

**Influence of Economic and Social Factors on Residential Property Investment Decision and Impact of Demographic Factors on Investment Portfolio Diversification**

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**Abstract**

This research examines the key factors i.e. economic and social factors that impact on residential property investment decision and also aims to examine the impact of demographic factors on the investment portfolio diversification. Asset allocation, the decision of how much of a portfolio to allocate to different types of securities is one of the fundamental issues in financial economics. Present study also examined the portfolios of investors. This is regarding what mix people should hold in terms of equities, bonds, and other assets. The findings and discussion are based on a survey of 300 samples of residential property owners. The results suggest that 85% investors are influenced by economic reasons and 90% investors are influenced by social reasons in their investment decision. It is found that 73% had a totally non-diversified investment portfolio, holding only residential property. In diversification across demographic groups, investors in middle income and middle classes categories hold the least diversified portfolios. In addition, it is observed that very few young and active investors are holding diversified portfolios.

**Key Words:** Residential property, Investment decision, Portfolio diversification.

**Introduction**

Investment decision involves two dimensions; first to decide whether to invest or not, which is a binary decision. Second, if decide to invest, it must decide how much to invest in it. How much to invest is partly related to the minimum amount of housing services that the owner demands, and partly to the investment decision portfolio. We therefore model investment decision as: Probability (investment decision) =f (demographic, economic and social variables).

A diversified portfolio so that risk may be spread, is a standard rule of investment. Risk in security market may be reduced through portfolio diversification. In order to optimize the return and risk of a portfolio of investments made by residential property owners, the portfolio has to be diversified as residential property owner should not keep all his eggs in a single basket. Most rational models of investor choice suggest that investors hold diversified portfolios to reduce or eliminate non-compensated risk... But do they? The study sought to assess the degree of diversification of the investment portfolio of residential property owners.

**Literature Review**

Mitchell and Moore have sought to examine how people invest the assets they do have control over. Uhler and Cragg (1971), have sought to understand the degree to which household asset allocation decisions conform to rational models of investor behavior. Blume and Friend (1975) use tax filing and survey data to investigate diversification in household portfolios and find that the household portfolios are grossly under-diversified and the degree of diversification increases with wealth. Cohn, Lewellen, Lease, and Schlarbaum (1975) find that as wealth increases, a higher proportion of the total wealth is allocated to risky assets and investors exhibit decreasing relative risk

aversion. A number of authors recently have focused on the apparent under-investment in risky assets and explore possible explanatory factors.

Guiso, Japelli, and Terlizzo (1996) use Italian household survey data to test whether expected future borrowing constraints and exposure to non-diversifiable risks such as labor income risk (which may be reinforced by borrowing constraints) explain differences in equity holdings. Bertaut (1998) finds that the propensity to invest in equities is partly explained by lower risk aversion, higher wealth and higher education. Heaton and Lucas (2000) study the asset holdings of investors who hold stocks and find that entrepreneurial stakes substitute for investment in equities. Perraudin and Sorensen (1996) suggest that frictions restrict the ability of investors to hold a large number of assets. William N. Goetzmann and Alok Kumar claim that they are able to focus on the question of diversification within an asset class.

A study of National Council of Applied Economic Research (NCAER) suggests (July 2000) that 12.8 million (8%) of all Indian households have invested directly in equity shares or debentures or both at end of financial year 1998-1999. 87.5% of such households had invested in equity shares whereas just 12.5% had invested in debentures. The study also suggests that Investor households are aware of risks in investing in equity shares.

In the latter half of the 19<sup>th</sup> century, portfolio diversification was developed as a means of reducing investors' risks in stock and bonds (Markowitz, 1952; Sharp, 1963). In 1982 Miles and McCue tested diversification strategies that consisted of dividing the country into four geographic regions versus a strategy that diversified the portfolio by property type. When the previous data set was extended further into the 1980s and enriched with additional property characteristics, regional characteristics showed to be more important (Hartzell, Hekman and Miles, 1986). Diversification benefits were also tested on mortgage portfolios by Corgel and Gay (1987).

