Practical Aspects of Expectations Surveys in an Emerging Economy: India’s IESH Survey

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Data

Inflation Expectations Survey of Households (IESH): Concurrent with a number of emerging countries

- IESH is a quarterly survey started in 2005Q3, covering 4000 households from 12 cities.
  - 500 households each from Chennai, Jaipur, Kolkata, and Mumbai.
  - 250 households each from Ahmedabad, Bangalore, Bhopal, Delhi, Guwahati, Hyderabad, Lucknow, and Patna

- Starting from 2012Q4, four new cities are added with 250 households each, bringing the total sample size up to 5000.
  - Bhubaneswar, Kolhapur, Nagpur, and Thiruvananthapuram

- Since 2005, the survey went through several significant changes before it was stabilized in 2008Q3. We use the data from 2008Q4 to 2018Q3.
Data

Inflation Expectations Survey of Households (IESH)

- For each household, we have the city of residence. We also have the respondent’s gender and age, as well as the employment category of the main earning member of the household:
  - Financial sector employees; other employees; self-employed; housewife; reitred persons; daily workers; others.
- From each household, we have 3-month and 1-year ahead qualitative inflation expectations of general items, food products, non-food products, household durables, housing, and services.
- Qualitative expectations are give as one of the following: prices increase more than current rate, similar to current rate, less than current rate, no change in prices, decline in prices.
Examination of the Aggregates
IESH Quantitative Inflation Expectations: Actual vs. Forecasts

![Graph showing Actual Inflation Rate vs. Inflation Perception over time with Three-Month-Ahead and One-Year-Ahead Expectations.](image)
Examination of the Aggregates: India
Comparing SPF Short-Run Forecasts vs. Household Expectations

India: Household Expectations, Professional Forecasts, and Actual Inflation Rate

- Actual Inflation Rate
- Mean from IESH Survey
- Mean from India SPF
• “And yes, ...... please junk inflation expectations survey before it causes more damage.

• Making repo policy on the basis of the inflationary expectations survey is exactly the same as making policy according to a random noise generator.

• Pure junk was never defined better than the results of the RBI expectations survey, the very same that the RBI uses for information on anchoring inflationary expectations.

• .......the junk RBI expectations survey (when will they stop?)”

- Surjit Bhalla (2014)
Examination of the Aggregates: United States
Comparing SPF Short-Run Forecasts vs. Household Expectations

US: Household Expectations, Professional Forecasts, and Actual Inflation Rate

- Actual Inflation Rate
- Mean from Michigan Survey
- Mean from US SPF
Adjustments in Michigan Surveys for Outliers

- Since 2015Q1, the actual numeric responses from these respondents are recorded. Over the period from 2015Q1 to 2017Q2, the mean and median of the reported expectations are 31% and 25% respectively, both much higher than 16%.

- This evidence is similar to the University of Michigan’s consumer sentiment survey over 1978 - 2014. The Michigan survey records one-year-ahead quantitative inflation expectations up to a rate of inflation 50%. Out of around 8800 responses above 16%, 4700 are above 20%; 1900 are above 30%; and 1400 are above 40%. Keep in mind that on average, the inflation rate in the US is much lower than that in India.

- Thus, the extreme responses found in IESH is not unusual even in established household surveys.
Examination of the Aggregates
Regional Variations in IESH Expectations
Examination of the Distributions: 2008Q3 to 2013Q2
IESH Perceptions: All Cities (solid: actual; dashed: mean perception)
Examination of the Distributions: 2013Q3 to 2018Q1
IESH Perceptions: All Cities (solid: actual; dashed: mean perception)
Balance Statistics from Reported Qualitative Responses, Lahiri et al. (IJF 2019)
Explaining Errors in Perceptions/Expectations

- As an attempt to explain errors in perception, we regress the difference between actual inflation rate and perceived inflation rate (error in perception) on:
  - City dummies
  - Quarter dummies
  - Age group dummies
  - Gender dummy
  - Employment category dummies
Explaining Errors in Perceptions

