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Research Article

Do Personality Traits Impact Consumers' Confidence Towards the Economy? An Indian perspective

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ABSTRACT

Policymakers across the world have been tracking consumer confidence to guide policy associating it with important macroeconomic variables such as the national income, inflation and employment. However, there is a dearth of studies that explore how consumer confidence is formed, and in particular, whether they are driven by non-rational factors and to what extent. This study argues that an association of personality traits with consumer confidence can be a strong indicator that consumer confidence towards the economy is affected by non-rational factors. Using a modified version of the Reserve Bank of India's methodology to measure consumer confidence and the Big Five Inventory for gauging personality traits (*n=267*), the study finds that consumers' perception of past economic performance is associated with conscientiousness, while consumer perception of future economic performance is associated with conscientiousness and neuroticism. The results also indicate that personality can account for any explanatory power that the demographic variables may have.

KEYWORDS: *Big Five Personality Traits, Consumer Confidence Index, Current Situation Index, Future Expectations Index*

1. INTRODUCTION

The sentiments of agents in an economy have been known to have important consequences for macroeconomic variables for a long time. Indices to capture such sentiments have been present for decades too. The sentiment of our concern, consumer confidence, has seen attempts to measure at least since 1969 when the Conference Board started producing indices of consumer confidence, as noted in Batchelor and Dua (1998). The Michigan Index of Consumer Sentiment, developed by Katona and other researchers in the Survey Research Centre of the University of Michigan is another popular index, that has been in existence for about half a century (Linden, 1982). Several studies have found a significant relationship between consumer confidence and important macroeconomic variables. See Mazurek and Mielcová (2017) and Sorić (2018) for GDP, and Li and Qiu (2013) and Raaij and Gianotten (1990) for inflation and savings as covariates.

Over the years, policymakers have taken increasing notice of such indicators in their decision making. The European Commission's Economic Sentiment Indicator (Gelper and Croux, 2010), the OECD's consumer confidence indicator and Composite Leading Indicator (OECD, 2021), and Bank of Indonesia's indicators have consumer confidence aspects. The index of our concern is the 'Consumer Confidence Index', produced by the Indian central bank, the Reserve Bank of India (RBI). The RBI has been conducting the Consumer Confidence Survey in several cities in India since 2010 based on which, two indices are constructed, the 'Current Situation Index', which investigates how consumers perceive economic perceptions in the last one year, and the 'Future Expectations Index', which looks into the expectations that consumers have about major economic variables in the next one year.

The importance of gauging consumer confidence in policymaking can be two-fold, as the chapter points out later. The relative merit of the two ways consumer confidence enters macroeconomic processes is dependent on our view of the behaviour of economic agents. The economy is essentially populated by individuals whose actions not just affect but constitute macroeconomic behaviour. The current understanding in both research and policy acknowledges the micro-foundations of macroeconomic behaviour formally. As McCombie and

Negru (2014) notes, New Classical thinking of deriving macroeconomic phenomena from the behaviour of rational agents and New Keynesianism agree on this. Most macroeconomic models used by policymakers assume rationality.

The study argues whether the assumption of rationality of agents has a bearing on what questions shall be asked of consumer confidence and in relation to which variables shall it be deliberated. The chapter also discusses why personality traits may be important to consider in relation to consumer confidence in the case of both paths.

Before proceeding further, a discussion of the two ways in which consumer confidence is important needs to be highlighted. We begin with the first, what we term the ‘information path’. This path relies on the fact that agents’ fate depends on macroeconomic outcomes and vice versa. Therefore, they have a direct incentive to gather information, about the economy (Acemoglu and Scott,1994; Delorme et al., 2001). Policy makers can then use this information (as many already do). But if agents are irrational, this information may be biased. Thus, different strategies may be needed to see if irrationalities exist. This study adopts one such strategy. If the agents are irrational, then consumer confidence and other expectations may systematically vary with factors that are not relevant for rational agents. A major set of such variables are personality traits. It is widely accepted in the psychology literature, as shall be discussed later, that the kind of information one deems relevant and how one reacts to such information depend on one’s personality (Mitchell and Thompson, 1994). None of this should matter for rational agents, but for irrational agents, significant relationships may be expected.

