

*Statistics and Information Management in the RBI – Where We Are; Where We Want to Be**

Michael Debabrata Patra

Dr. O. P. Mall, Executive Director, Dr. Ajit Joshi, Principal Adviser, all my colleagues from the Department of Statistics and Information Management or DSIM, colleagues from other departments and Guwahati office, I thank Mall for inviting me on behalf of all of you to this pre-Conference dinner conversation – in an Anglo-Saxon setting, this could have been possibly called a fireside chat, but in India, we can do much better. So I will call it our Brahmaputraside Bartalap¹. It has been three years since we met. What I propose to do today is to hold up a mirror to you. I have a set of slides with which I propose to engage you, just to show you what you look like to the outside world. You have the right to respond, differ, reject and modify wherever you think appropriate and politically correct. You can also agree, acquiesce and yield. My speech and presentation are structured like a voyage of discovery or re-discovery, if you like, with two parts: (i) where we are; and (ii) where we want to be.

* Speech delivered by Michael Debabrata Patra, Deputy Governor, in the Annual Statistics Conference of the Department of Statistics and Information Management on June 9, 2022 at Guwahati. Gratitude and appreciation are owed to Pratik Mitra, Pankaj Kumar and Tanima Das for their invaluable help in creating the presentation that anchors this interaction. I am also thankful to Richa Rawat, Gaurav Sangwan, Shradha Singh, Rajendra Chavan, Aditya Mishra, Haridwar Yadav, M N Limbkar, Arjya Misra, Prabha Jadav, Sanjib Bordoloi, Srilikhita Patel, Sweta Kumari, Amarnath Yadav, Geeta Giddi, Tushar Das, Sasanka Sekhar Maiti, N Unnikrishnan and Anshuman Hait; more than their contribution to slides, it was their participation which enriched the quality of interaction. Gratitude is also due to Asish Thomas George for carrying out aesthetic refinements, and to Vineet Kumar Srivastava and Samir Ranjan Behera for editorial assistance.

¹ pronounced the Ahomiya way.

II. Where We Are

In terms of the department's vision and mission, you are indeed the source of high quality statistics and policy oriented research with a hallowed history; but you also add cutting edge to the Bank's functioning with statistical and information management support. You are the repository of its databases. Your footprint has expanded to virtually every part of the institution. Hence, I worry that your vision and mission somehow circumscribe you, understate you. They do not seem to reflect the spirit, the soul of DSIM. My sense is that you are much more. This is my first question: can we review and restate our vision and mission to reflect the true DSIM? Can you be Prometheus² unbound?

II.1 Banking

Let me start with the banking unit. Several notable milestones were crossed during the year gone by but probably the proudest ones are (i) the refinements you have brought into the department's workhorse – the Banking Statistical Returns – in terms of timeliness, data quality and reporting requirement synchronisation; and (ii) the onboarding of payment system operators on to the Central Information System for Banking Infrastructure (CISBI)³ (Chart 1). Reductions in time lags have been a major achievement for it makes information relevant and useful, but care is warranted in ensuring that it does not become an obsession with a means to an end, missing the end itself.

II.2 Corporate Sector

Turning to the corporate unit, an important transition that the unit has been engaged in is the

² In Greek mythology, Prometheus defied the gods by stealing fire from them and giving it to humanity. As a punishment, he was chained to a rock and an eagle was sent to eat his liver eternally.

³ Central Information System for Banking Infrastructure (CISBI) is an on-line portal for allotment and maintenance of Basic Statistical Return (BSR) codes along with locational details of banks, payment system operators (PSOs) and other all India financial institutions (AIFIs) and their banking channels.

move from Indian Generally Accepted Accounting Principles or IGAAP to Indian Accounting Standards (IND-AS) which is a step towards convergence with International Financial Reporting Standards (IFRS). Systems and procedures are ready to place in the public domain the accounts of 10,000 companies in the IND-AS format. The emphasis is on consistency checks, reorganisation of financial statements and getting the taxonomy right before public dissemination. Another important achievement is the work on the life cycle of a project, which is critical to understanding the dynamics of private corporate investment⁴ (Chart 2). As corporate results are generally one quarter older than T-zero, I wonder if it is possible to develop higher frequency indicators, not necessarily based on the latest audited results, to gauge corporate activity and in particular, the life cycle of projects, contemporaneously.

