CHAPTER III

REVIEW OF LITERATURE AND RESEARCH DESIGN
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From the preceding chapters, it is identified that households demanded money for transaction purposes, speculative and financial purposes. The transaction demand for money is measured in terms of consumption expenditure speculative demand, measured in terms of households portfolio assets and financial assets is interns of bank deposits, LIC provident fund chit funds and others. In this background the existing studies are classified into 1. Households’ transactions demand for money 2. Households’ speculative demand for money and 3. Households’ financial investment demand for money.

Households’ Transactions Demand for Money

The theory of intertemporal choice as it stands today is based on life cycle and permanent income hypotheses introduced in the 1950s. These models were the first ones to address the behaviour of a consumer whose planning horizon extends over several periods instead of one period like in the models stemming from the Keynesian tradition. In the life cycle-permanent income framework, total lifetime resources available to the economic agent are an important determinant of consumption. Lifetime resources are comprised both of the stream of labour income expected to receive over the remainder of
the working life and of assets owned by the consumer. Keynesian
theory, in contrast, asserts that disposable income is the only relevant
variable with respect to consumption decisions.

The key implication of the benchmark life cycle-permanent
income framework is that the economic agent smooths consumption
over the life cycle. Hall (1978)\(^1\) showed using his rational expectations
version of the permanent income hypothesis that consumption
should follow a martingale. As a result, any past or otherwise
predictable information should not help to forecast changes in
consumption. Current and past values of income especially should
have no predictable power whatsoever. However, empirical studies on
time-series data have rendered this implication suspect. Consumption
has been observed to exhibit both excess sensitivity and excess
smoothness. Whether excess sensitivity and excess smoothness of
consumption are puzzles from the theoretical point of view depends in
large part on the specification of the time-series model describing the
dynamics of labour income. Two commonly proposed rationales for
these empirical puzzles include constraints on borrowing and the
failure of the life cycle-permanent income framework to take into
account the long lasting service flows that durable goods produce.
The simple life cycle model predicts that during the working years of life assets are accumulated in order to finance consumption in retirement.

Since the economic agent smooth on consumption of the whole life span, there should be no change in spending after retirement. Rational forward-looking behaviour also requires that wealth is exhausted by the end of the life cycle. The observed behaviour of retirees seems not to accord with these theoretical implications. Elderly seem to reduce consumption after retirement. Furthermore, they do not appear either to decumulate their wealth at all or to dissave at a rate fast enough to be consistent with the benchmark theory. As a solution to these contradictory regularities, the theory of intertemporal choice has been modified to allow for uncertainty over the time of death and for a desire to leave a bequest.

The empirical puzzles associated with life cycle and permanent income hypotheses are puzzles with respect to the certainty or certainty equivalence benchmark. When proper accountancy is made for uncertainty through a more plausible specification of utility function, the behavioral implications of the intertemporal choice theory are significantly different from those of conventional models. More precisely, the observed patterns of consumption and wealth
holdings, in fact, arise from rational optimising behaviour on the part of the consumer. Another troublesome feature of the benchmark life cycle-permanent income framework is the assumption about the representative agent. In Deaton’s (1992) words, the representative agent knows too much and lives too long relative to reality. Hence, it is highly controversial if the behaviour of the representative agent corresponds to the behaviour of actual consumers. Finally, in empirical analysis aggregate is consumption often treated as if it had been generated by the decisions of a single consumer. Such a straightforward simplification is clearly invalidated.

An important role in the life-cycle consumption and saving decisions of economic agents is played by housing. Housing wealth is the most significant asset in their overall portfolios for many households. Real estate assets differ substantially from financial assets due to their dual role. Housing wealth is demanded both as an investment good and as a durable consumption good. The consumption of housing services need not be combined with the ownership of real estate assets. Banks, Blundell, Oldfield and Smith (2004) have examined the implications of housing price uncertainty for the life cycle path of consumption and wealth.
Life Cycle Hypothesis

After the introduction of Keynes' *General Theory* in 1936 it was generally accepted, according to Friedman (1957)⁴ and Branson (1972)⁵, that one of the key macroeconomic relationships is the one between income and consumer expenditure. This relationship is termed the consumption function. Keynes asserted that real consumption is a function of real disposable income, total income net of taxes. Even though Keynes did not impose restrictions on the functional form, usually within Keynesian framework of consumption is expressed as a linear function of income with a positive intercept. The linear formulation was supported by empirical findings of budget studies as Modigliani (1986)⁶ recollects in his Nobel Prize lecture.

The obvious implication stemming from Keynes' consumption function is that the fraction of income saved increases with income (for example Friedman 1957 and Branson 1972). Hence, the marginal propensity to consume out of income decreases as income rises. When this assumption of Keynes is applied to a cross section of a population, rich people could be expected to save proportionally more than poor people. Post-Keynesians like Kaldor (1955 – 1956)⁷ divided income into earnings from labour and into profits by which Kaldor referred to income from property in general and not just to dividend income.
Kaldor (1955 - 1956) assigned different propensities to consume out of the two forms of income. The marginal propensity to consume out of profits was to be smaller than that out of wages. At first, empirical investigations on cross section data seemed to verify Keynes' theory. Current consumption expenditure was highly correlated with income. Moreover, when rich and poor households were compared with each other at one moment in time the proportion of income saved increased along with income. These facts have been recorded by Friedman (1957) and Branson (1972) among others.

Studies of consumption and saving behaviour on time series data, however, refuted Keynes' prediction that there is a downward trend in the ratio of consumption expenditure to income. Kuznets showed originally in 1946 that on average the fraction of income consumed had not fallen in the United States since the end of the 1860s although real income had increased substantially. Instead, his estimates summarised in Kuznets (1952)\(^8\) indicated that in the long run the ratio of consumption to income and remained more or less at the same level. On the other hand, in the short run this ratio did vary inversely with income due to cyclical fluctuations in economic environment as Keynes had postulated.
Kuznets (1952) also found that regardless of the marked rise in aggregate income the ratio of savings to income had secularly declined at the individual level. In other words, households had not saved a larger fraction of their income as they had become richer over time. Kuznets (1952) suggested that this phenomenon could be attributable to an increase in consumer demand. Branson (1972) states that in contrast to expectations based on Keynesian theory private demand increased sharply after World War II. It was proposed that during the war consumers were forced to accumulate an excess stock of liquid assets because of rationing. During the postwar era the decumulation of these assets resulted in a rise in consumption expenditure. Along with other contradictory evidence this phenomenon implied that consumption is not determined by current income alone, but it depends on assets or wealth as well.

