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Immersive Outlook

Fourth edition

Money talks: Examining the disruptions in the BFSI landscape

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'All our attention is on organic growth'

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Foreword

The banking, financial services and insurance (BFSI) sector has undergone a seismic shift over the past few years, primarily driven by digital disruption, rapidly changing customer expectations and sustainability imperatives. Market dynamics too have, of late, had a spiralling effect, as evinced by the tremors in the global economy following attempts by global central banks to rein in inflation by hiking interest rates. India's banking sector, fortunately, has seen little impact, as loans rather than investments comprise the larger share of Indian banks' assets and the relative increase in interest rates was much lower than that in the western world.

In the banking space, India continues to be at the forefront of innovation and financial inclusion with the Unified Payments Interface (UPI) and Aadhaar stack. India is also one of the select few countries that has launched its own Central Bank Digital Currency (CBDC). While the Reserve Bank of India (RBI) perceives CBDC as the next-generation seamless, ubiquitous, anonymous payment mode that delivers value to customers, there is, however, more ground to cover before digital currency can become the dominant mode of exchange in India and elsewhere.

On the insurance front, the pandemic was the litmus test of the insurance sector's resilience quotient in India. Despite the unprecedented disruption caused by COVID-19, the insurance industry in India was by and large solvent, indicating that there is enough room for leveraging capital and using efficiency tools for furthering growth.

The colour of money then is the broad theme of this edition of Immersive Outlook, with the spotlight on securing the customer's future by building trust, demonstrating value and meeting customer expectations with hyper-personalisation. While wealth, as they say, may consist of having few wants rather than great possessions, in the current BFSI landscape, if those few wants are met satisfactorily, the 1.4 billion-strong population of India will have much to celebrate. That is the crux of the articles and interviews.

Varun Dua, Founder and CEO, Acko General Insurance Limited, emphasises that point – showing value rather than preaching it. In an online interview with **Joydeep K. Roy**, Partner and India Financial Services Advisory and Global Health Insurance Leader, he insists on the need for insurance companies to transition from being complex product companies to trust and brand companies, and discusses the necessity to bridge the protection gap and the means of rural penetration.

'Digital at the fore, human at the core' is **Shyam Srinivasan's** mantra for transformation. In a conversation with **Venkata Peri**, Partner and Research and Insights Hub Leader, the MD and CEO of Federal Bank says that technological advancements and rapid innovations in the banking space have further accentuated the need for human connection.

In Bridging gaps in the India insurance sector, Partners **Amit Roy** and **Nitin Jain** contend that the insurance industry's growth at a CAGR of **~12%** over three years points to a huge opportunity to cover the 90% protection deficit. India is the 10th largest and fastest-growing insurance market in the world. To further accentuate this growth, harnessing technology is the need of the hour. The authors recommend, among other initiatives, embedded insurance and innovation for developing hyper-personalised products to win customers and influence people via robust distribution channels.

In Assessing vulnerabilities in India's banking sector, Partners **Kuntal Sur** and **Rounak Shah** examine the resilience of the domestic banking system by scanning the vulnerability indicators in India's banking system. Elaborating on the importance of timely regulatory intervention and the need to build investors' trust, they recommend a three-pronged strategy to help banks withstand global headwinds.

Mihir Gandhi and **Zubin Tafti** focus on global tailwinds in the Future of digital currency in India. India is steadily transitioning to the digital mode with a record INR 149.5 trillion UPI and card transactions registered in 2022. According to the India Digital Payments Annual Report, UPI clocked over 74.05 billion transactions in volume and INR 126 trillion in terms of value. Understandably then, the RBI foresees the e-Rupee as the next-generation ubiquitous payment mode that will deliver value to customers. The authors dwell on what it will take to turn the RBI's vision of a cashless economy into reality.

It is evident that the BFSI sector is poised for further disruption and exponential growth. The integration of emerging technologies with business strategy, as the articles and interviews suggest, will unlock new possibilities for hyper-personalisation, customer engagement, efficiency and risk management.

We hope you find the content in this edition insightful. Reach out to us if you would like to have a more detailed discussion on any of the aspects we have touched upon.