II.3 Surveys

Let us turn to surveys. The unit conducted a once in a lifetime survey on the informal sector. Perhaps, if you develop it further and endeavor to bring it into the mainstream of your work, light shall seek it out. It is said that nobody can put down a survey whose time has come. Another noteworthy achievement was the publication of the surveys on services and infrastructure outlook and the Bank Lending Survey (Chart 3). While on surveys, I am going to move to the Ecommerce and New Age Surveys Division on the use of Artificial Intelligence (AI) and Machine Learning (ML) in banks and NBFCs during the pandemic as gathered from the pilot survey in November-December 2020 and the follow-up survey in March-May 2022 (Chart 4).

II. 4. External Sector

Moving on to the external unit, the Foreign Exchange Transactions Electronic Reporting System

⁴ Private Corporate Investment: Growth in 20-21 and Outlook for 2021-22; RBI Bulletin, September 2021; https://rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=20500

(FETERS) Card captures cross border transactions using cards. This enables the segregation of e-commerce transactions from travel transactions (Chart 5). FETERS Card has a lot of these interesting findings. One of them is that Indians use a lot of cash while travelling abroad, in contrast to foreigners who prefer cards.

Another noteworthy development is the work on the currency composition of India's International Investment Position, which is a recommendation of the G 20 Data Gaps Initiative (Chart 6). This comes in handy as India is about to assume the G20 Presidency from December this year and it will look remiss of the President to be a data gap defaulter.

II.5. Research

The Statistical Measurement and Modelling Unit carried out important work on supply chain pressures, both domestic and global (Chart 7). I am excited about it because I have a paper on the subject⁵. *Supply chain disruptions have forced their way into policymakers' radars in the wake of the pandemic. My co-authors and I developed an index of supply chain pressures for India (ISPI) by extracting common factors latent in 19 domestic and global variables for the period March 2005 through March 2022. We found that it contemporaneously predicts industrial production, gross domestic product (GDP) and input costs and displays lead indicator properties in respect of export volumes and inflation.* We find that exposure to global supply chain disruptions are quickly transmitted to domestic supply chains, especially from those countries from which India sources the large part of its requirements of raw materials and intermediates.

Another achievement of this unit is improvement in the publication lag with regard to house prices (Chart 7). In this effort, the contribution of regional offices is worthy of praise. Yet another frontier-pushing work

⁵ Measuring Supply Chain Pressures on India; RBI Bulletin, April 2022 https://www.rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=20938

of the unit is the use of remote sensing information in the field of agriculture, the subject matter of many empirical studies internationally and in India (Chart 8). In this context, the availability of spatio-temporal data on near real time basis makes this work exciting.

Last but by no means the least in the section on 'where we are', I turn to the work by the Information Management and technology unit on offsite surveillance of NBFCs, a big step towards scale-based regulation (Chart 9). In recent years, the NBFC sector has gained significance as well as complexity and interconnectedness, with implications for financial stability. It is in this context an integrated scale based regulatory framework was issued on October 22, 2021

III. Where We Want to Be

As I embark on the way forward, I propose to become department-wide rather than unit-based. If over the year 2022-23, you can achieve six big milestones, it will be a source of satisfaction, and the just reward for all of you who put your shoulders to the wheel and push every day.

Upgrading India's international banking statistics in accordance with revised Bank for International Settlements (BIS) norms will be a major initiative for this year (Chart 10). This will help to understand risks facing India's banking sector from its international presence as well as risks from the operations of foreign banks in India.

Investing in environmental, social, and corporate governance (ESG) is gathering growing interest across the world. It seeks to evaluate the extent to which a corporation works on behalf of social goals that go beyond the role of maximising profits for shareholders. The goals from an ESG perspective include working to protect and preserve the environment, supporting certain social movements, and whether the corporation is governed in a way that is consistent with the goals of the diversity, equity, and inclusion (Chart 11).

A major gap in the bouquet of surveys conducted by the department is that rural and semi-urban households are not covered. This gap is sought to be bridged during 2022-23 by taking up a survey to assess consumer sentiments in rural areas on employment, income, expenditure and the price situation (Chart 12).

Currently, reporting of external commercial borrowing transactions and trade credits occurs through physical paper forms. With the implementation of SPECTRA or the Software Platform for External Commercial Borrowings and Trade Credit Reporting and Approval, online submission of returns will be enabled (Chart 13). This will improve timeliness and accuracy.

Another goal for 2022-23 is to develop big data and machine learning solutions for various functions of the Bank (Chart 14). Within this initiative, efforts are also planned to explore new data sets for forecasting, surveillance and early warning systems.

Centralised Information and Management System (CIMS), our new data warehouse which has been in the works for two-three years, should become operational in 2022-23 (Chart 15). It is a mammoth project which will cater to central office departments, host all RBI publications and databases. It will also facilitate launching of surveys for monetary policy purposes. It will also provide an analytics platform that will include big data analytics and make a big leap towards element-based reporting and data storage.

