

*Statistics and the Reserve Bank of India**

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1. Respected Governor, Deputy Governors, distinguished guests from the financial institutions, members of the academia, members of the press, Prof. T. N. Srinivasan, Prof. J.K. Ghosh, Prof. Arijit Choudhuri, Dr. Wilbert van der Klaauw and friends. Today we had the privilege of listening to a panoply of perceptive and incisive speeches on varied facets of critical issues facing the researchers and practitioners in the field of Statistics. That it is Statistics Day, in honour of Professor P.C. Mahalanobis, the legendary statistician lends the perfect backdrop and contextual topicality to the entire occasion.

2. Importantly, what makes Statistics Day this year more special than those in the past is that today's event is also an integral part of the ongoing Reserve Bank of India Platinum Jubilee celebrations. As you are probably aware, the Reserve Bank of India, which started its journey on April 01, 1935, has just entered its 75th year. Not only does this landmark occasion mark a momentous milestone in the history of this great public institution, it is also an occasion for introspection, an occasion to reflect on the evolution of the institution, to remind ourselves of the objectives of our institution and identify how we can fulfil those objectives so that the Reserve Bank continues to make a positive difference in the life of every Indian.

Key Observations by Speakers

3. While the distinguished speakers, as I mentioned earlier, have enlightened us today with their thought-provoking presentations, let me do a brief recap of the important issues that they have flagged.

- Recounting the value of mammoth contributions of Prof. P. C. Mahalanobis

* Valedictory address by Sh. Deepak Mohanty, Executive Director on July 2, 2009 on the occasion of third Statistics Day Conference of the Reserve Bank of India.

in Statistics, Governor in his inaugural address highlighted the relevance and importance of this conference towards statistics, statistical analysis and, in particular, the role of sample surveys in central banking activities. While critically commenting on the ongoing surveys in the Reserve Bank, he emphasised five major challenges for the Reserve Bank statisticians. These include issues relating to reliability and revision of data, inflation measurement, information on leading indicators for business cycles, use of statistical knowledge in assessing financial stability and lack of availability of data on employment.

- Professor T. N. Srinivasan spoke at length, from his heart about his association with the Professor Mahalanobis, at both professional and personal level. He talked elaborately on the contributions of Prof. Mahalanobis to theoretical and applied statistics, particularly data and analysis, including sample surveys, cross checking and validation of data, national income accounts, statistical quality control and policy. He acknowledged that empirical and theoretical contributions of Prof. Mahalanobis to Statistics are of pioneering nature and there is no parallel to this in any developing country.
- Taking the cue from the famous lecture entitled "why statistics" delivered in American Statistical Association by Prof. Mahalanobis, Prof. Ghosh spoke on how statistics has been successfully used in enhancing human welfare, be it in the field of Epidemiology, Medical and Physical Science, Ecology,

Genetics, Finance and Economics. He also explained with several examples on how the science of understanding the uncertainty and variability is crucial for informed decision making. In particular, the parallel between causality based on classical statistics and Granger's causality, routinely used in econometric analysis nowadays, is important. Finally, on the advanced understanding of statistics, he indicated the utility of empirical Bayes theory.

- The technical session on survey started with the latest methodological development on survey sampling after Prof. P. C. Mahalanobis. In his paper, Professor Arijit Chaudhuri focused on the areas of small area estimation, randomised response, network and adaptive sampling and permanent random numbers. Some of these techniques are extremely useful in tackling the problem anticipated in gathering data on many features in human beings in socio-economic surveys.
- The paper 'Rethinking the Measurement of Household Inflation Expectations: Preliminary Findings' presented by Wilbert van der Klaauw of Federal Reserve Bank of New York, reports research findings aimed at improving survey measures of inflation expectations. Several aspects of inflation expectation survey like, seemingly small difference in how inflation is referred to in a survey can lead respondents to consider significantly different price concepts. Thus, this paper argues in favour of

going beyond direct measurement and focused on the way households form and update their expectations; and the links between inflation expectations and consumer behaviour. This will help improving the understanding of the processes by which expectations are formed and updated by the households and will also help to design survey questions that enable respondents to express their expectations more accurately.

