DETERMINANTS OF HOUSEHOLD PORTFOLIO COMPOSITION: A SURVEY

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By
R.R.Rajamohan

Thesis Advisory Committee

Dr. Chinmoy Sahu (Chairman)
Dr. Mallikarjun (Member)
Dr. Ajay Pandey (Member)

Institute of Management, Nirma University of Science and Technology

C E R T I F I C A T E O F DISSERTATION A P P R O V A L

Name: RAJAMOHAN R.R.
First Middle Last

Thesis Title: DETERMINANTS OF HOUSEHOLD PORTFOLIO COMPOSITION: A SURVEY

We, the below signed, hereby state our full approval of the dissertation submitted by the above student in partial fulfillment of the requirements for the Doctoral Programme in Management of Nirma University of Science and Technology

APPROVED BY:

DR. CHINMOY SAHU_____
Chair, TAC

DR. M. MALLIKARJUN_____ _____
Member, TAC

DR. AJAY PANDEY_____ _____
Member, TAC

the above named student completed the final doctoral oral examination on _____
Date

DR. M. MALLIKARJUN_____
Chairperson DPM

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Sl.No	Abbreviation	Meaning
1	FKS	Financial Knowledge Score
2	PS	Planning Score
3	80k	Annual Income Rs 80001 – Rs 100000
4	100k	Annual Income Rs 100001- Rs 150000
5	150k	Annual Income Rs 150001- Rs 200000
6	200k	Annual Income Rs 200001- Rs 250000
7	250k	Annual Income Rs 250001- Rs 300000
8	300k	Annual Income Rs 300001- Rs 350000
9	> 350k	Annual Income Above Rs 350000
10	G	Graduate
11	PG	Post-graduate
12	20%	20 Percent marginal tax rate
13	30%	30 Percent marginal tax rate
14	Acad	Academician
15	Prof	Professional
16	Fin Ser	Financial Services
17	Mgr	Manager
18	Busi	Business
19	EPS	Employees Pension Scheme
20	EGP	Eligible for Government Pension
21	PBS	Pension Benefit Status

22	MTR	Marginal Tax Rate
23	HHS	Household Size
24	Obj.	Objectives
25	A’bad	Ahmedabad
26	B’lore	Bangalore
27	H’bad	Hyderabad

ABSTRACT

Personal Finance is concerned with how people spend, save, and invest their financial resources to achieve financial objectives. This is an important issue now in the minds of the occupants of an Indian household.

The household has several options to park their savings. They include simple risk-free post office savings scheme such as post office monthly income scheme, recurring deposits, term deposits, national savings certificate etc. A certain of these schemes are also available in banks, both private and public sector. The money parked in banks is safe up to certain limits provided the banks have insured it with Deposit Insurance and Credit Guarantee Corporation (DICGC). Then follows the products from insurance companies, which offer pure insurance products as well as investment products. Mutual fund companies offer different kind of products like debt oriented, equity oriented, monthly income schemes, sector schemes etc. One can also invest directly in the shares of any company. Thus, there are several investment options available to the households. Each and every financial asset has its own characteristics in terms of safety, liquidity, and rate of return. Thus, one has to look in to one's objectives and try to match it with the avenues in which to park one's money. However such decisions call for the awareness about the various options and the knowledge about the risk characteristics of those options.

The savings pattern in India show that the households prefer to save money more in physical assets than in financial assets. Within the financial assets, they prefer fixed interest-bearing instruments such as bank deposits, small savings, PF/Pension Funds, and life insurance funds.

The report named Project OASIS Report (2000), an Expert Committee for devising a Pension System for India, was constituted by the Ministry of Social Justice and Empowerment, Government of India. It has recommended for the implementation of defined contribution pension plan for the work force in India. Kelkar committee (Task force on direct and indirect taxes 2002) was constituted by the Ministry of Finance, Government of India to rationalize and simplify procedures, on direct and indirect taxes. It has recommended the removal of tax rebates to the salaried employees and the deduction under sections 80L, 80CCC. It also recommends the introduction of Exempt Exempt Tax (EET) policy. Under EET, the contribution to the specified savings is exempt from tax. The income earned by these savings is also exempted from tax. However, the withdrawal(s) when made will be taxed in that year. Rakesh Mohan committee constituted by Department of Economic Affairs (Budget Division), the Ministry of Finance, Government of India (2004) to advice on the administered interests and rationalization of existing savings instruments, has recommended the consideration of the weighted average of G-sec yields for the previous two years to work out the benchmark for administered interest rates for saving instruments offered by the GOI through post offices.

The Government of India, on the suggestion of Project OASIS Report (2000) introduced the defined contribution pension plan to the newly recruited employees of the Government of India, except the Armed Forces from 1st January 2004. 7 State Governments have also notified the introduction of this scheme in line with the Government of India for their newly recruited employees.

During the financial year 2005-2006, the income tax rebate for the salaried class was replaced with a new section (Section 80C), which provides for total deduction to the amount invested in a broad menu of financial assets (up to a maximum of Rs 1,00,000) in arriving at the individual's tax liability/payment. The Finance Ministry, Government of India has set up a committee under R. Kannan (2005) to provide the road map for the implementation of the Exempt Exempt Tax policy.

Thus, on the one hand the household prefers to save money in safe investment avenues. On the other hand the government tries to reduce its fiscal deficit by transferring the risk in pension payment to the employees by making them responsible for managing their retirement through defined contribution scheme. This new pension system calls for the individual to take the asset management decision, such as selecting a fund manager from a group of competing fund managers, selecting a scheme out of the proposed three schemes according to one's risk tolerance etc, which calls for financial literacy among the households.

A strand of literature on personal finance issues has looked at the relationship between financial knowledge and other demographic and contextual variables on the savings behaviour of households. These empirical studies related to savings behaviour of households have shed light on the determinants of the household behaviour. For

Example, Axel Borch-Supan and Angelika Eymann (1999) in Germany, Luigo Guiso et al (1999) in Italy and James Bank and Sara Smith (2000) in UK analysed the household portfolio composition and found that, in general, the household portfolio is simple and less diversified. L.C. Gupta (1991, 1993, 2005), L.C. Gupta, C. P. Gupta and Naveen Jain (2001) found majority of the Indian households' risky assets portfolio contains 3-10 companies' shares.

Axel Borch-Supan et al (1999), Rob Alessie et al (1999) in Netherlands found the positive impact of age on the ownership of risky assets. Luigio Guiso and Tullio Jappelli (1999) in Italy found the positive relationship between age and ownership of risky assets. They also found similar relationship between the age and the share of risky assets invested in total assets.

Carl Bertuat et al (2000) in the USA found the positive relationship between income and ownership of risky assets, while Defined Benefit Pension is negatively related with it. Stefan Hocheguertal et al (1997) in Netherlands found income to be positively related with the share of risky assets investment of the total wealth.

James Poterba et al (1999) in the USA found education and marginal tax rate positively related with the ownership of risky assets. James Poterba et al (1999) and Stefan Hocheguertal et al (1997) found education and marginal tax rate positively related with the share of risky assets investment in the total wealth.

Rob Alessie et al (1999) in the Netherlands found household size to be negatively related with the ownership of risky assets, while Yilmazer (2000) in the USA found similar relationship between household size and share of risky assets investment in the total wealth.

Jonas Agell et al (1990) found Swedish white-collar workers to be positively related with the ownership and share of risky assets in the total wealth. Zvi Bodie and Dwight B. Crane (1997) found home ownership to be positively related with the ownership of risky assets.

Of late few studies in the USA have analysed the impact of financial knowledge (Marianne A. Hilgert et al 2003), and planning (Lusardi 2001) on household portfolio composition and found that they have a positive impact on household portfolio composition. Few studies (B. Douglas Bernheim et al 1996; Patrick Bayer et al 1996) in the USA also found the positive impact of employer related retirement education on retirement wealth, retirement savings and the higher rate of participation and contribution in 401(k) plans.

However, in India very few studies have analysed the capital market investors' behaviour. Hence this study makes an attempt to scrutinize the relationship between financial knowledge, planning and household portfolio composition. Thus, the factors included in this study to determine its impact on household portfolio are financial knowledge, planning, age, income, education, occupation, marginal tax rate, household size, home ownership and pension benefit status. It is hoped that such a study would help in understanding the savings behaviour of Indian households better. In particular, it is of interest to find which demographic variables explain the choice of investment in risky assets. Similarly, it is of interest to find at the extent to which financial awareness and knowledge act as facilitator in making the choice of risky investments.

The study was carried out in Coimbatore and Ahmedabad. For the study a questionnaire containing 40 questions was prepared. The sample size in Coimbatore and Ahmedabad were 345 and 227 respectively. The study was carried out from 15th October 2004 to 15th January 2005 in Coimbatore and from 20th Feb 2005 to 20th April 2005 in Ahmedabad.

The study used probit and tobit models to find out the factors, which influence the ownership of risky assets and the proportion of total wealth, invested in risky assets. These two dependent variables reflect the inclination and comfort of the households in making investments in risky assets. Model calibration is used as a criterion to assess the goodness of fit of the model. Model calibration evaluates how well the observed and predicted probabilities agree over the entire range of probability values. Hosmer and Lemeshow test is a commonly used test for the goodness of fit of the observed and predicted number of events. This test is carried out to test the goodness of fit of the model and found the fitness of the model.

In Coimbatore, the finding of the study is that the financial knowledge, marginal tax rate, age, income, and pension benefits have an impact on the ownership and proportion of investment in risky assets. Planning and household size impacts only the proportion of investment in risky assets. Financial services personnel differed from other occupational category respondents both in the ownership of risky assets and in the proportion of investment in risky assets.

In Ahmedabad, the study finds that the variables: financial knowledge and pension benefits status are the determinants of the ownership and proportion of risky assets investments. Variables such as age, income, marginal tax rate, and occupation have an impact only on the proportion of risky assets investments in the total wealth.

In Combined Sample, the study finds that financial knowledge, pension benefit status, age, income and marginal tax rate are the determinants of the ownership and the proportion of risky assets investments. Planning and education impacts only the proportion of investments in risky assets. The ownership of risky assets and the proportion of risky assets owned by the academicians and managers are less when compared to the financial services personnel. In case of unclassified category of respondents the proportion of risky assets owned by them is less when compared to financial services personnel.

Thus, the study finds that the variables used in the study are, significant in Coimbatore or Ahmedabad or Combined Sample in explaining the proportion of risky assets investment in the total wealth. However, only two variables: Financial Knowledge and Pension Benefit Status are significant in explaining the ownership of risky assets and the proportion of risky assets investment in the total wealth among the households. Thus, one can conclude that the lack of financial knowledge acts as an entry barrier for the households in owning the risky assets in their portfolio.

CHAPTER 1: INTRODUCTION

Personal Finance is concerned with how people spend, save, and invest their financial resources to achieve financial goals. Of late, personal financial decisions occupy an important position in the minds of the Indian household with the increase in household income and liberalization of financial sector.

The households prefer to park their funds in the safest investment avenue - fixed interest-bearing instruments such as bank deposits, small savings, PF/Pension Funds, and life insurance funds. During the 1990s, the preference for financial assets was marginally higher than that for the physical assets. However, this trend got reversed in 2000-2001 (Table1.1).

Bank Deposits are safer, up to Rs 1 Lakh, since 1st May 1983, provided the banks insure them with Deposit Insurance and Credit Guarantee Corporation (DICGC) (www.dicgc.org.in). However the failures of smaller banks like Benaras State Bank, Nedungadi Bank, Global Trust Bank and few co-operative banks in the recent years pose a question of safety for the small investors' money.

Insurance industry has opened up for the private players and they offer a variety of products that include pure insurance as well as investment-linked products. Financial Planners suggest that Mutual Funds route is the next best solution to the small investors who cannot invest directly in shares. However the Mutual Fund industry in India has number of problems such as late trading, trade allocations, dividend stripping, and

Table 1.1: Savings in the Indian Economy

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
Public sector (as % GDS)	4.18	8.42	6.94	0.28	6.70	8.07	7.22	5.75	-4.58	-4.30	-9.77	-10.48
Private Corporate sector (as %GDS)	11.49	14.16	12.65	15.42	14.02	19.63	19.26	18.03	17.34	18.07	17.52	16.74
Household Savings (HHS) (as % GDS)	84.33	77.42	80.42	81.76	79.28	72.30	73.52	76.22	87.24	86.22	92.25	93.75
Savings in Physical assets (as % of HHS)	54.66	43.18	47.61	40.16	39.44	51.22	39.27	45.32	44.78	49.37	51.98	50.22
Financial Savings (FS) (as %of HHS)	45.34	56.82	52.39	59.84	60.56	48.78	60.73	54.68	55.22	50.63	48.02	49.78
1.Currency (as % of FS)	12.58	13.13	10.03	14.11	13.18	15.71	9.63	8.70	12.08	10.23	8.12	10.98
2. Net Deposits (as % of FS)	22.51	23.36	30.43	34.67	34.97	32.64	42.40	38.33	30.71	27.69	34.59	29.31
3. Shares and debentures (as % of FS)	16.92	25.57	21.14	15.59	14.40	8.65	7.35	3.45	3.87	8.37	2.82	2.71
4. Net claims on Govt (as % of FS)	14.81	7.17	5.40	6.58	10.59	8.89	8.17	14.77	15.14	13.68	17.35	19.04
5. Life Insurance funds (as % of FS)	10.74	10.66	10.35	9.71	9.12	12.86	10.99	12.77	12.50	13.59	15.00	15.94
6. Provident and pension funds (as % of FS)	22.44	20.12	22.65	19.34	17.74	21.25	21.45	21.98	25.69	26.44	22.58	22.02

(Source: National Accounts Statistics 1998, 2001, 2003).

entry/exit load discrimination in which small investors are the losers (Business Standard, December 1 & December 8, 2003).

1.1 Changes in the Personal Finance Context

Investments in shares and debentures peaked during the period 1991-1992 but the capital market scam drove the investors away. In 2000, small investors burnt their fingers with failure of dot com companies. Immediately thereafter, another scam in the capital market led to the small investors losing their confidence in capital market investments. Since January 2004, 115 companies have got themselves relisted. 47 out of these 115 relisted shares on the BSE have been relisted after being in the suspended companies list for a period ranging from 2 to 9 years. (Business Standard, 18th September 2004). From 16th August 2004, NSE and BSE moved 51 stocks to Trade-For-Trade (TFT) segment where all trades are delivery based (Outlook Money, 30th September 2004).

NCAER-SEBI (2000) Survey interestingly finds that one set of households with lower income and lower penetration level of consumer durables are in the securities market, while another set of households with higher income and higher penetration level of consumer durables have not invested in the capital markets. Lack of awareness about the securities market and the absence of a dependable infrastructure and distribution network coupled with their risk aversion to risk appear to be the reasons for this situation.

The Government of India has notified the implementation of defined contribution pension plan -as per the recommendation of Project OASIS committee (2000)- for its employees except Armed Forces from 1st January 2004. Several State governments have also notified the implementation of the scheme to their newly recruited employees and

few other state governments have also shown interest (Finance Minister's 2005-2006 Union Budget Speech). In this system, an employee must open a retirement account and receive a unique account number. The workers accrete savings towards their retirement into this account throughout the working life, and receive benefits from it after their retirement for the rest of their life. The individual account holder is asked to select one scheme out of the three schemes offered by a fund manager to invest the contribution. The three schemes differ in the way the contribution in it is invested. Scheme A predominantly invests the contribution in government securities with a small part in risky assets. Scheme C predominantly invests the contribution in risky assets and a small part in government securities. Scheme B balances its investment in both the government securities and risky assets around 50 percent respectively. Thus, each worker in this system has a complete control in managing his retirement savings; by selecting a professional fund manager from a pool of competing, professional fund managers and similarly, selecting an annuity provider from a pool of competing annuity providers. Individual accounts give an opportunity to the worker to alter his risk profile over a period of time. In spite of this flexibility, the individual worker is forced to invest at least a portion of his savings in risky assets.

Kelkar committee (2002) has recommended for the abolition of tax rebates for the notified savings options under section 88 and elimination of deduction under the sections 80L, 80CCC and the tax treatment of Exempt Exempt Tax (EET) method for new insurance policies. These sections are usually applicable to relatively safe designated investments.

Rakesh Mohan committee (2004) has recommended the weighted average of G-sec yields for the previous two years to work out the benchmark for administered interest rates for saving instruments such as National Savings Certificate (NSC), Post Office Monthly Income Scheme (POMIS). Of late, these investment vehicles have turned out to provide risk-free returns higher than the other alternatives available in the financial markets. The committee also recommended for the abolition of certain schemes and a few among them such as Deposit Scheme for Retired Employees (DSRE), 6.5% Tax-free Government of India savings bonds have been discontinued. It also recommended for the introduction of Dada-Dadi Savings Scheme for all the retirees and senior citizens. The Government of India has introduced a scheme in the name of Senior Citizen Saving Scheme.

The Finance Minister in his 2005-2006 Union Budget has announced the withdrawal of section 80L and replaced the rebate under section 88 with a new section, 80C in which all the savings option entitled for rebate under section 88 are clubbed with an overall ceiling for Rs 1,00,000. He also announced the formation of a committee to formulate a framework for implementing EET (Exempt-Exempt-Tax) method of tax for long-term savings of the household. This would imply that the household needs better management of household finance in the coming days, as they would have more flexibility in investments qualifying for tax rebates.

The implications for all the developments discussed above on personal finance in the Indian context can be summarized as under:

1. The reduction in interest rate would result in increased savings for target retirement accumulation, otherwise it will result in less wealth accumulation in relation to the past.
2. The households have the flexibility to choose the investment options from safe post office instruments, bank deposits, pure and investment based life insurance products, to risky assets such as mutual funds and stocks for claiming tax rebates.
3. Dramatic shift from defined benefit plans to defined contribution plans needs employees to make informed investment decisions.
4. A question remains whether the households in the unorganized sector would voluntarily participate in the proposed New Pension System (NPS).

By identifying the relationship between the financial knowledge, planning and portfolio composition, the study helps the policy makers to come up with appropriate programmes to educate/teach the people to plan their savings more effectively. This is the motivation to include the financial knowledge and planning as variables along with the variables that have been found to be significant in prior researches (age, income, education, home ownership, marginal tax rate, household size, pension benefit status and occupation).

CHAPTER 2: REVIEW OF LITERATURE

There is a large body of literature covering the entire gamut of household saving behaviour such as the effect of financial deregulation on personal saving, on household portfolio composition, and the determinants of portfolio allocation by the households. The review of literature here covers a few theoretical studies followed by the empirical studies of the determinants of household portfolio choices. This section also reviews a few theoretical and empirical studies on related strands of literature concerned with the determinants of retirement wealth accumulation.

