factors: tastes and ability to buy. Taste, which is the desire for a good, determines the willingness-to-buy the good at a specific price. Ability-to-buy means that to buy a good at specific price, an individual must possess sufficient wealth or income. Both factors of demand depend on the market price. When the market price for a product is high, the demand will be low. When price is low, demand is high. At very low prices, many consumers will be able to purchase a product. However, acquiring additional increments of a good or service in some times will yield less and less satisfaction. As a result, the demand for a product at low prices is limited by taste and is not infinite even when the price equals zero. As the price increases, the same amount of money will purchase fewer products. When the price for a product is very high, the demand will decrease because, while consumers may wish to purchase a product very much, they are limited by their ability to buy.

The demand theory and analysis concentrate on formulating laws on relationships between the amounts of various goods demanded and some easily quantifiable phenomenon such as the prices of those goods, the prices of other competitive or complementary goods and the income of consumers. There are additional matters, which are usually assumed to be relatively constant, notably the quality of the goods analyzed, and the tastes of consumers. The quality changes can sometimes be quantified to an extent. What shifts in demand remain to be explained, when price, income and quality changes accounted for are usually ascribed to changes in consumer's tastes. Economists assume that each consumer has a planned set of choice on goods and services, under a certain conditions or constraints (e.g. price, income, wealth, taste, education). This is mainly based on the assumption of rationality. Accordingly, consumers are logical in making choice on goods and services to seek the maximum level of satisfaction or self-interest.

Some researchers have tried to measure the demand for education with a simple demand function, \( D = f(p, y) \). They used an exponential demand model, \( d = f(y^a p^b) \), where \( y \) is income and \( p \) is price of education (tuition fees) and 'd' is demand for education. The function is later converted into a log linear and found that
the demand for education is income elastic. But these estimates are criticized on the
ground that they have assumed the educational expenditure as consumption. However,
there are some studies, which have exclusively taken the expenditure on education as
investment. There are difficulties in analyzing the educational demand with simple
demand functions of the above model.

Education in any country at any given time is carried on at many different
levels by a complex system of institutions. Some of these levels are closely
interconnected, and some of them are almost entirely unrelated. Hence, any attempt to
make the analysis of the demand for education simpler by taking the component parts
(or levels) rather than the whole system is not very satisfactory because of varying
degrees of complementarity between the parts. Furthermore, analysis of demand
changes in the short-term (say monthly or quarterly), though relatively more free from
difficulties arising from taste and quality change, are not of great interest when it
comes to education, typically one is involved with the analysis of ten to twenty years
and with forecasting for five to ten years. The demand for education is almost
invariably analyzed in a long-term framework, and therefore, it becomes more
difficult to justify putting awkward changes in taste, quality, or social structure in the
bound of ceteris paribus. Other things may be manifestly not equal.

Thus, it is important to realize that the whole problem of assessing the
demand for education is not simply one of formulating a demand schedules i.e., some
functional relationship between amount demanded and price, income, or a rate of
return on investment (if one considers education as an investment good).

Further, difficulty is that, the educational system and society in general not
being static, is continuously changing and developing over time; thus analysis of
demand over time will have to bear this change and development in mind. It is likely
that there is more than one-way relationship involved, the amount or type of education
demanded does not simply depend on forces acting from society or various
individuals within society. Education may influence the society and thus influence the
society's demand for education. The relationship may be one of interaction rather than
one which can be formulated simply in terms of independent and dependent variables
of price (or income) and quantity, given certain parameters of quality and consumers' tastes. Therefore, in dealing with the demand for education, it should be remembered how abstract are the concepts of demand theory in relation to the social and educational phenomena to which they are applied. Traditional price theory, which is basically static, is being applied to dynamic and complex social processes. This should warn us at least not to expect too many results from an analysis of the demand for education.

Most theoretical and empirical analysis of the demand for education has centered on the investment or rate of return aspect. The consumption aspect has generally been treated by analyzing the amount spent per head of population, or per student, as income per head changes, this aspect to demand for education is known as the social demand approach.

