Factors that Influence Indian Propensity to Invest
in the Real Estate Market

Amarjit Gill¹, Gregory D. Herbert¹, Harvinder S. Mand²,
Suraj P. Sharma³ and Neil Mathur⁴

Abstract

This study examines the factors that positively influence the propensity of Indian investors to invest in the real estate market. This paper also seeks to extend the findings of Gill and Biger [1]. Individuals from India were surveyed to find out their perceptions, feelings, and beliefs on the factors that positively influence the propensity of investors to invest in the real estate market. This study utilized survey research (a non-experimental field study design). The results show that investment expertise of investors, investors’ knowledge of neutral information,
investors’ motivation from an advisor, and family positively influence the Indian propensity to invest in the real estate market. This study contributes to the literature on the factors that influence the investment propensity of investors. The study can be useful for real estate investors and investment advisors.

**JEL classification numbers:** G32

**Keywords:** Investment expertise of investors, investors’ knowledge of neutral information, investment propensity of investors, motivation from an advisor, real estate market, India

1 Introduction

The purpose of this study is to examine the factors that positively influence the propensity of Indian investors to invest in the real estate market. India is second largest country in the world after China in terms of population. By 2030, the population of India is expected to be largest in the world estimated to be around 1.53 billion [2]. Because of the large size of population and economic growth, the Indian real estate sector is booming and the annual demand for residential buildings in the country is anticipated to grow at a compound annual growth rate of 52.5 percent [3].

Sanford [4] indicates that the Indian real estate market is one of the emerging markets in the less developed economics of countries. India recorded an economic growth rate of 8.50 percent in year 2010-11 [5]. One of the contributing factors of high GDP growth rate in India during 2010-11 was the real estate market [6]. Thus, the real estate market and real estate investors play important roles in the economic growth of India. Since the Indian real estate market is one of the emerging markets in the less developed economics of countries and real estate investors play an important role
in the development of the Indian economy, it is important to understand the factors that have positive influence on the propensity of Indian investors to invest in the real estate market. Therefore, the resultant thesis is that the propensity to invest in the real estate market depends on investment expertise of investors, investors’ knowledge of neutral information, investors’ motivation from an advisor, and family; the purpose of this study is to explore these relationships among the above variables.

The Gill and Biger [1] study on the Indian real estate market collected data from Canadian investors. This study seeks to extend the study of Gill and Biger by collecting data from Indian investors. This study contributes to the literature on the factors that influence the investment propensity of investors. The results of this study can be generalized to the real estate industry.

2 Literature Review

There are many factors such as investment expertise of investors, investors’ knowledge of neutral information, investment motivation from an advisor, etc., that influence the investment propensity of investors [1, 7]. Investment propensity, in the context of this study, is defined as the extent to which investors are inclined to invest in the real estate market to: i) get rich quickly, ii) diversify risk, and iii) obtain higher rate of return.

Emerging markets for investment feature slightly higher risk levels than the developed nations of the world [4]. Investment risk is a multidimensional construct with four principal attributes: i) the possibility of a very large loss, ii) the possibility of a below target return, iii) the ability to control loss, and iv) the investor’s level of knowledge [8].

The investor’s level of knowledge is one of the principal risk attributes that
impact on investment propensity. The relative importance of the investor’s level of knowledge attribute is a function of idiosyncratic investor and asset characteristics [1].

Improved investment knowledge and experience enable consumers to make better investment decisions [9]. That is, the more accurately investors perceive risk, the better they understand the link between risk and return in the Indian real estate market; and the better the understanding of the link between risk and return in the Indian real estate market, the higher the investment propensity of investors. Risk-averse investors continue to be attracted by relative stability of residential properties and buildings [10]. Investors’ investment knowledge and experience have positive and negative impacts on their propensity to invest capital in the real estate market. That is, if Indian investors perceive higher risk in the Indian real estate market, they are reluctant to invest capital and vice versa.