Vishnupriya Sengupta
Senior Director, Markets

‘Insurance companies should be able to **unlock services to show value’**

Varun Dua, Founder and CEO, Acko General Insurance Limited, believes insurance companies need to transition from being complex product companies to trust and brand companies. In an online interview with **Joydeep K Roy**, Partner and India Financial Services Advisory and Global Health Insurance Leader, he outlines the key factors that could ensure wider reach and lead to enhanced customer experience.

Varun Dua (left); Joydeep K Roy (right)

Excerpts from the interview

Joydeep Roy: Good afternoon, Varun. It's a pleasure to have you here with us. Having known you for two decades and having seen the passion you bring to the insurance industry while being single-mindedly focused on creating value, I wish to ask you, how do you feel about this journey?

Varun Dua: Yes, Joydeep, we have known each other for a while, and it's been a long journey. Over a period, one doesn't typically tend to get attached to a domain like insurance, but I did. More than passion, I guess it's the attachment to the insurance business that made me explore the domain and find better ways to provide solutions. My journey, as a professional providing software services to this industry to selling insurance products to now developing our own products, has been an exciting one altogether, and I continue to remain attached to this space.

Joydeep Roy: That's true, Varun. At a time when some people didn't believe that the youth of India could get attached to the insurance industry, you had a holistic view of the market, the protection gap, and the gap in efficiency. I have been working with you, and I think that your experience over the years in this domain has made your journey unique. What are your views on the protection gap, which most insurance companies believe will provide a lot of growth potential?

Varun Dua: Yes, I agree that the protection gap exists. If you look at the type of products in the Indian insurance market, you will realise that most of them are savings based, and life insurance products, too, haven't been able to penetrate rural India. I believe that the protection gap is much larger than what the numbers say. I think that the insurance industry in India is mostly saturated in 30–50 cities and there is lack of awareness about insurance products in tier-3, tier-4 places and rural areas, and that restricts our ability to enter those markets as we have not found that magic wand in terms of cost structures and types of products that we can offer there.

Even our company is not focused on that segment as we are still trying to concentrate on the digital population, which is savvy and aware. It needs a high degree of focus to enter the rural markets and create awareness in an environment where frauds are rampant. As we are trying to find solutions for the same, I strongly believe that we need companies which specifically focus on rural markets, backed by specialists.

Joydeep Roy: There is a lot of interest in the insurance industry from the private equity (PE) sector. Your company is one of the first to be a PE-invested company. Do you think investment by the PE sector would help you bridge the protection gap or are there any challenges you foresee due to investment by PE firms?

Varun Dua: Based on my conversations with investors in the last five to six years, I understand that they are bullish on India, especially the insurance industry. They look at the insurance industry in India as a sunrise sector and they are eyeing tremendous growth in the domain in the next two to three decades.

However, there are two aspects I would stress upon where we face challenges, the first one being the regulatory aspect and the second one being market structure. I would first like to talk about the challenges related to market structure. I believe that a lot of capital goes into growing a business in the highly competitive 30–40 cities, so every new infusion of capital is competing within that market base, catering to the same set of population.

This is creating margin pressure for all players, and they try to undercut each other. There are no new models yet to reach out to the uncatered population which has other cost structure challenges.

Therefore, I believe that PE firms are hesitant in the wake of capital competing in the same segment which makes the return profile probably less lucrative.

On the regulatory side, we are seeing some developments like scrapping of complicated laws and regulations related to PE investment. Regulators have also been meeting up with investors and courting them. Steps should be taken to make it easier for PE firms to invest more in specialist companies, which would improve coverage of the unserved population, and this may include some tax breaks or lower capital requirements. The last thing I would like to point out here is that the government needs to bring some reforms in the public sector undertaking (PSU) insurance sector, at least in the general insurance segment, as most PE investors think that they are competing against the government when they do general insurance business. The pricing set by PSU insurance companies is difficult for private companies to match or support to compete.

Joydeep Roy: **I concur with you, Varun. The government has also announced the 'insurance for all goal' by 2047 as India marks the 100th year of its Independence. What major reforms do you think are required to achieve that target?**

Varun Dua: Structural changes are needed to get insurance for all and to achieve higher penetration. I believe the insurance industry in India is highly capital inefficient. For example, in spite of COVID-19 being such a big tragedy, the insurance industry by and large was solvent. The fact that such a big global disaster doesn't stress any insurer's solvency means that we are over-capitalised and that extra capital, which has been locked away, could be used for growth.