One of the analytical attempts to account for the observed phenomena was Modigliani and Brumberg’s (1980) life cycle hypothesis. It was designed to reconcile the discrepancy between cross-sectional findings and the findings of time-series analysis. In addition, the model was meant to capture the effect of liquid assets on consumption.
The Stripped-Down Life Cycle Model

Unlike Keynes’ hypothesis, Modigliani and Brumberg’s (1980) life cycle model is based on microeconomic theory of consumer choice. Modigliani and Brumberg (1980) assumed that the decision horizon of a finitely lived consumer consists of the whole life span instead of one period as in the static Keynesian and Kaldorian models. The consumer derives utility from its own aggregate consumption in current and in future periods. The decision problem of the representative agent is thus to maximise lifetime utility subject to total resources available to him over the life cycle.

In addition to current income, lifetime resources during age period \( t \) are comprised of assets owned at the beginning of the period and of discounted non property income which the agent expects to earn during the remainder of his working life. It follows that the intertemporal budget constraint.

According to Branson (1972), this budget constraint conveys the idea that the consumer can both borrow and lend in order to separate the time paths of income and consumption from each other as long as the present value of consumption does not exceed the present value of lifetime resources. Branson (1972) also asserts that the value of assets
measured at the beginning of period $t$ can be assumed to equal the present value of income from these assets if capital markets are reasonably efficient. Hence, there is some similarity between Modigliani and Brumberg's (1980) hypothesis and Kaldorian models. In the so-called stripped-down version of the life cycle model, there is only one change in labour income. It takes place when the consumer retires. During the earning span of life income is constant, but after retirement it falls to zero.

What comes to the shape of the utility function, Modigliani and Brumberg (1980) assumed that preferences are homothetic. Furthermore, they insisted that the consumer neither inherits any assets nor intends to leave a bequest to his heirs. Consequently, the only way for the agent to accumulate assets is to save himself. On the basis of these two assumptions, Modigliani and Brumberg (1980) concluded that the representative agent plans to consume a constant fraction of his total lifetime resources over the remainder of his life span; that is, regardless of the change in income, the consumer aims to maintain the time path of consumption smooth. The assumption of homothetic preferences is not, however, required for this result to arise. It suffices to assume that marginal utility is decreasing (see for example Campbell and Viceira 2002).
One of the novel ideas of Modigliani and Brumberg (1980)\textsuperscript{11} was to include expectations into budget constraint. In their original paper they failed to specify the meaning of expectations; hence, their model is not closed and cannot be regarded as a truly intertemporal model. Later Ando and Modigliani (1986)\textsuperscript{12} amended this flaw in order to statistically test the life cycle model. They hypothesized that average expected income is a multiple of current labour income. From the current point of view Modigliani and Brumberg’s (1980) life cycle hypothesis is, naturally, a perfect foresight model. The time path of income is given and interest rates as well as price level are fixed by assumption. As a consequence, there is no uncertainty in the model.

The simplifying assumptions concerning consumer's opportunities and tastes which Modigliani and Brumberg (1980) made are obviously special and unrealistic. Two particularly drastic assumptions are the ones that interest rate is zero and that income is constant until retirement Deaton (1992)\textsuperscript{13} asserts that the introduction of a positive interest rate does not significantly change the main features of the life cycle model. In the beginning of the life cycle consumption path shifts downwards, whereas at the end it shifts upwards. Income path is more realistically described by a hump-shaped age profile. During the early
years of working career income is typically low, but increases along with ageing. Eventually earnings decline at the end of the working career. According to Deaton (1992), in this case consumption smoothing implies that a young worker might in fact want to borrow rather than to save during the early years of his earning span.

Further incentives to borrow during the early years of the life cycle are offered by the presence of dependent children and productivity growth. In the stripped-down model there are only two phases of life, working life and retirement. It is assumed that consumer starts working and accumulating retirement wealth immediately after the birth, so that the additional burden children place on young workers is ignored. Productivity growth, in turn, may give rise not only to income growth across individual life cycles but also to income growth within them. Expected income growth encourages consumers to borrow and the larger the growth rate the more they want to borrow.

**Permanent Income Hypothesis**

Contemporaneously with Modigliani and Brumberg (1980) Friedman (1957) developed his permanent income model in an attempt to explain the behaviour observed in cross-sectional budget
studies. While the life cycle model focuses on the relationship between age, consumption, savings, and the accumulation of assets, the permanent income theory concentrates on the dynamic behaviour of consumption. In particular, the permanent income theory is concerned with the evolution of consumption expenditure over the short term and in relation to income.

Another central difference between life cycle and permanent income hypotheses is the length of the planning horizon. Modigliani and Brumberg (1980) introduced finite life span in order to extract the effects of systematic variations in income and in needs occurring over the life cycle that maturing, retiring and changes in family size cause. In contrast, Friedman's (1957) permanent income model applies to an infinitely long planning horizon.

Like the life cycle hypothesis, the permanent income model is founded on the assumption of individual consumer's utility maximisation. The maximisation of lifetime utility is, again, constraint by the requirement that all lifetime resources need to be exhausted. Because consumer makes his expenditure plans by taking into account expected lifetime income instead of income received during the current period, Friedman (1957) stressed the need to distinguish the
concepts of consumption and current expenditure as well as those of income and current receipts from each other.

Friedman (1957) proposed that measured income, $y$, is the sum of two components the one of which is permanent component, $y_p$, and the other transitory component, $y_t$. According to Friedman (1957), the permanent component of income reflects the effects of the factors that determine the capital value or wealth of the consumer. Such factors include, for instance, the nonhuman wealth the consumer owns and personal characteristics that have an effect on the consumer's earning potential. As explained by Branson (1972), this means that the present value of the agent's future labour income stream, his human capital, is included in $y_p$. The transitory component, $y_t$, on its part is supposed to reflect the effect of the factors that the consumer has not been able to predict for one reason or another. $y$ assumption, there is no correlation between transitory and permanent income, so that $y T$ is just a random variation around $Y_p$.