2.1 Literature Review on Household Portfolio Allocation.

Franco Modigliani's (1954) Life-Cycle hypothesis, an early pioneering work, assumes that people save in order to smooth their consumption over their lifetime. One important objective they have is to generate an adequate retirement income. Hence people tend to save while working so as to build up wealth before retirement, and then they spend their accumulated savings in their twilight years. The hypothesis assumes that individuals are well-informed and forward-looking decision makers. Empirically, a large number of studies in recent years have investigated the factors, which influence the composition of household portfolios. Some of them are summarized in this section. The studies included here in this section have tried to explore the differences in household portfolio in general and investments in risky assets in particular. To a certain extent, there could be cultural differences across countries and regions, the empirical studies summarized here have been classified under North America, Europe, East Asia and other developing countries.

2.1.1 European Studies

Luigi Guiso, Tullio Jappelli, and DanieleTerlizzese (1996) surveyed 4079 Italian households from January 1988 to December 1988 to study the household portfolio heterogeneity. They found that the investors when confronted with uninsurable income risk and borrowing constraints reduce their exposure to risky assets and keep their wealth in a safer and more liquid form. Axel Borch-Supan and Angelika Eymann (1999) using 1983, 1988, 1993 German Income and Expenditure Survey (EVS) of 30000 households found that most of the households' wealth was held in the form of housing and pensions. They showed that the participation in risky assets was influenced positively by wealth and education. Age was found to have a hump shaped profile on the ownership of risky assets. This means the ownership of risky assets increases initially as the age of the households' increases up to certain level and then it declines later.

James Bank and Sarah Smith (2000) using cross sectional data of 4800 respondents (collected monthly for the period from Jan 1997 to June 1998) studied the heterogeneity of household portfolio in UK. They found that the ownership of risky assets showed positive relationship with wealth and education, while age showed a hump shaped profile. They also found that the differential tax treatment across savings products resulted in tax-preferred savings.

Luigi Guiso and Tullio Jappelli (1999) using repeated cross sectional and panel data consisting of 8000 Italian households for the period 1989-1995, studied the heterogeneity of portfolio among the households. They showed that wealth, college education and index of financial information had significant positive effect on the ownership and share of risky assets, while age showed a hump shaped profile.

Rob Alessie et al (1999) using 6 waves of CentER Savings Survey (CSS) - a panel consisting of 2500 Netherlands households - for the period 1993-1998 studied the household portfolio heterogeneity. They found that non-capital income, total net worth, interest on financial matters, employment status had positive impact on the ownership of different asset classes, while the household size had a negative impact on it. They also showed that age followed a hump shaped profile. The answer to the statement, "I am very interested in financial matters (insurance, investments etc.)" is used to grade (in a eight point scale) the respondents' interest on financial matters.

Jonas Agell and Per-Anders Edin (1990) studied the portfolio allocation among 8 asset categories using 1979 Swedish yearly income distribution survey (HINK), which consisted of 1943 wage earning households. They found that wealth, occupation, marginal income taxes had strong positive effects on ownership of different asset categories in the household portfolio choice. They also found the significant positive impact of age, education, occupation, retirement status of the head of the household in the proportion of various assets in their portfolio.

Stefan Hochguertel et al (1997) studied the portfolio allocation among 4 asset categories using 3077 Netherlands households surveyed in 1988. They found that income, education and tax had a positive impact on the proportion of financial wealth held in risky assets while age had a hump shaped relationship.

Anne-Marie Palsson (1998) studied the impact of interest rate on saving allocation using annual Swedish data covering the period 1964-1995. She found that the financial saving and real saving allocation was quite sensitive to the risk-free rate of

return i.e. the financial assets increased and real assets decreased when the risk free rate of return increased and vice-versa.

2.1.2 North American Studies

Peter S. Yoo (1994) using 1962 Survey of Financial characteristics of Consumers, and 1983 &1986 Survey of Consumer Finances, studied the portfolio allocation among cash, bond, and equity. He found that the relationship between age and portfolio allocation is not linear; young and retired individuals demand less risky assets, bonds than middle-aged individuals.

Zvi Bodie and Dwight B. Crane (1997) studied the allocation of wealth among cash, bond, and equity by 916 TIAA-CREF members (USA), surveyed during February 1996. He found that net worth and house ownership had positive significant effect on the ownership of risky assets, while age had a negative impact.

James M. Poterba and Andrew A. Samwick (1999) analysed the portfolio allocation among 8 asset categories using pooled data of 1983,1989,1992,and 1995 Survey of Consumer Finance (15451 U.S. household) and cross sectional data of 1995 SCF (4299 household). They found that income, wealth, education and marginal tax rate had a positive effect on households' asset allocation decision.

Using Federal Reserve Board's Flow of Funds Account (FFA) for the period 1983-1998, and 1989, 1992, 1995, 1998 SCF consisting of 4500 households, Carol Bertuat and Martha Starr- McCluer (2000) studied why the household portfolio is heterogeneous. They found that the portfolio of the typical household remains fairly simple and safe consisting of a checking account, savings account, and tax-deferred retirement account. They showed that wealth and college education had a positive

significant effect on the ownership and share of risky assets, while employment status had a negative effect on them. Age showed a mixed effect (negative effect on the ownership and a positive impact on the share of risky asset in total wealth). Income and defined benefit pension plan had a positive impact only on the ownership of risky assets.

Yilmazer (2001) analyzed the factors influencing the portfolio allocation among 6 asset categories using 1989, 1992, 1995, and 1998 Survey of Consumer Finance data. He showed that the probability that a household owns a home increases with each additional child while their share of investment in stocks decreases with an increase in the number of children.

Annette Vissing-Jorgensen (2002) studied the household portfolio heterogeneity using PSID panel data of 1984, 1989 and 1994 consisting of around 3500 U.S. households. She found that non-financial income of the household had a positive impact on the ownership and the share of risky assets and education had a positive impact only on ownership of risky assets in their portfolio.

2.1.3 East Asian Study

Yoon Geum Lee Jang et al (2000) using a cross sectional study of 2729 South Korean families surveyed in 1994 investigated the factors influencing the percentage share of financial assets in total wealth of the families. They found that wealth was negatively associated and family income positively associated with the share of financial assets in total assets.

2.1.4 Indian Studies

L.C. Gupta (1991) analyzed 5822 profiles of Indian households in mid 1990 and found one-fourth of the Indian shareowners had shares of only 1 or 2 companies, and slightly above half of them had no more than 5 companies in their share portfolio. Thus, the extent of diversification of share investment was grossly inadequate in the case of the majority of Indian shareowners, exposing them to considerable 'unsystematic' risk. He found that holders of undiversified or inadequately diversified portfolios had a higher proportion of those who reported unsatisfactory experience compared to holders of more diversified portfolios.

L.C. Gupta (1993) analyzed 1755 Indian households' investment preferences during March-April 1992 and found that the extent of diversification in the case of share investment do not show any significant change between 1990 and 1992.

Shanmugham et al (1998) using 201 Coimbatore investors studied the profiles of the investors and the factors influencing their decision process. They found that the equity portfolio diversification was moderate. Educational levels of investors had its impact on the use of technical analysis and the occupation had its impact on the use of fundamental analysis.

Rajarajan (1999) using 405 Chennai investors studied the size of financial investments and the percentage of financial assets invested in risky category. He showed that the individual investors' life cycle stage is an important determinant in the size of financial assets investments and the percentage of financial assets investment in the risky category.

SEBI-NCAER (2000) study found that only 7% of all households invested in Shares & Debentures and 9% in Mutual Fund units. The majority of the Equity investor households hold an undiversified portfolio of relatively small value of less than Rs. 25000. It was seen that one set of households, in spite of their lower income & lower penetration level of consumer durables, invest in the securities market, while another set of household with higher income and higher penetration level of consumer durables do not.

L.C. Gupta, C. P. Gupta and Naveen Jain (2001) analyzed 2819 Indian households' investment preferences during the second half of 1997 and found a gradual improvement in the household portfolio diversification in 1997 when compared to 1990. In 1997, only 18% of the households held 1 or 2 share when compared to 25% in 1990. At the other extreme one-sixth held shares in more than 20 companies in 1990 and that had increased to one-fifth in 1997.

Mukhopadhyay (2004) studied the profile of 200 Kolkata investors. Using a questionnaire based survey, he found that aged people prefer less risky investments while the youngsters are aggressive in risky investments. One of the questions asked the investors risk perception about capital market investments and found that people having lower qualification outnumbered the people having higher qualification in answering that the stock market investment is risky.

MARCH Survey (2004) using 1398 samples covering Ahmedabad, Bangalore, Chennai, Delhi, Hyderabad, Kolkata, and Mumbai cities, found that the investors in the western region of the country prefer to take risks in investments as against investors in

the south, but in terms of diversity of investment portfolio surprisingly it was the South Indian investors who had the most diversified investment portfolio.

The 'ET Retail Equity Investor Survey (2004)', designed by ET intelligence group (ETIG) along with AC Neilson ORG-MARG interviewed 513 retail investors in Mumbai, Delhi, Kolkata, Chennai, and Ahmedabad who had invested a minimum of Rs. 10,000 into equities in secondary markets. The study found that the investors are smart in terms of setting book-profit or cut-loss limits and adhering to it, averaging their investments. However it also found that only 2 percent of the investors hold the securities for more than 1 year and for half of the respondents it was only 75 days.

L.C. Gupta (2005) found that the extent of portfolio diversification is mostly 3-10 companies across all income and age groups.

Thus, the findings of the studies are summarized across various countries. In Italy education had a positive impact on the ownership and the proportion of risky assets in total wealth, while age had a hump shaped profile. In Germany, age had a hump shaped profile and education had a positive impact on the ownership of risky assets. In the United Kingdom age had a hump shaped profile, while education and marginal tax rate had a positive impact on the ownership of risky assets. In the Netherlands, age and income had a positive impact on the ownership of risky assets while household size had a negative impact on it. Income, education and the marginal tax rate had a positive impact on the proportion of risky asset investment in the total wealth, while age had a hump shaped profile. That means the middle-aged household own a higher proportion of risky assets in the total wealth when compared to others. In Sweden, Income and marginal tax had a positive impact on the ownership of risky assets. Age and education had a positive

impact on the proportion of risky assets in the total wealth. In the case of occupation, white-collar household head had a positive relationship with both the ownership of risky assets and the proportion of risky assets in the total wealth when compared to the rest of the respondents.

In the USA income, education and marginal tax rate had a positive relationship with both the ownership of risky assets and the proportion of risky assets in the total wealth. Defined benefit pension plan and home ownership had a positive impact on the ownership of risky assets, while age had a negative impact on it. Household size had a negative impact and age a hump shaped profile on the proportion of risky assets in the total wealth.

In South Korea income had a positive impact on the proportion of risky assets in the total wealth.

In India, age had a negative impact and education a positive impact on the ownership of risky assets. The life cycle stage of the investors was found to have an impact on the size of the investments made in risky assets. The findings of the few Indian studies are in line with the findings of European and the US studies, in case of the variables: age and education in the ownership of risky assets and the life cycle stage in case of proportion of risky assets in the total wealth.

Thus, age, income, education, occupation, homeownership, household size, marginal tax rate and pension benefit status are the factors found to have had its impact on the household portfolio.

2.2 Literature review on Retirement Wealth Accumulation.

The Literature on retirement wealth accumulation from countries such as the US, Sweden and India were analysed. The main issues seen in the literature in the context of retirement wealth accumulation are financial awareness, planning for retirement income, retirement risks etc. While in OECD countries, the issues are mainly related to longevity risk, need for annuitization and low annutization rates besides the impact of income and financial knowledge or planning for retirement income. In case of a developing country like India, the concern has been low-income levels and lack of even rudimentary financial knowledge besides issues related to access to alternative instruments.

Bodie (1990), argued that the employer sponsored pension plans is a retirement income insurance to employees and found that the dominant form of employer pension plan is Defined Benefit Pension plan because this provides more complete insurance against the major sources of retirement risk - replacement rate inadequacy, social security cuts, longevity, interest risk-than does the defined contribution pension plans.

Richard H. Thaler (1994) argued that the people have trouble in figuring out how much to save and implement a plan to achieve any given goal. Hence he focuses on importance of information and incentives to induce savings. Thus, he suggests that the policy should provide tax benefits and knowledge initiatives be carried out to make the people more efficient financial planners.

Bodie (2002) argued that the financial service providers should come up with user-friendly new retirement products such as Escalating life annuities, (Increasing level of annuity over time), Bundled risk annuities (annuity with health insurance) to overcome the poor rate of voluntary annuitisation among the retirees. Voluntary annuitisation

means households making voluntary contribution to an annuity provider during working life and obtaining a regular income from them after retirement. John Ameriks and Paul Yakoboski (2003) argued that the major retirement problems faced by the retirees are longevity risk, rate of return risk, inflation risk and medical risk. To hedge against the longevity risk, they should annuitise the accumulated savings to ensure guaranteed stream of income. However, they found that the annuitisation rates among the retirees are low. According to them, one of the major reasons for low rates is the lack of consumer understanding of the benefits of the products. They also suggest to policy makers to ensure that annuitisation options are offered as part of the retirement savings plan at work, thus leading to the additional benefit of educational information covering what annutisation is, how it works and its benefits for a retiree.

Ajay Shah (2000) argued that the idea of placing critical asset management choices in the hands of the participants - the working class, the self employed etc - calls for answering the question of the extent of financial literacy of the participants.

Rajeev Ahuja (2003) is of the opinion that the proposed new pension system in India is appropriate for those who can save for retirement and there is a need for an alternative approach for low-income people, who can't benefit through the new system. He emphasized that for such people, the tax benefit (incentive) is not the main criterion for defined contribution pension plans, since most of them are not paying taxes in any case.

Ramesh Gupta (2003) argued that the challenge in building a pension system lies in the low administrative costs, nationwide collection, and adequate simplicity for participation by millions of people with very limited financial sophistication.

Bernheim et al (1996) analysed the effect of employer sponsored retirement education on household saving behaviour using a cross sectional study of 2055 U.S. respondents aged between 30 and 48 which was surveyed during November 1994. They showed that employer-based retirement education in the work- place strongly influenced household financial behaviour in the form of increased total retirement wealth, retirement saving and participation in 401 (k) plan.

Bayer et al (1996) analysed the impact of employer sponsored retirement seminars on retirement saving, using survey data from 300 U.S. firms (which sponsored pension plan to their employees) for the period 1993 and 1994. They found that employer sponsored retirement seminars are significantly associated with higher rates of 401(k) plan participation and contribution rate.

Zvi Bodie and Dwight B. Crane (1997) using a cross sectional study of 916 TIAA-CREF members (USA), surveyed during February 1996 analysed the portfolio allocation between retirement and non-retirement funds. They found that equity investment in retirement account had positive impact on equity investment in non-retirement account providing evidence that individuals do not diversify their holdings across retirement and non-retirement accounts and conclude that, given enough education, information, and experience, people might tend to manage their self-directed investment accounts in an appropriate manner.

Lusardi (2001) emphasized that understanding the link between saving and planning may have implications for examining the consequences of changes in pension plan provisions, such as the current shift among employers from defined benefit pension plans to defined contribution pension plans. Using the Health and Retirement Study

(HRS) 1992- a cross sectional study of 1172 U.S. individuals (households' head who were 50 to 61 years old and neither fully nor partially retired)- Lusardi found that the respondents who had not thought of retirement plans were the ones with lower wealth (excluding the social security benefits) when compared with those who thought about their retirement plans.

Ameriks, Caplin, and Leahy (2002) using a cross sectional study of 500 U.S. participants of Survey of Financial Attitudes and Behaviour (FAB) 2001 surveyed in January 2001, analysed why do similar households end up with very different levels of wealth. They showed that households with a higher propensity to plan are associated with increased wealth accumulation. They also found that the annuitisation rates among the retirees are low and opined that one of the major reasons is the lack of consumer understanding of the financial assets and products. They also found a negative impact of defined benefit pension plan on gross financial assets.

Marianne A. Hilgert et al (2003) using 1004 respondents of the monthly Survey of Consumers conducted in November and December 2001 analysed the impact of financial knowledge on financial behaviour. They found that financial knowledge test scores had a significant positive relationship to cash flow management, saving management and investment management.

Annika Sunden (2003) using National Social Insurance Board (NSIB) survey of 1000 Swedish individuals of 2003 analysed the impact of information and education initiative of pension reform on households. She showed that the information and education initiative by the Swedish Government had some success in increasing knowledge about the reformed system. At the same time, participants also reported that

they needed more information and hence felt that it is equally important to design pension plans to make it easy for the participants to understand and use them.

Indian Investor Economic Foundation (IIEF-2002) survey, surveyed 1832 Indian respondents in July 2002, to assess the knowledge, attitudes and behaviours of individuals towards retirement, saving, risk, investments etc. It concluded that it might be appropriate to assume that a quantum improvement in financial knowledge among households would result in continued voluntary participation in the new pension system.

Vaidyanathan (2004) analyzed the secondary data regarding household savings in India during the period 1961-2001. He found that in India the self-employed, not having any old aged income-providing scheme, fall back on gold resulting in large savings in the form of gold. He calls for the life insurance companies to come up with innovative products to capture this huge untapped market.

In two studies, financial knowledge is represented by a score, which is used to study the relationship between financial knowledge and financial behaviour. Planning is represented by a score, which is used to study the relationship between retirement wealth accumulation and saving.

In the literature, the effectiveness of the employer based retirement programmes are analysed by the participation and contribution in retirement saving plans before and after the exposure to these programmes. The awareness level of the respondents about the reform system measured the effectiveness of pension reform education initiative.

Thus, planning, employer sponsored retirement education and financial knowledge are the factors found to have impact on retirement wealth accumulation and risky assets allocation. Hence financial knowledge and planning are also included as explanatory variables for this study.

Most of the studies discussed in this section either analysed the factors influencing the ownership of risky assets or the amount of investments made in risky assets. Only few studies have analysed the factors influencing the ownership and proportion of risky assets on total assets. Investors take two-stage decisions in portfolio formation. In the first stage, the household decides about the combination of assets in their portfolio (the discrete portfolio choice). In the second stage they decide about how much to invest in different assets (the continuous portfolio choice).

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

Literature has shown that the major determinants of portfolio composition are age, income, education, home ownership, household size, occupation, pension status and marginal tax rate.