Investor knowledge of ‘neutral information’ plays an important role in investment decision making process. The concept was developed long ago by Siegel et al. [11] who found that many investors view the financial statements as not useful for investment decision-making purposes. They conjectured that there are other sources of information which investors feel to be more informative for investment decisions. Gill and Biger [7] also indicate that investors’ propensity to invest capital is positively affected by their own perceived knowledge of neutral information. Thus, investors do not rely on a single integrated approach, but rather on many categories of factors such as price movement in the real estate market and current economic indicators (e.g., business cycle, GDP, etc.).

Nagy and Obenberger [12] indicate that the recommendations of family members and friends impact on the investment decisions of investors. Gill and Biger [7] indicate that investment propensity of investors is positively affected by their own perceived consultation with an advisor. In similar manners, real estate brokers, family members, and friends can act as investment advisors in the real estate market. O’Neal [13] also suggests that investment advisors play a
significant role in investment decisions of investors.

The empirical studies on the relationship between investment expertise of investors, investors’ knowledge of neutral information, investor consultation of an advisor, and investment propensity of investors are as follows:

Al-Tamimi [14] collected data from United Arab Emirates (UAE) and found that family member opinion has positive influence on investment behavior. Gill and Biger [1] collected data from Canadian real estate investors. Through regression analysis, authors found a positive relationship between Canadian investors’ investment expertise and Canadian investors’ propensity to invest in the Indian real estate market.

Gill and Biger [7] collected data from Canada and found investors’ investment expertise, investors’ knowledge of neutral information, and investor consultation of an advisor positively impact on the investment decision of investors.

Gill et al. [15] collected data from India and found investment expertise of investors, investors’ knowledge of neutral information, investor consultation of an advisor, and family positively impact on the investment decision of investors. In summary, literature review indicates that investment expertise of investors, investors’ knowledge of neutral information, motivation from an advisor, and family influence the propensity of the investors to invest capital.

3 Methods

3.1 Research Design

This study utilized survey research (a non-experimental field study design).
3.2 Measurement

In order to remain (for comparison and reference reasons) consistent with previous research, the measures were taken from two referent studies, which in turn, are based on previous studies in behavioral finance. All measures pertaining to:

i) Investment expertise of investors and investment propensity of investors were taken from Gill and Biger [1], and

ii) Measures pertaining to investors’ knowledge of neutral information and investors’ motivation from an advisor were taken from Gill and Biger [7].

All the scale items were reworded and the reliability of these re-worded items was re-tested for construct validity. Respondents were asked to indicate their agreement with each item, using a five-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree.”

Family was used as a dummy variable. Family dummy variable was measured by a single item that asked respondents to indicate their family characteristics. Categorized alternative responses were: 0) Single Family and i) Joint Family.

Investment expertise of investors (IEOI) is operationalized as the extent to which Indian investors are experienced and understand the Indian real estate market risk. Gill and Biger [1] used the two-item tolerance-of-freedom scale, which measures the investors’ knowledge and experience with investment products. Both items were selected to measure the “IEOI” variable. Scale items were reworded and the reliability of these re-worded items was re-tested. The Cronbach alpha on the responses of 29 investors who participated in the pre-test of the above scale items was 0.85. Both items were included in the final questionnaire.

Investors’ knowledge of neutral information (IKONI) is operationalized as the extent to which investors understand i) recent price movement in the real estate market and ii) the current economic indicators (e.g., business cycle, GDP, etc.) in India. Gill and Biger [7] used three items to measure “IKONI” variable. Based on
Gill and Biger’s [7] Confirmatory Factor Analysis (CFA), two items were selected to measure the “IKONI” variable. Scale items were reworded and the reliability of these re-worded items was re-tested. The Cronbach alpha on the responses of 29 investors who participated in the pre-test of the above scale items was 0.94. The two items were included in the final questionnaire.