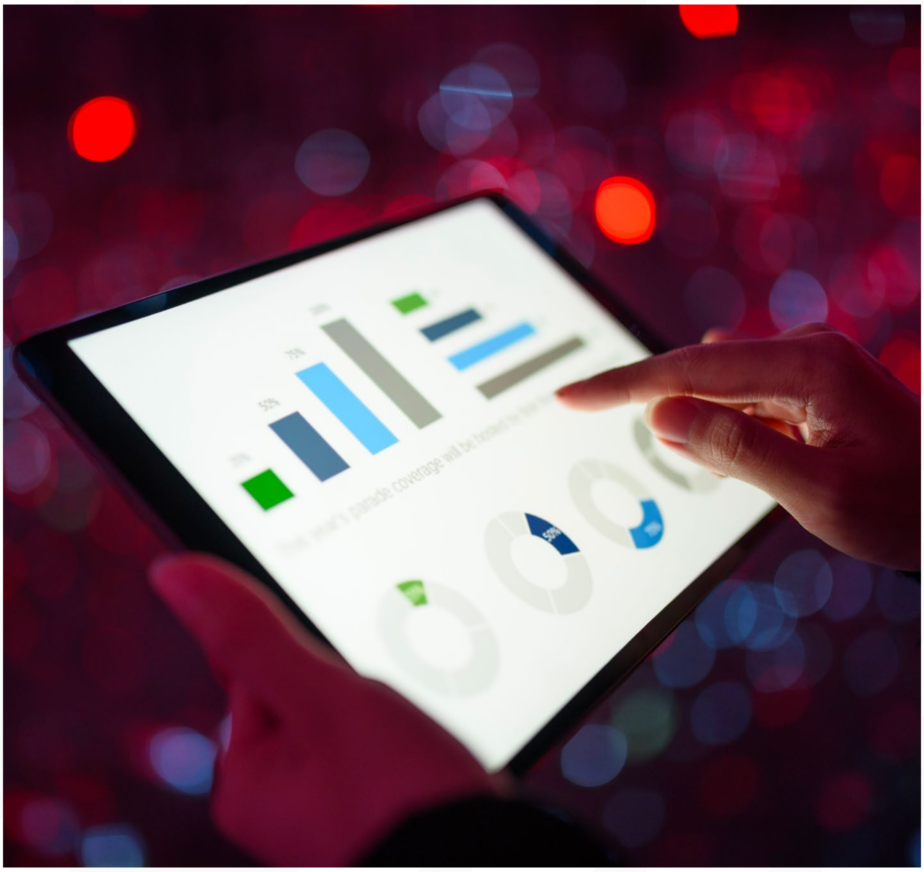
Today, we are hearing about a slew of changes like insurance adding value to people's lives and generating income. We are an emotional race, and we don't like to talk about wills and estate management. Companies are now offering estate planning, trust management, will planning services, along with insurance, in an organic way and at the right moment. Customers need to receive value from an insurer on an ongoing basis and not just at the time of claim.

Customers often don't see value in insurance products. One general example I can provide is of BPO employees who, despite belonging to the low-to-middle-income group, are willing to pay high EMIs on expensive phones but are hesitant to spend that amount on their health or life insurance.

Hence, if there are some regulatory reforms which can open doors for insurers to provide myriad services, they can show value to customers and not just preach value. Another area that I would like to talk about here is risk-based solvency, which I hope will come in soon. I think risk-based solvency, value-added services and ability to cross-sell other financial products would make insurers relevant in the eyes of consumers and would help penetrate the uninsured population. I am glad that all these points are under discussion with the regulators. However, it is yet to be seen how everything unfolds, the regulations come into play and companies implement them. We are just excited that things are moving in the right direction.

Joydeep Roy: **There's a trend of emergence of common platforms for claims and sales to show clients rates and conditions. Do you think these common platforms for all insurers will play a role in market penetration?**

Varun Dua: We haven't seen such platforms in the past. However, Unified Payments Interface (UPI), as a common platform for payments, has done well. As an industry, we are excited for this common platform as it has many potential benefits, but there's also one challenge. Compared to insurance, lending and payments do not involve complex transactions and inherently that structure works. If I make payment to a street vendor, it's easy to do so through UPI. Lending may involve variables like term of the loan, tenure of the loan, cost of the loan, interest rate – all of which influence 95% of the decision making. In the case of insurance, there are too many variables involved. All policies are not the same, coverage can be customised, life stages are different. Payment and lending are very standardised use cases. If there are fewer regulations, insurance companies can come up with products which can be more personalised and suited to needs. On the one hand, there is a slightly complex use case which needs to be personalised and on the other, there is a standardised use case on a common platform. There is something of a dichotomy as the use cases of payments and lending are far simpler. However, for simpler insurance products like auto insurance and basic life insurance, the dichotomy can be addressed, and the common platform can be used efficiently and probably the platform can also cater to the untapped population of India as I earlier said. But I am doubtful about whether the common platform will become the only way or the predominant way to transact.