The second is the ‘action path’, which is concerned with how the information acquired affects the decisions of the agents as against the ‘information’ path which is concerned with the formation of beliefs or expectations. Agents having different personalities may react differently to information: do extroverts reduce spending more during downturns than introverts? It would be interesting if they did. Thus, policy makers may target policies and design survey instruments based on this additional information.

This study is thus, relevant for both a fundamental understanding of microeconomic and individual behavioural variables affecting macroeconomic outcomes and for policymakers who may want to consider behavioural factors in their decisions, as further research in this area is conducted.

2. LITERATURE REVIEW

Before delving into the literature, it is pertinent to mention the theory on which this study defines personality traits, the Big Five theory of personality. It is a five-factor model of personality, comprising openness, conscientiousness, extraversion, agreeableness and neuroticism. Openness or 'openness to experience' is the trait of being receptive to new ideas and being inventive or artistic (McCrae, 1993). Conscientiousness is the trait of having a propensity to follow socially prescribed norms of impulse control, to be goal-directed, to plan and to be able to delay gratification (Roberts et al., 2009). Extraversion involves successful adaptation through interpersonal relationships or dominance, mastery and achievement (Watson and Clark, 1997). Agreeableness entails being likeable, pleasant, and harmonious in relationships with others (Graziano and Tobin, 2009). Lastly, neuroticism is the tendency to respond to threat, frustration or loss with negative emotions (Lahey, 2009).

While not much attention has been paid to the connection between personality and consumer confidence in the literature, some studies relate variables of individual agents to their expectations and attitudes. There is also a significant mention of relationships between variables that are related to aspects of consumer confidence and personality traits in the literature. The question of what kind of information is factored in by agents is nuanced. Ramalho et al. (2011), for example, finds that in Portugal, consumer confidence is largely explained by variables that should matter: economic performance, entrance in the Euro-zone, electoral conditions etc. But it is possible that not only the kind of information that is being attended to but also the way it is presented affects the confidence of consumers. Hollanders and Vliegenthart (2011) finds that media attention to economic developments is positively associated with consumer confidence, but more negative news is negatively associated with consumer confidence. More recently, Svenson et al. (2017) finds that the relationship between exposure to ambiguous news and changes in consumer confidence is mediated by economic uncertainty. This may be related to the question of personality as people with different personality traits may be predisposed to seek different sources of information or media and may thus exhibit different levels of confidence behaviour.

In fact, the literature abounds with findings that show a relationship between personality and response to different kinds of information. One way this happens is through 'affects'. In psychology, 'affect' refers to how a person experiences positive or negative states emotionally (Gross et al. 1998). Affect is related to both personality and people’s reaction to the news, which as discussed, has a bearing on consumer confidence. Meyer and Shack (1989) note the structural similarities between affect and personality.

It has been long established in the psychological literature that personality is associated with affect. Early studies such as Costa and McCrae (1980), Emmons and Diener (1985), Tellegen (1985), Larsen and Katelaar (1989), Rustling and Larsen (1997) among others, have all consistently found neuroticism to be associated with negative affect while extraversion to be associated with positive affect. Meyer and Shack (1989) postulate that an implication of this may be shared dimensions in the common mood-personality space between extraversion, which strengthens the reason to believe that personality is closely related to consumer confidence as affect is associated with how agents react to information. Noguchi et al. (2016) find that positive affect is positively associated with attention to positive news. It also reports that, attention to positive news is also associated with extraversion and optimism. Negative affect, on the other hand, is associated with attention to negative news. Attention to negative news, as expected, is affirmed to be associated with neuroticism. Attention to negative news is negatively related to optimism. Findings in McNiel and Fleeson (2006) suggest that these associations may not just be correlations, but causal relationships. Even when just asked to act in an extraverted manner, participants reported higher positive affect scores, for instance.