IV. Conclusion

In conclusion, I will take you back to the question that I posed at the beginning. How do we develop a vision and a mission that better capture the rapidly changing profile of the department and its evolving aspirations that embody where we want to be? New entrants arrive with stars in their eyes at the prospect

of a career in the RBI. Within a year, they are dismayed at the huge burden of data collection and management which does not allow time for exploring the data, innovating, finding new solutions and thereby contributing to the welfare of the nation. How do we set the department's vision and mission to make

the dreams of new generations of our statisticians, information managers and data scientists come alive? In this, I call on our seniors to lead us into the journey into the future.

Thank you.

Annex

Chart 1: Central Information System for Banking Infrastructure

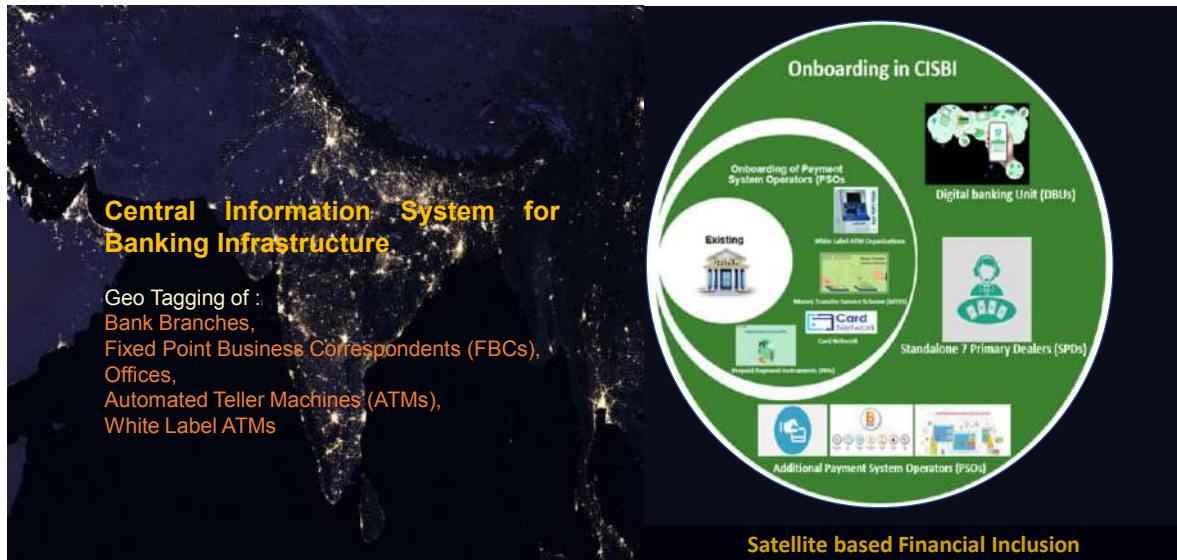
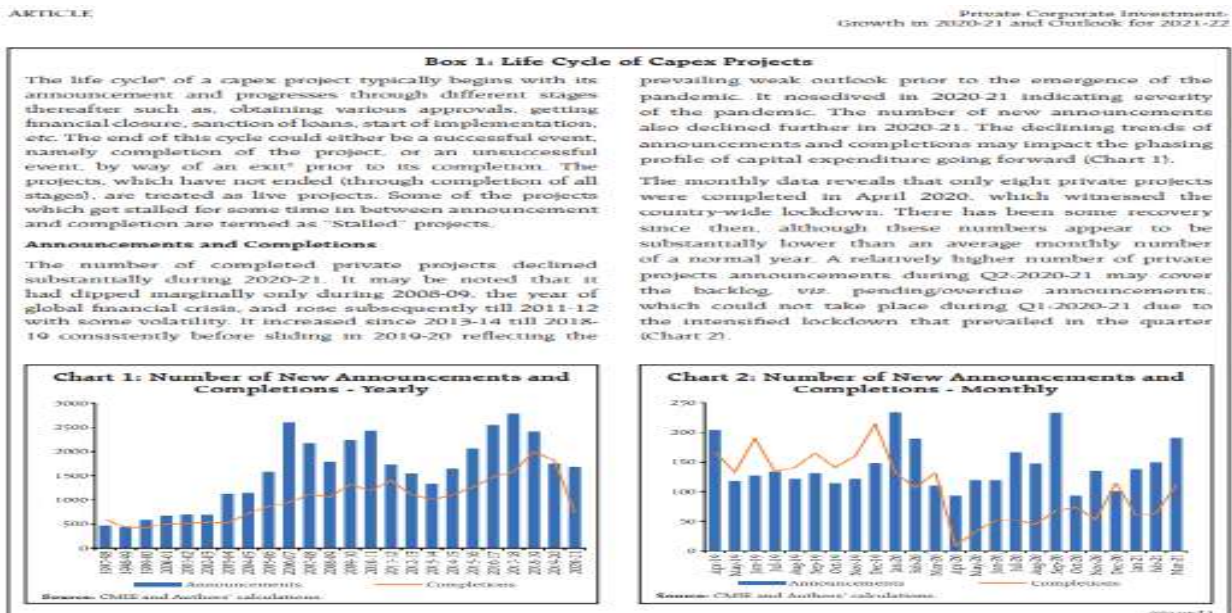