**Investors’ motivation from an advisor (IMFA)** is operationalized as the extent to which real estate broker, family members, and friends motivate investors to invest in the real estate market. Gill and Biger [7] used three items to measure “investor consultation with an advisor” variable. Based on Gill and Biger’s [7] CFA, all three items were selected to measure the “IMFA” variable. Scale items were reworded and the reliability of these re-worded items was re-tested. The Cronbach alpha on the responses of 29 investors who participated in the pre-test of the above scale items was 0.93. All three items were included in the final questionnaire.

**Investment propensity of investors (IPOI)** was operationalized as the extent to which investors are inclined to invest in the Indian real estate market to: i) get rich quickly, ii) diversify risk, and iii) obtain higher rate of return. Gill and Biger [1] used the four-item tolerance-of-freedom scale, which measures the investor’s propensity to invest. Based on Gill and Biger’s [1] CFA, three items were selected to measure the “IPOI” variable. Scale items were reworded and the reliability of these re-worded items was re-tested. The Cronbach alpha on the responses of 29 investors who participated in the pre-test of the above scale items was 0.89. All three items were included in the final questionnaire.

### 3.3 Sampling Frame, Questionnaire Distribution, and Collection

The current study consisted of the population of Indian investors. Indian investors living in Punjab (Ludhiana, Malerkotla, Raikot, Banga, Hoshiar Pur, Kaputhala, Phagwara, Jalandhar, and Sahid Bhagat Singh Nagar) area of India
were chosen as a sampling frame.

3.4 Sampling Method, Sampling Issues, and Possible Planned Solutions

Punjab area (Ludhiana, Malerkotla, Raikot, Banga, Hoshiar Pur, Kaputhala, Phagwara, Jalandhar, and Sahid Bhagat Singh Nagar) of India was chosen as the research site to collect data. Given that the population is “abstract” (e.g., it was not possible to obtain a list of all members of the focal population) [16, p. 101], a non-probability (purposive) sample was obtained. In a purposive sample, participants are screened for inclusion based on criteria associated with members of the focal population. The focal population was comprised of investors in the Punjab area of India. The survey did not need to be translated into Punjabi or Hindi for the Indian participants since almost all the investors can read and write English. Researchers were also available for translation. The instruction sheet indicated that participants could contact the researchers by telephone and/or email regarding any questions or concerns they might have about the research.

To avoid sampling bias, data collection team was asked to only choose participants that represent the target population. Non-Indian investors were excluded.

To achieve a convenience sample, an exhaustive list of Indian investors’ names and telephone numbers were created to distribute surveys and to conduct telephone interviews. Survey questionnaire bundles coupled with an instruction sheet were provided to the surveyors for distribution.

The sample included approximately 800 research participants encompassing Indian investors. A total of 209 surveys were completed over the telephone (approximately 10% of the surveys were completed over the telephone), through personal visits, and received by mail. Two of the surveys were non-usable. The
response rate was roughly 26.12%. The remaining cases were assumed to be similar to the selected research participants.

3.5 Issues Related to Confidentiality of the Research Participants

All individuals who were approached were ensured that their names will not be disclosed and confidentiality will be strictly maintained. In addition all subjects were requested not to disclose their names on the questionnaire. Since the research was based on the survey questionnaire respondents were not forced to respond to each specific question.

All subjects were provided with stamped envelopes and confidentiality was ensured. There was no obligation for the subjects to answer our questions over the telephone and in person. Before any telephone interview the person was asked for willingness to participate and of course no one was forced to participate.

Investors’ Consent Letter specifically indicated that by completing the survey, subjects have consented to participate in the study. Any information that was obtained in connection with this study and that can be identified with subjects will remain confidential and will be disclosed only with subjects’ permission or as required by law.