Personality may be associated with consumer confidence in other ways too. Inekwe (2020) relates risk aversion to consumer confidence for example, and risk aversion varies with personality. Agreeableness is negatively related to risk aversion, while conscientiousness and openness are positively associated with risk aversion (Aumeboonsuke & Caplanova, 2021). Neuroticism and openness are found to be related to risk aversion in Ahmad (2020). Niszczota (2014) finds that neurotics in less risky foreign equities. Personality, similarly, also affects investment decisions via behavioural biases (Yadav & Narayanan, 2021).

On the basis of the literature reviewed, this study seeks to investigate the identified gap. Furthermore, we wish to see if currently used demographic variables in RBI's survey provide enough information, as it does not account for personality. Accordingly, the following hypotheses have been framed:

H_a1: Openness, conscientiousness, extraversion, agreeableness and neuroticism are associated with consumer confidence

H_a2: Demographic variables (age, gender and family income) provide increased explanatory power compared to the personality traits.

3. METHODOLOGY

To investigate the relationship between personality and consumer confidence, a primary data study has been undertaken using the Consumer Confidence Survey, developed by the RBI. While the RBI does provide an extensive dataset, the survey data does not contain personality variables for the respondents, prompting us to collect data ourselves.

3.1. Consumer Confidence Survey

Currently, the RBI surveys 13 major cities of India. It includes questions regarding the perception of the respondents on macroeconomic variables: the general economic situation, employment scenario, price levels, household income and household spending. Similar surveys in other countries include somewhat similar questions (see RBI, 2019). The respondents are asked the direction of change, according to them, of the variables in the present compared to one year ago, and the expected direction of change one year from the present compared to the present. The former is used to calculate the Current Situation Index (CSI) while the latter is used to calculate the Future Expectation Index (FEI). As described in RBI (2021), for the CSI, economic situation, employment, price level and income are considered 'negative sentiments' while spending is considered a 'positive sentiment'. For the FEI, economic situation and price level are considered 'negative sentiments' while the rest are considered 'positive sentiments'. Each positive factor has a score of +10 while each negative factor has a score of -10. For both the indices, the formula for calculation is given as,

$$Overall\ Index = Average(100 + Net\ Responses\ of\ Selected\ Factors) \quad (1)$$

The selected factors for the CSI are economic conditions, household circumstances, income, spending and price level, while for the FEI they are economic conditions, income, spending, price level and employment. The Net Response is calculated by using the following formula,

$$Net\ Response = Positive\ perceptions\ (\%) - Negative\ Perceptions(\%) \quad (2)$$

The current study seeks to find how consumer confidence varies across individuals, while the two indices are calculated for the sample as a whole. Therefore, the indices are not calculated by finding the averages, but instead, the scores (+10 or -10) of each factor for each individual are summed to get the individual 'current score' and 'future score'.

3.2. Big Five Questionnaire

The study uses John and Srivastava (1999)'s 44-item questionnaire for Big 5. Each item asks the respondent to rate on a Likert scale from one to five, the extent to which she agrees to the statement in the item. An example of a statement from the questionnaire is "I see myself as someone who is talkative" (for extraversion). In this manner, the questionnaire contains eight questions for extraversion, nine each for agreeableness and conscientiousness, eight for neuroticism and ten for openness. The scores of each item are averaged (after correcting the negative statements by using the formula, $6 - statement\ score$) to get the scores for each factor.

3.3. Data

The scope of this study includes every Indian citizen above the age of 21, which coincides with the population targeted by the RBI for its survey too. The questionnaire was circulated online. The sample, although not representative, is inclusive, covering 20 states, and has a size of 267. This size excludes unengaged respondents, which were detected based on having a standard deviation of zero in the Likert scale questions. None of the respondents have any missing data. There are roughly equal representation of men (55.8%) and women (44.20%); covering different income groups and also covering a good range for the age variable ($\bar{X} = 34.10, Med. = 30\ and\ Mo = 22$). The majority (95.50%) of the respondents have graduation and/or higher educational background.

