

Project : ISI-RBI Research Collaboration (2014-15)

Sampling & Official Statistics Unit (SOSU), Indian Statistical Institute,
Kolkata

Team:

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- **Ms. Ankita Dey-**
Present: Ph.D Student, Department of Statistics, University of Calcutta, Project Linked Personnel, SOSU, ISI Kolkata
Past: Project Linked Personnel, SQC&OR Unit, ISI Kolkata (August 2012-March 2014)
Academic Background: M.Sc in Statistics from University of Calcutta in 2012, B.Sc (Honours) in Statistics, University of Calcutta in 2010.
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Present: Project Linked Personnel, SOSU
Academic Background: M.Sc in Economics from Kalyani University in 2013, B.Sc (Honours) in Economics from Kalyani Mahavidyalaya in 2011.
- **Ms. Aditi Das-**
Present: Business Analyst, Cigna Health Solutions
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- **Mr. Sambit Banerjee-**

Present: M.Sc Student in Applied Statistics and Informatics, IIT Bombay

Past: Summer Intern (May-July 2014), SOSU, ISI, Kolkata.

Academic Background: B.Sc (Honours) in Statistics from St.Xavier's college, Kolkata in 2013.

- **Mr. Sayantan Dawn-**

Present: M.Sc Student in General Economics, Madras School of Economics.

Past: Summer Intern, SOSU, ISI Kolkata (2014)

Academic Background: B.Sc in Economics from Narendrapur Ramkrishna Mission Residential College in 2013

Special Advisors:

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- Dr. Sunil Bhogal, Assistant Professor, Alliance University, Bangalore;
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Agenda:

Main areas (Conducted by the Reserve Bank of India) to be revisited:

1. Inflation Expectation Survey of Households (IESH)
2. Consumer Confidence Survey (CCS)
3. Industrial Output survey (IOS)
4. Asset Price Monetary System (APMS)
5. Credit Condition Survey (CrCS)
6. Order Books, Inventory, Capacity Utilisation Survey (OBICUS)
7. Services and Infrastructure Outlook Survey (SIOS)

Agenda:

- Revisiting the index methodologies, considering weighting and selection of indicators.
- Rephrasing of questionnaires
- Sampling methodology

- Estimation of standard error estimates

Analyses Done:

1. Consumer Confidence Survey(CCS):

The Consumer Confidence Survey provides an assessment of respondents' perception spread across six metropolitan cities viz., Bengaluru, Chennai, Hyderabad, Kolkata, Mumbai and New Delhi. The survey captures qualitative information from respondents about their perceptions on general economic conditions and own financial situation on a 3-point scale viz., improve, remain same or worsen. The assessments are analysed in two parts - current situation as compared with a year ago and expectations for a year ahead

- i.* Estimation of standard error by the use of half-sample method (*Dr. Kajal Dihidar, Aditi Das*)
- ii.* Rephrasing of Questionnaire has been done on the basis of the correlation between current situation index and future expectation index. (*Dr. Debasis Sengupta, Dr. Diganta Mukherjee, Arini Bhattacharjee*)
- iii.* Possible use of Q8 instead of Q10 to capture "non-essential spending" has been explored with negative results. (*Dr. Debasis Sengupta, Dr. Diganta Mukherjee, Arini Bhattacharjee*)
- iv.* Using "spending" as "positive" factor for measuring consumer confidence.
- v.* Latent class analysis: The questionnaire has been modified by the techniques of LCA.
Dr. Sunil Bhogal, Alliance University, Bangalore, visited our institute to help on this issue. (*Dr. Sunil Bhogal, Ankita Dey, Aditi Das, Arini Bhattacharjee*)
- vi.* Current Situation Index (CSI) and Future Expectation Index (FEI):
To overcome the difficulty of interpreting the qualitative responses, results are converted into a single quantitative number. The average net responses of selected factors are obtained. 100 is added to this term to get the index. (*Dr. Debasis Sengupta, Dr. Diganta Mukherjee, Arini Bhattacharjee*)

- vii. Matching PFCE with CCS: The confidence indices (CSI & FEI) are matched with the PFCE data to track the directional change. It is found that CSI matches better with PFCE than FEI as far as change in direction is concerned. *(Dr. Diganta Mukherjee, Ankita Dey)*

2. Inflation Expectation Survey of Households(IESH):

IESH has been conducted by RBI on quarterly basis since September, 2005. The main purpose of survey is: (i) to estimate the household inflation expectation at population level, (ii) how inflation expectation changes over time.