In accordance with the definition of income, consumption expenditures are comprised of permanent, $c_p$, and transitory, $c_t$, components. By the permanent component of consumption Friedman (1957) referred to the value of planned consumption during a certain
period which will maximise lifetime utility. Without uncertainty, permanent consumption would coincide with the value of actual expenditures. The transitory component of consumption is defined in the similar fashion as transitory income: it captures the effects of all other factors. The covariance between permanent and transitory consumption is assumed to be zero. Furthermore, Friedman (1957) assumed that there is no relationship between transitory consumption and transitory income.

One particularly significant implication of Friedman’s (1957) model is that the nature of income shocks matters. Since consumers make their decisions on the grounds of their estimate of the resources available over the life cycle, transitory shocks should not have as forceful an effect on consumption as permanent shocks have.

**Rational Expectations Permanent Income Hypothesis**

In his famous article published in 1976, Lucas criticized the fixed distributed lag formulation used in empirical research to relate current and past observed income to expected income (Hall 1978). This practice naturally emanated from the work of Friedman (1957). As Deaton (1992) and Fernandez-Corugedo (2004) mention, Lucas argued that under rational expectations such a stable structure
between observed and future income should not exist. Consumers make inferences about future income on the basis of realized income, so that changes in economic environment, like in policy, have an influence on the optimal way in which income forecasts are formed.

Therefore, under rational expectations there is no reason for consumption to be eventually determined by observed income as the distributed lag formulation implies. Instead, consumption depends on current and expected income.

On the basis of the Euler equation (6), it is not possible to derive explicit solution for consumption in general. However, for specific utility functions and assumptions about asset returns and labour income such a solution exists. Blanchard and Fischer (1989)18 and Fernandez-Corugedo (2004) provide the details. One of the main cases in which an explicit solution can be derived is that of quadratic utility. Blanchard and Fischer (1989) postulate that with quadratic utility there is no need to impose any restrictions on labour income.

**Empirical Findings and the Rational Expectations Permanent Income Hypothesis**

There are two puzzles that challenge the empirical validity of the rational expectations permanent income hypothesis, if aggregate
consumption is to be treated as that of the representative agent. These puzzles are known as excess sensitivity and excess smoothness of consumption.

**Excess Sensitivity of Consumption**

Flavin (1981) argues that when rational economic agents form their expectations of future earnings, they will take into account the fact that income is a stochastic process which exhibits fairly high degree of serial correlation. Due to the serial correlation, the fluctuations in current income will be correlated with fluctuations in permanent income and further on correlated with changes in consumption. On the basis of this notion, Flavin (1981) introduced a test for excess sensitivity of consumption to income. For the test, equation (15) is extended to include lags of income change. The modeling and testing procedure itself consists of the joint estimation of the extended equation and an autoregressive specification for labour income. According to Deaton (1986), autoregressive models are well suited to describe the process governing actual labour earnings.

Under the null hypothesis that consumption follows a martingale, and hence that permanent income hypothesis is true, the regression coefficients of lagged income changes should equal zero. However, Flavin's (1981) results did not support the null hypothesis.
Instead, the parameter estimates of lagged changes in income reported in her paper are statistically significantly positive. In other words, anticipated changes in income positively predict changes in consumption. This finding clearly contradicts the implication of the permanent income hypothesis. The phenomenon that consumption responds to anticipated changes in labour income is known by the name excess sensitivity.

In principle, Flavin's (1981) test for excess sensitivity is equal to the test Hall (1978) performed to find out if the change in consumption is orthogonal to lagged income, but their results are contradictory. Hall (1978) regressed current consumption on the first lag of consumption and on lags of income. On the basis of this regression, he found no evidence of a relationship between consumption and lagged income conditional on lagged consumption. Deaton (1992) suggests that the discrepancy in Flavin's and Hall's results may in part stem from the choice of sample period and in part from the modeling technique. Provided the restriction implied by equation (10), that the lagged consumption equals unity is correct, Flavin’s (1981) test may be expected to be more efficient.

Excess sensitivity of consumption to income seems to be a characteristic feature of aggregate time series data in the United States
and elsewhere. Subsequent literature, extensively overviewed in Deaton (1992), has not been able to refute Flavin’s (1981) finding despite the improvements that have been made to econometric method she used. The purpose of these methodological improvements has been to increase the asymptotic efficiency of the test. For instance, the estimation procedure has been adapted to account for the possibility of non-stationary income as well as for the discrepancy between the length of the period over which data is measured and the length of the period over which consumers make their decisions.

Hall and Mishkin (1982)\textsuperscript{21} used micro data on food expenditure to test if consumption is responsive to expected fluctuations in income. Their excess sensitivity parameter is also statistically significant, but in contrast to parameters estimated using macro data the sign is negative. Hayashi’s (1985)\textsuperscript{22} investigations on micro data have produced similar estimates. Furthermore, it is worth noting that Campbell’s (1987)\textsuperscript{23} results show only weak evidence for excess sensitivity. Some of the theoretical explanations for the existence of excess sensitivity will be taken up after the introduction of a related puzzle, namely the excess smoothness of consumption.

In Tong Hun Lee paper the author had attempted to test the income-wealth hypothesis originally suggested by Marshall and later
enunciated by Hansen. The hypothesis is that both income and wealth are the determinants of the demand for money\(^24\). The data are drawn from the cross-section sample of the 1957-58 re-interview Surveys of Consumer Finances. The numerical elasticities of income and wealth are also derived for both liquid assets as a whole and its various components in order to make a comparison with those of prior studies. Furthermore, the findings in the present analysis have some implications as to the adequacy of the Gurley-Shaw hypothesis that a substantial volume of close substitutes for money created by non-bank financial intermediaries has tended to reduce the demand for money.

The principal findings from the particular sample are that (1) not only income but also wealth has a significant positive effect on the demand for money, thereby rejecting the alternative hypotheses that either income or wealth is the unique constraint on money balances, (2) income elasticities are substantially higher than those reported in other studies, whereas wealth elasticities are almost identical, and (3) some aspects of the Gurley-Shaw hypothesis do not appear to be substantiated by this study.