Joydeep Roy: Interesting take, Varun. You have been making a lot of simplifications on market penetration through embedded insurance. Do you think embedded insurance has a huge role to play in the coming days?

Varun Dua: I believe embedded insurance is a good starting point for product trials. We use it for customers who are new to our brand. If they try a product, the cost of the trial comes down. We ensure that such embedded products have a claims experience because that's when people will trust the brand. A product with lower claims would not be of value to the customer.

Joydeep Roy: Agreed, Varun, this experience is important and brings brand visibility and relevance. How can the insurance industry be more relevant in the light of ESG guidelines which are applicable to all kinds of companies? Do you think insurance companies can make ESG more relevant for their clients, constituents and customers?

Varun Dua: Healthcare costs in India, although affordable, are arbitrary when compared to those globally. During COVID, we saw that. Even when we process claims, we find many costs which are unnecessary. Globally, governance steps in when it comes to a payer-provider relationship. When payers become strong and large, and most of the expenses go through insurance companies, it automatically creates a balance in terms of transparency and costs as institutions keep a check on each other. I think Ayushman Bharat is a great step, and it has standardised some costs because as the amount goes through the payer and to the provider, the checks and balances automatically come in.

On the environment side, one important thing that we, as a company, are interested in is the carbon footprint of the cars we are insuring. I think we can explore if a part of our business goes to set off the carbon footprint of the cars we are insuring. The data, size and scale of the insurance industry along with its ecosystem can play a part in the matter of healthcare and environmental costs, which may be difficult to quantify. However, I believe it's too early to say so as many companies haven't ventured into this territory. For example, If insurance and FASTag can be used together to reduce waiting time at toll booths, or track non-compliant vehicles, it can also save fuel. But not only insurance, ESG is also at a superficial level for many industries.

Joydeep Roy: There are two big challenges for the insurance industry: one being the complicated products and the hustle it takes to sell them and the other being the shortage of good talent. How do you tackle these challenges?

Varun Dua: I think the insurance industry has gotten into the narrative that it needs complex selling to get customers, but at Acko, we are trying to change things. I think there are other aspects in a business: your product can be complex but there are also factors like trust, the brand. A lot of technical stuff can probably not be as important to customers if you are providing value to them. So, if you create trust and experience, the customers will buy your products. Social media today is filled with complaints against insurance companies. Although the intention of most companies is not wrong, they eventually settle the claims, but the process they adopt is painful for customers. Hence, customer experience needs attention.