Except a very few studies, most of the earlier studies on household portfolio composition had focused on the impact of the above-mentioned variables but not on the financial knowledge on the asset allocation of households. Of late very few studies, particularly in the U.S. have tried to study the relationship between financial knowledge, planning and household portfolio composition.

A few among the Indian studies quoted in the literature review have studied only the investors in capital market and not the households who have not invested in the capital market instruments. The reforms in Indian financial sector have led to the financial market becoming a complex one and the shift from defined benefit pension plans to defined contribution pension plans could pose a great challenge to the Indian households in managing their self directed investments. Hence the current study intends to examine the relationship between financial knowledge, planning and household portfolio composition along with the other variables such as age, income, education, homeownership, household size, marginal tax rate and pension benefit status. If the study finds such a relationship between the financial knowledge and the household portfolio composition, these findings will help the planners/policy makers to take appropriate actions to ensure that individuals who would have an indirect obligation to invest in the capital markets through the pension reforms are provided with the required inputs. This will help them to take proper decisions to accumulate the required retirement corpus and

to have a decent retired income. Households, who do not have any plan to generate steady income during the retired life, would have the option to voluntarily participate in the new pension plan. Such households could also be targeted with the appropriate programmes to enable them to participate in the capital market and reap the benefits in terms of higher returns.

Thus, this study aims to answer the following questions:

1. What is the relationship between the financial knowledge and the households' portfolio composition?
2. What is the relationship between planning and the households' portfolio composition?

The following research hypotheses are formulated to test in this study.

3.1 Research Hypotheses

H_{01}: There is no relationship between the financial knowledge and the household portfolio composition.

H_{11}: There is a relationship between the financial knowledge and the household portfolio composition.

H_{02}: There is no relationship between the planning and the household portfolio composition.

H_{12}: There is a relationship between the planning and the household portfolio composition.

3.2 Operational Definitions

Household is any group of persons living together who are related by marriage, blood, or adoption.

Financial Knowledge includes knowledge about general personal finances such as savings, investments, risk, insurance, retirement plans, employee benefits, credit, inflation and tax benefits.

Planning includes all activities in managing the family finances such as tracking the monthly expenses, saving out of every monthly pay, saving beyond tax requirements, having life and medical insurance, preparing a monthly budget for spending, PF/EPF withdrawal, usage of credit for house construction, usage of credit cards etc.

Household size means the total number of members in the family consisting of the head of the family (husband/wife), spouse, children and other dependents, if any.

Pension Benefit Status means the position of the household with respect to the receipt of pension benefit after retirement. They might receive from the government, employee's provident fund organization (EPFO) or may not have such benefits from both.

Clearly Safe Financial Assets include Cash in hand, Savings Bank account, Bank Deposits, Postal Savings (POMIS, Term Deposits, Recurring Deposits, NSC, NSS), PPF, PF/EPF accumulation, RBI Bonds.

Fairly Safe Financial Assets include Cash value of Life Insurance Premium paid, Infrastructure Bonds, and Chit funds.

Risky Assets include Mutual funds excluding gilt and money market mutual funds, Shares and Corporate Bonds.

Total Wealth/Assets include Cash in hand, Savings Bank account, Bank Deposit, Postal Savings (POMIS, Term Deposits, Recurring Deposits, NSC, NSS), PPF, RBI

Bonds, Cash value of Life Insurance Premium paid, PF/EPF accumulation, Infrastructure Bonds, Chit funds, Mutual funds, Shares, Corporate Bonds, land, home, gold and silver.

3.3 Methodology

The focal point of the study is to see whether there exists any relationship between the financial knowledge, planning and investment in risky financial assets. The time and cost constraints of the study on an all-India basis is not viable by an individual. Hence, this study has been carried out in Coimbatore and Ahmedabad cities.

For this study a questionnaire was prepared, which collected the demographic information such as age, income, education, occupation, household size, the financial knowledge level, and the level of planning done by the household using a series of questions most of them are either multiple choice or dichotomous (yes or no type). The study also collected the respondents' investments in different financial asset categories and their investments in non-financial assets as percentage of their total assets/wealth.

A pilot test was conducted in Coimbatore for the questionnaire and discussions were held with faculty members at the Institute of Management, Nirma University and with the Thesis Advisory Committee (TAC) to validate the contents of the questionnaire. The responses to this questionnaire were used in analyzing the determinants of household portfolio composition.

The study collected the responses from the households residing in Coimbatore and Ahmedabad. The households who received Form-16 from their employers in case of employed households and in case of self employed and businessmen who have more than Rs 80,000 as income per annum for the financial year 2003-2004, were the sample for the study. The personal income tax rate for the financial year 2003-2004 was 10 percent for

the income between Rs 80,000 and Rs 1,00,000. It is assumed that the household will make use of tax induced saving instruments to reduce their tax payment. Since the study is concerned with savings and investments, the probability of getting better response from the respondents increases with the household having a reasonable income. The taxpayers by default think of savings to reduce their tax payment and hence only those households having a taxable income are considered for the study.

The study used Judgment sampling technique to collect data from Coimbatore and Ahmedabad. The data was collected from 15th Oct 2004 to 15th Jan 2005 in Coimbatore and from 20th Feb 2005 to 20th Apr 2005 in Ahmedabad.

Nearly 900 questionnaires were circulated in Coimbatore and the responses obtained were 475. Out of 475 only 345 were complete in all aspects and hence the rest (130) were discarded. In Ahmedabad, 600 questionnaires were circulated and the responses obtained were 278 only. Out of 278, only 227 were complete in all aspects and hence the rest (51) were discarded. Thus, the sample analysed was 345 in the case of Coimbatore and 227 in the case of Ahmedabad.

Dependent and Independent Variables:

The households were provided with a list of options in the questionnaire (classified into 14) available to save their surplus income and requested them to provide the share of their total wealth in each of the savings/investment options. For the purpose of analyzing the relationship, the household portfolio is classified into 3 major asset categories such as

- Clearly safe financial assets
- Fairly safe financial assets
- Risky financial assets

The ownership of risky assets and the proportion of risky assets investments in total assets are determined by looking into the responses provided by the households for these saving/investment options and adding the sum of them in case of calculating the total share for these three asset categories.

95 percent of the respondents in Coimbatore and 100 percent in Ahmedabad own clearly safe financial assets. 90 percent of the respondents in Coimbatore and 86 percent of the respondents in Ahmedabad own fairly safe financial assets. Only 29 percent and 54 percent respondents hold risky assets in the two cities respectively.

If one looks into the macro level data (Table1.1), the preferences of household for parking their savings in these two asset categories are well represented while the percentage of amount invested in risky assets is meager (less than 10% of Gross Domestic Saving).

Hence the ownership and share of risky assets investment in total assets are the dependent variables for the study.

Well-informed, financially educated households are in a better state to make good decisions for their families and thus are in a position to increase their economic security and well-being. The role of the financial knowledge is important in decision-making in information intensive assets (such as stocks and other risky securities). It is expected that the household with the better level of knowledge about all kinds of financial products be expected to make better decisions and have a diversified portfolio.

The household, which spends more time in financial planning, is expected to accumulate more wealth compared to households who spend no time or less time in

financial planning. Also they could use the risky assets that offer better returns in the long run to accumulate their wealth.

Younger people have a greater labor flexibility than that of older people, so if the returns to their investments turn out to be low, they could work more or retire later. In contrast older people have to reduce their consumption in line with their income, and so may choose to limit their risk. Also there is a possibility for the household to accumulate information about investment opportunities over a period of time and hence age is an important factor to be considered in household portfolio analysis.

Households may have highly leveraged portfolio typically dominated by housing wealth. This might force them to use their cash flow to pay down their mortgages or invest in safe assets, rather than buy risky assets. Hence, home ownership is also included for analysis.

Taxation may affect portfolio choice in different ways. Different taxation of different assets alters both the after-tax returns and the riskiness of assets, and even a comprehensive income tax with full loss offset can effect on risk taking. Hence households with a higher marginal income tax rates are more likely to own tax-advantaged assets, tax-deferred assets than households with lower marginal tax rates.

Employer's contribution to Employees Provident Fund (EPF) is considered in total assets for households who receive it from their employers. In case of government employees who are eligible to receive defined benefit pension plan after retirement is not considered in their total wealth. Household which expect to receive defined benefit pension from employers after retirement might take some risk during the working life when compared to households which don't have such benefits after retirement.

The nature of one's work might expose him/her to different kinds of information that is useful to life. For example, an individual working in financial services industry is expected to have better knowledge in savings and investments and hence to have a better portfolio. Hence occupation is included for analyzing the determinants of household portfolio.

Higher educated people tend to hold significantly more risky assets relative to their savings. Assets holding are determined by the informational status that the investor has acquired with respect to certain assets. Risky assets can be viewed as information intensive assets and informational status can be proxied by the educational level of the investor. Education also provides a control for past and future income. Thus education could be also used as a proxy for human capital.

Income checks the dependence of portfolio allocation on financial status. Higher income raises the probability of owning risky assets. The variable number of children is represented by the household size to control the life-cycle factor.

Thus, in line with the research questions and the findings of the literature review, along with the above expectations, the predictor variables used in the study are financial knowledge, planning, age, income, education, home ownership, household size, marginal tax rate, pension benefit status and occupation.

The variables: financial knowledge, planning, age and household size are metric variables. The variables: income, education, marginal tax rate, pension benefit status and occupation are categorical variables. The variable home ownership is dichotomous and categorical in nature.

3.4 The rationale in choosing Coimbatore and Ahmedabad cities

A two-phase process was used to select the cities for the study. In the first phase, the state was selected. Then in the second phase, a city from each of these two states was selected. The study is concerned with savings and investments of households. Hence the factors considered for selecting the state at the first stage of the selection process are, state per capita income, savings proxied by scheduled commercial banks deposits out standing at the state level, literacy level, population, number of beneficiary accounts, number of cities having National Stock Exchange branches, number of VSAT terminals and National Stock Exchange turn over.

Table 3.1 and Table 3.2 provide the details of the Gross State Domestic Product (GSDP) and Scheduled Commercial Bank's Deposits for Tamil Nadu and Gujarat states.

Table 3.1: Gross Domestic Products of Tamil Nadu and Gujarat States

Rank	State	% Share of GDP at 1993-94 prices		% of Indian Population
2	Tamil Nadu	8.1	8.3	6.1
3	Gujarat	7.2	7.4	4.9

(Source: EPW Research Foundation Mumbai, June 2003)

Table 3.2: Scheduled Commercial Banks Deposits Outstanding (in %)

Rank	State	Scheduled Commercial Banks Deposits Outstanding (in %).						
		96-97	97-98	98-99	99-00	00-01	01-02	02-03
5	Tamil Nadu	6.65	6.70	6.57	6.72	6.64	6.52	6.62
6	Gujarat	5.95	5.84	5.88	5.88	5.80	5.81	5.65

(Source: Money & Banking, Centre for Monitoring Indian Economy, September 2004)

The data in the table 3.3 and table 3.4 show the states contribution to National Stock Exchange turnover, number of beneficiary accounts, number of VSAT terminals connected with the National Stock Exchange etc.

Table 3.3: National Stock Exchange Turn Over (in %)

State/ District	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	Mean	Mode
Coimbatore	3.45	2.25	1.14	0.92	0.59	0.59	0.60	0.55	0.45	1.17	0.60
Ahmedabad	1.98	4.27	3.71	2.55	2.66	2.68	2.49	2.28	2.99	2.85	2.66

(Source: www.nseindia.com)

Table3.4: Comparison of Tamil Nadu and Gujarat states in terms of Beneficiary Accounts, VSAT Terminals

State	% Beneficiary account	NSE No. of cities	No of VSAT terminals	% of Cheque Clearing Centers	Per Capita Income 00-01 (93-94 prices)	Per Capita Income 01-02 (93-94 prices)	Literacy Rate	Illiterates
Tamil Nadu	7.2	26	180	7.58	12944	13108	70.00	4.21
Gujarat	16.78	41	209	5.91	12934	14102	61.1	8.67
India	100.00	365	2888		10306	10754	65.4	

(Source: www.nseindia.com, Census 2001, http://chandigarh.nic.in)

Table 3.5: MARCH Retail Investors Survey – Investment Objectives (in % - not mutually exclusive)

Investment Obj / Cities	A'bad	B'lore	Chennai	Delhi	H'bad	Kolkata	Mumbai
Capital Gains	20	6	99.5	68	74	49.5	20
Safety	18	65.5	99.5	63	57	54	18
Regular Income	21	61	100	62	61	47.5	21
Secured Future	20	78.5	99	75	58	65	20
Tax	20	72.5	99	68	72	62.5	20
Others	1					5	1

(Source: Charted Financial Analyst, July 2004)

Table 3.6: MARCH Retail Investors Survey – Investment Avenue Preference (in % - not mutually exclusive)

Investment Avenue / Cities	A'bad	B'lore	Chennai	Delhi	H'bad	Kolkata	Mumbai
PPF	0.5	--	--	--	--	--	0.5
POS/CPF	1.5	--	--	--	--	3.5	1.5
Pension Plans	17.5	26	85	25	23	22	17.5
Equity	54.5	67	96	56	82	38.5	54.5
Gold	20.5	17	94	25	14	12.5	20.5
Real Estate	20	38	95	45	37	22	20
Bonds	30.5	37	94	42	26	36.5	30.5
Insurance Products	59	71	97	68	56	60.5	59
Bank Products	66	43.5	97	54	36	58.5	66
Mutual Funds	83.5	88.5	99	73	92	67	83.5

(Source: Charted Financial Analyst, July 2004)

Table 3.7: MARCH Retail Investors Survey – Knowledge of Mutual Funds (in % - not mutually exclusive)

Knowledge of MFs. / Cities	A'bad	B'lore	Chennai	Delhi	H'bad	Kolkata	Mumbai
Very Good	13	NA	9	7	NA	NA	13
Good	26	NA	30	24	NA	NA	26
Average	47	NA	57	24	NA	NA	48
Poor	10	NA	4	4	NA	NA	10
No	4	NA	2	2	NA	NA	4

(Source: Charted Financial Analyst, July 2004)
NA – Not Available

MARCH Survey (2004) using 1398 samples covering Ahmedabad, Bangalore, Chennai, Delhi, Hyderabad, Kolkata, and Mumbai cities, found that the investors in the west prefer to take more risks in investments as against investors in the south, but in terms of diversity of investment portfolio surprisingly it is the South Indian investors who have the most diversified investment portfolio (Table 3.5, Table 3.6 and Table 3.7).

The 'ET Retail Equity Investor Survey (2004)', designed by ET intelligence group (ETIG) along with AC Neilson ORG-MARG interviewed 513 retail investors in Mumbai, Delhi, Kolkata, Chennai, and Ahmedabad who had invested a minimum of Rs. 10,000 into equities in secondary markets. The study concluded that the average retail equity investor in the secondary stock market is a smart, calculating person who understands the market and knows about the risks that the market throws up.

Outlook Money-C fore survey (2004) interviewed 2,018 income taxpayers in six cities (Bangalore, Chennai, Delhi, Hyderabad, Kolkata and Mumbai) and found that two-thirds of the respondents were in agreement with the tax reform recommendations: lower

tax rates and a withdrawal of tax breaks. Significantly, the percentage of those who favoured a 'low tax rates, no tax breaks' regime were the highest among the government employees and in the over Rs 3 lakh income category. Surprisingly Hyderabad and Chennai respondents' topped among the 6 cities preferring market based interest rates rather than administered rates of savings schemes. Only one-third of the respondents of this survey favoured the option of pension funds investing in equity and an equal number favoured it only if the government guarantees higher returns. The rest of the one-third surveyed rejected the option, as it was perceived as 'too risky'.

The MARCH survey found that the South Indian households prefer less risk in their investments when compared to their western counterparts. Within the southern states the per capita income, number of beneficial accounts are the highest in Tamil Nadu but their contribution to the NSE turnover is not commensurate with their status among the other states. The literacy level of Tamil Nadu is also higher than other states except Kerala. Tamil Nadu is the first state to notify the implementation of the New Pension Scheme (NPS) of the Government of India to their newly recruited employees since 1st April 2003.

From the above facts and study findings, one could summarize that the per capita income, the literacy level of Tamil Nadu are above the national average, the number of VSAT terminals and the contribution to NSE turnover are greater than the other states except a few (Maharastra, Delhi, West Bengal and Gujarat). They prefer less risk investment avenues when compared to their western counterparts. At the same time they hold well-diversified portfolios.

Similarly, in case of Gujarat their per capita income is above the national average while the literacy level is marginally lower than the national average. The percentage of beneficiary accounts and the contribution to NSE turnover are greater than the other states except Maharastra. The number of VSAT terminals is greater than the other states except a few (Maharastra, Delhi).

Hence the States, Tamil Nadu and Gujarat are selected for the study.

The above-mentioned 3 studies have analysed only the top 5/ 6/ 7 cities and not the relatively smaller but enough towns in the country. Hence the study makes an attempt to study the households which are not covered by the earlier studies, viz relatively smaller town investors.

Table 3.8: Comparison of Top Cities in Tamil Nadu and Gujarat (Rank in India)

City	Best City to Live in	Best city to do Business	Best city to Market their products	Urban Agglomeration/City Population	% of NSE turnover
Chennai	2	6	4	4	4
Coimbatore	23	4	10	18	16
Madurai	52	26	26	NA	NA
Ahmedabad	10	17	8	7	5
Surat	21	19	16	9	17
Vadodara	45	13	19	16	11
Rajkot	36	15	23	35	19

(Source: Outlook Money, April 2003)

NA – Not Available

Table 3.8 provides the findings of three different surveys conducted by three different agencies to find out the best city to live in (Outlook Money-Indicus Analytics during 2003), the best city to do business (Confederation of Indian Industries during 2003), and the best city to market their products (Indicus Analytics during 2002). Chennai, Coimbatore, Trichirapalli, and Madurai are the four cities that find a place in these surveys from Tamilnadu. Ahmedabad, Surat, Vadodara and Rajkot are the four cities that find a place from Gujarat in these surveys.

There are 6 Municipal Corporations in the state of Tamil Nadu. They are part of the main 6 districts in Tamil Nadu viz. Chennai, Coimbatore, Madurai, Trichirapalli, Salem and Tirunelveli. All the 6 districts are above the state average in terms of the ownership of different assets such as car/jeep/van; scooter/motorcycle/moped; telephone; television; radio/transistor; bicycle; availing banking services and the literacy rate.