The study of Fujiki, it is estimated that the Japanese money demand function by household using seasonally adjusted panel data following Fujiki and Mulligan (1996a,b)\(^25\). The most plausible estimates
of the income elasticity of money demand are in the range from 1.28 to 1.35 for the period from 1990 to 1995. These results are robust with respect to the choice of scale variables, and consistent with the estimates based on seasonally unadjusted monthly data and annual data. The stable relationship obtained from regional panel data provides useful information with which to judge the stability of the money demand function for the central bankers.

Although a considerable amount of work has been conducted on the validity of the Hall hypothesis, as applied to consumer expenditure, there has been negligible empirical work on the Hall hypothesis as applied to the demand for money. In this paper the Hallian hypothesis is applied to consumer expenditure and the demand for money using quarterly data for six countries (R. MacDonald and D. A. Peel, 1987)\textsuperscript{26} Hall (1978) has stimulated considerable controversy and empirical work on testing the validity of the permanent income hypothesis (PIH). Much of this work is on the developed countries. In the developing countries per capita incomes show larger fluctuations and for the majority, opportunities for intertemporal substitution are limited. B. Bhaskara Rao (2004)\textsuperscript{27} uses the extended framework of Campbell and Mankiw (1990)\textsuperscript{28} and finds that current consumption is determined by current income for more than two thirds of the consumers in Fiji.
The Muellbauer and Murphy (1990) version of Hall’s (1978) ‘surprise’ consumption function is adopted to conduct the investigation. The results show strong support for the hypothesis, supporting thus the authors’ version of Hall’s ‘surprise’ consumption function. The basic idea of Milton Friedman’s (1957) permanent-income hypothesis is that people in trying to maintain a rather constant standard of living base their consumption on what they consider their ‘normal’ income, although their ‘actual’ income may vary though time. As a result, changes in actual income are assumed to be temporary and thus have little effect on consumption. In testing the permanent income hypothesis five alternatives have been proposed with respect to the consumption function. In the first case, the marginal propensity to consume is assumed to be equal to the average propensity to consume. In the second case, the adaptive expectation scheme is adopted. In the third case, a compound of adaptive expectation and habit persistence scheme is employed. In the fourth case, the rational expectations model introducing lags into the consumption function has been used (Hall, 1978). In the fifth case, the rate of change of consumption is determined by the innovation in the income-generating process (Muellbauer, 1983). This final case refers to the examination of the ‘surprise’ consumption function associated with Hall’s (1978) rational expectations version of the permanent income hypothesis.
The purpose of this paper is to estimate the ‘surprise’ consumption function for the initial 15 European Union member-states and to compare the sensitivity of the rate of change in consumption to the innovation in the income-generating process among these 15 EU member-states.

This study of Robert G. Murphy (1992) shows that the debt burden of households, as measured by the debt service to income ratio, is helpful in forecasting the future growth of consumption expenditures. Using data for the period 1960-97, he found a significant negative relationship between the debt-service ratio of households and future aggregate spending growth. This effect is statistically important for spending on durable goods and services, but not for spending on nondurable goods. Because almost 70 percent of spending on nondurable goods represents purchases of food and clothing (which are relatively nondiscretionary), he conclude that my results are consistent with the view that borrowing constrained households will limit their discretionary purchases when faced with tightened lending standards following an increase in their debt burden. His findings that the debt-service ratio predicts the future growth of consumer spending is at odds with standard versions of the life-cycle and permanent-income theories of consumption. These theories state that current spending by households should reflect all available information so that
future changes in spending are unpredictable. The predictive power of the debt-service ratio, however, is not surprising, given that several other indicators have been shown by previous authors to predict the future growth of consumption expenditures.

In Lusardi, paper (1996), the author estimates Euler equations, i.e., the first order conditions of the consumers' maximization problem, using data from two data sets. Consumption data are taken from the Consumer Expenditure Survey. Income data are taken from the Panel Study of Income Dynamics. Since the data for the estimation come from two samples, the author uses a generalization of the instrumental variables estimator: two-sample instrumental variables estimator. She finds evidence that consumption is excessively sensitive to predictable income growth. The estimates of the coefficient of excess sensitivity for three consumption measures range from 0.2 to 0.5.

**Households Demand for Portfolio and Financial Investments/Assets**

Jan Tin (1998) examines the demand for major financial assets by householders during different stages of their lives using the life-cycle theory of consumption and saving and cross-sectional data from the Survey of Income and Program Participation (SIPP). Unlike most
studies on money demand, data used in this study are microeconomic and free from the identification problem frequently encountered in the literature. Regression results show that the propensities to hold financial assets out of labor income, wealth, and net worth differ substantially among young, middle-age, and old householders. Also, the impacts of relative rates of return and demographic variables on asset demands vary among householders of different ages.

There has been considerable research on the issue of what determines the allocation of households' portfolio of assets. Many theoretical models analyse the impact of wealth, age, and tax rates on the portfolio section. The neoclassical model of portfolio selection assumes that in a world of prefect information, perfect capital markets, no taxes or transaction costs, invdiduals choose their portfolio to maximize expected return. However in real world, the recognition of such factors as transaction costs, capital market imperfections and vagaries of tax systems makes it unlikely that asset proportions will be stable across wealth and age groups. The portfolio allocation of the household sector is also influenced by the risk return trade-off. In simple portfolio models it is assumed that investors allocate funds across assets with different risks and returns and try to maximize wealth by diversification of portfolios. The relative importance of different assets in the portfolio reflects investor's risk
and return preference. Interest yield on an asset would be an important determinant of the demand for an asset, and the relative interest rates on different asset would determine the pattern of asset holding. An analysis of the structure of interest rates in India would shed some light into the household portfolio and variation in interest would repeat the degree of substitution among assets.

Indian studies have focused on savings behaviour of the household sector at the aggregate level while portfolio decisions of households received less attention. Paradoxically this has gone hand in hand with a number of tax incentives to influence the saving choices of households. Therefore an empirical analysis of the effect of interest rates on the portfolio allocation of households is an essential first step in evaluating the effect of tax incentives on the allocation of savings. Understanding household portfolio behaviour may help in understanding the changes in asset holding patterns that have taken place over the period of time due to partial financial sector reforms. Portfolio decisions also have implications for issues such as the adequacy of precautionary saving and degree of retirement preparedness.