Conference Theme

4. We at the central bank, use official data on key macro-economic variables, such as output and prices as the primary signposts of our economy. However, it not only takes time for these data to get collected and published, these data are based on incomplete samples that get revised as more information becomes available. In such a situation not only do the surveys help fill-in the data gaps, they also provide measures of variables for which there is no official counterpart. The surveys also provide a short-term outlook by seeking answers to forward looking questions. Keeping in view the important role sample surveys play in our decision making, we thought it apt to keep the focus of the conference on sample surveys.

Professor Mahalanobis and Surveys

5. Professor Mahalanobis to whom we all are paying tribute today was a tireless advocator of the usefulness of sample surveys. Though the contributions of Professor Mahalanobis to the Indian Statistical System are immense, his

contributions to large scale sample surveys¹ are his most significant and lasting gift to statistics. He made many methodological contributions to survey sampling that included the optimal choice of sampling design using variance and cost functions, and the technique of interpenetrating network of sub-samples for assessment and control of errors, especially non-sampling errors, in surveys. Professor Mahalanobis raised important and difficult philosophical questions on randomness and representativeness of a sample, which remain relevant and challenging even today. Professor Mahalanobis received the Weldon Medal from Oxford University in 1944 and was elected a Fellow of the Royal Society, London, in 1945, for his fundamental contributions to Statistics, particularly in the area of large-scale sample surveys.

6. For the overall importance of statistics in national development, Professor Mahalanobis said²

- "Statisticians, in fact, have a four-fold task in national development. Firstly, to conduct properly organised surveys for the collection, analysis, and interpretation of relevant statistical data. Secondly, on the basis of such information, to help in the choice of an efficient programme of action. Thirdly, when the plan goes into operation, to measure the progress of work and to

¹ Mahalanobis, P. C. (1946): "On Large-scale Sample Surveys". *Philosophical Transactions of the Royal Society of London, Series B*, 231, 329-451; and Mahalanobis, P. C. (1946): "Recent Experiments in Statistical Sampling in the Indian Statistical Institute". *Journal of the Royal Statistical Society*, 109, 326-370.

assess the results achieved. And, finally, on the basis of such assessment, either to report that the work is proceeding as desired or to give the early warning signals that the results attained are not proceeding in accordance with the plan or are not commensurate with the effort; in which case the plan itself may have to be modified. In this way the four-step cycle would begin again."

7. This succinctly explains the importance of statistics in the formulation of policy and its evaluation. In fact, many developments in terms of technology, quantitative methods, and marketisation as well as globalisation have reinforced what Professor Mahalanobis observed. The use of statistics has increased manifold and the demand is for real time or near real time data on almost all aspects of life and economy.

Reserve Bank and Surveys

8. The System of National Accounts and the related accounting system on balance of payments, fiscal and financial statistics provide the basic framework for the collection of statistics. As monetary policy responds quickly to emerging developments in the economy, and its effectiveness depends on market expectations, the set of data required for the same, like business expectations and inflation expectations, need to be collected through quick surveys.

9. With increased globalisation and liberalisation of the financial system, informed decisions hold the key to successful implementation of policy. While administrative and supervisory information are collected by statutory returns, the information gap on financial

statistics, macro economic variables and other related areas in central banks is typically supplemented by surveys.

10. The Reserve Bank indeed has a long history of using surveys for getting inputs for assessing the monetary policy objectives of price stability and growth with financial stability. The first comprehensive survey of the Reserve Bank was the All India Rural Credit Survey in 1951-52. The survey findings led to the world's biggest social banking experiment by shifting the focus from class banking to mass banking and taking banking to rural areas. The survey that originally covered the rural areas was extended to the urban areas in 1971 and was renamed as All India Debt and Investment Survey (AIDIS). The survey is now conducted by National Sample Survey Organisation (NSSO). Even today, the AIDIS is the only source that covers credit extended by the informal sector or non-institutional agencies as they are popularly referred to.