In terms of contribution to the NSE turnover, Chennai district contributes nearly 5 times as compared to Coimbatore and the contribution of Coimbatore has dramatically reduced to 0.6 percent as compared to around 3 percent during 1993-94, the other 4 district head quarters do not find their place in the top cities of NSE turnover list (Table 3.9). In case of possession of different assets, Coimbatore district is better than the other 4 districts, which are more or less equal (Table 3.11).

In case of Gujarat, the NSE contribution from Ahmedabad is far better than the contributions from the other three places (Table 3.10). The households in Gujarat are believed to be risk takers when compared to the southern state households. Ahmedabad city also takes a favorable place (in all the parameters) in the city surveys conducted by

the 3 agencies. Both Coimbatore and Ahmedabad have a Regional Stock Exchange and are emerging non-metros.

Table 3.9: Comparison of 6 Districts contribution in % of NSE Turnover during 1995-2004 in Tamil Nadu

Districts	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
Chennai	3.32	4.62	4.55	4.18	3.88
Coimbatore	3.45	2.25	1.14	0.92	0.59
Madurai	NA	NA	NA	NA	NA
Trichirapalli	NA	NA	NA	NA	NA
Salem	NA	NA	NA	NA	NA
Tirunelveli	NA	NA	NA	NA	NA

(Source: www.nseindia.com).

Table 3.9 (cont'd)

Districts	2000-2001	2001-2002	2002-2003	2003-2004	Mean / Med.
Chennai	3.40	3.56	3.59	2.88	3.78 / 3.59
Coimbatore	0.59	0.6	0.55	0.45	1.17 / 0.60
Madurai	NA	NA	NA	NA	NA
Trichirapalli	NA	NA	NA	NA	NA
Salem	NA	NA	NA	NA	NA
Tirunelveli	NA	NA	NA	NA	NA

(Source: www.nseindia.com).

NA – Not Available

Table 3.10: Comparison of 4 Districts contribution in % of NSE Turnover during 1995-2004 in Gujarat

Districts	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
Ahmedabad	1.98	4.27	3.71	2.55	2.66
Baroda	0.28	1.07	0.82	0.83	0.81
Surat	0.08	0.20	0.27	0.31	0.26
Rajkot	0.06	0.22	0.67	0.51	0.46

(Source: www.nseindia.com).

Table 3.10 (cont'd)

Districts	2000-2001	2001-2002	2002-2003	2003-2004	Mean / Med.
Ahmedabad	2.68	2.49	2.28	2.99	2.85/2.66
Baroda	0.73	0.62	0.68	0.70	0.73/0.73
Surat	0.41	0.48	0.43	0.28	0.30/0.28
Rajkot	0.38	0.29	0.27	0.25	0.35/0.29

(Source: www.nseindia.com).

Thus, Coimbatore is selected for the study from Tamil Nadu state and Ahmedabad from Gujarat state.

Table 3.11: Comparison of 6 Districts in Tamil Nadu for ownership of various assets (in %)

District	% of household availing banking services	Radio Transistor	TV	Telephone	Bicycle	Scooter Motorcycle Moped	Car Jeep Van	None of the specified assets
Chennai	11.50	8.91	12.09	15.21	6.34	11.19	21.95	1.90
Coimbatore	7.32	6.84	8.63	9.57	6.73	11.51	12.71	5.81
Madurai	3.71	3.97	5.14	4.22	3.52	3.67	4.01	4.45
Salem	3.52	3.80	4.70	5.09	5.36	6.62	4.51	5.33
Tiruchirapalli	5.13	4.24	3.90	4.57	4.32	4.33	3.54	3.64
Tirunelveli	4.79	4.89	4.00	4.11	4.42	3.05	3.17	4.75
Tamil Nadu Total Household in 000s	3234.770	6172.203	5595.386	1592.540	6014.940	2280.742	309.595	4589.040

(Source: Census 2001, Statistical Handbook of Tamil Nadu 2002).

3.5 Analytical Tools

The explanatory variables financial knowledge, planning, age and household size are metric variables. The explanatory variables: income, education, marginal tax rate, pension benefit status and occupation are categorical variables. The explanatory variable, home ownership is dichotomous and categorical in nature. The dependent variable, ownership of risky assets is dichotomous and categorical in nature.

OLS regression may be used when the dependent variable is metric, whereas the explanatory variables are either metric or non-metric (or dummy), or a combination of these two. However, if the dependent variable is of non-metric/categorical in nature, qualitative response models should be used. There are three approaches to developing a probability model for a binary response variable. They are - (1) The linear probability model (LPM), (2) The logit model and (3) The probit model.

The LPM is plagued by several problems such as - (1) non-normality of disturbances (u_i), (2) heteroscedasticity of disturbances, (3) possibility of $\hat{Y}_i$ lying outside the 0-1 range, and (4) the generally lower R^2 values. Hence, Logit or Probit model are generally used (Damodar N. Gujarati, 2005). The logit model uses the logistic cumulative distribution function (CDF) while the probit uses normal cumulative distribution function for the random variable. In most applications, the models are quite similar with the main difference being that the logistic distribution has slightly fatter tails. It results in the conditional probability approaching zero or one at a slower rate in logit than in probit. Therefore, there is no compelling reason to choose one over the other (Damodar N. Gujarati, 2005). The study was aimed at analyzing the factors influencing the risky assets

ownership, which is dichotomous and categorical in nature and hence probit model has been used for analyzing the ownership of risky assets among the households.

After analyzing the ownership of risky assets using probit model, at the second level, the study analyses the factors, which influences the proportion of investments in risky assets. For this purpose the tobit model, which is the extension of probit model has been used.

The probit model is used to analyze the variables, which influence the ownership of risky assets among the households. The tobit model is used to find out the variables, which influence the proportion of total wealth, invested in risky assets by the households. There is a possibility that the different set of variables may influence the ownership of risky assets, as against the amount invested in risky assets. Thus by carrying out both probit and tobit analysis, one should be able to find out the factors which influence household behaviour in the ownership and/or proportion of risky assets in their investment.

If a variable influences both the ownership and proportion of risky assets, it means that the variable acts as a facilitator in risky assets ownership as compared to the variables, which influence only the proportion but not on the ownership of risky assets. By combining the probit and the tobit analysis, one should be able to find out the variables which play a major facilitating role in the ownership of risky assets.

SYSTAT 8.0 software was used for running the probit model. EasyReg International software was used for running the tobit model.

3.6 Assessing the goodness of fit of the model

Model calibration is a criterion, which is used to assess the goodness of fit of the model. Model calibration evaluates how well the observed and predicted probabilities agree over the entire range of probability values.

Hosmer and Lemeshow test is a commonly used test for the goodness of fit of the observed and predicted number of events. It is most useful when the number of covariate patterns is large and the standard goodness-of-fit chi-square tests cannot be used. To use this technique sensibly, one must have a fairly large sample size so that the expected number of events in most groups exceeds 5 and none of the groups have an expected value less than 1. The usual null hypothesis test is that there is no difference between the observed and predicted values.

3.7 Specification test for the model

The two important specification problems are the effect of omitted variables and the effect of heteroscedasticity (William H. Greene, 2000).

The explanatory variables used in this study are derived from the past literature and hence the test for omitted variables is not carried out. In the cross sectional data, heteroscedasticity problem will exist and hence the test for heteroscedasticity is not carried out in this study.

Thus, the proposed model is found to be significant in explaining the relationship between the explanatory variables and the dependent variables.

CHAPTER 4: ANALYSIS OF RESULTS

The analysis of the study is reported in three sections. The first section consists of a brief discussion on the profile of the respondents. The second one discusses the relationship between the explanatory variables and the ownership of risky assets in Coimbatore, Ahmedabad and the Combined Sample. Then the analysis of multivariate probit and tobit models are reported in the third section.

4.1 Sample Profile

The sample from Coimbatore, Ahmedabad and the Combined Sample (Table 4.1) are made up of representative cross-sections in terms of nature of employment, age and income.

In case of nature of employment, 52 percent of the respondents in Coimbatore are salaried employees in the private sector while it is 67 percent in Ahmedabad and 57 percent in the Combined Sample. In the case of government employees, the corresponding values are 29 per cent, 18 percent and 25 percent respectively. Businessmen constitute 19 per cent in Coimbatore, 15 percent in Ahmedabad and 18 percent in the combined sample.

15 percent of the respondents in Coimbatore are in the age group 21-30 years, while the corresponding figures for Ahmedabad and the Combined Sample are 42 percent and 26 percent. In the age group 31-40 years Coimbatore, Ahmedabad and the Combined Sample respondents represent 46 per cent, 28 percent and 39 percent respectively. 24 percent of the respondents in Coimbatore are in the age group 41-50 years, while the corresponding figures are 16 percent and 20 percent in Ahmedabad and the Combined

Sample. The oldest respondents (above 50 years) are around 15 percent in Coimbatore, Ahmedabad and the Combined Sample.

In terms of household income, the lowest income category (less than Rs 1 lakh) is 6 per cent in all the three samples. Half of the Coimbatore respondents are in the income category Rs 1-2 lakhs, while it is 30 per cent in Ahmedabad and 43 percent in the Combined Sample.29 percent of the respondents from the three samples are in the income category Rs 2-3 lakhs. 15 percent of the respondents in Coimbatore are in the highest income category (above Rs 3 lakhs), while it is 35 percent in Ahmedabad and 22 percent in the Combined Sample.

Table 4.1: Sample Profile

Variable		No of Respondents in Coimbatore (in percent)	No of Respondents in Ahmedabad (in percent)	No of Respondents in Combined Sample (in percent)
Age (in Years)	21-30	15	42	26
	31-40	46	28	39
	41-50	24	16	20
	Above 50	15	14	15
Annual Income (in Rs)	< 1 lakh	6	6	6
	1 – 2 lakhs	50	30	43
	2 – 3 lakhs	29	29	29
	Above 3 lakhs	15	35	22
Occupation	Salaried employees (private)	52	67	57
	Salaried Employees (government)	29	18	25
	Businessmen	19	15	18

The respondents from the salaried private sector represent textile, software, telecommunication, pharmaceutical, chemical and fertilizers, construction, hospital, medical transcription, call centers, engineering machineries, banking, and insurance industries.

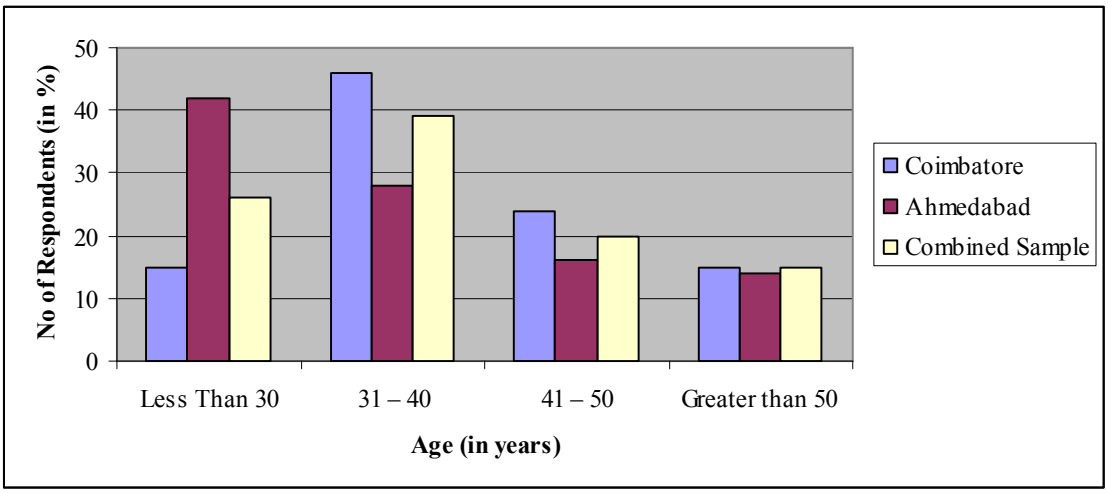

Figure 4.1 Sample Profile (Age)

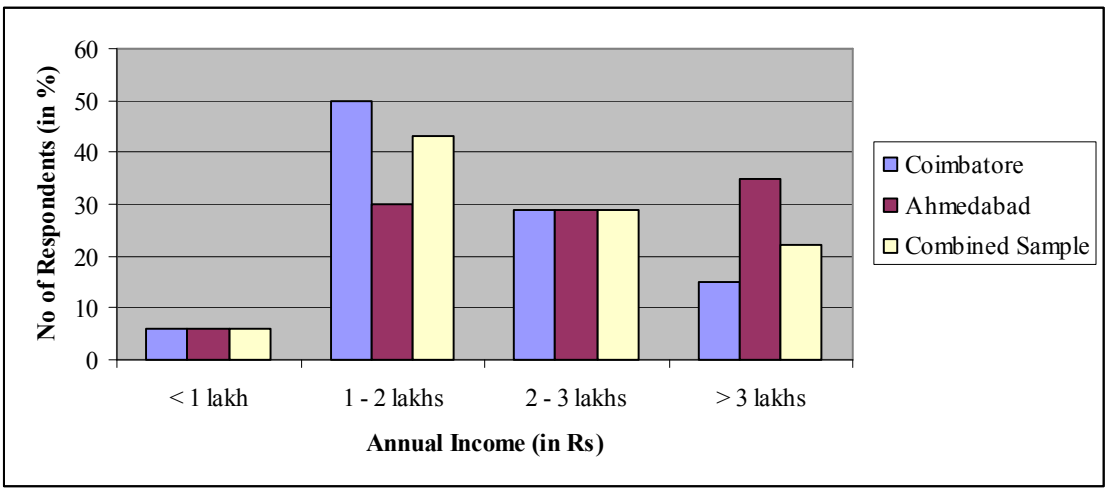

Figure 4.2 Sample Profile (Annual Income)

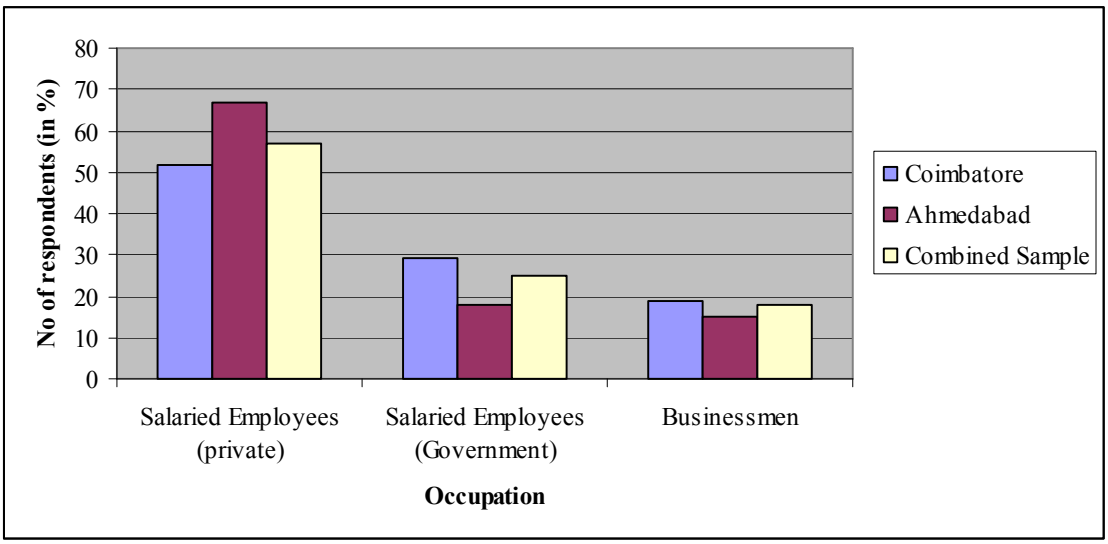

Figure 4.3 Sample Profile (Occupation)

4.2 Hypothesis Testing

The study formulated two hypotheses and they are tested by analyzing the probit multivariate regression results (Table 4.19). The dependent variable for the multivariate probit analysis is the ownership of risky assets. The independent variables used in the analysis are financial knowledge, planning, age, income, education, household size, home ownership, marginal tax rate, pension benefit status and occupation.

The two hypotheses tested are given below.

H_{01}: There is no relationship between the financial knowledge and the household portfolio composition.

H_{11}: There is a relationship between the financial knowledge and the household portfolio composition.

H_{02}: There is no relationship between planning and the household portfolio composition.

H_{12}: There is a relationship between planning and the household portfolio composition.

4.2.1 The Ownership of Risky Assets and Financial Knowledge Score:

It is expected that the household with a better level of knowledge about all kinds of financial products be expected to make better decisions and have a diversified portfolio.

The respondents are classified according to the financial knowledge score and the ownership of risky assets in their portfolio. By looking at the panel A, panel B and panel C in table 4.2, one could infer that in Coimbatore, Ahmedabad and the Combined Sample, the ownership of risky assets is the lowest among the respondents with the lowest percentile on the financial knowledge score. It increases as the percentile of

financial knowledge score increases. Thus, it indicates the importance of financial knowledge in explaining the ownership of risky assets in Coimbatore, Ahmedabad and the Combined Sample**.**

Table 4.2: The Ownership of Risky Assets and the Financial Knowledge Score

Panel A – Coimbatore			
Financial Knowledge Score	Number of Risky asset owners	Percentage	Total Respondents
0 - 25 Percentile	17	14.91	114
26 – 50 Percentile	20	22.99	87
51 – 75 Percentile	23	34.85	66
76 – 95 Percentile	34	48.57	70
Top 5 Percentile	6	75.00	8
Total	100	28.99	345
Panel B – Ahmedabad			
Financial Knowledge Score	Number of Risky asset owners	Percentage	Total Respondents
0 – 25 Percentile	22	36.07	61
26 – 50 Percentile	33	45.83	72
51 – 75 Percentile	33	66.00	50
76 – 95 Percentile	28	77.78	36
Top 5 Percentile	6	75.00	8
Total	122	53.74	227
Panel C – The Combined Sample			
Financial Knowledge Score	Number of Risky asset owners	Percentage	Total Respondents
0 – 25 Percentile	39	22.29	175
26 – 50 Percentile	43	31.16	138
51 – 75 Percentile	84	48.84	172
76 – 95 Percentile	44	61.97	71
Top 5 Percentile	12	75.00	16
Total	222	38.81	572

The study carried out multivariate probit regression and the results (Table 4.19) show that there is a positive and significant relationship between the financial knowledge and the ownership of risky assets. Thus, one could conclude that there is an impact of financial knowledge among the respondents in Coimbatore, Ahmedabad and the Combined Sample and hence the null hypothesis that there is no relationship between the ownership of risky assets and the financial knowledge is rejected.