Evans and Archer (1968) and Latané and Young (1969) provided the first empirical estimates of the rate at which risk is reduced with increasing numbers of stocks in a portfolio. However, Whitmore (1970) showed that, instead of the standard deviations, the models should have used the variances of the simulated portfolio returns. Evans (1975) found that the reduction of the standard deviation of returns is a function of both the number of stocks in a portfolio and the average correlation coefficient between returns. Similar to Evans (1975) and Elton and Gruber (1977), it is assumed that the means and (co-)variances of returns are identically distributed. With no information about these return characteristics one could assume that they do not differ across assets. Consequently, it would be optimal to buy equal amounts of each investment (Samuelson, 1967).

The most recent work by Malizia and Simons used three real estate demand-side indicators (employment, personal income, and population) to test the effectiveness of three current geographical diversification strategies: the traditional geographic four regions used by Frank Russell Company/CREIF; the U. S. Department of Commerce's eight regions, and the economically grouped eight regions developed by Hartzell, Shulman and Wurtzcbach.

Lack of diversification may also result from psychological factors, in particular, due to an "illusion of control" (Langer 1975). Huberman (2001) endorses that investors do indeed have a strong tendency to invest in stocks that they are familiar with. Hartzell et al. examine diversification benefits and diversification categories of real estate portfolios.

## Research Methodology

The study is based on survey conducted among 300 respondents in Ahmedabad and Gandhinagar cities of Gujarat. The reliability was assessed by computing Cronbach's Alpha. Alpha value of 0.6 or less generally indicates unsatisfactory level. But in this survey the test value was found more than the required value (.769) that indicates good consistency among items. The study is based on the primary data collected through scientifically developed questionnaire from respondent. The questionnaire has been constructed in consultation with expert and piloted. It has been personally administered while filling up from respondents on convenient basis. Each answer was recorded on a five-point Likert scale, verbally anchored by "strongly agree" (5) and "strongly disagree" (1). Enough care was taken to minimize error of wrong interpretation and biased views. For analysis of data statistical methods are applied with the aid of SPSS (Statistical Software for Social Sciences).

## Objectives

1. To study the influence of economic and social factors on residential property investment decision.
2. To study investment portfolio diversification and also to examine the impact of demographic factors on it.

## Hypothesis

Hypothesis: 1

H0: Economic factors affect half of the population, i.e.,  $H_0: P=0.5$

H1: Economic factors affect more than half of the population, i.e.,  $H_1: P>0.5$

Hypothesis: 2

H0: Social factors affect half of the population, i.e.,  $H_0: P=0.5$

H1: Social factors affect more than half of the population, i.e.,  $H_1: P>0.5$

Hypothesis: 3

H0: Half of the investors hold non-diversified portfolio, i.e.,  $H_0: P=0.5$

H1: More than half of the investors hold non-diversified portfolio, i.e.,  $H_1: P>0.5$

Hypothesis: 4

H0: Age of the respondent & Portfolio diversification is independent.

H1: Age of the respondent & Portfolio diversification is dependent.

Hypothesis: 5

H0: Occupation of the respondent & Portfolio diversification is independent.

H1: Occupation of the respondent & Portfolio diversification is dependent.

Hypothesis: 6

H0: Income of the respondent & Portfolio diversification is independent

H1: Income of the respondent & Portfolio diversification is dependent.

**Analysis and Interpretation**

• ***Influence of Economic Reasons on Residential Property Investment Decision***

**Table – I**

<b>Economic Reasons For Investment</b>	<b>No.</b>
Yes	255
No	45
<b>Total</b>	<b>300</b>

**Table – II**

<b>Economic Reasons For Investment</b>	<b>%</b>
Wealth accumulation	11%
Good return	28%
Taxation benefit	12%
Low risk	43%
Retirement income	6%

Out of the total investors, 85% of them believe that economic reasons affect their investment decision. ‘Low Risk’ was clearly the most important consideration in the property investment decision. 43% of respondents ranked this as their first most important reason for engaging in investment. 28% investors believe that property gives good return.

• ***Influence of Social Reasons on Residential Property Investment Decision***

**Table – III**

<b>Social Reasons For Investment</b>	<b>No.</b>
Yes	270
No	30
<b>Total</b>	<b>300</b>

**Table – IV**

<b>Social Reasons For Investment</b>	<b>%</b>
Build legacy	26%
Easy to borrow	42%
Hands on investment	32%

Only a nominal percent of investors believe that social reasons do not affect their investment decision. ‘Easy to borrow’ is ranked by 42% of the investors as first most important social reason for the investment in residential property. Investors not only had ‘pride’ in his superior abilities by ‘hands on investment’ but also revealed a sense of complacency.