11. As the Indian economy expanded, the need for information grew and the Reserve Bank adapted and further strengthened its statistical system. It carried out more surveys to fill-in data gaps. In the External Sector, the Reserve Bank has a Foreign Exchange Transactions' Electronic Reporting System that is supplemented by several surveys like the Unclassified Receipt Survey, Foreign Liabilities & Assets Survey and Coordinated Portfolio Investment Survey.

12. In addition, the Reserve Bank has a Corporate Sector data base, rare for a central bank. Similarly, the collection of micro level banking statistics through Basic Statistical Returns (BSRs) is also unparalleled. While all the available data through the BSR

system are not in the public domain, the attempt should be to release granular data electronically. This will be immensely helpful for researchers and analysts.

13. Given the well known lags in the transmission of monetary policy, the surveys providing a macro-economic outlook attain greater importance. Since actual data are available with a lag, the Reserve Bank supplements the information from actual data with forward looking surveys. The Reserve Bank has over the past few years, initiated a number of surveys to capture timely information on the major leading indicators of economic activity. These include the Industrial Outlook Survey; Survey of Inventories, Order Books and Capacity Utilisation; Inflation Expectations Survey of Households and Survey of Professional Forecasters. These surveys have provided useful and timely inputs in to the conduct of monetary policy by the Bank. There are ample studies in the literature that suggest that forecasts generated through surveys outperform other forecasting methods (Ang et al., 2005², Lloyd (1999)³, Bryan et al. (1986)⁴). Most of the survey results are internal to the Reserve Bank and are used for policy purposes. There could be case for making available these results in public domain

² Ang, Andrew, Geert Bekaert, and Min Wei (2005): "Do Macro Variables, Asset Markets, or Surveys Forecast Inflation Better?", *Working paper, Columbia University Graduate School of Business*.

³ Thomas, Lloyd B., (1999): "Survey Measures of Expected U.S. Inflation", *Journal of Economic Perspectives* 13, 125-144.

⁴ Bryan, Michael F. and Gavin, William T (1986): "Comparing Inflation Expectations of Households and Economists: Is a little knowledge a dangerous thing?", *Economic Review*, 1986 Quarter 3.

once there is reasonable confidence on the coverage and quality of these surveys.

14. While the timeliness of the information brought out by various surveys is very vital, the survey methodology, coverage, objective and relevance also need to be regularly ascertained, more so when the economic environment is rapidly changing. Given this perspective, the Bank has set up a Working Group on Surveys to examine the relevant issues.

15. There are several areas where we need to carry out new surveys, *e.g.* Survey on Credit Conditions, to improve the understanding of the credit market, survey of Consumer Confidence to determine the concerns of general public relative to their household circumstances like income, spending and employment conditions; a Business Outlook Survey for the Trading Sector. I am sure the Working Group would deliberate on these issues.

16. There are other forward looking surveys that the Bank has already conceptualised, which need to be implemented. Housing Start is one such subject that has strong forward and backward linkages with other sectors of economy and for which much ground work has already been done. A Survey to capture real estate prices is another example, which could be used as a lead indicator since it reflects market's expectation of future stream of services associated with assets and conveys information on future demand and supply conditions.

Statistical Information Management

17. All these activities need larger resources and institutional change. With this in mind,

I would like to draw your attention to the fact that last year the Reserve Bank renamed its Statistics Department from the Department of Statistical Analysis and Computer Services (DESACS) to the Department of Statistics and Information Management (DSIM). This is not just a change in nomenclature, but also represents a change in the approach to manage the entire statistical information system.