- i. Use of ARMA process for inflation experience across CPI-IW and IESH cities *(Dr. Ayanendranath Basu, Dr. Diganta Mukherjee, Ankita Dey)*
- viii. Analysis of respondents grouped into "informed" (who are correctly reporting the current inflation) and "mis-informed" (who are not correctly assessing). *(Dr. Diganta Mukherjee, Aditi Das, Sambit Banerjee)*
- ii. Sampling plan modification: The approximation of proportionately allocated sample size has been modified. *(Dr. Diganta Mukherjee)*
- iii. A detailed note on the performance of Median Estimation Systematic Sampling for the IESH has been prepared. *(Dr. Kajal Dihidar)*

3. Industrial Outlook Survey(IOS):

RBI is conducting the survey on a quarterly basis since 1998. It gives insights into the perception of the private corporate sector engaged in manufacturing activities about their own performance and prospects. It covers selected non government non financial private and public limited companies with a good size.

- i. Matching of Business Expectation Index (BEI) with the actual IIP data: Graphical comparison of BEI with actual General Index of IIP has been done. *(Dr. Diganta Mukherjee, Ankita Dey)*
- ii. Grouping of respondents by "Informed" (who are correctly assessing the IIP change from the previous quarter) and "uninformed" to see whether the "informed" people are more appropriately predicting the

future than the “uninformed” people. (Dr. Diganta Mukherjee, Ankita Dey, Arini Bhattacharjee)


- iii. Checking of biasness: Four indicators are created for both the assessment and expectation quarters in Industrial Outlook Survey. The number of informed respondents, who are correctly assessing the changes in IIP in the current quarter as well as predicting the change correctly for the succeeding quarter, is obtained. The matching proportion of uninformed respondents is also obtained. (Dr. Diganta Mukherjee, Arini Bhattacharjee, Ankita Dey)
- iv. A 3*3 matrix is formed containing three responses (Better, No Change, Worsen) of current assessment (in row) and future expectation (in column). For each round a column diagram is drawn showing the frequency matrix. There is a clear evidence of occurrence of "**positive biased responses**" in all rounds. (Dr. Debasis Sengupta, Dr. Diganta Mukherjee, Arini Bhattacharjee)
- v. Regression model fitting: A linear model has been considered to assess the impact of different factors such as Assessment index based on different indicators, IIP change from the previous quarter, company size, company’s situation in capacity utilization, industry group etc on the expectation index.
From the regression results, we found that the variables “capacity utilisation” & “industry size” have no significant impact on the response variable “Expectation Index”. Only the Assessment Index, IIP change & Industry Group (some of them) are significant.
(Dr. Diganta Mukherjee, Ankita Dey)

4. Field Work: Survey and Post Verification Survey of CCS & IESH with the RBI officials and Surveyers of agencies.

5. Validation of APMS methodology/data

The Reserve Bank collects data on house prices as reported in housing loan transactions by banks under its Asset Price Monitoring System (APMS). Such data on asset prices are considered important for macro-policy. In the context, using these data for house price index (HPI) compilation and releasing in public domain, several statistical issues need to be examined:

- a) Robustness of APMS data in terms of coverage/reporting and consequent sensitivity analysis for compilation of the price index/ other parameters derived from this data as only a part of housing transactions are financed by Banks.

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- b) Methodological issues-(Laspeyre's method *via-a-vis* other methods, selection of cities for all-India HPI, weighing diagram for city-wise and all India HPI)
 - c) Statistical compilation of affordability and regulatory parameters/ ratios for monitoring (e.g. House-price to income ratio, MI to income ratio, loan to value ratio).

Reports related to ISI works on the project, published by the Reserve Bank of India:

- ❖ RBI Monthly bulletin for September 2014:
http://rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=15122