4 Analysis and Results

4.1 Data Analysis Methods

Measures of central tendency, variance, skewness, and kurtosis were calculated on responses to all of the items. Skewness measures for all of the items were within the range of: -0.699 to -1.121, which is considered to be a good range for most research that requires using statistics appropriate to normal distributions. Therefore, we used statistics that assume scalar values and symmetric distributions to test our hypotheses. Table 1 shows descriptive statistics related to this study.
Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Investment Expertise of Investors</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding of real estate investment risk</td>
<td>1</td>
<td>5</td>
<td>3.99</td>
<td>0.862</td>
</tr>
<tr>
<td>Experience in the Indian real estate investment</td>
<td>1</td>
<td>5</td>
<td>3.74</td>
<td>0.903</td>
</tr>
</tbody>
</table>

**Investors’ Knowledge of Neutral Information**

| Knowledge of recent price movement in the Indian real estate market | 1   | 5   | 3.89 | 0.954 |
| Knowledge of the current economic indicators (e.g., business cycle) | 1   | 5   | 3.70 | 0.929 |

**Investors’ Motivation from an Advisor**

| Motivation from real estate broker to invest capital in the real estate market | 1   | 5   | 3.88 | 0.885 |
| Motivation from family to invest capital in the real estate market | 1   | 5   | 3.95 | 0.874 |
| Motivation from friends to invest capital in the real estate market | 1   | 5   | 3.91 | 0.866 |

**Propensity of Investors to Invest in the Real Estate Market**

| Get rich quickly | 1   | 5   | 3.83 | 0.939 |
| Diversify risk   | 1   | 5   | 3.82 | 0.958 |
| Obtain higher rate of return | 1   | 5   | 3.77 | 0.925 |

Min = Minimum  
Max = Maximum  
\( \bar{x} \) = Mean  
\( \sigma \) = Standard Deviation

We began our analysis by factor analyzing responses to the 10 items that described the respondents’ feelings about their investment expertise, knowledge of
neutral information, motivation from an advisor, and propensity to invest in the Indian real estate market. The principle components analysis (a cluster analysis tool designed to capture the variance in a dataset in terms of principle components) with number of factors set to 4 and a varimax rotation explained 84.15% of the variance in the original scores (see Table 2).

Table 2: Total Variance Explained – Rotation Sums of Square Loadings

<table>
<thead>
<tr>
<th>Component</th>
<th>Total Variance Explained</th>
<th>Rotation Sums of Square Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>2.683</td>
<td>26.832</td>
</tr>
<tr>
<td>2</td>
<td>2.184</td>
<td>21.841</td>
</tr>
<tr>
<td>3</td>
<td>1.785</td>
<td>17.853</td>
</tr>
<tr>
<td>4</td>
<td>1.763</td>
<td>17.630</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis

As can be seen in Table 3, all the items loaded on the expected factors. Cronbach Alpha on the clusters of items: IEOI 0.832; IKONI 0.854; IMFA 0.870 and IPOI 0.900.

The question subsets were analyzed in order to enable the calculation of the weighted factor scores. In terms of these weighted factor score items: two IEOI, two IKONI, three IMFA, and three IPOI, loaded approximately equally.

Table 4 provides the Pearson correlation for the variables used in the regression model. As shown in Table 4, investment propensity of investors (IPOI) is positively correlated with investment expertise of investors (IEOI), investors’ knowledge of neutral information (IKONI), investors’ motivation from an advisor (IMFA), and family.
Table 3: Rotated Component Matrix \(^a\)

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEOI1)</td>
<td>0.2240</td>
<td>0.1360</td>
<td>0.2350</td>
<td>0.898</td>
</tr>
<tr>
<td>IEOI2)</td>
<td>0.1980</td>
<td>0.3000</td>
<td>0.4300</td>
<td>0.695</td>
</tr>
<tr>
<td>IKONI1)</td>
<td>0.2980</td>
<td>0.1960</td>
<td>0.7220</td>
<td>0.417</td>
</tr>
<tr>
<td>IKONI2)</td>
<td>0.1870</td>
<td>0.2100</td>
<td>0.8950</td>
<td>0.223</td>
</tr>
<tr>
<td>IMFA1)</td>
<td>0.2300</td>
<td>0.8470</td>
<td>0.2510</td>
<td>0.104</td>
</tr>
<tr>
<td>IMFA2)</td>
<td>0.4210</td>
<td>0.7280</td>
<td>0.1410</td>
<td>0.273</td>
</tr>
<tr>
<td>IMFA3)</td>
<td>0.5020</td>
<td>0.6910</td>
<td>0.1520</td>
<td>0.202</td>
</tr>
<tr>
<td>IPOI1)</td>
<td>0.7620</td>
<td>0.3300</td>
<td>0.1590</td>
<td>0.278</td>
</tr>
<tr>
<td>IPOI2)</td>
<td>0.8430</td>
<td>0.2830</td>
<td>0.1940</td>
<td>0.143</td>
</tr>
<tr>
<td>IPOI3)</td>
<td>0.8350</td>
<td>0.2810</td>
<td>0.2350</td>
<td>0.159</td>
</tr>
</tbody>
</table>