Chart 2: Life Cycle of Capex Projects – RBI Bulletin September 2021



* The life cycle of a capex project refers to the cycle covering various phases of the project before it gets completed. Another life cycle can be thought of covering the phase since its completion / commissioning till the time it remains operational before it gets demolished or becomes obsolete.

† The exit of projects could be at various stages. The earliest possibility is abandonment of the project after the announcement itself (without progressing to any further stages). The same could happen during various approval stages (after the announcement but before the start of implementation). The third possibility of exit is after the start of implementation. These three types of exit have been defined as “Announced and abandoned”, “Shelved”, and “Abandoned”, respectively, in the capex database of the Centre for Monitoring Indian Economy (CMIE).

Chart 3: Bank Lending Surveys-Recent Trends – RBI Bulletin, December 2020

ARTICLE

Bank Lending Survey-Recent Trends*

Initiated in 2017 by the Reserve Bank, the Bank Lending Survey in India provides perceptions of banks on loan demand and loan terms and their outlook in near term across major sectors. The details of the survey and its summary results since the first round (Q2:2017-18) are presented in this article. A broad corroboration is observed in the borrowers' perceptions and lenders' sentiments on the manufacturing sector. Bankers' sentiments on lending conditions have consistently improved after the adverse situation witnessed during April-June 2020 due to the COVID-19 pandemic.

Introduction

In a bank dominated economy like India, credit is an essential lubricant to the engine of economic growth and its prognosis may be a useful input in policy formulation. Information on credit is often supplemented with the bankers' perceptions about its demand and financing conditions, which are collected through the dedicated Bank Lending Survey (BLS), also known internationally as senior loan officers' survey or credit condition survey.

Lending choices of banks depend on various factors like macroeconomic outlook, liquidity conditions, borrowers' creditworthiness, uncertainty associated with the concerned sector, expected return including risk premium, portfolio mix and risk management abilities, among others. In this context, BLS provides lender's qualitative perspective on credit market conditions, especially the impact

Following the recommendations of the Internal Working Group on Surveys (2009), the Reserve Bank launched the Credit Conditions Survey (CrCS) in 2010. Its questionnaire underwent few revisions based on users' requirements as well as feedback from technical experts and responding banks, before it was rechristened as Bank Lending Survey (BLS) in 2017. The present article lays out broad contours of its methodology, trends in its results and compares it with official statistics and other surveys.

The remainder of the article is structured in six sections. Section II presents the cross-country practices on BLS. Section III gives an overview of the methodology of quarterly BLS conducted by the Reserve Bank. Section IV highlights the results of survey and Section V discusses its relationship with other select economic series. Section VI concludes.

II. Cross-Country Practices

Bank lending surveys are conducted regularly by central banks in major developed economies (e.g., the USA, the UK, Japan, Canada, New Zealand and the euro area countries) and some other developing and emerging market economies such as Jamaica, Nigeria and Thailand, which generally release their aggregate results in public domain. The European Investment Bank (EIB) manages the half-yearly BLS to monitor banking sector trends and challenges in the Central, Eastern and South-Eastern Europe (CESEE) region.

BLS is conducted among banks and often also covers other lending institutions and respondents are given time upto a month to provide their feedback. Its respondents are usually senior loan officers / heads of credit department and other senior officers in comparable positions, who give their qualitative