• ***Investment Categories & Diversified Portfolios***

**Table – V**

<b>Investment Categories</b>	<b>No.</b>
Residential property	219
Others	81
<b>Total</b>	<b>300</b>

**Table – VI**

<b>Investment Categories (Others)</b>	<b>%</b>
Equity	29%
Bonds	8%
Gold	63%

Respondents are asked to rank their investment categories in order of importance. Four categories were specified: residential property, equity investments, Bonds, Other

investments. 73% had a totally non-diversified investment portfolio, holding only property. The investors remained under diversified without understanding the benefits of diversification, but on the other side investors also understand benefits of including real estate in portfolios as examined by Hartzell. It is also found that gold is ranked first most important investment followed by equity, bonds.

- **Age Wise Portfolio Diversification**

**Table – VII**

<b>Age Wise Portfolio Diversification</b>	<b>Diversified</b>	<b>Under Diversified</b>	<b>Total</b>
20-30	22	23	45
30-40	32	93	125
40-50	20	75	95
50 & above	9	26	35
<b>Total</b>	<b>83</b>	<b>217</b>	<b>300</b>

An analysis of diversification across age group suggests that the investors who are in the age group of '30-40' and '40-50' are holding under-diversified portfolios, not by chance but by choice. Previous studies have established that risk aversion increases with age. This is true in the study as portfolio diversification increased with age of investors.

- **Occupation Wise Portfolio Diversification**

**Table – VIII**

<b>Occupation Wise Port. Diver.</b>	<b>Diversified</b>	<b>Under Diversified</b>	<b>Total</b>
Business	15	10	25
Profession	9	12	21
Government Service	25	140	165
Private Service	19	56	75
Retired	2	7	9
Others	1	4	5
<b>Total</b>	<b>71</b>	<b>229</b>	<b>300</b>

Investors that belong to Government Service hold the least diversified portfolios in the sample while Investors who retired hold the most diversified portfolios. Here, the result is totally different to the study of Malizia, Simons, Hartzell, and Shulman where they found economically based diversification was superior one.

• **Income Wise Portfolio Diversification**

**Table – IX**

<b>Income Wise Port. Diver.</b>	<b>Diversified</b>	<b>Under Diversified</b>	<b>Total</b>
< 10000	13	33	46
10000-20000	26	77	103
20000-30000	20	76	96
> 30000	27	28	55
<b>Total</b>	<b>86</b>	<b>214</b>	<b>300</b>

For the middle income categories, the diversification differences are not statistically significant. However, the degree of diversification is higher for the high income category while it is lower for the low income category. Thus, income wise portfolio diversification was somewhat similar as it shows economically based diversification was superior which was studied by Malizia, Simons, Hartzell and Shulman.

**Hypothesis Testing**

**Hypothesis-1: Test of Single Sample Proportion**

H0: Social factors affect half of the population, i.e., H0: P=0.5

H1: Social factors affect more than half of the population, i.e., H1: P>0.5

Under H0, n=300, P=0.5, p=270/300=0.90, Q=1-P=0.5

$$Z_{cal} = \frac{p-P}{\sqrt{PQ\left(\frac{1}{n}\right)}} = \frac{0.9 - 0.5}{\sqrt{\frac{(0.5)(0.5)}{300}}} = 13.84$$

Here level of significance (α) =0.05 at α=0.05 & for right-tailed test, from z-table we get 1.645 i.e., Ztab=1.645. Here, Zcal > Ztab. So, H0 is rejected, i.e., H1 is accepted. i.e. social factor affect more than half of the population

**Hypothesis-2: Test of Single Sample Proportion**

Ho: Economic factors affect half of the population, i.e., H0: P=0.5

H1: Economic factors affect more than half of the population, i.e., H1: P>0.5

Under H0, n=300, P=0.5, p=255/300=0.85, Q=1-P=0.5

$$Z_{cal} = \frac{p-P}{\sqrt{PQ\left(\frac{1}{n}\right)}}$$

$$\frac{0.85 - 0.5}{\sqrt{\frac{(0.5)(0.5)}{300}}} = 12.1107$$

Here level of significance ( $\alpha$ ) =0.05

At  $\alpha = 0.05$  & for right-tailed test, from z-table we get 1.645 i.e.,  $Z_{tab} = 1.645$

Here,  $Z_{cal} > Z_{tab}$ . So  $H_0$  is rejected, i.e.,  $H_1$  is accepted. i.e. economic factors affect more than half of the population