3.4. Methodology

The reliability of the Big 5 instrument is calculated for the sample taken, using Cronbach's alpha scores for the five items. The reliability for the future and current scores for consumer confidence has not been tested because they do not include reflective statements.

For relating the personality factors with the 'current score' and the 'future score', four multiple linear regressions: two with the future score and two with the past score as dependent variables are run. For each of the cases, two regressions: one with only the personality traits as the regressors and one with age, gender and family income added as regressors are considered. The regression equations of the four models can be described as:

$$Models\ 1\ and\ 2: Score_i = \beta_0 + X_i\beta_1 + \epsilon_{1i} \quad (3)$$

$$Models\ 2\ and\ 3: Score_i = \gamma_0 + X_i\gamma_1 + D_i\gamma_i + \epsilon_{2i} \quad (4)$$

Scores are the current and future scores, X are the Big 5 scores and D are demographic variables. These models are for hypothesis 1, with and without controls.

Further, a comparative analysis of these models is done to investigate if the demographic variables provide additional explanatory power in both cases separately, to help us test hypothesis H_a2. Model I is nested in Model III, while Model II is nested in Model IV. Conducting an analysis of variance allows us to compare these sets of models. A statistically significant difference in the performance of the models would indicate that the demographic variables commonly included in consumer confidence questionnaires contain information in addition to what is provided by personality traits. This provides us with a way to assess the importance of studying personality traits in relation to consumer confidence, vis-à-vis the commonly included demographic variables.

4. RESULT ANALYSIS AND DISCUSSION

All the factors have Cronbach's alpha scores less than 0.7 (Column one of Table 1) and present unreliable estimates Adadan and Savasci (2011). To remedy this, each item of the questionnaire was correlated with the average of all the items of its factor. All the items that were negatively correlated with the averages were removed to get a revised questionnaire. The new Cronbach's alpha scores after this correction are provided in the second column Table 1.

Table 1: Cronbach's Alpha Scores of the Revised Questionnaire

	Initial Reliability Score			**Revised Reliability Score**		
Personality Trait	**Cronbach's Alpha**	**The lowest value of 95% confidence interval**	**The highest value of 95% confidence interval**	**Cronbach's Alpha**	**The lowest value of 95% confidence interval**	**The highest value of 95% confidence interval**
Openness	0.72	0.68	0.76	0.90	0.89	0.92
Conscientiousness	0.62	0.55	0.69	0.86	0.84	0.89
Extraversion	0.65	0.58	0.72	0.77	0.72	0.82
Agreeableness	0.64	0.58	0.70	0.89	0.87	0.92
Neuroticism	0.67	0.60	0.73	0.79	0.75	0.83

Source: The Authors

Not only the point estimates, but the entire 95% confidence bands of the alpha estimates lie above 0.70 giving the confidence that the personality traits have been reliably measured.

4.1. Model I and Model II

In Model I, the current score was regressed on all the personality traits. Model II has 'future score' as the regressand. The results are provided in Table 2.

Table 2: Results of Models I and II

VARIABLES	**MODEL I**		**MODEL II**	
Regressand	Past Score		Future Score	
Regressor	**Estimate**	**t-Value**	**Estimate**	**t-Value**
Intercept	09.58**	02.48	-15.15**	-02.33

	(3.86)		(6.50)	
Openness	02.86 (1.95)	01.48	03.40 (3.29)	01.04
Conscientiousness	-04.45** (1.77)	-02.52	-06.76** (2.98)	-02.27
Extraversion	-01.52 (1.46)	-01.04	04.08* (2.47)	01.65
Agreeableness	00.63 (1.63)	00.39	-02.32 (2.75)	-00.84
Neuroticism	-1.40 (1.09)	-01.28	03.96** (1.84)	02.16
Figures in parentheses represent Standard Errors ****, **, and * represent 0.01, 0.0five and 0.10 level of significance respectively*				