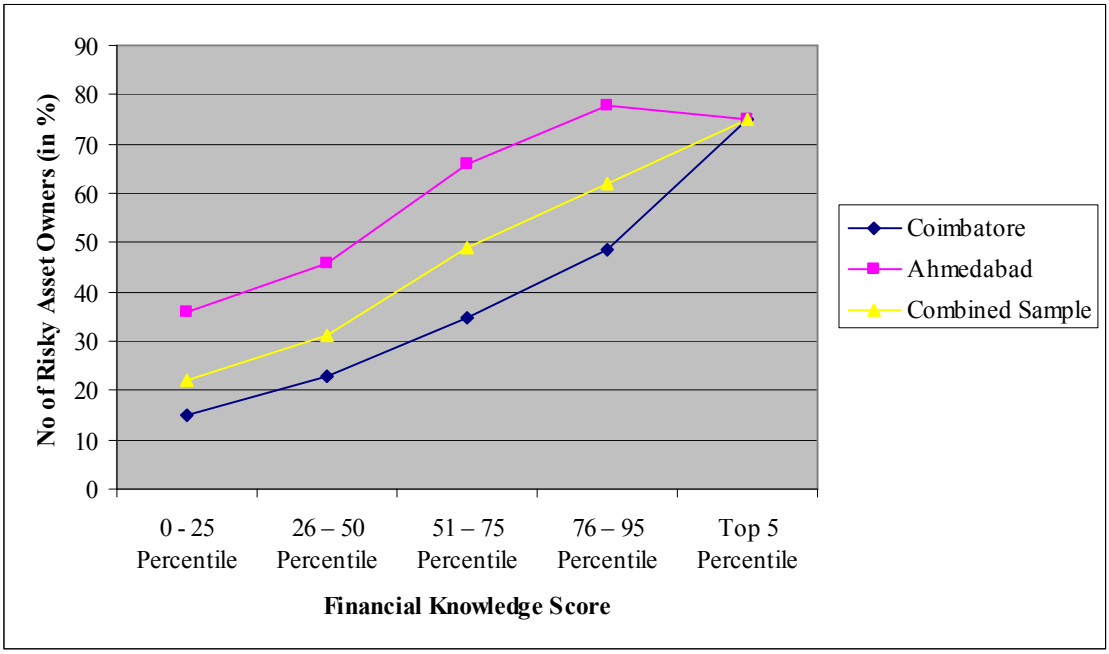

Figure 4.4: The Ownership of Risky Assets and the Financial Knowledge Score

4.2.2 The Ownership of Risky Assets and the Planning Score:

The households which spend more time in financial planning are expected to accumulate more wealth as compared to households which spend no time or less time in financial planning.

The respondents are classified according to the planning scores and the ownership of risky assets in their portfolio. By looking at the panel A in table 4.3, one could infer that in Coimbatore, the ownership is more or less equal upto 75 percentile and increases in the other 2 categories. Thus, it seems that there is some relationship between these two variables. This could be due to the better educational background of the respondents.

From panel B in table 4.3, one could infer that in Ahmedabad, the ownership of risky assets increases from the category of 25 percentile to 50 percentile and reduces in that of 75 percentile and increases in 95 percentile.

By looking at the panel C in table 4.3, one could infer that as the ownership of risky assets is more or less constant except the category 26 – 50 percentile on the planning score and is the maximum at the highest percentile on the planning score.

Thus, planning score does not seem to have any relationship with the ownership of risky assets in Ahmedabad and the Combined Sample except Coimbatore.

To test the hypothesis the results of multivariate probit regression is used (Table 4.19). The results show a positive and significant relationship between planning and the ownership of risky assets in Coimbatore and the Combined Sample. Thus, the null hypothesis that there is no relationship between planning and the ownership of risky assets is rejected in Coimbatore and the Combined Sample.

Table 4.3: The Ownership of Risky Assets and the Planning Score

Panel A – Coimbatore			
Planning Score	Number of Risky asset owners	Percentage	Total Respondents
0 – 25 Percentile	25	23.81	105
26 – 50 Percentile	37	27.82	133
51 – 75 Percentile	16	25.81	62
76 – 95 Percentile	18	46.15	39
Top 5 Percentile	4	66.67	6
Total	100	28.99	345
Panel B – Ahmedabad			
Planning Score	Number of Risky asset owners	Percentage	Total Respondents
0 – 25 Percentile	44	50.00	88
26 – 50 Percentile	37	57.81	64
51 – 75 Percentile	28	54.90	51
76 – 95 Percentile	12	60.00	20
Top 5 Percentile	1	25.00	4
Total	122	53.74	227
Panel C – The Combined Sample			
Planning Score	Number of Risky asset owners	Percentage	Total Respondents
0 – 25 Percentile	69	35.75	193
26 – 50 Percentile	55	45.08	122
51 – 75 Percentile	47	37.30	126
76 – 95 Percentile	47	37.60	125
Top 5 Percentile	4	66.67	6
Total	222	38.81	572

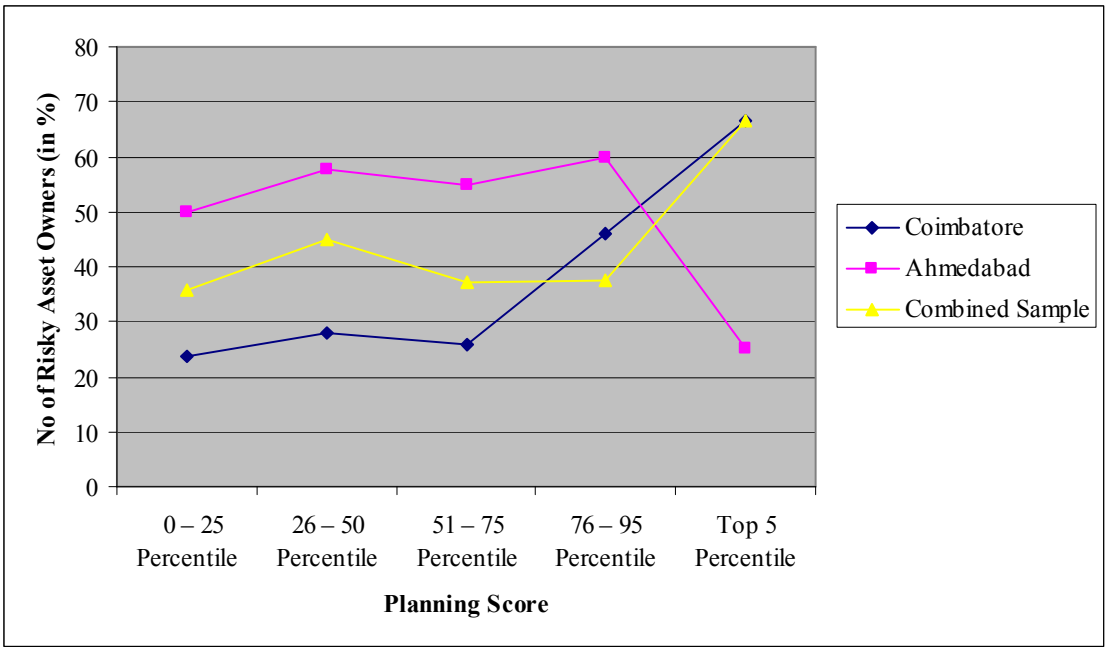

Figure 4.5: The Ownership of Risky Assets and the Planning Score

4.3 Descriptive Analysis

The decision to own risky assets is influenced by a number of factors. In this section how each of the explanatory variables influence the ownership of risky assets are discussed. In this description, the ownership of risky assets and independent variables measured has been related. This analysis however, only discusses the impact of each variable without considering the relationship between independent variables. For example, income could be related to education, occupation etc. The joint impact of independent variable has been analyzed later finally.

4.3.1 The Ownership of Risky Assets and the Age:

Younger people have greater labor flexibility than older people, so if the returns to their investments turn out to be low, they could work more or retire later.

In Coimbatore, the ownership of risky assets in the youngest age category is 27 percent and reduces to 24 percent in the age group 31 years to 40 years. Then again the ownership of risky assets increases as the age increases. Thus, it seems that in Coimbatore, there is a positive relationship between age and the ownership of risky assets. This, however, also could be because higher aged households may also be the ones with high income or financial knowledge.

In Ahmedabad, the ownership of risky assets is the lowest in the age group 31 years to 40 years and is the highest in the age group 41-50. The ownership among the youngest and the oldest respondents are equal and is lesser than the 41-50 years category and greater than the respondents in the age group less than 30 years. In the Combined Sample, the ownership of risky assets is more or less the same in all the age groups except 31 to 40 years category.

Thus, age does not seem to have any relationship with the ownership of risky assets in Ahmedabad and the Combined Sample except Coimbatore.

Table 4.4: The Ownership of Risky Assets and the Age

Panel A – Coimbatore			
Age (in years)	Number of Risky asset owners	Percentage	Total Respondents
Less Than 30	14	27.45	51
31 – 40	38	24.05	158
41 – 50	28	34.15	82
Greater than 50	20	37.04	54
Total	100	28.99	345
Panel B – Ahmedabad			
Age (in years)	Number of Risky asset owners	Percentage	Total Respondents
Less Than 30	51	53.13	96
31 – 40	32	50.00	64
41 – 50	22	62.86	35
Greater than 50	17	53.13	32
Total	122	53.74	227
Panel C – The Combined Sample			
Age (in years)	Number of Risky asset owners	Percentage	Total Respondents
Less Than 30	65	44.22	147
31 – 40	70	31.53	222
41 – 50	50	42.74	117
Greater than 50	37	43.02	86
Total	222	38.81	572

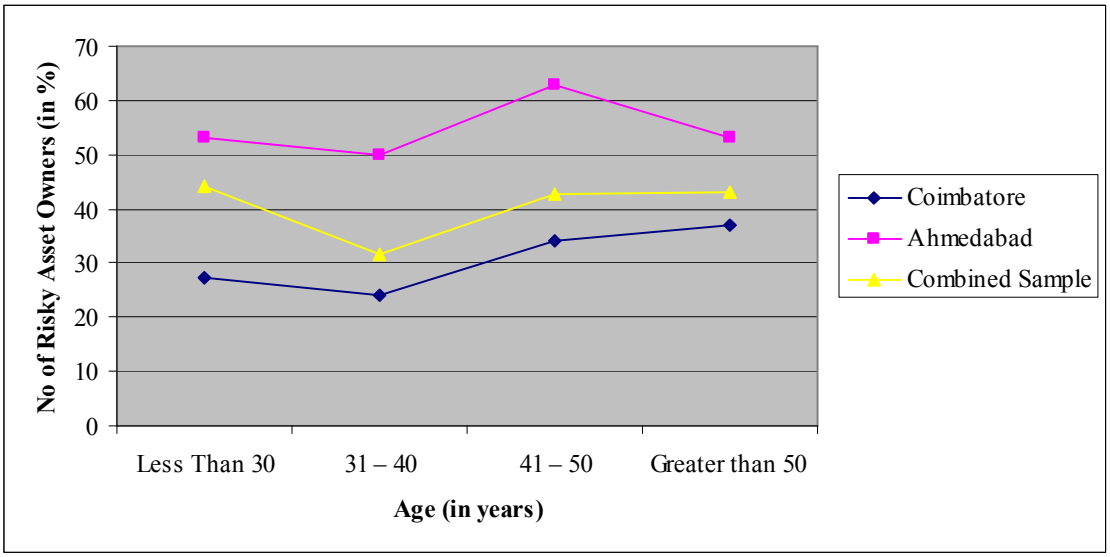

Figure 4.6: The Ownership of Risky Assets and the Age

4.3.2 The Ownership of Risky Assets and the Income:

Higher income raises the probability of owning risky assets in case investors exhibit no or less risk-aversion to investments in risky assets.

In Coimbatore, 24 percent of the lowest income group owns risky assets. The ownership between the income levels Rs 100001-150000 is the lowest. 28 percent of the respondents in the income level Rs 150001-200000 and Rs 200001-250000 own risky assets. The ownership between income level Rs 250001-300000 and above Rs 3500000 is the highest (45 percent).

In Ahmedabad, nearly one-third of the respondents in the income group 150001-200000 own risky assets. 58 percent of the respondents in the income level Rs 100001-150000 and Rs 300001-350000 own risky assets. The ownership among the highest income group is the highest (69 percent) among the various income categories.

Table 4.5: The Ownership of Risky Assets and the Income

Panel A – Coimbatore			
Annual Income (in rupees)	Number of Risky asset owners	Percentage	Total Respondents
80001 – 100000	5	23.81	21
100001 – 150000	18	20.00	90
150001 – 200000	24	27.91	86
200001 – 250000	18	28.57	63
250001 – 300000	17	44.74	38
300001 – 350000	3	21.43	14
Above 350000	15	45.45	33
Total	100	28.99	345
Panel B – Ahmedabad			
Annual Income (in rupees)	Number of Risky asset owners	Percentage	Total Respondents
80001 – 100000	6	46.15	13
100001 – 150000	23	58.97	39
150001 – 200000	11	36.67	30
200001 – 250000	20	46.51	43
250001 – 300000	10	43.48	23
300001 – 350000	12	57.14	21
Above 350000	40	68.97	58
Total	122	53.74	227
Panel C – The Combined Sample			
Annual Income (in rupees)	Number of Risky asset owners	Percentage	Total Respondents
80001 – 100000	11	32.35	34
100001 – 150000	41	31.78	129
150001 – 200000	35	30.17	116
200001 – 250000	38	35.85	106
250001 – 300000	27	44.26	61
300001 – 350000	15	42.86	35
Above 350000	55	60.44	91
Total	222	38.81	572

The ownership among Rs 200001-250000, Rs 250001-300000 and the lowest income group is lesser than the average ownership level of the sample.

In the Combined Sample, nearly one-third of the respondents in the income categories 80001 – 100000, 100001-150000, and 150001-200000 are owners of risky assets in their portfolio. The ownership among 200001-250000 and 250001-300000 income group increases when compared to the above-mentioned groups. The ownership among the highest income group is the highest among the various income categories.

Thus, it seems that income shows no clear relationship with the ownership of risky assets in Coimbatore, Ahmedabad and the Combined Sample.

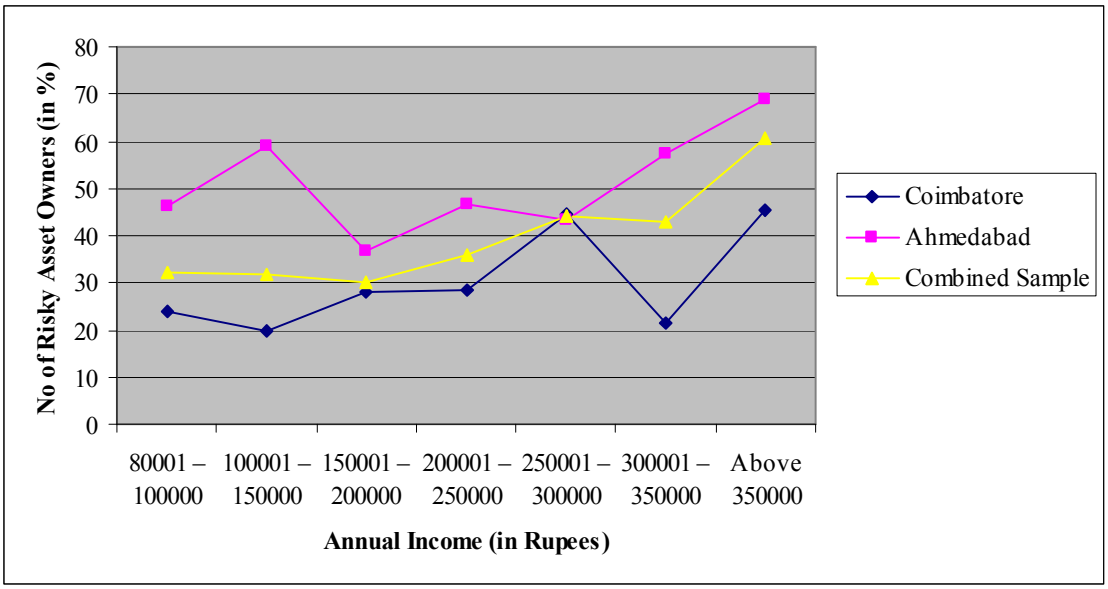

Figure 4.7: The Ownership of Risky Assets and the Income

4.3.3 The Ownership of Risky Assets and the Education:

Higher educated people tend to hold significantly more risky assets relative to the less educated (Jonas Agell et al 1990). Assets holding are determined by the informational status that the investor has acquired with respect to certain assets.

In Coimbatore, the ownership among the respondents with education level below graduation is the lowest. It is highest among the post-graduate respondents. The ownership among the graduate respondents is lesser than that of post-graduates. Prima-facie, it seems that there is some positive relationship between education and the risky assets ownership. This, however could be because higher educated respondents may also be the one's with high income or financial knowledge.

In Ahmedabad, the ownership among the respondents with education level below graduation is the lowest. It is highest among the graduates. The ownership among the post-graduate respondents is lesser than that of degree holders. In the Combined Sample, the ownership among the respondents with education level below graduation is the least. It is highest among the graduates. The ownership among the post-graduate respondents is lesser than that of graduates.

Thus, education does not seem to have any relationship with the ownership of risky assets in Ahmedabad and the Combined Sample except Coimbatore.