In this study the researcher approaches the problem by estimating the properties of the household demand function for the claims against financial intermediaries. The objectives of the study are
to estimate a simple model of household investment behaviour and determine the degree of substitution among the financial assets.

There are numerous aggregative studies of the household demand for financial assets including money. Lydall (1958)\textsuperscript{32} and Pesek (1963)\textsuperscript{33} found that wealth and not income had a significant effect on households money balances. Lee (1964) exploring the effect of wealth and income on the holdings of various types of financial assets concluded that both income and wealth are important determinants of the amounts held. Uhler and cragg (1971)\textsuperscript{34} considered the effect of non-human wealth, income, family size and age of the household head on holding of financial assets. Using logarithmic regression to estimate the effects of the variables on total amounts of financial assets held at each level of diversification, they found that wealth, age and family size were significant where as the income variables are rarely significant.

In the above studies the yield on financial assets did not figure as an important variable. However it becomes an important variable while looking at the substitutability among assets, particularly money and other interest bearing financial assets. The issue of substitution was addressed in the context of the theoretical concept of money. Questions were raised whether the concept of money should be confined to currency plus demand deposits or should be extended to
include other liquid assets. Those who argued that the definition should be broadened assume that the assets to be included are closer substitutes for currency and demand deposits than for other assets. In this context a number of studies were undertaken to identify the close substitutes for currency and demand deposits. Lee (1966) has found evidence in favour of the substitutability between non bank intermediary liabilities and money whereas Feige (1964) found no such substitution among them.

Hamburger (1966) tried to analyses this issue by looking at the properties of the household demand functions for the claims against financial intermediaries. He investigated the household demand for different financial assets and used yield along with income and wealth as explanatory variable. The results for the study period 1952-1962 suggest the significant impact of wealth and interest rate and negligible impact of income on the demand for financial assets.

He also found that time and saving deposits at commercial banks are close substitutes to savings accounts at other financial institutions and marketable funds. However the results do not provide any support for the suggestions for extending the definition of money to include assets other than currency and demand deposits.

Chase, Jr. (1969) while estimating the households demand for savings deposits in USA for the period 1921-1965 found that the size
of the saving deposits depends on the yield offered to saving depositors relative to market yield. Also he traces that the demand for money is negatively related to savings deposit yield.

The capital asset pricing model (CAPM) analyses the behaviour of household sector portfolio allocation on the basis of risk return trade-off, which implies that in equilibrium an investor, will hold only a minimum variance portfolio. However it had been observed that individuals often hold portfolios of very different nature consisting of few assets. In general, households invest in a small number of safe assets such as bank accounts (saving and checking accounts) or tax deferred retirement account. Several studies have been undertaken to find out the reasons for the lack of diversification of portfolios. Deaton, (1991)\textsuperscript{37} observed that institutional restrictions such as minimum purchase requirements can make a particular asset less attractive to smaller borrowers. Feldstein (1976)\textsuperscript{38} pointed out that the portfolio structure is biased towards or against certain assets without necessarily leading to zero holdings. He concluded that differential tax treatment alters the relative price of assets making some more attractive than others and hence makes the portfolio biased towards certain assets. The issue of capital market imperfection in the form of borrowing and liquidity constraints (Paxson, 1990)\textsuperscript{39} and incomplete
information (King and Leape 1987) are also cited as reasons for non-
diversification of portfolios.

An attempt was also made to extend these results by examining
the impact of transaction costs on optimal portfolio decisions. Zabel
(1973) while analyzing portfolio decisions and transaction costs,
observed that introduction of transaction costs changes the character
of the individual’s consumption and portfolio choices. He found that
the number of assets in an optimal portfolio would be sensitive to the
magnitude of fixed charges per transaction. He also concluded that
the sensitive to the magnitude of fixed charges per transaction. He
also concluded that the same features would be observed in the
presence of proportional transaction costs. Goldsmith (1976) developed several models explaining some effects of transaction costs
on portfolio selection. His analysis shows that greater transaction
costs, reduces the number of securities held because it makes
diversification more costly. Therefore he suggested that an investor
would want to substitute less risky assets into his portfolio, thus
reducing the necessity for greater diversification. Similarly Mayshar
(1981) tried to examine the implications of introducing transaction
costs to the Capital Asset Pricing Model (CAPM). He observed that in
the presence of transaction costs, investors don’t trade in all the
assets.
Various studies on India (Raj 1962; Chakravarty, 1973; Rao, 1980 and Mujumdar, 1980) have tried to explain the increase in aggregate savings in India. The increase has been attributed to redistribution of income in favour of non agricultural households, decline in agricultural prices and build up of institutional infrastructure such as branch expansion and bank nationalization are the major determinants of growth of saving rate. The issue of substitutability of various savings instrument such as currency and bank deposits (demand and time deposits) for the period 1951-52 to 1978-79 and its two sub periods such as 1963-64 to 1978-79 and 1968-69 to 1978-79 by using OLS method. The substitution effect of currency for bank deposits and of demand deposits for time deposits was brought out for all the periods. Subrahmanyam and Swami (1995) estimated a direct translog model for the period 1970-71 to 1988-89 for India's household sector to examine this issue which indicated the presence of significant substitutability between bank deposits and life insurance plus pension funds.

It has been argued that financial liberalization and reforms in the form of deregulation, easy entry, and developments in formation technology lead to major changes in the portfolio allocation of the households through asset substitution. Rybezynski (1986) observed
that "As an economy passes through the bank oriented stage of financial development, increased competition from other financial firms and markets, rise in market interest rates etc., tend to shift funds away form bank deposits and into other financial instruments. Therefore the financial sector reforms in the recent decades have raised important issues concerning the substitution of assets.

In this context, Jha and Longjam (2004) observed that the financial sector reforms in India have important implications for the user cost of assets and resulted in substantial substitution among them. The post decade in India has seen radical changes in financial markets. Financial markets have experienced a policy-induced move towards international integration, liberalisation and product innovation. The most important effects are the growth in mutual funds, the increasing importance of private pension funds and so on. In the face of such changes in portfolio behaviour, it is important to study the portfolio composition saving choice. Therefore the present study makes an attempt to analyse various factors responsible for the selection of household portfolios.
Critical Evaluation of the Studies.