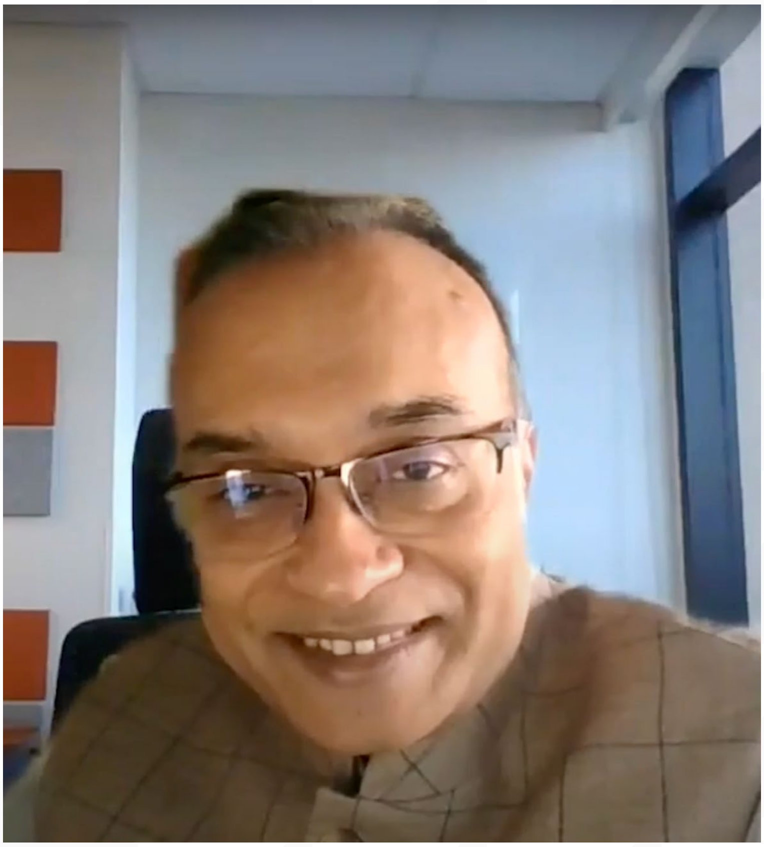
On the second part of your question, in the early days, we did face some problems in getting talent as you said earlier, but I believe the newer generation of employees – for instance, people born in the 90s or who are in the early or mid-stage of their career – are starting to get into management positions and they are more inclined towards doing good and not just making money. It was difficult to align them to policies or conditions which aren't good for consumers as they believe in fairness, doing the right thing. They consider a job and money to be a part of that greater thought. The newer generation wants to add value while making money in the process. So, if an organisation provides them with that type of culture, they stick with it or else they look for other opportunities.

As I earlier said, if you have built trust and brand value, employees feel a sense of belonging and it all leads to better synchronisation of things. That's how we have also tried to build our workforce. We made sure to hire candidates from outside the insurance industry to get fresh perspectives. They can learn about the domain in six months, it's not that hard. We need more and more new people who can bring fresh perspectives.

On the tech front, it is imperative for technology to be a part of any business, so the ability to hire people who are tech-focused is the need of the hour. A business may get obsolete sooner or later if it is not focusing on technology.

Joydeep Roy: Thanks a lot, Varun, for the interesting insights and for helping us understand how the insurance industry is focused on its future. It was a pleasure talking to you. Thank you for being with us.

Varun Dua: Thanks a lot, Joydeep. It was my pleasure too.



Bridging gaps in the India insurance sector

The growth of the Indian insurance sector is important for the expansion of India's GDP. With customer requirements driving innovation in this space, insurance sector CEOs have their work cut out for them, say **Amit Roy** and **Nitin Jain**.

Insurance and reinsurance companies have globally experienced accelerated transformation by adopting emerging technologies. In India, insurance companies have often repositioned themselves in the broader economic fabric as stabilisers of business, markets and societies during economic upheavals.

Despite the challenges due to the COVID-19 pandemic, climate crisis and the Russia-Ukraine conflict, the Indian insurance industry, the 10th largest in the world, has grown at a robust rate of 10.3% in FY 2022 compared to the muted growth rate of 7.9% in the previous year.[1] Its agility in embracing digitisation across operations and distribution, and robust risk management fundamentals with the overarching principle of placing customers first have reinforced the resilient nature of the Indian insurance industry.

While the Indian insurance industry continues to grow year-on-year on the back of varied factors, the life insurance market penetration remains at 3.2% as of 2021[2] due to increasing protection deficit and limited distribution reach, among other reasons. Alongside, insurers are often perceived as a market stabiliser, and there remains a probability of future shocks on account of current and emerging trends in business, technology, regulatory landscape and policies. Our article scans these factors before weighing in on the CEO's agenda.