<table>
<thead>
<tr>
<th>Variable Group</th>
<th>Variable</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group</td>
<td>25 to 30 years</td>
<td>-0.025</td>
<td></td>
<td>-0.048</td>
<td></td>
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<tr>
<td></td>
<td>30 to 35 years</td>
<td>-0.137**</td>
<td></td>
<td>-0.186***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35 to 40 years</td>
<td>-0.194***</td>
<td></td>
<td>-0.257***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 to 45 years</td>
<td>-0.218***</td>
<td></td>
<td></td>
<td>-0.309***</td>
</tr>
<tr>
<td></td>
<td>45 to 50 years</td>
<td>-0.411***</td>
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<td>-0.439***</td>
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<td></td>
<td>50 to 55 years</td>
<td>-0.463***</td>
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<td>-0.566***</td>
</tr>
<tr>
<td></td>
<td>55 to 60 years</td>
<td>-0.594***</td>
<td></td>
<td></td>
<td>-0.604***</td>
</tr>
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<td></td>
<td>60 years and above</td>
<td>-0.760***</td>
<td></td>
<td></td>
<td>-0.775***</td>
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<td>Gender</td>
<td>Female</td>
<td></td>
<td>-0.295***</td>
<td></td>
<td>0.032</td>
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<tr>
<td>Employment Category</td>
<td>Other Employees</td>
<td></td>
<td></td>
<td>-0.092</td>
<td>-0.195***</td>
</tr>
<tr>
<td></td>
<td>Self-Employed</td>
<td></td>
<td></td>
<td>-0.240***</td>
<td>-0.258***</td>
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<tr>
<td></td>
<td>Retired Persons</td>
<td></td>
<td></td>
<td>-0.609***</td>
<td>-0.061</td>
</tr>
<tr>
<td></td>
<td>Daily Workers</td>
<td></td>
<td></td>
<td>-0.681***</td>
<td>-0.551***</td>
</tr>
<tr>
<td></td>
<td>Other Category</td>
<td></td>
<td></td>
<td>0.303***</td>
<td>-0.106*</td>
</tr>
<tr>
<td></td>
<td>Homemaker</td>
<td></td>
<td></td>
<td>-2.313***</td>
<td>-0.497***</td>
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<tr>
<td>Constant</td>
<td></td>
<td>-2.633***</td>
<td>-2.752***</td>
<td>-2.584***</td>
<td>-2.324***</td>
</tr>
<tr>
<td>Observations</td>
<td></td>
<td>181772</td>
<td>181774</td>
<td>181772</td>
<td>181772</td>
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<tr>
<td>Adjusted R Square</td>
<td></td>
<td>0.002</td>
<td>0.001</td>
<td>0.005</td>
<td>0.379</td>
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</tbody>
</table>
So, who tend to give high responses?
  – Older persons, housewives, and daily workers

What does this mean? Irrationality or true experience?

One explanation is that these people spend a disproportionately large amount to satisfy basic need: food and energy items.

So we proceed to examine the effect of the price of a selected set of frequently consumed items on household inflation perceptions and expectations.

We consider the following commodities: rice, wheat atta, dal, groundnut oil, goat meat, fish, milk, onion, sugar, and kerosene.
The inflation rates of different commodities vary greatly within each city.

At the same time, for each commodity, the inflation rates vary greatly over time and across the cities.

The next set of plots shows the inflation rates of a few commodities over time, comparing across cities.

Much of household expectations are psycho-social in a society with many subject to food insecurities.
Effect of the Inflation Rates of Frequently Consumed Goods
Inflation rates of selected commodities in major cities

Onion Inflation Rates in Selected Cities

- Ahmedabad
- Bangalore
- Bhopal
- Bhubaneswar
- Chennai
- Delhi
- Guwahati
- Hyderabad
Effect of the Inflation Rates of Frequently Consumed Goods
Inflation rates of selected commodities in major cities

Rice Inflation Rates in Selected Cities

- Ahmedabad
- Bangalore
- Bhopal
- Bhubaneswar
- Chennai
- Delhi
- Guwahati
- Hyderabad
Effect of the Inflation Rates of Frequently Consumed Goods

- Households in different cities tend to consume different amounts of the same good.

- The inflation rates of the more frequently consumed good may have a more significant impact on household expectations than that of less-often consumed goods.

- As an example, we compare the inflation rates of rice and wheat in a few cities. Note the very different dynamics of the two inflation rates.
The following table shows the effect of the inflation rates of several commodities on household inflation perceptions.

The dependent variables of all four models are the same – households’ quantitative inflation perceptions.

The independent variables in the baseline model, Model 1, include a constant and four lags of the actual inflation rate.