Notes: \(^a\)Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
Rotation converged in 6 iterations
Table 4: Pearson Bivariate Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>IPOI</th>
<th>IEOI</th>
<th>IKONI</th>
<th>IMFA</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPOI</td>
<td>1</td>
<td>0.548**</td>
<td>0.550**</td>
<td>0.743**</td>
<td>0.201**</td>
</tr>
<tr>
<td>IEOI</td>
<td>1</td>
<td>0.696**</td>
<td>0.549**</td>
<td>0.066</td>
<td></td>
</tr>
<tr>
<td>IKONI</td>
<td>1</td>
<td>0.556**</td>
<td>0.106</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMFA</td>
<td>1</td>
<td>0.123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

IPOI = Investment propensity of investors
IEOI = Investment expertise of investors
IKONI = Investors’ knowledge of neutral information
IMFA = Investors’ motivation from an advisor

5 Testing of Hypotheses

In this section, we present the empirical findings on the relationships between investment expertise of investors (IEOI), investors’ knowledge of neutral information (IKONI), investors’ motivation from an advisor (IMFA), Family, and investment propensity of investors (IPOI).

Positive relationships between i) IEOI and IPOI, ii) IKONI and IPOI, iii) IMFA and IPOI, and iv) Family and IPOI were found (see Table 5); that is, investment expertise of investors, investors’ knowledge of neutral information, investors’ motivation from an advisor, and family are the predictors of investment propensity of investors to invest in the Indian real estate market.
Table 5: Regression Coefficients $^{a,b,c}$

\[
R^2 = 0.598; \text{ SEE } = 0.640; F = 75.17; \text{ ANOVA's Test Sig. } = 0.000
\]

Regression Equation: \( \text{IPOI} = -0.113 + 0.113 \text{ IEOI} + 0.116 \text{ IKONI} + 0.590 \text{ IMFA} + 0.214 \text{ Family} \)

<table>
<thead>
<tr>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients $^c$</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B</strong></td>
<td><strong>Std. Error</strong></td>
<td><strong>Beta</strong></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-0.113</td>
<td>0.065</td>
</tr>
<tr>
<td>IEOI</td>
<td>0.136</td>
<td>0.065</td>
</tr>
<tr>
<td>IKONI</td>
<td>0.116</td>
<td>0.065</td>
</tr>
<tr>
<td>IMFA</td>
<td>0.590</td>
<td>0.056</td>
</tr>
<tr>
<td>Family</td>
<td>0.214</td>
<td>0.090</td>
</tr>
</tbody>
</table>

$^a$ Dependent Variable: IPOI  
$^b$ Independent Variables: IEOI, IKONI, IMFA, and Family  
$^c$ Linear Regression through the Origin

SEE = Standard Error of the Estimate  
IPOI = Investment propensity of investors  
IEOI = Investment expertise of investors  
IKONI = Investors’ knowledge of neutral information  
IMFA = Investors’ motivation from an advisor

Note that:  
- A test for multicollinearity was performed. All the variance inflation factor (VIF) coefficients are less than 2.50 and tolerance coefficients are greater than 0.46.  
- 59.8% ($R^2 = 0.598$) of the variance in the degree of IPOI can be explained by the degree of Family, IEOI, IMFA, and IKONI.