Chart 4: Artificial Intelligence – Machine Learning in Banks and NBFCs

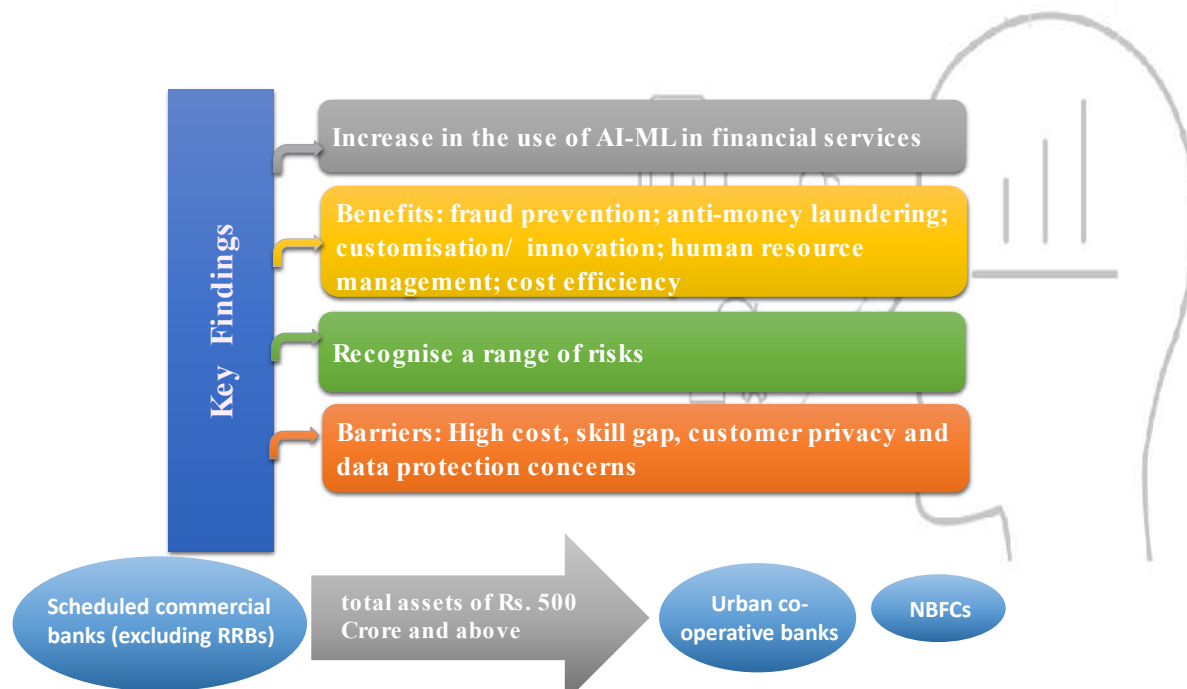


Chart 5: FETERS-Cards

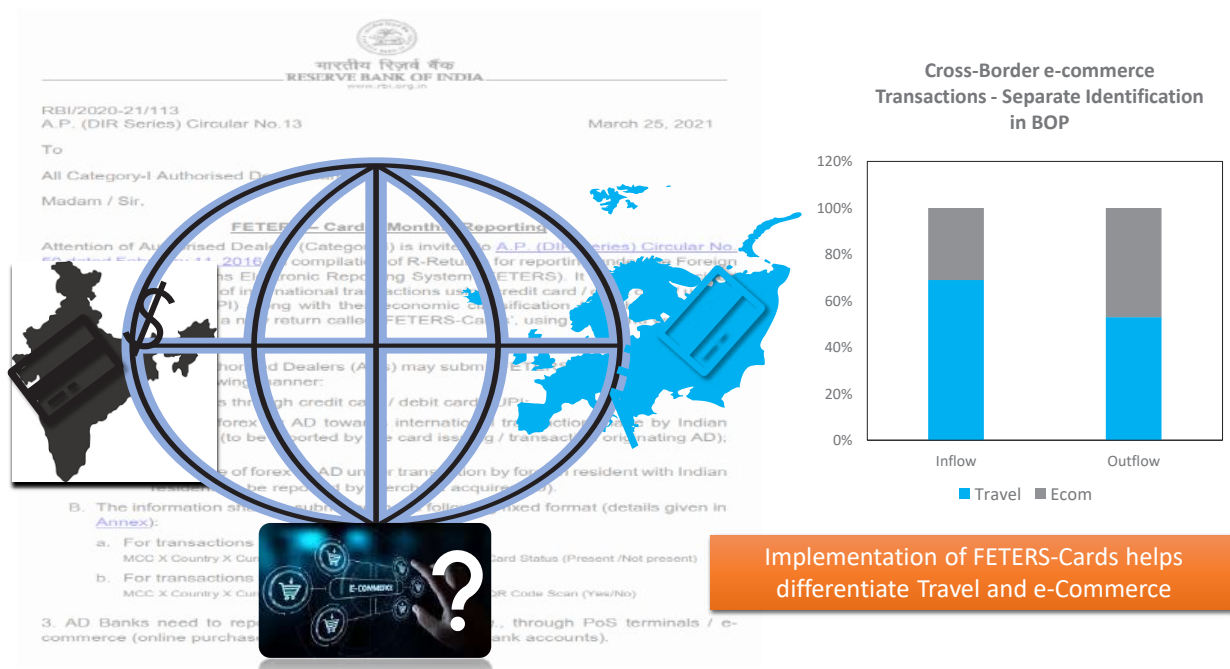