According to Tin (2000) in monetary economics, the effect of an exogenous change in money supply on general economic activities is critically dependent upon the predictability of money demand. It is therefore not surprising that poor performances of aggregate money demand in recent decades have received great attentions in the literature. Using microeconomic data, the Baumol-Tobin model, and the life-cycle theory, this study shows that when the long-run money demand model is directly estimated without its short-run counterpart, money demand is essentially a predictable function of income, interest rates, and a set of demographic variables. This implies that the long-run impacts of monetary policies on interest rates, incomes, employment, and prices are not as uncertain as those found in past standard aggregate money demand studies.

Consumption expenditure is the largest component of output and the marginal propensity to consume (MPC) determines the size of the multiplier and the size of the effects of various shocks to the economy. Therefore, it is important to have a proper specification and estimation of the consumption function. However, in Fiji it did not get much attention, except in a recent work by Rao and Singh (2004). Rao
and Singh (2004) have used essentially a simple Keynesian specification and estimated alternative consumption equations with the general to specific (GTS) and the cointegration and error correction (ECM) approaches. Both gave similar results for the period 1970 to 2002. While GTS implied an MPC of 0.87, ECM estimate was 0.77. In both specifications the coefficient of the proxy variable for the availability of (consumer) credit was significant with the correct positive sign. Furthermore, inflation rate was found to have a significant negative short run effect on consumption in the GTS equation. It is well known that the Keynesian approach to consumption is a theoretical. Therefore, specifications based on Friedman’s (1958) permanent income (PIH) and Modigliani and Bruberg’s (1954) life-cycle consumption (LCH) theories are widely used in country studies and for international comparisons. Both theories share a common optimization model and yield similar conclusions. They imply that MPC is much smaller than in the Keynesian specification, since current consumption decisions are based on a long run view of income i.e., the average life-time or permanent income, and optimizing consumers tend to smooth consumption expenditure. Therefore, consumption is not sensitive to changes in current income. Luis A. Gil-Alana (2004) paper deals with the issue of the Permanent Income Hypothesis (PIH) and we show that consumption and income
may be fractionally cointegrated. We use a semi-parametric frequency
domain procedure of Robinson (1995a), and the results show that the
UK and the Japanese consumption and income are related in the long
run throughout a fractional model.

Murphy’s studies (1999) shows that the debt burden of
households, as measured by the debt service to income ratio, is helpful
in forecasting the future growth of consumption expenditures. Using
data for the United States over the period 1960-97, He finds a
significant negative relationship between the debt-service ratio of
households and future aggregate spending growth. This effect is
statistically important for spending on durable goods and services, but
not for spending on nondurable goods. Because almost 70 percent of
spending on nondurable goods represents purchases of food and
clothing (which are relatively nondiscretionary), he conclude that his
results are consistent with the view that borrowing constrained
households will limit their discretionary purchases when faced with
tightened lending standards following an increase in their debt burden.

Simple life cycle and permanent income hypotheses imply that
changes in consumption should be unforecastable. Rational forward-
looking agents ought to smooth consumption over the life cycle and
exhaust the asset stock accumulated during the working career in
retirement. Empirical observations seem not to conform to these predictions of the simple theory of intertemporal choice which has given rise to elaborations on the benchmark model. The theoretical discussion of this paper concentrates on literature dealing with the seemingly problematic empirical regularities and on proposed explanations. The review of literature focuses particularly on the life cycle issues of consumption behaviour (Päivi Kankaanranta, 2006).

Ingrid Größl and Ulrich Fritsche (2006) analyse how money as a store of value affects the decisions of a representative household under diversifiable and non-diversifiable risks, given that the central bank successfully stabilizes the rate of inflation at a low level. Assuming exponential utility allows us to derive an explicit relationship between optimal money holdings, the household’s desire to tilt, smooth and stabilize consumption as well as minimize portfolio risk. In this context the authors also show how the correlation between stochastic labour income and stock returns impact the store-of-value function of money. Finally they prove that the store-of-value benefits of money holdings continue to hold even if they take riskless alternatives into account.
Objectives

From the perspective provided by the authors discussed above, the present study is made with specific reference to the Tiruchirappalli city. The objectives of the study are as follows

1. To examine the gender differences in the households demand for money with respect to transactions, speculative and financial demand for money

2. To identify the extent of disparity between the different income categories of households with respect to transactions, speculative and financial demand for money.

3. To investigate the impact of age education and family size of the households on transactions, speculative and financial demand for money.

Hypotheses

To give a specific focus to the objectives, a few hypotheses have been drawn up to be tested using appropriate statistical tools in the analysis chapters.

1. Transaction demand for money is significantly higher for female headed households than for male headed households.
2. Speculative and financial demand for money are highly male responsive than female households.

3. The household demand for money is significantly determined by the income, wealth, credit, age, education and family size of the households.

**Concepts and Definitions for Money**

The operational definitions of various concepts used in the study are given below.

Money is different from wealth. The collective demand for wealth is infinite as there is never enough to satisfy everyone desires. Money is a narrowly defined term which includes things like paper currently, traveler's cheques, and savings accounts. It does not include stocks and bonds, or forms of wealth like homes, and cars, since money is only one of many forms of wealth, it has plenty of substitutes. The intuition between money and its substitutes explain why the demand for money changes.

Money may be defined in other form also:-

- Money as medium of exchange. It a generally accepted means of payment.
Money as a unit of account. It is a widely recognised measure of value.

Money as a stone of value. It is a transfer of purchasing power from the present into the future. In short, money is an asset which is widely used and accepted as a means of payment. It is very liquid, but pays little or no return. All other assets are less liquid but pay higher return.

**Transactions’ Demand for Money**

The need for cash for the current transactions of personal and business exchanges.

**Precautionary Demand for Money**

The desire for security as to the future cash equivalent of a certain proportion of total resources.