Two attempted theoretical derivations of the demand curve for education will now be considered. Blaug (1966), is concerned with the aggregate demand curve for education. The basic premise is people demand education as long as the rate of return from education (Re) is greater than some market rate of interest, in this case the average yield of equities and debentures (Rb). The Rb is the rate of interest on bonds, which measures the opportunity cost of education. The greater the Rb, the demand for education is less and the greater the Re, the greater the demand for education, other things being equal. Hence, the demand curve for education can be drawn as positive function of the internal rate of return on investment in education and a negative function of the average yield of equities and debentures. That is, a demand curve which is drawn in the normal way with Rb/Re (representing the price of education) as one axis and the amount of education on the other, will have the normal (negatively sloped) configuration. Obviously, this is of interest to the policy maker who is trying to influence the demand for education: changes in financing arrangements (such as adjustments in fees and grants by the public authorities) can influence the cost of education to the individual and thus influence the internal rate of return (Re). The resulting demand curve drawn on the usual assumption of ceteris paribus is as follows:
The horizontal axis is presumably measured in man-hours (school grades) of education demanded. For the individual, there is the first difficulty that the amount demanded would not be a smooth function of price. Education is a lumpy commodity and cannot be varied by small amounts; one makes a decision for or against a course which may last from one to six years and which is typically three or four years. Also, of course, if an individual ranks the educational options before him in order of rates of return, he will not be able to choose all those pieces of education, which cover their cost, as to a significant extent they represent mutually exclusive courses of action. Thus, for an individual, at least there is a problem of indivisibility; the very best one can hope for is a step function rather than a smooth demand curve. A further difficulty arises from the question of whether or not there exist diminishing returns to successive increments of education. The existence of diminishing returns is argued by analogy with the basic economic theory of the application of successive units of a variable factor to one or more fixed factors. Thus in education, one factor decreasing the marginal rate of return, at least eventually, with increases in the amount invested is a presumed diminishing marginal product from adding more (educational) capital to a fixed human body. In other words the capacity of a person to absorb knowledge is
limited and additional education will increasingly come up against capacity constraints, leading to diminishing returns. Also the increasing opportunity costs associated with successively higher levels of education and the finiteness of the life of the individual have been put forward as a reason for the eventual emergence of diminishing returns. The aggregate demand curve glosses over the difficulties in deriving the individual demand curves, the implicit assumption must be that the individual at any given decision age refers to the average returns up to any terminal education age, that interdependencies are ignored, and that the returns vary smoothly with education received.

An alternative is not to start from the individuals' demand curve but simply from the individuals' yes/no decisions on any education. Ordinary investment theory would have the individual compare his/her expected rate of return with some appropriate interest rates. Education will be purchased, if the expected rate of return exceeds the rate of interest. Education will not be purchased, if the interest rate exceeds the rate of return. An aggregate demand schedule for enrolments demanded would equal the aggregate of all enrolments for which the rate of return exceeds the rate of interest. The variations in the rate of interest will lead to inverse variations in the number of enrolments demanded. This clearly avoids the first aggregation problem, but it does not avoid the interdependency problem, i.e., how the individual made the decision to demand education up to the pre-college levels. Neither does it entirely escape the consumption investment problem (Latchanna Gara and Hussein Jeilu Oumer, 2007).

The demand for educational services tends to increase:

1. with an increase of the population, in so far as every human person has a right to be given a chance to develop his mind and skills, and society has the responsibility to make the best use of available human resources;

2. with the economic development, which is essentially an increase in the real (total and per capita) income. The elasticity of the demand for education services grow as the social and technical environment becomes more complex, and the time available for free activities also grow;
3. with the influence which the supply of education exerts on the demand for them. For instance, the development of the arts often causes an expansion of related activities, which in turn tends to generate more demand for education services.

2.3 INVESTMENT IN HUMAN RESOURCES

The insight offered by viewing expenditure on higher education as an investment in human resources, with returns of various kinds expected at future dates, is leading to a basic revolution in the economics of higher education and has generated disequilibrium in educational finance. This is partly due to the capital and investment theory concepts having made education more amenable to economic analysis.

The four main economic determinants considered are current income, expected returns, interest rates, and an index of desires for equity in educational opportunity. These influences are combined with the more commonly explored effects of demographic changes in the age composition of the population. Since the educational capital is durable, and has a long production period, a model of investment in human capital with a flexible accelerator is employed. Investment in human resources therefore is viewed as an aspect of household saving and investment behaviour.