Chart 6: International Investment Position (InIP) : Currency Composition

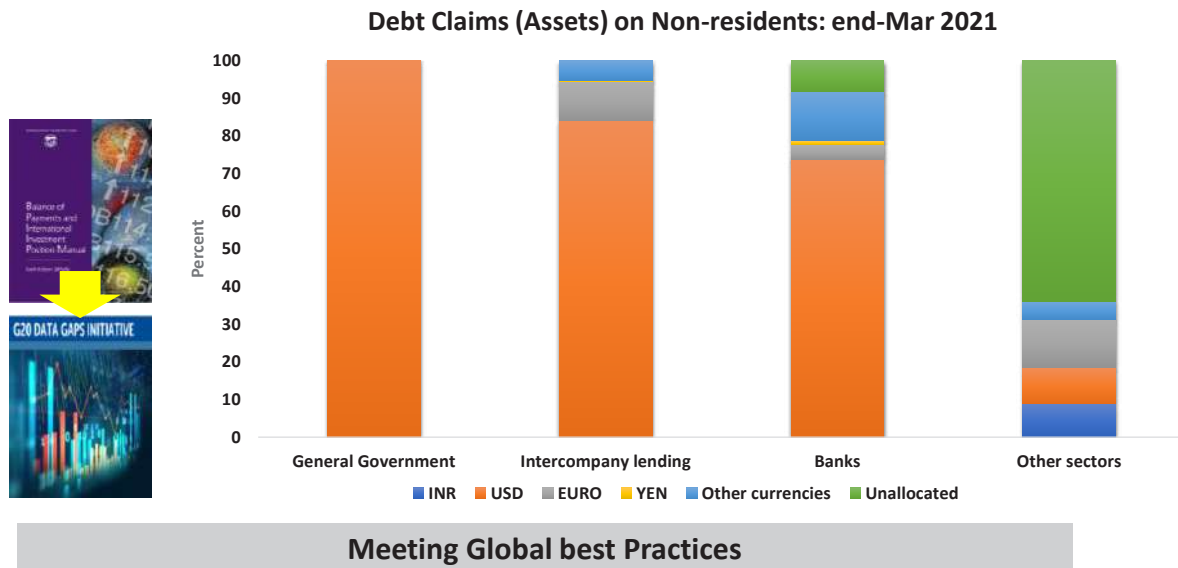
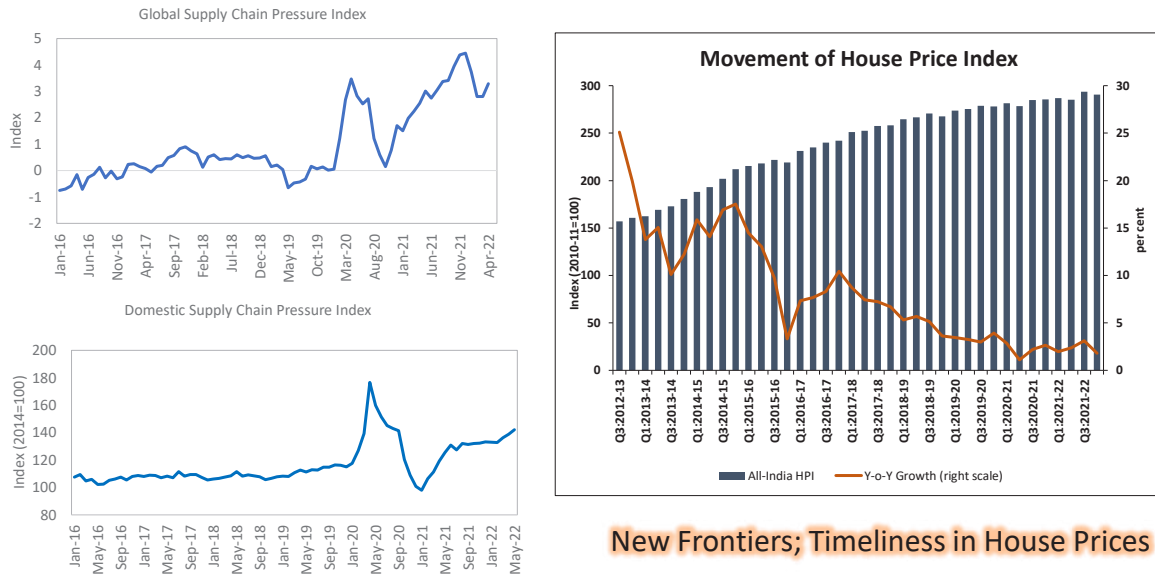