**Hypothesis-3: Test of Single Sample Proportion**

$H_0$ : half of the investors hold non-diversified portfolio, i.e.,  $H_0: P=0.5$

$H_1$ : More than half of the investors hold non-diversified portfolio, i.e.,  $H_1: P > 0.5$

Under  $H_0$ ,  $n=300$ ,  $P=0.5$ ,  $p=219/300=0.75$ ,  $Q=1-P=0.5$

$$Z_{cal} = \frac{p-P}{\sqrt{PQ\left(\frac{1}{n}\right)}}$$

$$\frac{0.73 - 0.5}{\sqrt{\frac{(0.5)(0.5)}{300}}} = 2.53$$

Here level of significance ( $\alpha$ ) =0.05

At  $\alpha=0.05$  & for right-tailed test, from z-table we get 1.645 i.e.,  $Z_{tab}=1.645$

Here,  $Z_{cal} > Z_{tab}$ . So  $H_0$  is rejected, i.e.,  $H_1$  is accepted. More than half investors hold under-diversified portfolio.

**Hypothesis-4: Test of Independence**

$H_0$ : Age of the respondent & portfolio diversification is independent.

$H_1$ : Age of the respondent & portfolio diversification is dependent.

Under  $H_0$ ,

**Table – X Observed Frequency (O<sub>i</sub>)**

Port Age	Diver.	Under- Diver.	Total
20-30	22	23	45
30-40	32	93	125
40-50	20	75	95
50 & above	9	26	35
<b>Total</b>	<b>83</b>	<b>217</b>	<b>300</b>

**Table – XI Expected Frequency (E<sub>i</sub>):**

Port Age	Diver	Under- Diver.	Total
20-30	12.45	32.55	45
30-40	34.58	90.42	125
40-50	26.28	68.72	95
50 & above	9.68	25.32	35
<b>Total</b>	<b>83</b>	<b>217</b>	<b>300</b>

**Table – XII - Calculation**

O <sub>i</sub>	E <sub>i</sub>	(O <sub>i</sub> -E <sub>i</sub> )	(O <sub>i</sub> -E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>
14	12.45	9.55	7.3255
32	34.58	-2.58	0.1925
20	26.28	-6.28	1.5007
9	9.68	-0.68	0.0478
31	32.55	-9.55	2.8019
93	90.42	2.58	0.0736
75	68.72	6.28	0.5739
26	25.32	0.68	0.0183
		<b>Chi square cal.</b>	<b>12.5342</b>

$$\chi^2_{cal} = 12.5342$$

$$\begin{aligned} \text{Degree of freedom} &= (r-1)(c-1) \\ &= (4-1)(2-1) = 3 \end{aligned}$$

Here level of significance  
( $\alpha$ )=5% or 0.05

At  $\alpha = 5\%$  & d.f ( $\nu$ ) = 3,  
we get,  $\chi^2_{tab} = 7.82$

Here,  $\chi^2_{cal} > \chi^2_{tab}$

Therefore H<sub>0</sub> rejected, i.e, H<sub>1</sub> is accepted.  
So, Age of the respondent & Portfolio diversification is dependent.

**Hypothesis-5: Test of Independence**

H<sub>0</sub>: Occupation of the respondent & Portfolio diversification is independent.

H<sub>1</sub>: Occupation of the respondent & Portfolio diversification is dependent.

Under H<sub>0</sub>,

**Table – XIII Observed Frequency (Oi) Table – XIV Expected Frequency (Ei)**

Port. Occupation	Diver.	Under-Diver.	Total
Business	15	10	25
Profession	9	12	21
Govt. Service	25	140	165
Private Service	19	56	75
Retired	2	7	9
Others	1	4	5
<b>Total</b>	<b>71</b>	<b>229</b>	<b>300</b>

Port. Occupation	Diver.	Under-Diver.	Total
Business	5.92	19.08	25
Profession	4.97	16.03	21
Govt. Service	39.05	125.95	165
Private Service	17.75	57.25	75
Retired	2.13	6.87	9
Others	1.18	3.82	5
<b>Total</b>	<b>71</b>	<b>229</b>	<b>300</b>