**Speculative Demand for Money**

The object of securing profit from knowing better than the market what the future will bring forth. Keynes recognized that money held for each of these three purposes forms, nevertheless, a single pool which the holder is under no necessity to segregate into three water light compartments for they need not be sharply divided even in his
own mind and the same sum can be held primarily for one purpose and secondarily for another. It is also recognized that the individuals aggregate demand for money in given circumstances as a single decision though the composite result of a number of different motives.

Keynes himself admitted that the transaction demand for money was misspecified in the general theory. He rectified this error by adding a fourth motive for demanding liquidity the finance motive.

The respecification of the demand for money went unnoticed as most economists were still trying to understand Keynes liquidity preference as it had been set out in the General Theory (1936).

In the present research, all the four motives taken for analyzing the household demand for money. At the same time, the first two motives i.e. transaction and precautionary are combined together termed as transaction demand for money and the motive viz., speculative demand for money and the fourth finance motive are treated separately.

**Sampling unit of household**

The basic sampling unit is the household in the study. Household is taken to mean a group of persons related by blood, marriage or adoption, living under the same roof and sharing a
common kitchen continuously for not less than a six month period all the time of interview. A single person constitutes a household if a kitchen is maintained by him/her.

**Consumption Units**

Persons above 12 years have been treated as adults constituting one consumption and those below are treated as children constituting half-consumption units. The size of the household is based on the number of consumption units.

**Household Income**

Household income has been calculated as the sum of income derived from i). salary / wage of all members in the house, ii). Livestock maintenance, iii). Wealth iv). Non-farm self employed enterprises v). remittances and other sources.

**Caste Levels**

For the purpose of analysis, the people of various castes have been divided into four hierarchical groups. The first level castes are those classified as Forward Communities (Fc) by the Tamilnadu Government. As per the same classification, the second and the third level castes come under Backward (BC) and Most Backward
Communities (MBC). The fourth level castes are the Scheduled Castes and Tribes as per the government classification.

**Liabilities**

Net borrowings of the households are derived as borrowing during the reference period deducting repayments. Net lendings are calculated as amounts lent plus interest occurred on all lending minus repayments received, both capital and interest during reference period.

**Wealth**

Wealth covers both physical and financial assets. The components of wealth in the study include: land, building, livestock and durables.

**Savings**

Savings of an economic unit can be estimated from i. the income account by way of assessing the earned net worth which is the difference between changes in assets and liabilities. The present study adopts the balance sheet method for it has a number of advantages over the income consumption method. In the latter the emphasis is on consumption and the income side is either neglected or under estimated. Further, it does not highlight the various forms of
investment in which saving are embodied. Thus the study adopts the change in net worth definition of saving.

**Methodology**

The present study comprises both the primary as well as the secondary data. The primary data relating to the households demand for money have been collected from field survey through well designed questionnaire cum schedule. The design included monthly surveys of households; households were included in the sample for 6 months from December 2005 to may 2006 the Tirchirppalli city consists of 4 adminisation zones viz., 1. Srirangam 2. Ariyamangalam 3. Golden Rock and 4. K. Abishekapuram Each zone consists of 15 wards.

For the present study these wards are remarked on the basis of the highest population. In each zone, first 8 wards are selected. In each ward, 15 households are randomly selected. In total, about 480 households are surveyed A diary was given to each household to enter their expenditure, saving and investment from December 2005 to May, 2006 once in a two months, the researcher inspected the diaries about the entries made by the households. Non- entry diaries were filled by the researcher through personal interview with the households.
**Data on Expenditure**

The survey instrument was used to collect data on household demographics, expenditures, and income. For estimation purposes, expenditures on various goods and services were aggregated into the following six categories. Food (including food *away from home,* and the value of home produced food) housing (including rent, building or purchase of houses, utilities such as electricity, water, gas, etc; household furnishings (including furniture, drapes, durable consumer goods, cleaning of households, and maintenance of household appliances etc.,) clothing (including dresses, fabrics used for making dresses, personal accessories, jewelry, cleaning, repair and maintenance of items including in this category) entertainment and education and other non food consumer items (including all other consumption expenditures not included in other categories)

The category other non food expenditures is an aggregation of personal care, health care, transportation and communication and other expenditures.

These six categories are aggregated in order to get total household expenditures which is used to measure the purchasing power of the household.
The secondary data relating to the socio and economic profile of the Tiruchirappalli city have been collected from corporation website.

**Non-Sampling Errors Limitations.**

In the present survey, possible care has been taken to reduce the non-sampling errors. The researcher paid attention to reduce the response error. The wards selected in Trichy city are presented in the following table.
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**Application of Econometric Models**

To test the hypotheses, the following Econometric and statistical techniques are applied to test the first hypothesis viz., Transaction Demand for money is significantly higher for female headed households than for male headed households, Distrainment analysis is used and the model is explained below.

**Discriminant Analysis**

Computational Procedure

Notations: $p = \text{number of variables}$

$g = \text{number of groups used for the analysis. This excludes}$

those with negative group size.

$t = \text{total number of groups}$

$n_m = \text{number of cases in group } m$

$n = \text{total number of cases}$

$x_{mki} = \text{value of variable } i \text{ for case } k \text{ of group } m$

Assume for simplicity that the first $g$ of the $t$ groups are used for analysis.

Step 1. The data are read and the following are formed:

$$\bar{X}_i = \frac{1}{n_m} \sum_{m=1}^{g} \sum_{k=1}^{n_m} x_{mki} \quad i = 1,2,\ldots,p$$
Group Means
\[ \bar{X}_{mf} = \frac{1}{n_m} \sum_{k=1}^{n_m} X_{mki} \quad i = 1, 2, \ldots, p \]

Group Standard Deviations
\[ S_{mf} = \left( \frac{1}{n_m - 1} \sum_{k=1}^{n_m} (X_{mki} - \bar{X}_{mi})^2 \right) \quad i = 1, 2, \ldots, p \]

\[
M = 1, 2, \ldots, t
\]

Within and total cross-matrices
\[ W = \{ W_{ij} \}; \quad W_{ij} = \sum_{m=1}^{g} Z_m \sum_{k=1}^{n_m} (X_{mki} - \bar{X}_{mi})(X_{mj} - \bar{X}_{mj}) \]

\[ T = \{ t_{ij} \}; \quad t_{ij} = W_{ij} + \sum_{m=1}^{g} (\bar{X}_{mi} - \bar{X}_{j}) (\bar{X}_{mj} - \bar{X}_{j}) \]