18. The Reserve Bank maintains a data warehouse that can be accessed through its website. This data warehouse has been used as a prototype by several other central banks. The philosophy behind creating the Reserve Bank data warehouse was to meet Reserve Bank's own transparency standards as well as those of the international agencies and for better dissemination of statistical information. The warehouse provides a data dissemination platform for the analysts within the Bank, the market analysts and the researchers. Continuous efforts are being made to enhance the coverage of the data warehouse. Its internet portal as well as data exchange with the Bank for International Settlements (BIS) has been a major recent development. In addition, time series data are made available through its publication of the Statistical Handbook on the Indian Economy. We are making efforts to make available this Statistical Handbook online in this Platinum Jubilee Year of the Reserve Bank. The long-term plan of the Reserve Bank is to use the data warehouse as the single channel of data dissemination to the public. I invite the analysts and researchers to look at our data warehouse, so that we can benefit from your suggestions to further improve data dissemination.

Financial Stability

19. It is recognised that with the dismantling of controls and a gradual shift from micro to macro regulation of the financial entities, there has been loss of certain information, which could be important from the viewpoint of the regulation of the financial system and for ensuring financial stability. The recent financial crisis has once again brought to the fore the importance of enhanced transparency and disclosure of information in the financial system to ensure financial stability and effective and smooth functioning of the markets. The deficiencies in regulatory oversight of the activities of a number of financial entities, their special conduits or off-balance sheet subsidiaries proved a source of systemic instability. Thus, a key lesson one can learn from these episodes is that with greater financial innovations and rising risks in the financial system, there is a greater need for statistics, which, in turn, would require the statisticians to be more forward looking in collecting such information.

20. In this context, I may mention that the Reserve Bank of India has set up a Financial Stability Unit⁵ the remit of which, *inter alia*, is to conduct macroprudential surveillance of the financial system and carry out stress tests to assess resilience. As the financial system is now much more interlinked with the real sector of the economy and the developments in the real economy swiftly impact on the balance sheets of the financial entities, there is greater demand for various indicators about the behaviour of the real

⁵ First Quarter Review of Monetary Policy 2009-10, Reserve Bank of India (para 86).

sector entities such as corporates and households in order to assess the potential risks posed by such exposures. However, there are data gaps particularly with regard to household debt and asset prices which need to be addressed. Moreover, monetary and regulatory policies have to be forward looking and the statistics should help in reducing uncertainties. Thus, there is need for precise and timely information on various dimensions of the financial system for effective conduct of policies by the central bank. In this context, the timeliness of availability of data with regard to certain segments of the financial sector such as the non-banking financial companies (NBFCs) and cooperatives need to further improve.

Conclusions

21. The Reserve Bank has the key responsibility for collection and dissemination of statistics in respect of the financial and external sectors. It has an elaborate mechanism to collect, compile and disseminate these data. Information gaps on financial statistics and other related areas are filled up by supplementary statistics collected through various surveys, such as on industrial outlook, inflation expectations, indicators of banking sector, external sector and the private corporate sector. With the reform process initiated

since the early 1990s, the reporting has weakened and data submission relating to many areas has become voluntary. In such a system, the statisticians have to find alternative means to obtain timely, accurate and comprehensive information from the reporting entities. Given the constantly evolving financial landscape, there is also the need for expanding the coverage of the existing surveys, improving their response rate and the quality of information obtained from the respondents to make these more useful for the monetary policy analysis. This would also require greater interaction with the users of such surveys and the respondents.

22. To conclude, this day-long interface has undoubtedly thrown up challenges, illuminating ideas, fresh insights and alternative ways of thinking about the competitive yet cooperative combat that the world of banking and statistics is readying itself for. Standing at this historic bend of the corporate clock, these deliberations have also brought home the importance of monitoring international developments carefully, taking into account the country experiences and drawing upon the expertise of multilateral institutions in charting the further course of statistical work at the Reserve Bank. How best this can and should be done, it is for all of us to pause and ponder.