Chart 7: Measuring Pandemic Disruptions; Managing Operational Challenges



New Frontiers; Timeliness in House Prices

Chart 8: Remote Sensing based Crop Vegetation Indicator

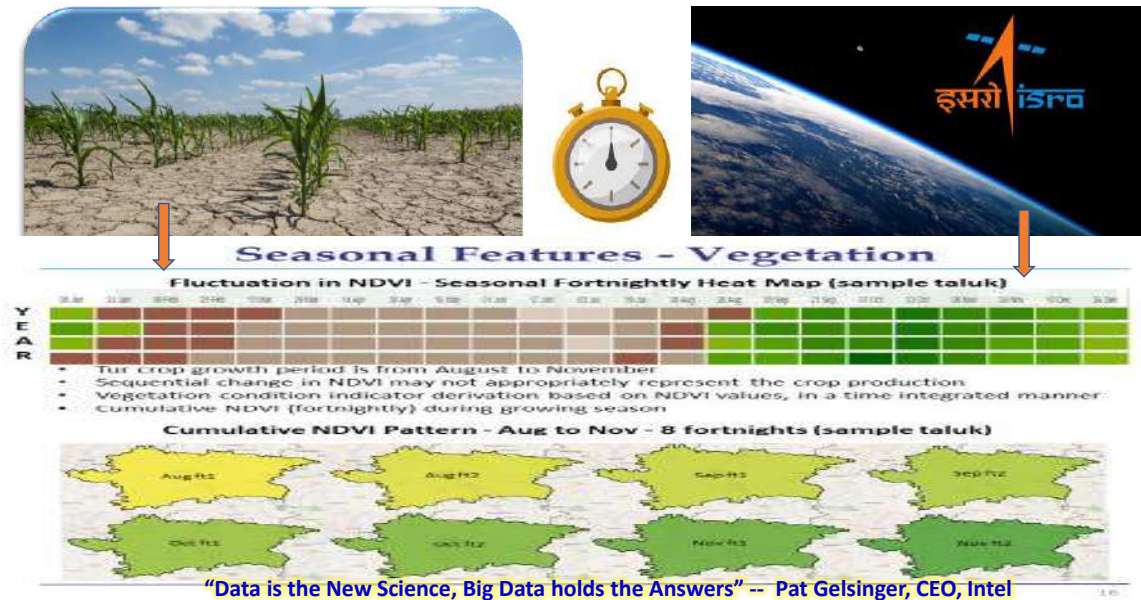
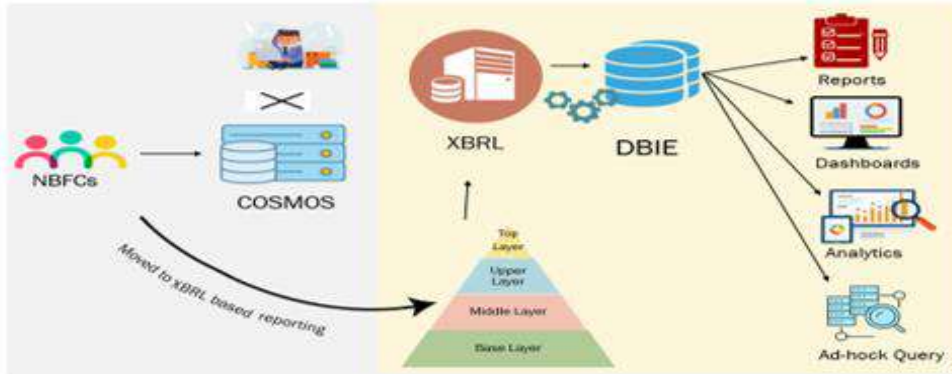


Chart 9: Offsite Surveillance of NMFCs

Offsite Monitoring system of NBFCs

- **Moving towards Scale Based Regulations**



Leveraging on XBRL for Supervisory Efficiency

Chart 10: Upgrading India's International Banking Statistics

The screenshot displays the BIS website interface. At the top, navigation tabs include 'About', 'Research & publications', 'Innovation', 'Committees & associations', 'Central bank hub', 'Statistics', 'Banking', and 'Media & Events'. The main content area features two tables:

LBS: Derivatives positions

Group of banks	Group of banks	Instrument	Outstanding	Outstanding	Outstanding	Outstanding
Bank	Bank	Interest rate	1,000	1,000	1,000	1,000
Bank	Bank	Foreign exchange	1,000	1,000	1,000	1,000
Bank	Bank	Commodity	1,000	1,000	1,000	1,000
Bank	Bank	Other	1,000	1,000	1,000	1,000