The selection of the determinants tested is aided by the development of the theory of family decisions to invest in higher education.

The current income (or wealth) is a theoretically acceptable determinant on the assumption, which is reasonable one, that there are imperfect capital markets for financing educational capital, so that larger family income lowers the financing costs. Income has been found to be significant in cross section data for individual household decisions (Brazer and David (1962), Feldman and Hoenack (1969) Bowles (1972)). It has also been found to be significant in studies of enrollment demand by Campbell and Seigel (1967), Hoenack (1967), Millen (1971), and Bishop (1972), even though enrollment as the dependent variable leaves some of the investment that reflects quality and better learning in the tuition terms, and leaves other components such as public investment or investment of foregone earnings even more unexplained. The capital markets for financing educational capital are to remain very imperfect in spite
of improvements made by government guaranteed loans. This is because in addition to lender’s risk (educational capital is less accessible to private lenders for use as collateral), there is also a large borrower’s risk, since students, especially freshmen are very uncertain of their abilities and of the future. There is an additional deterrent to borrow that, it involves an important shift of educational costs within the family from the parents to the students.

Several types of decision units must be considered in order to cover all the major investment decisions that result in expenditures on higher education and research. Families, state and local Governments and federal Government are basically different types of decision units. Their investment decisions therefore are considered separately, using four structural models, each of which is drawn from its appropriate theoretical framework and adapted for use with aggregate data over time. These models are presented, respectively, in:

- Investment by families in higher education
- State and local investment in higher education
- Federal investment in higher education
- Federal investment in research at institution of higher education

As far as the present study is concerned, the first model, investment by families in higher education is only related.

2.4 THE ECONOMIC THEORY OF DECISIONS TO INVEST IN HIGHER EDUCATION

Most decisions to invest in higher education are made while giving consideration to the return flows of income and non-monetary satisfactions expected in future periods. This multiperiod orientation to the future makes them similar to other types of investment decisions that are made by households (including investment in durable goods and houses), by businesses, and by governmental units.

The logical place to start is with an analysis of decisions to invest in human educational capital by private households. This is because a large part of the total investment in the society is financed by families and students out of their own resources.
Regarding this, the economic theory of choice is developed and applied to the problem in analyzing the family and students' decisions to invest in higher education.

2.4.1 The Basic Dynamic Model

The basic dynamic model assumes that the decision unit looks forward to the returns from education it expects to receive in the current and future periods, and then adjusts its actual stock of educational capital toward the long run desired level that this implies.

The short-term dynamic adjustment process shown in equation (1) and the desired stock of educational capital determined by equation (2) together summarise the basic dynamic model. The model will be seen to be consistent with the alternative rate of return formulation, e.g., Becker (1967), while offering new perspectives on short run investment behaviour, on family decisions, as well as on a number of other points. The stock adjustment process is:

\[ I_t = \theta_t(S_{Et}^* - (1 - \delta)S_{Et-1}) \rightarrow (1) \]

where,

\[ I_t \] - real investment in higher education,

\[ S_{Et}^* \] - equilibrium educational capital stocks, measured in constant dollar,

\[ S_{Et-1} \] - actual stocks, measured in constant dollars, at original cost,

\[ \delta \] - rate of depreciation and obsolescence, and

\[ \theta_t \] - the dynamic adjustment co-efficient.

The equilibrium stock of educational capital is determined by longer-run considerations drawn from a life cycle theory of household saving and investment decisions. The resulting stock of educational capital desired by students and their families at the stage where the son or daughter reaches age 18 is hypothesized in equation (2) to depend upon the present value of the expected additional earnings
made possible by college \( (Y^e_{Dt}) \) the non-monetary returns expected \( (X^e_{Dt}) \), which are especially important for females planning marriage, a psychological stock of parental education tastes and habits \( (S_{p_{t-1}}) \) and disturbances, \( (U_t) \):

\[
S_{E_t}^* = f(Y^e_{Dt}, X^e_{Dt}, S_{p_{t-1}}, U_t) \rightarrow (2)
\]