Table 4.6: The Ownership of Risky Assets and the Education

Panel A – Coimbatore			
Education	Number of Risky asset owners	Percentage	Total Respondents
Below-Graduation	5	17.24	29
Graduate	40	28.37	141
Post-Graduate	55	31.43	175
Total	100	28.99	345
Panel B – Ahmedabad			
Education	Number of Risky asset owners	Percentage	Total Respondents
Below-Graduation	3	50.00	6
Graduate	81	55.10	147
Post-Graduate	38	51.35	74
Total	122	53.74	227
Panel C – The Combined Sample			
Education	Number of Risky asset owners	Percentage	Total Respondents
Below-Graduation	8	22.86	35
Graduate	121	42.01	288
Post-Graduate	93	37.35	249
Total	222	38.81	572

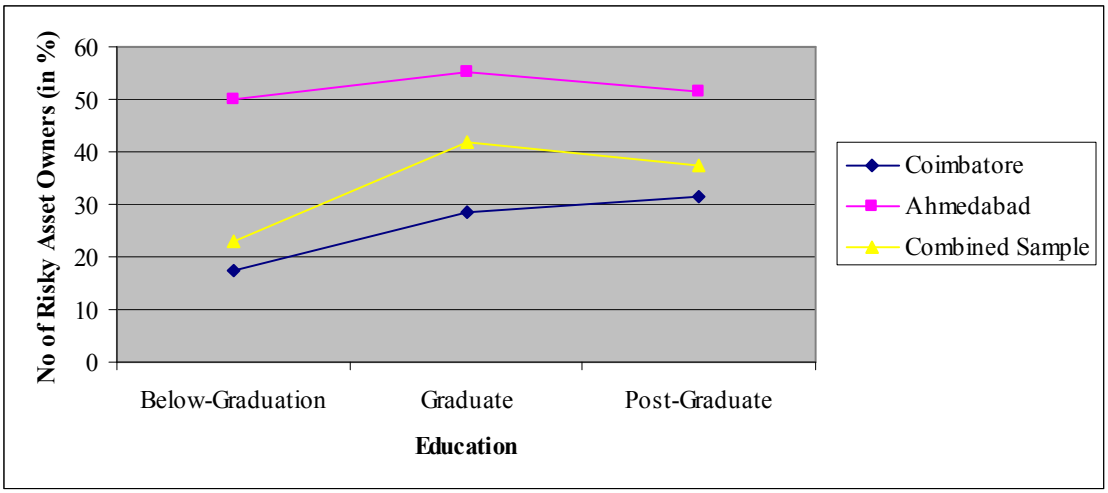

Figure 4.8: The Ownership of Risky Assets and the Education

4.3.4 The Ownership of Risky Assets and the Home Ownership:

Households may have highly leveraged portfolio typically dominated by housing wealth (Axel Borch- Supan et al 1999). Bodie (1997) found a positive relationship between home ownership and the ownership of risky assets.

In Coimbatore, 23 percent of the respondents who don't own a home, own risky assets. It is 31 percent in case of homeowners. Thus, it seems that there may be a relationship between the risky assets ownership and homeownership. On the other hand, it is possible that respondents owning home have a higher income, financial knowledge and better occupational status.

In Ahmedabad, 53 percent of the respondents who don't own a home, own risky assets. An equal number of respondents owning home also own risky assets. In the Combined Sample, 38 percent of the respondents who don't own home, own risky assets. An equal number of respondents owning home also own risky assets.

Thus, home ownership does not seem to have any relationship with the ownership of risky assets in Ahmedabad and the Combined Sample except Coimbatore.

Table 4.7: The Ownership of Risky Assets and the Home Ownership

Panel A – Coimbatore			
Home Ownership	Number of Risky asset owners	Percentage	Total Respondents
No	20	23.26	86
Yes	80	30.89	259
Total	100	28.99	345
Panel B – Ahmedabad			
Home Ownership	Number of Risky asset owners	Percentage	Total Respondents
No	50	53.19	94
Yes	72	54.14	133
Total	122	53.74	227
Panel C – The Combined Sample			
Home Ownership	Number of Risky asset owners	Percentage	Total Respondents
No	70	38.89	180
Yes	152	38.78	392
Total	222	38.81	572

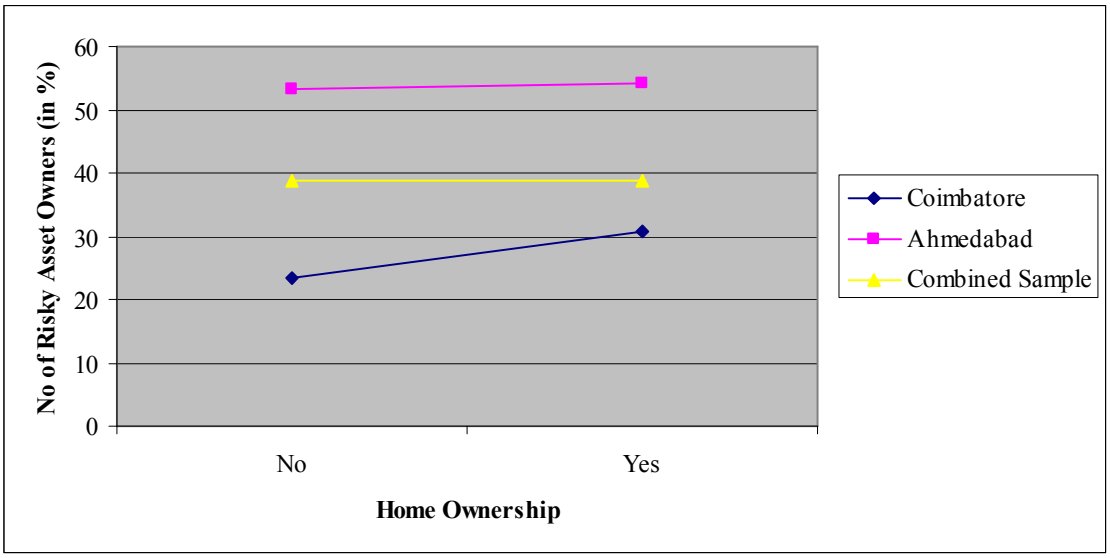

Figure 4.9: The Ownership of Risky Assets and the Home Ownership

4.3.5 The Ownership of Risky Assets and the Household Size:

The number of members in a household may have a negative impact on the ownership of risky assets in the household portfolio as it is expected that the risk-aversion would be higher among them with a larger family to support, Ceteris Paribus.

In Coimbatore, the ownership of risky assets among the family having a single member or more than 5 members is the maximum. Respondents' family having a size of 2 or 3 or 4 owns risky assets in the range of 25 percent to 32 percent.

In Ahmedabad, the ownership of risky assets among the small family having a size of one is the least (20 percent) and it increases as the family size increases upto 3 and decreases further until the family size is 5. Once again the percent of respondents owning the risky assets increases among the family, which have more than 5 members.

In the Combined Sample, the ownership of risky assets among the small family (having a size of one or two) is the least (32 percent) while 39 percent respondents of family size 3 or 4 have risky assets. The larger families (5 and more than 5) show mixed results.

Thus, it seems that household size show no clear relationship with the ownership of risky assets in Coimbatore, Ahmedabad and the Combined Sample. This could be due to home ownership coupled with their liabilities in the form of repaying mortgage loan resulting in reduced disposable income for savings and investments.

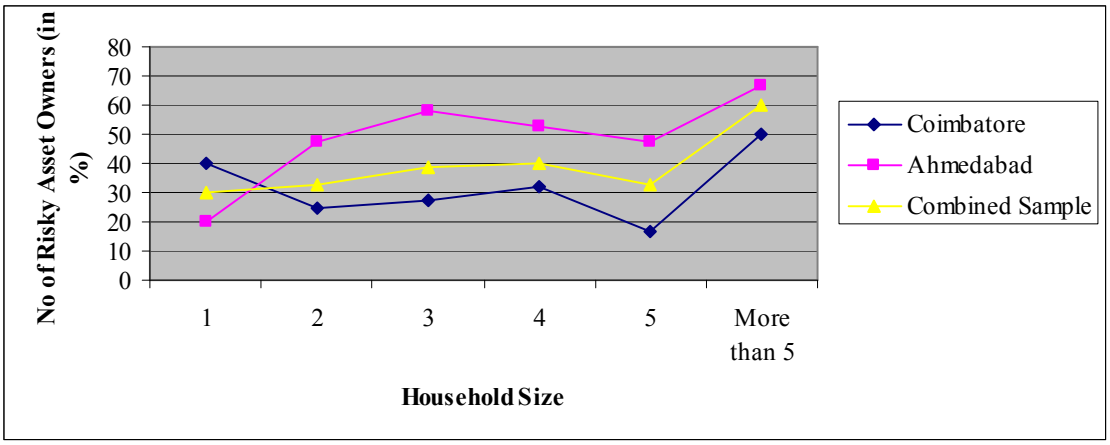

Figure 4.10: The Ownership of Risky Assets and the Household Size

Table 4.8: The Ownership of Risky Assets and the Household Size

Panel A – Coimbatore			
Household Size	Number of Risky asset owners	Percentage	Total Respondents
1	2	40.00	5
2	9	25.00	36
3	43	27.56	156
4	40	32.26	124
5	3	16.67	18
More than 5	3	50.00	6
Total	100	28.99	345
Panel B – Ahmedabad			
Household Size	Number of Risky asset owners	Percentage	Total Respondents
1	1	20.00	5
2	9	47.37	19
3	54	58.06	93
4	43	52.44	82
5	9	47.37	19
More than 5	6	66.67	9
Total	122	53.74	227
Panel C – The Combined Sample			
Household Size	Number of Risky asset owners	Percentage	Total Respondents
1	3	30.00	10
2	18	32.73	55
3	97	38.96	249
4	83	40.29	206
5	12	32.43	37
More than 5	9	60.00	15
Total	222	38.81	572

4.3.6 The Ownership of Risky Assets and the Marginal Tax Rate:

Households with higher marginal income tax rates are more likely to own tax-advantaged risky assets, tax-deferred risky assets than households with lower marginal tax rates.

In Coimbatore, 15 percent of the respondents in the lowest tax bracket own risky assets. It increases to twenty-five percent in the next slab. The highest i.e. 38 percent of the respondents in the highest tax bracket (30 percent) own risky assets. In the Combined Sample, 20 percent of the respondents in the lowest tax bracket own risky assets. It increases to thirty-four percent in the next slab. The highest i.e. 46 percent of the respondents in the highest tax bracket (30 percent marginal tax rate) own risky assets. Thus, it seems that as the marginal tax rate increases, the ownership of risky assets among the respondents' also increases in both Coimbatore and the Combined Sample. This however could be due to the influence of financial knowledge and the educational status of the households.

In Ahmedabad, 43 percent of the respondents in the lowest tax bracket own risky assets. It increases to fifty-six percent in the next slab. It then reduces to 54 percent among the respondents in the highest tax bracket (30 percent).

Thus, it seems that the marginal tax rate have some relationship with the ownership of risky assets in Coimbatore and the Combined Sample but not in Ahmedabad.

Table 4.9: The Ownership of Risky Assets and the Marginal Tax Rate

Panel A – Coimbatore			
Marginal Tax Rate	Number of Risky asset owners	Percentage	Total Respondents
10 Percent	10	14.71	68
20 Percent	30	25.42	118
30 Percent	60	37.74	159
Total	100	28.99	345
Panel B – Ahmedabad			
Marginal Tax Rate	Number of Risky asset owners	Percentage	Total Respondents
10 Percent	6	42.86	14
20 Percent	27	56.25	48
30 Percent	89	53.94	165
Total	122	53.74	227
Panel C – The Combined Sample			
Marginal Tax Rate	Number of Risky asset owners	Percentage	Total Respondents
10 Percent	16	19.51	82
20 Percent	57	34.34	166
30 Percent	149	45.99	324
Total	222	38.81	572

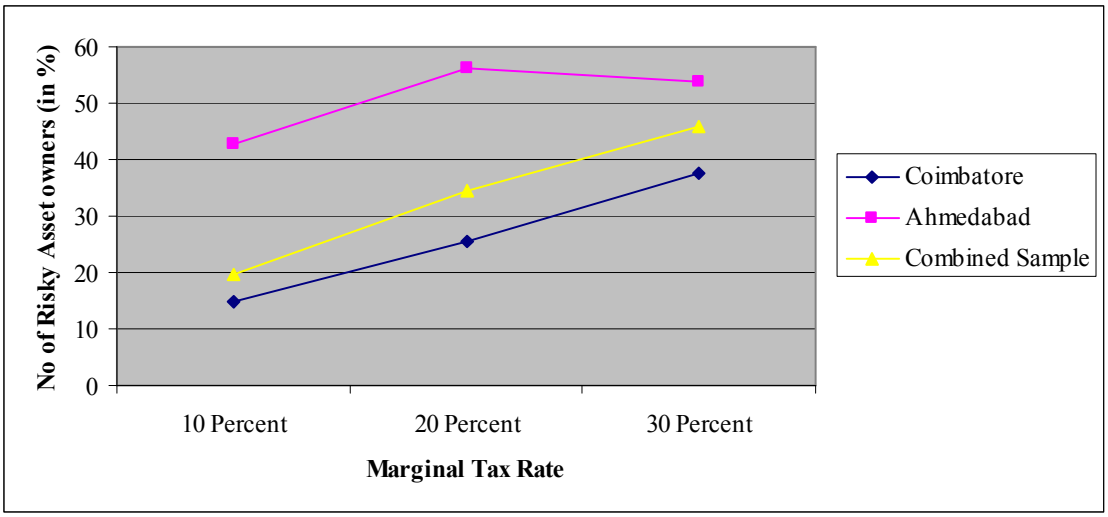

Figure 4.11: The Ownership of Risky Assets and the Marginal Tax Rate

4.3.7 The Ownership of Risky Assets and the Pension Benefit Status:

The household, which expects to receive Defined Benefit Pension from its employer after retirement might take, some risk during the working life when compared to households, which don't have such benefits after retirement.

In Coimbatore, the ownership of risky assets is the highest (31 percent) among the respondents who don't have any pension benefits from their employers. It is 30 percent in the case of respondents who have Employees Pension Scheme (EPS) from Employers Provident Fund Organization (EPFO). It is marginally less for the respondents who are eligible to get pension from the state (central government or state government). Prima-facie, it seems that the relationship between the ownership of risky assets and pension benefit status of the respondents is not clear. This however, could be due to lack of better awareness about the risk-return characteristics of risky assets.

Table 4.10: The Ownership of Risky Assets and the Pension Benefit Status

Panel A – Coimbatore			
Pension Benefit Status	Number of Risky asset owners	Percentage	Total Respondents
No Pension	34	30.91	110
EPS	37	30.33	122
EGP	29	25.66	113
Total	100	28.99	345
Panel B – Ahmedabad			
Pension Benefit Status	Number of Risky asset owners	Percentage	Total Respondents
No Pension	47	78.33	60
EPS	61	48.41	126
EGP	14	34.15	41
Total	122	53.74	227
Panel C – The Combined Sample			
Pension Benefit Status	Number of Risky asset owners	Percentage	Total Respondents
No Pension	81	47.65	170
EPS	98	39.52	248
EGP	43	27.92	154
Total	222	38.81	572

In Ahmedabad, the ownership of risky assets is the highest (78 percent) among the respondents who don't have any pension benefits from their employers. It decreases to 48 percent among the respondents who have pension benefit scheme from Employers Provident Fund Organisation (EPFO). It is the least among the respondents who are eligible for pension from the State (Central Government or State Government). Thus, it seems that the ownership of risky assets decreases as one goes up in his social security benefit status from no pension to government pension. In the Combined Sample, the

ownership of risky assets is the highest (48 percent) among the respondents who don't have any pension benefits from their employers. It decreases to 40 percent among the respondents who have pension benefit scheme from Employers Provident Fund Organization (EPFO). It is the least (28 percent) among the respondents who are eligible to get pension from the state (central government or state government). Thus, it seems that the ownership of risky assets decreases as one goes up in his social security benefit status from no pension to government pension in Ahmedabad and the Combined Sample. This could be due to better awareness about the features of risky asset investment among the respondents who don't have any pension benefits from their employers.

Thus, it seems that the pension benefit status has some relationship with the ownership of risky assets in Ahmedabad and the Combined Sample but not in Coimbatore.

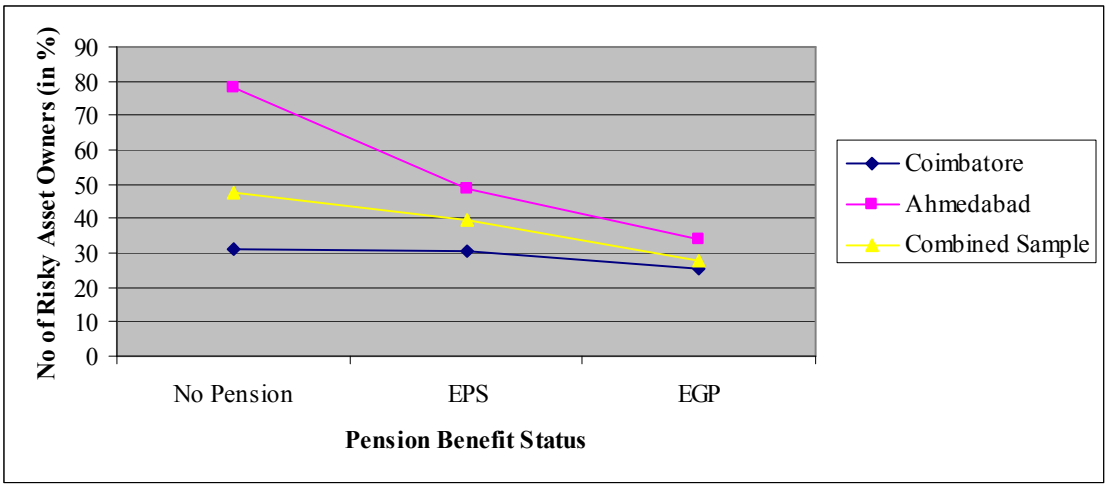

Figure 4.12: The Ownership of Risky Assets and the Pension Benefit Status

4.3.8 The Ownership of Risky Assets and the Occupation:

A household working in financial services industry is expected to have better knowledge in savings and investments and hence to have a better portfolio as compared to others.

In Coimbatore, as expected, the ownership of risky assets is the highest among the respondents who are in the financial services industry and the least is among the unclassified investors category. 30 percent of the professionals own risky assets. However, the ownership level among the rest is below the average level of ownership among the respondents. It seems therefore, that those working in financial services industry differ in their ownership pattern of assets from the rest and are more likely to invest in risky assets.

In Ahmedabad, the ownership of risky assets is the highest among businessmen and the least is among the academicians. 69 percent of the respondents in the financial services industry and 58 percent of the professionals own risky assets. The ownership level among manager and unclassified investor categories are below the average level of ownership of the sample. Thus, it seems that in case of occupation, academicians, financial services personnel and businessmen differ from the rest of the respondents in their ownership pattern of risky assets.

In the Combined Sample, as expected, the ownership of risky assets is the highest among the respondents who are in the financial services industry, which is followed by professionals and businessmen. Managers, academicians, and unclassified investors category respondents' risky assets ownership is below the average level of ownership of

Table 4.11: The Ownership of Risky Assets and the Occupation

Panel A – Coimbatore			
Occupation	Number of Risky asset owners	Percentage	Total Respondents
Academician	28	28.28	99
Professional	11	30.56	36
Financial Services	22	44.90	49
Managers	9	23.68	38
Business	18	26.87	67
Others	12	21.43	56
Total	100	28.99	345
Panel B – Ahmedabad			
Occupation	Number of Risky asset owners	Percentage	Total Respondents
Academician	8	27.59	29
Professional	26	57.78	45
Financial Services	11	68.75	16
Managers	18	48.65	37
Business	27	79.41	34
Others	32	48.48	66
Total	122	53.74	227
Panel C – The Combined Sample			
Occupation	Number of Risky asset owners	Percentage	Total Respondents
Academician	36	28.13	128
Professional	37	45.68	81
Financial Services	33	50.77	65
Managers	27	36.00	75
Business	45	44.55	101
Others	44	36.07	122
Total	222	38.81	572

all the respondents. It seems therefore, that those working in the financial services industry differ in their ownership pattern of assets from the rest and are more likely to invest in risky assets.