Source: The Authors

Conscientiousness is found to be significantly associated with the 'current score' ($p < 0.05$), negatively. The other traits are not significant. The adjusted R-squared is understandably low at 5.12%, as factors other than the personality traits would obviously affect the scores. Commonly included demographic variables were added as regressors later. In Model II, conscientiousness and neuroticism are associated with 'future score' at the 5% level of significance. The former is negatively related while the latter is positively. Extraversion is positively associated 'future score' at the 10% level of significance. The adjusted R-score is low again, at 3.06%. Diagnostic tests for the Gauss-Markov assumptions were done, which were all satisfactory. Regardless, there is a possibility that other important variables are missing from the regressor. This model is thus compared with another model where demographic variables that are usually included in such surveys are included later on.

4.2. Model III and Model IV

In these models, in addition to the regressors included in the previous models, age, gender and family income are also included as regressors. The results are presented in Table 3.

Table 3: Results of Models III and IV

Regressand	**Past Score**		**Future Score**	
Regressor	**Estimate**	**t-Value**	**Estimate**	**t-Value**
Intercept	09.15* (05.48)	01.67	-05.81 (09.20)	-0.632
Openness	-02.52 (01.98)	01.27	03.38 (03.33)	1.016
Conscientiousness	-04.35** (01.82)	-02.39	-06.19** (03.05)	-2.031
Extraversion	-01.56 (01.47)	-01.06	04.31 (02.47)	1.748
Agreeableness	00.91 (01.69)	00.53	-02.83 (02.83)	-0.998
Neuroticism	-01.46 (01.12)	-01.31	03.90** (01.87)	2.083
Age	-0.08 (00.08)	-1.02	00.02 (00.13)	0.119
Gender	0.92 (01.79)	0.52	-01.87 (03.00)	-0.623
Annual Income	1.10 (01.15)	0.96	-03.57* (01.93)	-1.851
Figures in parentheses represent Standard Errors ****, **, and * represent 0.01, 0.0five and 0.10 level of significance respectively*				

Source: The Authors

Once again, in model III, only conscientiousness is associated with the 'current score', negatively, at the 5% level of significance. None of the additionally included demographic variables are significant. For Model IV, conscientiousness and neuroticism remain significant at the 5% level. Annual family income too is significantly associated with 'future score' at the 5% level, negatively. The diagnostic tests for these models were satisfactory too.

4.3. Comparing the Models

Models I and III and models II and IV were compared against each other. Age, gender and annual family income are usually asked in surveys of consumer confidence, including the RBI's Consumer Confidence Survey. Thus, comparing their performance against personality traits can indicate the importance of personality traits in studying consumer confidence. While the adjusted R-squares of the models including only the personality traits are not very high, the case is about the same even when these demographic variables that are usually included are added to the models. To see whether the demographic variables add value to the personality-only models, they were formally compared. The analysis of variance F-test was used to compare Model I and Model III first and then Model II and IV. The results are provided in Table 4.

Table 4: Comparison of Models

Model	**Residual Degrees of Freedom**	**Residual Sum of Squares**	**Degrees of Freedom**	**Sum of Squares**	**F-Statistic**	**p-Value**
COMPARISON OF MODELS I AND III						
Model 1	226	37196	3	314.34	0.63	0.59
Model 3	223	36882				
COMPARISON OF MODELS II AND IV						
Model 2	226	105630	3	1763	1.26	0.29
Model 4	223	103867				

Source: The Authors

The results show that Model III does not add much explanatory power to Model I, as the p-value indicates insignificance. The p-value for comparison of model II and IV indicates insignificance here too.