Model 2 extends the baseline with dummy variables for the age group, employment category, and gender of the respondents.

Model 3 also includes four lags of the actual inflation rates on transportation and communications, as well as vegetables and fruits.

Model 4 adds two lags of the inflation rates on rice, wheat, dal, oil, goat meat, fish, milk, onion, sugar, and kerosene.
The objective of this survey is to get price and inflation expectations on goods and services consumed by your household. The questions do not relate to the prices of any goods produced by your household or cost of any inputs used for their production. This information is used by RBI for its Policy. Hence we will be thankful if you could please spare a few minutes of your valuable time for this.

1. Do you keep track of prices of items generally purchased in your household?


1. Give examples of how much prices of any two major items have changed in the last 12 months.

   Item 1: ___________ by ______ %, Item 2: ___________ by ______ %.

1. Do you know that the Government brings out an index of retail prices every month?


Ok, let me tell you that as per official data, prices in general increased, on an average, by X% every year in the last 5 years.
Median Inflation Perception and Expectations - Rural vs Urban

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>1 Year</th>
<th>5 Year</th>
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</thead>
<tbody>
<tr>
<td>Urban</td>
<td>7.1</td>
<td>8.1</td>
<td>6.9</td>
</tr>
<tr>
<td>Rural</td>
<td>5.8</td>
<td>6.3</td>
<td></td>
</tr>
</tbody>
</table>

Urban (Sept-19 Round)  Rural
## Effect of the Inflation Rates of Frequently Consumed Goods

<table>
<thead>
<tr>
<th>City</th>
<th>Adjusted R-squared</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cities</td>
<td></td>
<td>0.154</td>
<td>0.164</td>
<td>0.244</td>
<td>0.397</td>
</tr>
<tr>
<td>Ahmedabad</td>
<td></td>
<td>0.018</td>
<td>0.015</td>
<td>0.060</td>
<td>0.234</td>
</tr>
<tr>
<td>Bangalore</td>
<td></td>
<td>0.243</td>
<td>0.247</td>
<td>0.394</td>
<td>0.667</td>
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<tr>
<td>Bhopal</td>
<td></td>
<td>0.045</td>
<td>0.039</td>
<td>0.035</td>
<td>0.158</td>
</tr>
<tr>
<td>Chennai</td>
<td></td>
<td>0.018</td>
<td>0.022</td>
<td>0.105</td>
<td>0.303</td>
</tr>
<tr>
<td>Delhi</td>
<td></td>
<td>0.185</td>
<td>0.185</td>
<td>0.228</td>
<td>0.297</td>
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<tr>
<td>Guwahati</td>
<td></td>
<td>0.037</td>
<td>0.048</td>
<td>0.089</td>
<td>0.286</td>
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<tr>
<td>Hyderabad</td>
<td></td>
<td>0.217</td>
<td>0.212</td>
<td>0.267</td>
<td>0.331</td>
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<tr>
<td>Jaipur</td>
<td></td>
<td>0.103</td>
<td>0.101</td>
<td>0.176</td>
<td>0.399</td>
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<tr>
<td>Kolkata</td>
<td></td>
<td>0.019</td>
<td>0.020</td>
<td>0.110</td>
<td>0.320</td>
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<tr>
<td>Lucknow</td>
<td></td>
<td>0.114</td>
<td>0.109</td>
<td>0.299</td>
<td>0.406</td>
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<tr>
<td>Mumbai</td>
<td></td>
<td>0.271</td>
<td>0.273</td>
<td>0.331</td>
<td>0.462</td>
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<tr>
<td>Patna</td>
<td></td>
<td>0.165</td>
<td>0.177</td>
<td>0.351</td>
<td>0.503</td>
</tr>
</tbody>
</table>
Concluding Remarks

- There is a significant amount of variations across regions in household perceptions and expectations, partly due to varying consumption patterns across regions.
- Older persons and daily workers experience significantly higher inflation rates.
- Certain cities are found to be excessively sensitive to food and energy price inflation – indicating a potential mismatch between the consumption bundle used to calculate the official statistic and what people actually purchase and pay for.
- Expectations contain substantial physio-social factors due to food/fuel insecurity of many as reflected in the excess sensitivity of commonly and more frequently purchased consumption good.
- Extending the survey to rural and small cities seem to be is helping.