Thus, it seems that those working in the financial services industry in Coimbatore, Ahmedabad and the Combined Sample differ in their ownership pattern of assets from the rest and are more likely to invest in risky assets. This could be due to the awareness of various investment options available and their characteristics among the respondents from the financial services industry.

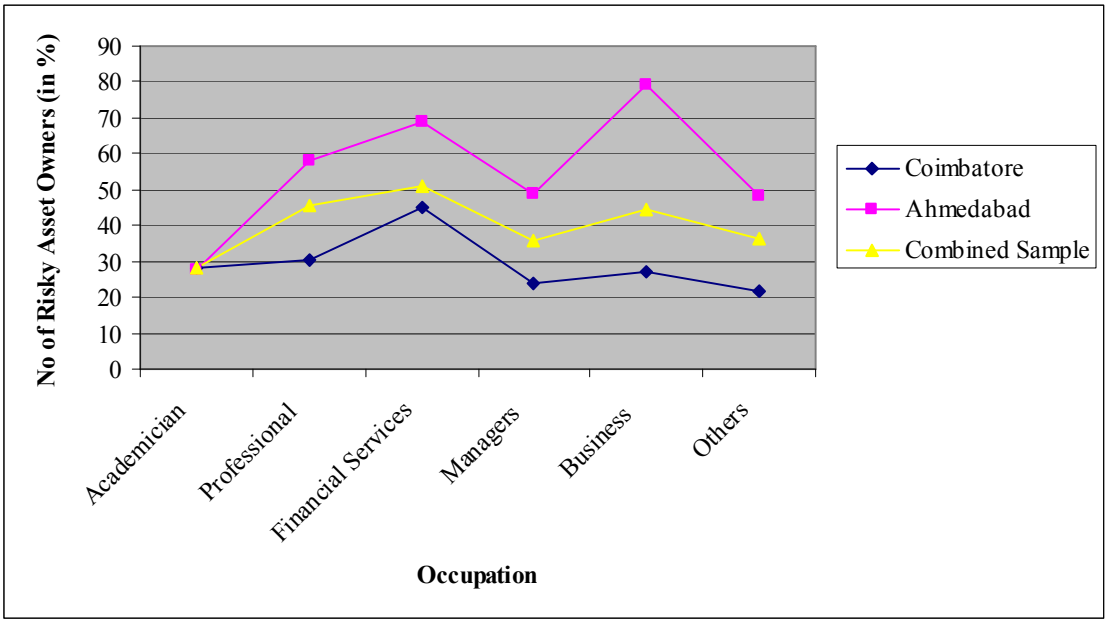

Figure 4.13: The Ownership of Risky Assets and the Occupation

4.4 Results and Discussion

Carrying out goodness of fit test for the model tests the robustness of the model in explaining the relationship between the dependent variable and the explanatory variables. Model calibration technique is used to assess the goodness of fit of the model for the Coimbatore Sample, the Ahmedabad Sample and the Combined Sample.

The usual null hypothesis tested is that there is no difference between the observed and predicted values.

The Hosmer and Lemeshow test values for Coimbatore (Table 4.12 and Table 4.13), Ahmedabad (Table 4.14 and Table 4.15) and the Combined Sample (Table 4.16 and Table 4.17) are given below.

Table 4.12: Hosmer and Lemeshow test results

Chi-square	Degree of freedom	Sig. Level
7.950	8	0.438

Table 4.13: The Contingency Table for Hosmer and Lemeshow test

Decile	Participation = 0.00		Participation = 1.00		Total
	Observed	Expected	Observed	Expected	
1	32	33.458	3	1.542	35
2	31	31.632	4	3.368	35
3	30	30.039	5	4.961	35
4	31	28.222	4	6.778	35
5	28	26.559	7	8.441	35
6	27	25.082	8	9.918	35
7	23	23.139	12	11.861	35
8	15	20.733	20	14.267	35
9	18	17.010	17	17.990	35
10	10	9.126	20	20.874	30

Table 4.14: Hosmer and Lemeshow test results

Chi-square	Degree of freedom	Sig.level
8.473	8	0.389

Table 4.15: The Contingency Table for Hosmer and Lemeshow test

Decile	Participation = 0.00		Participation = 1.00		Total
	Observed	Expected	Observed	Expected	
1	18	19.983	5	3.017	23
2	17	17.550	6	5.450	23
3	13	14.814	10	8.186	23
4	14	12.944	9	10.056	23
5	15	11.259	8	11.741	23
6	11	9.612	12	13.388	23
7	8	7.693	15	15.307	23
8	7	5.596	16	17.404	23
9	1	3.793	22	19.207	23
10	1	1.751	19	18.249	20

Table 4.16: Hosmer and Lemeshow test results

Chi-square	Degree of freedom	Sig.level
8.934	8	0.348

Table 4.17: The Contingency Table for Hosmer and Lemeshow test

Decile	Participation = 0.00		Participation = 1.00		Total
	Observed	Expected	Observed	Expected	
1	50	52.987	7	4.013	57
2	52	49.041	5	7.959	57
3	43	45.432	14	11.568	57
4	41	42.464	16	14.536	57
5	41	38.807	16	18.193	57
6	33	34.682	24	22.318	57
7	31	30.081	26	26.919	57
8	29	25.421	28	31.579	57
9	23	19.758	34	37.242	57
10	7	11.326	52	47.674	59

The observed significance levels for the chi-square values are 0.438 (Coimbatore), 0.389 (Ahmedabad) and 0.348 (The Combined Sample). Therefore the null hypothesis that there is no difference between the observed and predicted values cannot be rejected, for Coimbatore, Ahmedabad and the Combined Sample studies.

4.4.1 Multivariate analysis of the Ownership of Risky Assets and the Proportion of Risky Assets Investments.

The Multivariate analysis is carried out by using probit and tobit models. Probit model is used to analyse the factors influencing the ownership of risky assets while tobit model is used to determine the factors influencing the proportion of risky assets in the total wealth of the households. The results of these two models are discussed in this part.

The multivariate probit and tobit run is carried out between the explanatory variables namely financial knowledge, planning, age, income, education, home ownership, household size, marginal tax rate, pension benefit status, occupation and the dependent variables, ownership and proportion of risky assets. The results of Coimbatore, Ahmedabad and the Combined Sample are reported in Table 4.18 and Table 4.19.

As can be seen from the table 4.18 and table 4.19, financial knowledge is found to be positively significant in explaining the ownership of risky assets and the proportion of risky assets in the total wealth in Coimbatore, Ahmedabad and the Combined Sample. It is expected that as the level of financial knowledge increases the ownership and the proportion of risky assets in the total wealth might increase. The result is in line with this expectation.

The results also suggest the negative and significant effect of pension benefits status on the ownership of risky assets and proportion of risky assets in the total wealth in Coimbatore, Ahmedabad and the Combined Sample. It is expected that as one's pension benefit status improves, they take some risk to improve their wealth accumulation. Alternatively, if the respondents have some kind of future cash flows after retirement in the form of Government Pension or Employees Pension Scheme, then they may feel that

Table 4.18: The Multivariate Probit Estimates for Risky Financial Assets

	Coimbatore Sample		Ahmedabad Sample		The Combined Sample	
Variables	Beta	Sig. Level	Beta	Sig. Level	Beta	Sig. Level
FKS	0.122	0.000*	0.107	0.001*	0.116	0.000*
PS	0.051	0.266	0.050	0.433	0.058	0.103
Age	0.021	0.042•	0.017	0.110	0.015	0.027•
80k	0.415	0.446	2.705	0.934	0.181	0.671
100k	-0.473	0.231	-0.532	0.392	-0.481	0.100^
150k	-0.214	0.497	-0.632	0.069^	-0.371	0.088^
200k	-0.431	0.184	-0.458	0.150	-0.502	0.019•
250k	0.024	0.941	-0.377	0.291	-0.124	0.589
300k	-0.626	0.173	-0.240	0.509	-0.390	0.150
Graduate	0.202	0.553	-0.124	0.835	0.106	0.706
Post-Graduate	0.214	0.575	-0.034	0.957	0.195	0.519
Home Owner	0.208	0.293	-0.195	0.362	0.041	0.762
HHS	-0.058	0.548	0.018	0.838	0.011	0.859
20 %	0.632	0.058^	3.804	0.907	0.713	0.020•
30 %	0.551	0.103	3.145	0.923	0.450	0.141
EPS	0.032	0.886	-0.795	0.019•	-0.317	0.068^
EGP	-0.506	0.040•	-1.437	0.000*	-0.769	0.000*
Academician	-0.410	0.137	-0.678	0.186	-0.501	0.031•
Professional	-0.278	0.381	0.044	0.924	-0.133	0.588
Manager	-0.666	0.048•	-0.157	0.745	-0.457	0.065^
Business	-0.245	0.454	-0.121	0.820	-0.207	0.429
Others	-0.218	0.486	-0.310	0.497	-0.250	0.291
Region					0.659	0.000*

* – 99 percent; • - 95 percent; and ^ - 90 percent confidence level

Table 4.19: The Multivariate Tobit Estimates for Risky Financial Assets

	Coimbatore Sample		Ahmedabad Sample		The Combined Sample	
Variables	Beta	Sig. Level	Beta	Sig. Level	Beta	Sig. Level
FKS	2.1674	0.0000*	1.2117	0.0000*	1.6961	0.0000*
PS	1.0278	0.0018*	0.3972	0.3105	0.9904	0.0000*
Age	0.4201	0.0000*	0.1207	0.0539^	0.1902	0.0000*
80k	6.9503	0.3035	36.0982	0.0000*	2.7467	0.5551
100k	-8.8000	0.0247•	-3.0845	0.5516	-7.6176	0.0089•
150k	-7.2071	0.0418•	-11.1122	0.0103•	-8.7461	0.0009*
200k	-8.2829	0.0377•	-5.0229	0.1592	-8.0966	0.0021*
250k	-3.7599	0.4225	-5.8210	0.2212	-4.7297	0.1488
300k	-13.6189	0.1011	-1.6906	0.7226	-5.2352	0.2098
Graduate	3.2721	0.2758	2.8393	0.2739	2.5976	0.1773
Post-Graduate	3.3401	0.2305	3.7715	0.2301	3.7782	0.0615^
Home Owner	-0.9811	0.6756	-3.7134	0.1180	-2.6203	0.1081
HHS	-1.1007	0.0725^	-0.3896	0.5103	0.0451	0.9137
20 %	12.0946	0.0004*	49.5128	0.0000*	12.8921	0.0000*
30 %	11.3841	0.0001*	47.9242	0.0000*	11.3100	0.0000*
EPS	-1.1494	0.7036	-9.7128	0.0002*	-6.3790	0.0012*
EGP	-13.2245	0.0001*	-18.8644	0.0000*	-14.9491	0.0000*
Academician	-12.3141	0.0004*	-7.9857	0.0927^	-10.3630	0.0001*
Professional	-9.2796	0.0690^	3.6439	0.3324	-4.3973	0.1484
Manager	-17.6735	0.0014*	1.3959	0.7217	-8.7983	0.0056•
Business	-11.0022	0.0068•	6.8463	0.0951^	-4.1550	0.1281
Others	-6.7402	0.1318	0.0174	0.9958	-5.0241	0.0606^
Region					9.9754	0.0000*

* – 99 percent; • - 95 percent; and ^ - 90 percent confidence level

they can rely upon them and consequently may not take this risk. The negative coefficient of the variable eligible for government pension benefits suggests the latter.

Financial Planners and Advisors suggest the proportion of risky assets to decrease as one's age increases. This study found a positive relationship between ownership of risky assets with the age of the respondents in Coimbatore and the Combined Sample. However, this study found a positive relationship between the proportion of risky assets with the age of the respondents in Coimbatore, Ahmedabad and the Combined Sample. The study considered individuals who are in the work force and not retired from their service. The results differ from the results of Rob Alessie et al (1999), Luigi Guiso et al (1999). The difference could be due to the fact that in India, the individuals generally start working a little late and try to stabilize the financial status of the family by preferring to save in safe assets. Once they have established a good foundation for their family, they might start investing in risky assets and this could be attributed to the positive relationship between the ownership and the proportion of risky assets with the age of the respondents.

The study found that the variable marginal tax rate is positive and significant in explaining the ownership of risky assets in Coimbatore and the Combined Sample. Also, the study found that the variable, marginal tax rate is positive and significant in explaining the proportion of risky assets in Coimbatore, Ahmedabad and the Combined Sample. It is expected that as one's marginal tax rate increase one can be expected to invest in instruments, which are tax efficient (Jonas Agell et al 1990; James Poterba et al 1999). In India the long-term capital gain was taxed at 10 percent upto the financial year 2003-2004 and after that it has become tax-free. In case of short-term capital gains it was

30 percent and 10 percent respectively. Thus, prudent investors will make use of this opportunity and invest in risky assets, which will result in lesser tax outgo on its earnings when compared to their marginal tax rate. Thus, this positive relationship is found to exist among the respondents as expected.

In case of occupation, managerial category respondent ownership and the proportion of risky assets in the total wealth is less in Coimbatore and the Combined Sample. Academicians' ownership and the proportion of risky assets in the Combined Sample is less when compared to the reference category (financial services category respondents). However, in Coimbatore and in Ahmedabad their proportion of risky assets is less. Professional category respondents own lesser proportion of risky assets in Coimbatore. The Businessmen own lesser proportion of risky assets in Coimbatore while they own a higher proportion of risky assets in Ahmedabad. The proportion of investments in the risky assets by unclassified investors is less than those in the Combined Sample.

The study found the proportion of risky assets in the total wealth decreases for the income categories Rs 100001 – 150000, Rs 150001 – 2000000 and Rs 200001 – 250000 when compared to the highest income category (the reference group) in Coimbatore and the Combined Sample. In the Combined Sample, the ownership of risky assets decreases for the income categories Rs 100001 – 150000, Rs 150001 – 2000000 and Rs 200001 – 250000 when compared to the highest income category (the reference group). The study found the ownership of risky assets and the proportion of risky assets in the total wealth decreases as the income decreases for the income category Rs 150001 – 200000 in

Ahmedabad. However, the proportion of risky assets in the total wealth increases for the lowest income category in Ahmedabad.

Thus, there exists a positive relationship between the ownership of risky assets with the income in Ahmedabad and the Combined Sample. This result is in line with the findings of Jonas Agell et al (1990) in Sweden and James Poterba et al (1999) in the USA. The household in this income category may prefer to save their surplus first in the tax-based instruments and this could be the reason for the decrease in the ownership of risky assets. Simultaneously the lowest income category in Ahmedabad is positively related with the highest income category in the proportion of risky assets investment. This is in line with the findings of SEBI-NCAER (2000) in India.

It is expected that as one's tendency to plan increases, the probability to invest in risky assets also increases. The study found a positive and significant relationship between planning score and the proportion of risky assets investments in the total wealth in Coimbatore and the Combined Sample.

As the educational level of the respondents increases, they could diversify their portfolio by investing in risky assets. The study found a positive and significant relationship between education and the proportion of risky assets investments in the total wealth in the Combined Sample.

It is expected that the risk aversion would be higher among the households, which have a larger family to support. The study found a negative and significant relationship between household size and the proportion of risky assets investments in the total wealth in Coimbatore.

Thus, one could summarize the result that the ownership of risky assets and the proportion of risky assets in the total wealth are significantly and positively influenced by financial knowledge and negatively influenced by Pension Benefit Status in Coimbatore, Ahmedabad and the Combined Sample.

Age and marginal tax rate have a positive and significant influence on the ownership of risky assets in Coimbatore and the Combined Sample. Also, these two variables have a positive and significant impact on the proportion of risky assets investments in the total wealth in Coimbatore, Ahmedabad and the Combined Sample. Income influences the ownership of risky assets positively in Ahmedabad and the Combined Sample. Its impact on the proportion of risky assets investments in total assets in Coimbatore is positive but shows a mixed one with the Ahmedabad respondents. In case of occupation, managers are less likely to invest in risky assets and their proportion of investment in risky assets also is low when compared to respondents from financial services industry in Coimbatore and the Combined Sample. Academicians' proportion of investments in risky assets is less in Coimbatore, Ahmedabad and the Combined Sample. Businessmen own a less proportion of risky assets in Coimbatore but own a better proportion of risky assets in Ahmedabad when compared to the financial services industry respondents.

The study found a positive and significant relationship between planning score and the proportion of risky assets investments in the total wealth in Coimbatore and the Combined Sample. It also found a negative and significant relationship between household size and the proportion of risky assets investments in the total wealth in

Coimbatore and a positive and significant relationship between education and the proportion of risky assets investments in the total wealth in the Combined Sample.

By looking at the table 4.18 and table 4.19, one can find that in Coimbatore, the independent variables associated with planning, income and household size are found to be significant in the proportion of risky assets invested but not in ownership. The impact is positive in case of planning and income while it is negative in case of household size.

The table 4.20 shows the unconditional and the conditional proportion of ownership of risky assets. The unconditional proportion is a product of two effects - the probability of holding any risky assets at all, and the amount held in risky assets by those who hold them. These two effects are separated out in column (3) and (4). Column (2) shows the unconditional proportion of risky assets.

The unconditional proportion is more or less the same except for the top 5-percentile category. However, in the case of conditional proportion they are not constant (Table 4.20) and this could be attributed to the positive impact of planning in proportion of risky assets invested by the households.

The unconditional proportion is more or less constant among the household size except the single member category (the reference category). In the case of conditional proportion of risky assets too it is the highest among the single member category and it is not constant (Table 4.20) among the rest of the categories. This could be attributed to the negative relationship between the proportion of risky assets and household size.

Both the conditional and the unconditional proportion of the highest income category is the highest. The conditional proportion for other income categories decreases when compared to the highest income category. Thus they are not constant (Table 4.20)

among the various income categories and that could be the reason for the decrease of proportion of risky assets as the income level decreases.