CBS: Changes in items allocated by counterparty

Country	Item	Value	Value	Value
India	Item 1	1,000	1,000	1,000
India	Item 2	1,000	1,000	1,000

A circular inset image shows a group of people in a meeting. To the right, a list of BIS codes is displayed:

- UNA=7*
- UNB=UNOC3+FR2+5B0+19C402:1013+IREF100020++GESMES/TS*
- UNH=MREF00001+GESMES2:156
- BGM=74
- NAD=Z32-BIS*
- NAD=MR-SB0*
- NAD=MS+FR2*
- IDE=10+BIS,CBS reporting*
- IDS=BIS,CBS*
- STS=3+7*
- DTM=242:201904021013:203*
- IDE=5+BIS,CBS*
- CBS=AR3*
- CBS=1+*
- ARR++Q\$FRAC\$FAA\$TO1\$A\$120182:608:1A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$A\$U20192:608:2A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$A\$W20182:608:3A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$A\$S20182:608:4A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$B\$120182:608:5A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$B\$CH20182:608:6A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$B\$DE20182:608:7A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$B\$DK20182:608:8A\$F
- ARR++Q\$FRAC\$FAA\$TO1\$B\$ES20182:608:9A\$F
- UNIT=22+MREF00001
- UNZ=1+IREF100020*

Raising the Bar to BIS Standards

Chart 11: Environment Social Governance Framework with Score

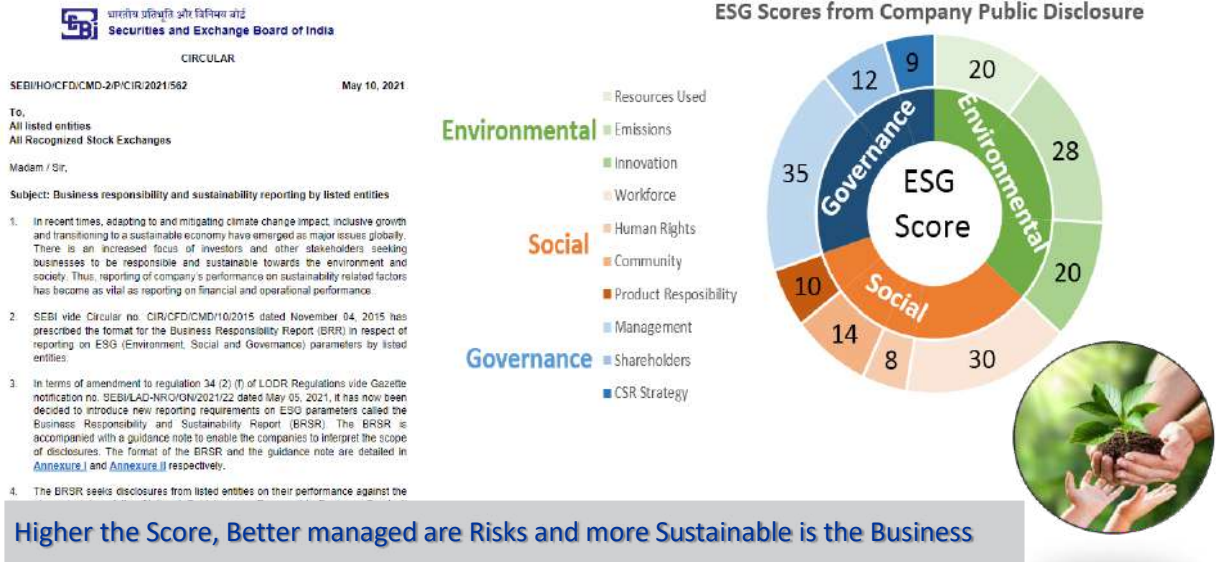


Chart 12: Launching of Rural Sentiment Survey



Chart 13: ECB Online Submission



RESERVE BANK OF INDIA

and Approval (SPECTRA) Project – Request For Proposal (RFP)

Form ECB
Revised Form ECB
ECB 2







Timeliness; Accuracy; Minimizing Manual Intervention

Chart 14: Machine Learning and Artificial Intelligence Goals



**DATA
SCIENCES
LAB**



**New Data
Novel Solutions**

Artificial Intelligence	Machine Learning	Deep Learning
		
Engineering of making intelligent machines and Programs	Ability to learn without being explicitly programmed	Learning based on Deep Neural Network





Remote sensing and its application in agriculture

COLLABORATION



Chart 15: Centralised Information Management System