Substituting the longer-run determinants given by equation 2 into equation 1 for \( S_{Et} \) changes nothing but simplifies the two equation basic dynamic model into a single equation.

\[
I_t = \theta_1[f(Y^e_{Dt}, X^e_{Dt}, S_{p_{t-1}}, U_t) - (1 - \delta)S_{E_{t-1}}] \rightarrow (3)
\]

The short run aspects can be made more specific. In summary, the following three aspects are developed:

1. financing constraints as measured both by parents’ disposable income \( (Y_{D_t}) \), and by borrowers’ risk as measured by \( \mu \) limited the amount of investment undertaken in any one year. But in addition to \( X_{D_t} \) and \( \mu \), there are technological and time constraints implicit in \( \theta \), and the hypotheses as stated apply to families with students of given ability.

2. the expected non-monetary contributions of higher education in later life \( (X^e_{D_t}) \) are the result of the expected contribution of education to the production of utility service flows (Becker’s “commodities”). The expected contributions, in turn, depend on \( S_{p_{t-1}} \). But a suitable direct measure of expected non-monetary contributions is not available in time series data.

3. a linear function is assumed to be reasonable first approximation, as when using the first part of a Taylor expansion.

A result incorporating these three considerations is,

\[
I_t = B_1Y_{D_t} + B_2Y^e_{D_t} + B_3S_{p_{t-1}} + B_4\mu + B_5(1 - \delta)S_{E_{t-1}} + \Sigma_t \rightarrow (4)
\]

Equation (4) is the basic equation to be estimated.
The determinants of desired educational capital stock (measured in dollar units) in this reduced-form equation are derived from a structural demand for real educational capital and from its marginal costs of household production, illustrated in the figure 2.2.

**Figure – 2.2**

**Investment in Higher Education**

![Diagram showing the relationship between price, demand, and supply of educational capital.](image)

The hypotheses are, simply, that the demand for educational capital (measured in knowledge units, and for a given set of tastes and habits), as shown in the figure is increased by an increase in the monetary or in the non-monetary returns expected from a college education. The increased demand for knowledge results in increase in desired educational capital stocks \((S_{et})\), measured in dollar units. This follows because the latter are the product of the increased quantity demanded and of a supply price \((P_{et})\), given by a marginal cost curve that is assumed throughout to be upward sloping.

The size and direction of the effect of the price \((P_{et})\) of educational capital \((S_{et})\), measured in knowledge units) on the longer run desired stock measured in value terms \((S_{et})\) depends on the elasticity of demand. If it is assumed that the
elasticity with respect to price is near unity, the effect of this price on total investment outlays will be negligible, and it should be left among the disturbances. In the short run, there are increases in $P_{et}$ that together with constraints or borrowing and income can act to curtail the amount of investment. But with the elasticity unknown, the longer-run price will be left among the disturbances (equation 2) for the time being.

In summary, increase in expected returns from higher education cause the demand curve for the total knowledge to be acquired to shift to the right as illustrated in figure 2.2. The variables used to affect demand appear (together with those affecting LRMC) in the reduced form of equation 2 when the discounted marginal returns are set equal to costs. The larger equilibrium stock of educational capital that this implies increases the investment by the student and his family, initially to something greater than zero. But the long gestation period and related technological constraints, as well as the borrowers' risk which tends to limit investment toward what can be financed out of current income, imply a partial short-term dynamic adjustment mechanism (equivalent to a distributed lag) that is given by equation 1.

Equation 2 is a simplified yet applicable version of this basic dynamic model designed to convey the main thrust of the argument. It summerises the determinants of investment in higher education, most of which are given direct attention later. They include current income, expected returns (dependant in part on age), tastes for further education, an uncertainty discount reflecting borrower's risk, the deterrent effect of accumulating educational capital stocks, interest rates, and in the case of public investment, desires for vertical equity. These determinants are drawn from a model.

2.5 CONCLUSION

In the present chapter the theoretical aspect and its link with the present study were discussed. With the help of this theoretical framework directly or indirectly, ample studies have been done earlier by many researchers. The forthcoming chapter will demonstrate the empirical evidences related to the present work.