Table 4.20: The Unconditional and the Conditional Proportion of Risky Assets in Coimbatore

Variables	Unconditional Share	Conditional Share	Probability of ownership
PS: 0 – 25 percentile	2.7946	11.7372	0.2451
26 –50 percentile	3.9764	14.2935	0.3064
51 –75 percentile	2.3323	9.0375	0.3394
76 –95 percentile	3.9428	8.5428	0.3737
Top 5 percentile	5.2500	7.8750	0.4090
Single Member	10.4000	26.0000	0.2511
Two Members	2.2306	8.9222	0.2669
Three Members	3.3949	12.3165	0.2833
Four Members	3.2427	10.0525	0.3001
Five Members	2.7511	16.5067	0.3174
> Five Members	6.4383	12.8767	0.3350
80k	3.2143	13.5000	0.2383
100k	2.8256	13.7556	0.2002
150k	2.2633	8.1100	0.2793
200k	3.9762	13.9167	0.2857
250k	3.1347	7.0071	0.4475
300k	1.2000	5.6000	0.2145
> 350k	7.7576	17.0667	0.4546

In Ahmedabad, the variables: age and the marginal tax rate are found to be significant in proportion of the risky assets in their total wealth while income and occupation are found to have a mixed impact on the proportion of the total wealth invested in risky assets.

Table 4.21: The Unconditional and the Conditional Proportion of Risky Assets in Ahmedabad

Variables	Unconditional Proportion	Conditional Proportion	Probability of ownership
< 30 Years	8.7582	17.02891	0.5243
31-40 Years	6.6764	12.66707	0.5402
41-50 Years	10.9354	17.39727	0.5561
> 50 Years	7.6094	14.32353	0.5718
80k	4.3077	9.3333	0.4602
100k	7.7692	13.1739	0.5895
150k	4.9500	13.5000	0.3665
200k	7.2395	15.5650	0.4649
250k	6.5000	14.9500	0.4345
300k	11.3114	19.7950	0.5714
> 350k	12.1933	17.6803	0.6893
10 % tax rate	4.000	9.3333	0.4286
20 % tax rate	6.7458	11.9926	0.5624
30 % tax rate	9.2924	17.2275	0.5394
Academician	2.9414	10.6625	0.2760
Professional	8.6824	15.0273	0.5777
Manager	7.4324	15.2778	0.4868
Business	17.1629	21.6128	0.7942
Others	6.6439	13.7031	0.4848
Fin Ser	8.7500	12.7273	0.6876

The unconditional proportion falls and rises with age and in the case of conditional proportion it is not constant (Table 4.21) and thus it shows the positive impact of age in the proportion of risky assets invested by the households.

The unconditional and the conditional proportion for various income categories show a mixed pattern of increase and decrease. Thus they are not constant (Table 4.21) among the various income categories and that could be the reason for the mixed relationship between the proportion of risky assets and income.

The unconditional and the conditional proportion of risky assets rises (Table 4.21) with marginal tax rate thus, supporting the positive and significant relationship between the proportion of risky assets investment and the marginal tax rate.

The occupation category academician has the least proportion of risky assets in both the unconditional and the conditional proportion (Table 4.21) cases. Thus, this could be attributed to the negative significant relationship between the academician category and households' proportion of risky assets investment. Similarly the household doing business has the maximum proportion of risky assets in both the unconditional and the conditional proportion (Table 4.21) cases. This could be attributed to the positive significant relationship between the business category and the households' proportion of risky assets investment.

In the Combined Sample, the variables planning and education are found to be positively significant in the proportion of risky assets invested.

The table 4.22 shows the unconditional and the conditional proportion of risky assets in household portfolio.

The conditional proportion is not constant (Table 4.22) among the planning categories and this could be attributed to the positive impact of planning in the proportion of risky assets invested by the households.

Table 4.22: The Unconditional and the Conditional Proportion of Risky Assets in the Pooled Data

Variables	Unconditional Proportion	Conditional Proportion	Probability of ownership
PS: 0 – 25 percentile	4.7183	13.1975	0.3698
26 – 50 percentile	7.2434	16.0671	0.3848
51 – 75 percentile	6.4089	17.1813	0.4005
76 – 95 percentile	3.4550	9.1887	0.4325
Top 5 percentile	5.2500	7.8775	0.4487
Under-Graduate	2.1714	9.5000	0.2284
Graduate	6.1625	14.6679	0.4199
Post-Graduate	4.8771	13.0581	0.3734

The risky assets share rises in the case of households with post-graduate degree both at the unconditional and the conditional level (Table 4.22) thus, proving the impact of education on the proportion of risky asset investment made by the households.

CHAPTER 5: FINDINGS AND CONCLUSION

This chapter discusses the overall findings and concludes by summarizing the findings of the three sample studies. It also draws policy implications with respect to the awareness/educational programmes that may be required for the government employees for whom defined benefit contribution plan is compulsory/mandatory.

The results of the three studies are compared for both the ownership of risky assets and the proportion of investments made in the risky assets in order to summarize it.

5.1 Probit Results:

By comparing the results of Coimbatore and Ahmedabad with the Pooled sample, the variables financial knowledge (positive) and pension benefits status (negative) have significant impact on the ownership of risky assets.

The variables: age, marginal tax rates and occupation have significant impact on the ownership of risky assets in Coimbatore and the Combined Sample. Similarly, income has a significant positive impact on the ownership of risky assets in Ahmedabad and the Combined Sample study.

5.2 Tobit Results:

The variables: financial knowledge and marginal tax rates have a positive significant relationship with the proportion of risky assets investment in Coimbatore Ahmedabad and the Combined Sample. The positive relationship between the proportion of risky assets investment and the financial knowledge was found in B. Douglas Bernheim et al (1996) and Patrick J. Bayer et al (1996) in the USA. The studies, James Poterba et al (1999) and Stefan Hochguertel et al (1997) also found the positive

relationship between proportion of risky assets and the marginal tax rate in USA and Sweden respectively.

Similarly, the relationship is significant and positive for the variables income in case of Coimbatore and the Combined Sample. In case of Ahmedabad it shows a mixed relationship. The proportion of risky assets in the total wealth decreases as the income level decreases except for the lowest income category. In the case of the lowest income category it is positively related with the highest income category. This result is similar to that of SEBI-NCAER (2000) in which households with lower income and lower penetration level of durable goods invest in risky assets while the households with higher income level and higher penetration of consumer durables are not so.

Households eligible for government pension after their retirement hold a lesser proportion of risky assets when compared to other households in the case of Coimbatore, Ahmedabad and the Combined Sample. This is similar to that of B. Douglas Bernheim et al (1996) and John Ameriks et al (2002) in the USA.

Academicians, professionals, managers and businessmen have a lesser share of their total wealth in risky assets in Coimbatore. In Ahmedabad, academicians hold lesser share, while businessmen are positively related with financial services personnel (reference group). Academicians, managers and unclassified investors category hold a lesser proportion of their wealth in risky assets in the Combined Sample. Jonas Agell et al (1990) found that the white-collar worker holds more risky assets as compared to others in Sweden.

Age is found to be positively significant across the three samples i.e. in Coimbatore, Ahmedabad and the Combined Sample in the proportion of risky assets investments. This is similar to that of Peter S.Yoo (1994), B. Douglas Bernheim et al (1996) in the USA and Stefan Hochguertel et al (1997) in the Netherlands.

Planning is found to be positively significant in Coimbatore and the Combined Sample. John Ameriks et al (2002) study in the USA found similar results.

Education is found to be positively significant in the Combined Sample. This is similar to that of Joans Agell et al (1990), Peter S.Yoo (1994), B. Douglas Bernheim et al (1996), Stefan Hochguertel et al (1997), James Poterba et al (1999), and Carol Bertaut et al (2000).

The household size is found to be negatively significant in Coimbatore only. Yilmazer (2001) found similar results in USA.

Thus, if one looks into the results of probit and tobit analysis, the two factors which emerge significant both in the ownership and the proportion of risky assets investment across the three studies are Financial Knowledge and Pension Benefit Status.

Age, Occupation and Marginal Tax Rates are significant across the three studies in the case of proportion of risky assets investment but in the case of ownership it is only in Coimbatore and the Combined Sample.

Income is significant across the three studies in the case of proportion of risky assets investment but in the case of ownership it is only in Ahmedabad and the Combined Sample.

Planning is found to be significant in the proportion of investments in risky assets in Coimbatore and the Combined Sample.

Education is found to be positively significant in the Combined Sample in the case of proportion of investments in risky assets only. Similarly, household size is found to be negatively significant only in the proportion of investments in risky asset in Coimbatore.

The findings of all the three studies are summarized in the table 5.1.

Table 5.1: Summary of Findings

Coimbatore Sample		Ahmedabad Sample		The Pooled Data	
Probit	Tobit	Probit	Tobit	Probit	Tobit
FKS (+)	FKS (+)	FKS (+)	FKS (+)	FKS (+)	FKS (+)
PBS (-)	PBS (-)	PBS (-)	PBS (-)	PBS (-)	PBS (-)
Age (+)	Age (+)		Age (+)	Age (+)	Age (+)
	Income (+)	Income (+)	Income (Mixed)	Income (+)	Income (+)
MTR (+)	MTR (+)		MTR (+)	MTR (+)	MTR (+)
Manager (-)	Academic (-) Prof. (-) Manager (-) Business (-)		Acad. (-) Business (+)	Academic (-) Manager (-)	Academic (-) Manager (-) Others (-)
	Planning (+)				Planning (+)
	HHS (-)				
					Education (+)

Thus, if one looks into all the three studies, the factors that emerge significant in both the ownership and the proportion of risky assets investment in the total wealth are Financial Knowledge and Pension Benefit Status.

The variables: income, marginal tax rate, occupation, age, planning, education, and household size are found to be significant mostly in the proportion of risky assets investment and not in the ownership of risky assets.

Thus, most of the variables used in the study in Coimbatore, Ahmedabad and the Combined Sample are found to be significant in case of the proportion of risky assets invested. However, only Financial Knowledge and Pension Benefit Status are significant in explaining the ownership of risky assets and the proportion of risky assets in the total wealth among the households. Thus, one could conclude that the lack of financial knowledge acts as an entry barrier for the households in owning the risky assets in their portfolio. Also the households having defined benefit pension plan own the least risky assets in their portfolio. In other words, once a household owns risky assets all the other variables are also found to have impact on the proportion of risky assets investment.

Implications for future research:

The study is conducted in Coimbatore and Ahmedabad cities only. It may not be possible to generalize the findings of this study to the whole of India because of a culturally diversified population. Similar studies in different cities/regions could shed more light in determinants of personal financial choices made by Indian investors.

Implications for Public Policy:

The macro level savings in India shows that the households past savings are predominantly in fixed income generating options and on an average less than 10 percent of their investments are in risky assets. The Government of India has introduced defined contribution pension plan instead of defined benefit pension plan for their new employees. Around 7 state governments have introduced it for their new employees,

while the other States have shown interest in it. The government is also expecting the workers in the informal sector to voluntarily participate in this system during their working life and get the annuitisation benefits in their retired life. The present study has shown the positive and significant relationship between the ownership of risky assets with the financial knowledge of the households. Hence, the central government and the state governments should take appropriate awareness/educational programmes to ensure that the participants to the new scheme do not suffer due to the lack of knowledge on the one hand and the obligation to be a participant to the new scheme on the other hand just because he or she is a government employee.

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Annexure-Questionnaire

A study on Determinants of Household Portfolio Composition: A Survey

Dear respondents,

I have undertaken a project to study the factors influencing the Household Portfolio Composition to complete my Doctoral Degree in Management Studies. To serve this purpose I have designed this questionnaire. Dear respondents, I acknowledge gracefully your co-operation in answering this questionnaire.

I assure that this information is gathered for educational purpose and personal identity, confidential information, views, etc will never be released for public criticism.

Thanking you

Yours Sincerely

R.R.Rajamohan

Ph.D Scholar,

Institute of Management,

Nirma University,

Ahmedabad-382481,

Gujarat State.

Questionnaire on Determinants of Household Portfolio Composition

1) Residential Area: Pin code:

2) Members of the Household Age Education Occupation Experience (in years)

- Husband (Head of the family)
- Spouse

Age Class/Standard

- Children 1
- Children 2
- Others

3) Annual Income of the Family

a) < 1,00,000 b) 1,00,001-1,50,000 c) 1,50,001-2,00,000

d) 2,00,001-2,50,000 e) 2,50,001-3,00,000 f) 3,00,001-3,50,000

g) 3,50,001-4,00,000 h) 4,00,001-4,50,000 i) 4,50,001-5,00,000

j) 5,00,000-8,50,000 k) > 8,50,000

4) Which of the following are the main reasons why you & your household save? If more than one reason please rank them.

a) to buy a house b) for children education c) for children's marriage

d) for retirement e) for a rainy day, such as getting sick or being unemployed

f) for holidays or travel or leisure g) any other reasons, please specify _____.

5) Which magazines, newspapers you read.

Magazines	Hrs/month	Newspapers	Hrs/week
Dalal Street		Economic times	
Capital Market		Businessline	
Outlook Money		Financial Express	
Investment Monitor		Business Standard	
Business Today		Times of India	
Business World		The Hindu	
Business India		The Indian Express	
Any other _____		Any other _____	

6) Do you read/talk about personal money management?

- Yes/No.

7) Government of India Guarantees returns of many savings programs against loss. Which of the following is not?

a) Postal Savings Account b) A certificate of deposit at the bank

c) Government of India securities d) no idea e) none of the above.

8) Which of the following instruments is NOT typically associated with spending?

a) Credit card b) Cash c) Certificate of Deposit

d) ATM (Automated Teller Machine) Card e) none of the above

9) Saving and investment products differ in their potential rate of return, liquidity, and level of risk.

- Yes/No/ No idea.

10) The maturity value of Rs. 1000 deposited in Bank A at an annual interest rate of 6% is equal to the maturity value of Rs. 1000 deposited in Bank B which offers the same interest rate but credits interest semi-annually (i.e. once in 6 months)

- Yes/No/ No idea.

11) Interest rate on National Saving Certificate (NSC) is fixed for the contracted period i.e. for 6 years.

- True/False/ No idea.

12) Interest rates on EPF/PF/PPF are variable during the life of the scheme.

- True/False/No idea.

13) What is investing?

- Something you can do with your money that will hopefully earn you more money
- Something only rich people can do with their money
- Buying stocks/shares
- None of the above

14) Share investment is a high-risk, high-yield investment.

- True/False/No idea.

15) Which item below is not an example of diversification?

a) One strong stock b) Several mutual funds

c) A stock index fund d) None e) No idea.

16) Returns from shares, mutual funds are volatile i.e. not certain.

- True/False/No idea.

17) Index mutual funds are actively managed and hence they charge high fees.

- True/False/No idea.

18) Dividend paying companies, have to pay dividend distribution tax to the Government.

- True/False/No idea.

19) Tuition fees paid by the parent(s) for their children up to 2 children are eligible for rebate under section 88 up to Rs. 12000 per child.

- True/False/No idea.

20) Inflation can cause difficulty in many ways. Which group among the below mentioned groups would have the greatest problem during periods of high inflation?

- young couples with no children who both work
- young working couples with children
- older, working couples saving for retirement
- older people living on fixed retirement income

21) The sum assured and the bonuses announced by the private life insurance companies are guaranteed by the Government of India.

- True/False/No idea.

22) If each of the following persons had the same amount of take home pay/pension, who would need the greatest amount of life insurance?

- a young married man without children
- an elderly retired man, with a wife who is also retired
- a young single woman/man without children
- a young single woman/ man with two young children

23) Floating rate home loan is a good choice if the interest rates are expected to rise.

- True/False/No idea.

24) What is the amount of time spent in hours per month to organize your saving and investment activities? _____ hours per month.

25) Do you track your monthly expenses?

- Yes/No.

26) Do you save from your household income each month?

- Yes/No.

27) Do you invest beyond what you have to save for taxes?

- Yes/No.

28) Do you know what you earn on your various investments?

- Yes/No.

29) Do you have enough life insurance?

- Yes/No/Can't say.

30) Do you have medical insurance?

- Yes/No.

31) Have you withdrawn money from your PF/EPF contributions?

- Yes/No.

32) Are you a credit card user?

- Yes/No. If yes
    - Are you using the revolving/rotating credit facility?
        - Never
        - Using it Every month
        - Occasionally.

33) Do you have the habit of preparing the budget every month?

- Yes/No. If yes
    - Do you review the budget at the end of every month to act accordingly in future?
        - Yes/No.

34) Have you used Zero-interest credit scheme to purchase any home appliances or 2/4 wheeler?

- Yes/No/Can't say.

35) Have you borrowed money for house construction to avail income tax benefits?

- Yes/No.

36) Do you want to learn about personal financial planning and management?

- Yes/No. if yes go to Q. 37 otherwise Q.40.

37) Which medium you prefer to learn personal financial planning and management?

a) classroom b) literature/handbook c) internet d) films.

38) How much would you be willing to spend to learn about investments and savings?

a) Rs.500 b) Rs.1000 c) Rs.1500 d) Rs.2000 and above e) nil.

39) How much time will you be able to devote for financial education?

a) 1 day b) 2 days c) 3 days d) 2 hours per day over 15 days e) nil.

40) Please mention the amount (in %) invested in different instruments mentioned in the table below in proportion to your total wealth.

NOTE: (For filling up the table given below:

For Life insurance the cash value of the life insurance should be considered. It is the total amount of premiums paid till date. (30th September 2004).

For home purchased on loan, the value is the market value of the home less the amount of loan to be repaid

For the value of Shares, Mutual Funds, Gold, land the market value on 30/09/04).

Investment Options	Amount in % to total wealth/asset	Example	Amount in percent to total wealth
Cash, Savings Bank account, Bank/Postal deposits < 1 year		Rs 75,000	Rs 75,000/20,00,000 = 3.75%
Money Market MF		Nil	---
Bank deposits > 1 yr		Rs 25,000	1.25%
Postal Savings Schemes (POMIS, TDs, RDs)		Rs 25,000	1.25%
NSS, NSC		Rs 25,000	1.25%
PPF		Nil	---
Infrastructure/ RBI bonds		Nil	---
PF/EPF contribution		Rs 3,00,000	15%
Life Insurance funds		Rs 1,00,000	5%
Mutual Funds		Rs 1,00,000	5%
Shares and Corporate Bonds		Rs 2,00,000	10%
Gold, Silver		Rs 2,00,000	10%
Residential house		Rs 7,50,000	37.5%
Land, Secondary house		Rs 2,00,000	10%
Total Assets/Wealth		Rs 20,00,000	100%