Earlier studies have not studied how personality traits are associated with consumer confidence directly, and thus, no direct comparison of our results with those from the literature can be made. We do provide indirect comparisons. While from the literature, it could indirectly be postulated that perhaps extraversion and neuroticism would be associated with consumer confidence in our models not much support is found for the case of extraversion.

Once demographic variables are taken into account, for the 'future score', conscientiousness and neuroticism are significantly associated ($p < 0.05$) along with annual family income. On the other hand, for 'current score', conscientiousness is significantly associated. None of the demographic variables shows significance.

It is well known that conscientious people exhibit great aversion to personal risk, as discussed in the review of the literature. The situations of risk generated by the loss of income, unemployment etc. may thus affect conscientious people severely. On the contrary, conscientiousness is negatively associated with negative affect (Javaras et al., 2012). This would suggest that the observed association between conscientiousness and 'past score' may not be driven by psychological affect.

The positive association of conscientiousness with 'future score' may similarly be associated with an aversion to personal risk. The more surprising result is the positive association with neuroticism, even though those who score high on neuroticism usually exhibit greater levels of negative affect. 'Emotional stability' (as opposed to neuroticism) is positively associated with optimism when controlling for all the other Big Five personality traits (Sharpe et al., 2011). This result thus appears to contradict past literature, although no direct ways of comparison are available.

Regardless of the explanatory power of the personality traits, the study finds that the variables that are commonly used in consumer confidence surveys, such as age, gender and family income, do not add much to the explanatory power that personality traits alone provide. Thus, the importance of personality traits in relation to individual levels of consumer confidence cannot be neglected.

5. CONCLUSION

The study of how consumer confidence is associated with personality was motivated in the introduction by noting that if any significant association is found at all, this may indicate that the formation of consumer expectation may at least partially be non-rational. However, if the personality traits differ systematically across demographic variables, and relevant demographic variables are associated with the economic condition of a person, then any observed association between personality and consumer confidence can be rational and driven by material conditions instead of psychological factors.

The study is based on primary data of individual consumer confidence (based on the work by the Reserve Bank of India) and their Big Five personality traits. It is found that even after controlling for demographic variables that are commonly included in consumer confidence surveys, some of the personality traits remain statistically significantly associated with 'past score' and 'future score', which constitute consumer confidence, based on our modified version of the RBI's methodology. In fact, the demographic variables provide no statistically significant additional explanatory power, compared to models where only the personality traits are included as regressors.

Several implications arise from this study, for both business and policy. Consumer confidence drives consumer behaviour to quite an extent. The spending decisions overall, as well as for different categories of products depend on the confidence that consumers have over their economic conditions, as well as those of people around them. The fact that consumer confidence varies systematically, means that there is scope for valuable information that can be extracted based on the personality of the consumer. For businesses, this means that tracking the personality of customers may yield valuable insights on who to approach and how for sales, and who to ignore under which circumstances. For example, conscientious customers may be less inclined to purchase extravagant products during times of economic downturn, as their perception of both the past and future economic performance appears to be discouraging. People scoring low on conscientiousness can perhaps be better approached. For policymakers, this implies that conventionally used rational models of expectations may be inadequate. Capturing personality data may help them decide which statistics represent rational concerns of consumers and which are only non-rational reactions. The results may also help explain which personality sub-group of the population is driving which results in consumer confidence surveys. This can serve two purposes. Firstly, policies that improve perceptions of those personality sub-groups may be selected in a targeted manner. Secondly, the questionnaires may be re-designed to account for personality differences and adjusted to yield a more accurate picture of economic outcomes.

As there is little to no precedence of investigating how personality is systematically associated with consumer confidence towards economy, this study is only a first step in this direction. Future studies may look into the causes and mechanisms behind this study's findings. Several explanations have been provided informally in this study, but they are only speculative. Is psychological "affect" actually at play or is it driven by some other mechanism such as risk aversion, for instance. These need to be adequately explored.

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