Where \( Z_m \) is the covariance weight of group \( m \)

Within groups covariance matrix
\[ V = \{ V_{ij} \}; \quad V_{ij} = \frac{1}{n-g} W_{ij} \quad i = 1, 2, \ldots, p \]

\[
J = 1, 2, \ldots, p
\]

d) F values for each variable

(1) If the variable \( j \) has been entered
\[ F_j = \left( \frac{a_{\mu} - b_j}{b_j} \right) \left( \frac{n-r-g+1}{g-1} \right) \]

With \( g-1 \) and \( n-r-g+1 \) degrees of freedom.
(2) If the variable $j$ has not been entered

$$F_j = \left( \frac{b - a}{\nu} \right) \left( \frac{n - r - g}{g - 1} \right)$$

with $g-1$ and $n-r-g$ degrees of freedom.

Under usual normality assumptions these are the likelihood ratio tests of the equality over all $g$ groups of the conditional distribution of variable $j$, given the (remaining) entered variables.

e) Wilks' test equality of group means

$$U = \text{Det}(W_{11})/\text{Det}(T_{11})$$

with degrees of freedom $(r, g-1, n-g)$

f) Approximate $F$ statistics to test equality of group means

$$F = \frac{1 - U^{1/8}}{U^{1/8}} \frac{ms + 1 - rq/2}{rq}$$

where $s = \frac{r^2q^2 - 4}{r^2q^2 - 5}$ if $r^2 + q^2$ is not equal to 5

$s = 1$, if $r^2 + q^2$ is equal to 5.

$$m = n - \frac{r + q + 3}{2}$$

$q = g - 1$

Its degrees of freedom are $(rq)$ and $(ms + 1 - rq/2)$. If either $r$ or $q$ is 1 or 2, the approximation is exact.
g) Tolerance values

$$W_{ij} = a_{ij}^r/t_{ij} \quad i=r+1,\ldots,p,$$

A variable passes the tolerance test if and only if $w_i$ and $t_i$ equal or exceed the value specified.

Step 3: To move one step to the text, one variable is added or removed from the discriminating set according to one of the following rules:

a) If there are one or more variables which entered and have a control value of 1 and a F value less than "F to remove", the one with the smallest F value is deleted.

b) If no variable satisfies a), then from among those variables which have not been included, which pass the tolerance test and have greatest control value, one is selected according to the rule specified.

Rule 0: The variable selected has the greatest F value.

Rule 1: The variable selected is the one, which after entering, minimizes

$$C_2 = \frac{1}{h_1} \sum_{1 \leq l, m \leq n} \frac{\alpha_{lm}}{1 + D_{lm}/4}$$

When $h_1 = g(g-1)/2$. the motivation for this formula is that it tends to separate groups which are close together. Each term corresponds to
an estimate of one minus the square to the multiple correlation between the classification variables and a dummy variable which identifies the corresponding pair of groups.

Rule 2: The variable selected is the one, which after entering, maximizes the smallest F between pairs of groups.

\[ C_2 = \frac{1}{h_2} \sum_{1 \leq m \leq n} \frac{\alpha_{im}}{1 + D_{im} / 4} \]

when \( h_2 = \sum_{1 \leq m \leq n} \alpha_{im} \)

Rule 3: The variable selected is the one which, after entering, maximizes the smallest F between pairs of groups.

Step 4. When the number of variables entered is equal to one of computed for \( l = 1,2,\ldots,t; \)
\( m = 1,2,\ldots,g; \quad k = 1,2,\ldots,n; \)

a) Value of the \( m^{th} \) classification function evaluated at case \( k \) of group 1

\[ S_{\text{imk}} = C_{m0} + \sum_{j=1}^{r} C_{mj} X_{\text{ij}} \]

b) Posterior probability of case \( k \) in group 1 having come from group \( m \)

\[ p_{\text{imk}} = \frac{\exp \left( S_{\text{imk}} \right)}{\sum_{l=1}^{g} \exp \left( S_{\text{il}} \right)} \]
\[ \Sigma \exp(s_{ijkl}) \]

where \( pm \) is the prior probability of group \( m \).

c) The square of Mahalanobis distance between each pair of groups

\[ D^2 = (n-g) \sum_{i=1}^{c} \sum_{j=1}^{g} \left( x_{ij} - x \right) a \left( x_{ij} - x \right) \]

This may be used a chi-square variable with \( r \) degrees of freedom for classification purposes.

Step 5. At this point let \( p \) denote the number of variables which are included after the last step and let \( w \) and \( T \) be their within and total sum of product matrices. Let \( B = T - W \). The eigenvalue problem.

\[ B_{ij} = l_{ij} W_{ij} \quad i=1,2,\ldots,p \]

is solved to find the coefficients, \( u_j \), of the canonical variables and the amount dispersion \( l_i \), explained by each canonical variable.

The vectors normalized so that \( u_i ' w u_j = \delta_{ij} \)

The canonical correlations \( r_1, r_2, \ldots, r_p \) relative to the groups are then computed.

\[ r_j = (l_{ij}/(1+l_{ij})^{1/2} \]

For each case, the first three canonical variables are computed

\[ Z_{ikj} = \sum_{m=1}^{g} u_{mij} (x_{ikj} - x_j) \quad m=1,2,\ldots,g \]

\[ j=1 \quad k=1,2,\ldots,nn \]
The first two of these three are plotted on a scatter diagram. If called for, it is stratified onto separate plots on the basis of the values of $z_{mk3}$. The outpoints used are the average of adjacent values, after ordering, of

$$
\bar{Z}_{k3} = \frac{1}{nm} \sum_{k=1}^{n} Z_{mk3}
$$

**Limitations**

The study primarily depends on field survey as well as secondary data source. The study period is 2005-2006. Multi-stage purposive random sampling method is used to select the study area as well as the respondents. The sampling techniques have their own limitations that cannot be avoided in this analysis. The results of the study may not applicable to other areas to Tamilnadu since the study area is Trichy city only, there may have been a lot of social and economic changes in the study area after 2005 and hence the result of the study is suitable only to respective study period.
Endnotes and References