**Table – XV – Calculation**

Oi	Ei	Oi-Ei	(Oi-Ei) <sup>2</sup> /Ei
15	5.92	9.08	13.9268
9	4.97	4.03	3.2678
25	39.05	-14.05	5.0551
19	17.75	1.25	0.0880
2	2.13	-0.13	0.0079
1	1.18	-0.18	0.0275
10	19.08	-9.08	4.3211
12	16.03	-4.03	1.0132
140	125.95	14.05	1.5673
56	57.25	-1.25	0.0273
7	6.87	0.13	0.0025
4	3.82	0.18	0.0085
		<b>Chi square cal.</b>	<b>29.313</b>

$\chi^2_{cal} = 29.313$

Degree of freedom = (r-1) (c-1)  
 = (6-1) (2-1) = 5

Here level of significance

( $\alpha$ ) = 5% or 0.05

At  $\alpha = 5\%$  & d.f (v) = 5, we get,

$\chi^2_{tab} = 11.07$

Here,  $\chi^2_{cal} > \chi^2_{tab}$

Therefore H0 rejected, i.e., H1 is accepted. So, Occupation of the respondent & Portfolio diversification is dependent.

**Hypothesis-6: Test of Independence**

H0: Income of the respondent & Portfolio diversification is independent

H1: Income of the respondent & Portfolio

diversification is dependent.

Under H0,

**Table – XVI – Observed Frequency (O<sub>i</sub>)**

Port. Income	Diver.	Under-Diver.	Total
Below 10,000	13	33	46
10,000-20,000	26	77	103
20,000-30,000	20	76	96
30000 & Above	27	28	55
<b>Total</b>	<b>86</b>	<b>214</b>	<b>300</b>

**Table – XVII – Expected Frequency (E<sub>i</sub>)**

Port. Income	Diver.	Under-Diver.	Total
Below 10,000	13.19	32.81	46
10,000-20,000	29.53	73.47	103
20,000-30,000	27.52	68.48	96
30000 & Above	15.77	39.23	55
<b>Total</b>	<b>86</b>	<b>214</b>	<b>300</b>

**Table – XVIII – Calculation**

O <sub>i</sub>	E <sub>i</sub>	(O <sub>i</sub> -E <sub>i</sub> )	(O <sub>i</sub> -E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>
13	13.19	-0.19	0.0027
26	29.53	3.53	0.4220
20	27.52	-7.52	2.0549
27	15.77	11.23	7.9970
33	32.81	0.19	0.0011
77	73.47	3.53	0.1696
76	68.48	7.52	0.8258
28	39.23	-11.23	3.2147
		<b>Chi-square cal.</b>	<b>14.6878</b>

$\chi^2_{cal} = 14.69$

Degree of freedom=(r-1) (c-1)  
 $= (4-1) (2-1) = 3$

Here level of significance  
 (α) =5% or 0.05

At α = 5% & d.f (v) = 3,  
 we get,  $\chi^2_{tab} = 7.82$

Here,  $\chi^2_{cal} > \chi^2_{tab}$

Therefore H<sub>0</sub> rejected, i.e., H<sub>1</sub> is accepted. Income of the respondent & Portfolio diversification is dependent.

**Discussion**

This research adds new dimension to the residential property investment literature. It constitutes survey of 300 investors on the influence of economic and social factors on residential property investment decision and also examines the impact of demographic factors on the investment portfolio diversification. It is noted that ‘Low Risk’ was clearly the most important and ‘Income for retirement’ was least important economic reason in the property investment decision while in social reasons, ‘Easy to borrow’ was the most important and ‘Build legacy’ was least important economic reason in the property investment decision .

Present study also examined the portfolios of 300 investors. This is regarding what mix people should hold in terms of equities, bonds, and other assets. It revealed that a vast majority of investors were under diversified because in sample most of the investors are government servants. They were conscious of the benefits of diversification and yet

assume a naive-diversification strategy by holding portfolios of limited securities without considering the correlation structure among the securities. Diversification level increases with income but reduces with age reflecting an increasing degree of risk aversion with income and decreasing with age.

### **Limitation of the Study**

Despite merits of the study, it has certain limitations that should be recognized. The research was carried out in a short span of time, where in the researcher could not widen the study. While taking opinions of employees i.e. filling questionnaire for primary data collection, halo effect of respondents may restricts the proposed study to certain extent. Non availability of useful data may restrict the research study to certain level. The employees generally differ in their opinion. Sometimes the difference may be very high in their opinion. Gujarat state has many cities so it may not be possible to generalize the results to employees of all cities.

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