As shown in Table 5, analysis of variance (ANOVA) test is also significant at 0.000.
6 Discussion, Recommendations, Limitations, and Future Research

6.1 Discussion

The main purpose of this study was to examine the perceived factors that positively influence the Indian propensity to invest in the real estate market. This was done by surveying a sample of real estate investors from Punjab area of India. The results show that the perceived investment propensity of investors is positively correlated with investment expertise of investors, investors’ knowledge of neutral information, investors’ motivation from an advisor, and family. The findings of this study lend some support to the findings of Al-Tamimi [14], Gill and Biger [1, 7] and Gill et al. [15].

Table 6 describes the previous authors’ findings related to the factors that influence investment propensity/decision of investors.

Table 6: Previous Findings Related to Factors that Influence Investment Propensity/Decision of Investors

<table>
<thead>
<tr>
<th>Author</th>
<th>Factors that Influence Investment Propensity/Decision of Investors</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nagy and Obenberger</td>
<td>►Found that recommendations from family members and friends impact on the investment decisions of investors.</td>
<td>USA</td>
</tr>
<tr>
<td>[12]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Al-Tamimi</td>
<td>►Found that family members’ opinion has a positive influence on investment behavior.</td>
<td>United Arab Emirates (UAE)</td>
</tr>
<tr>
<td>[14]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gill and Biger</td>
<td>►Found a positive relationship between Canadian investors’ investment expertise and Canadian investors’ propensity to invest in the Indian real</td>
<td>Canada</td>
</tr>
</tbody>
</table>
Gill and Biger [7] found that investors’ investment expertise, investors’ knowledge of neutral information, and investor consultation of an advisor positively impact on the investment decision of investors.

Gill et al. [15] found that investment expertise of investors, investors’ knowledge of neutral information, investor consultation of an advisor, and family positively impact on the investment decision of investors.

Figure 1: Factors that Influence Indian Propensity to Invest in the Real Estate Market
Figure 1 shows the factors that positively influence the Indian propensity to invest in the real estate market. The overall ranking of the factors is as follows:

i) IMFA (Beta = 0.590),
ii) IEOI (Beta = 0.136),
iii) IKONI (Beta = 0.116), and
iv) Family (Beta = 0.107).

In conclusion, investment expertise of investors, investors’ knowledge of neutral information, investors’ motivation from an advisor, and family positively influence the Indian propensity to invest in the real estate market.

6.2 Recommendations for Investment Advisors

The significant positive correlations between i) investment expertise of investors and Investors’ motivation from an advisor and ii) investor’s knowledge of neutral information and Investors’ motivation from an advisor (see Table 4) show that Indian real estate investors are risk-averse. To reduce the perceived investment risk, they seek consultants’ advice before investing in real estate market. Thus, Indian investors can be considered conservative investors. Therefore, investment advisors must be careful when they provide investment advice to invest in the Indian real estate market. That is, investment advisors should not suggest risky real estate investments to conservative investors because it may create ethical issues.

6.3 Limitations

The present study asks for responses from fixed format, set-questions survey tools, which could direct questions to the exclusion of providing additional input. Maturation of participants can also affect the survey response rate. Maturation of
participants, in the context of this research, means that some of the research participants may be on holidays. However, a short study period (four weeks) limited any negative effects from maturation.

The practical implications of this study are that if Indian investors perceive that:

i) Their investment expertise is higher, their propensity to invest in the real estate market is also higher.

ii) Their knowledge of neutral information is higher, their propensity to invest in the real estate market is also higher.

iii) Motivation from an advisor is higher, their propensity to invest in the real estate market is also higher.

6.4 Future Research

The present study is limited to perceptions and intentions. The relations found may suffer from common factor bias, as the questions were parts of the same data collection instrument. Future research is needed to test the relation of investment propensity of investors to actual investment in the real estate market through longitudinal data. Other variables such as age, education, gender, etc., should also be used in the future study.
References


Factors that Influence Indian Propensity ...