1 IRDAI.gov.in

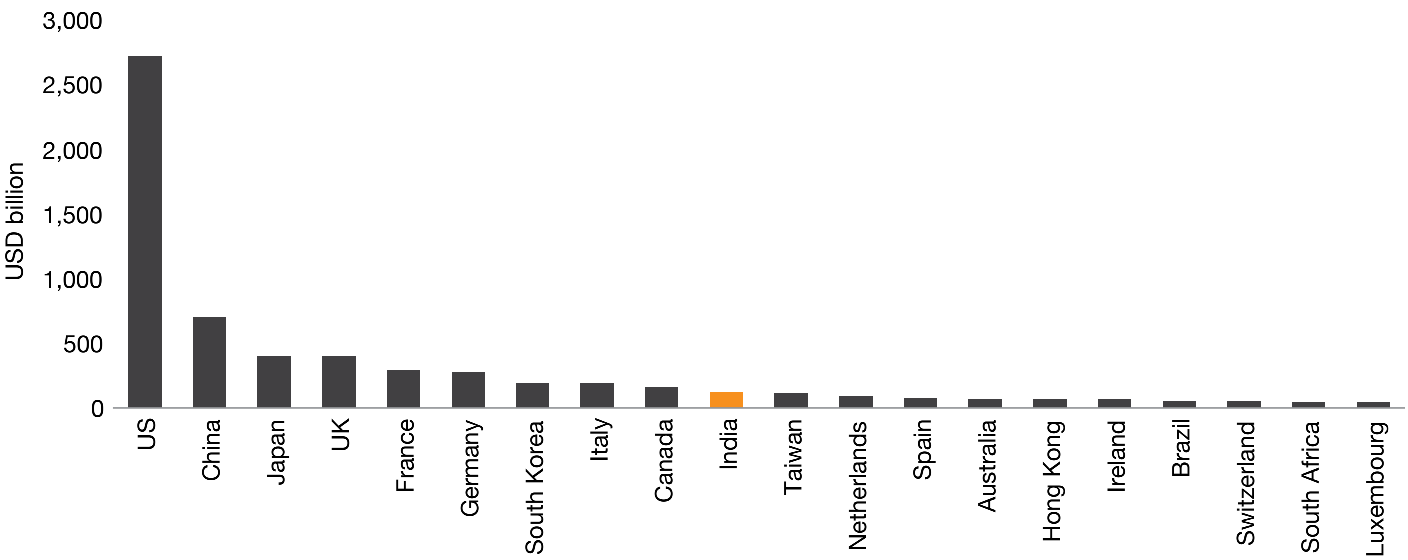
2 Economic Survey 2022-23: https://www.indiabudget.gov.in/economicsurvey/

1. A resilient and fit-for-future Indian insurance industry

The insurance industry has been globally acknowledged as a key stakeholder in restoring financial stability during uncertain times. As of March 2022, the total investment by Indian insurance carriers amounted to more than USD 700 billion.[3]

Insurance companies are one of the major contributors in strengthening capital markets by channelising a significant proportion of their investment (>50%) in the debt and equity market. Given the sheer size of its investment in the economy, the insurance industry plays a crucial part as a stabiliser of market sentiments during a crisis.

Figure 1: Top 20 largest insurance markets in the world by premium volumes, 2021



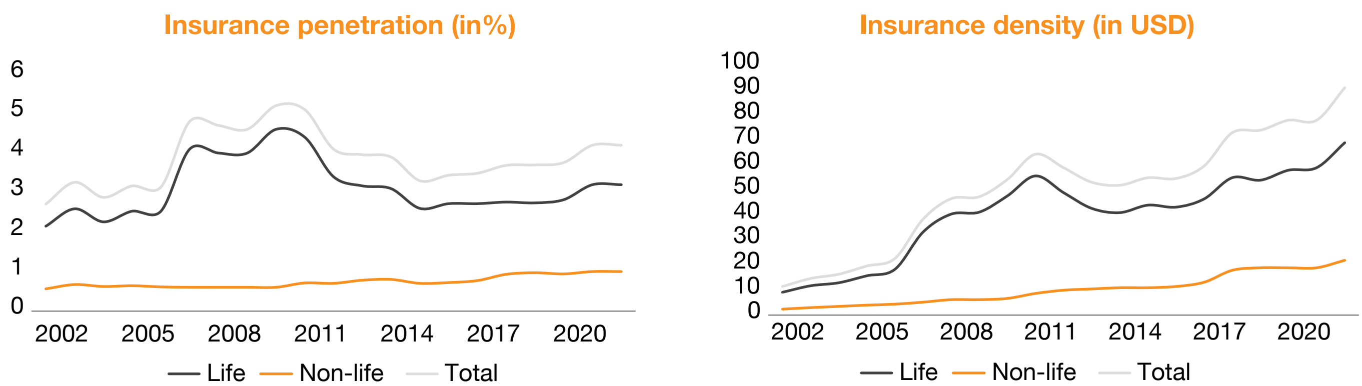
Source: Swiss Re Sigma Reports, Various Issues

3 IRDAI Annual Reports and Publications

Therefore, the insurance sector is perceived as an important contributor in reducing economic costs by providing further resilience in disaster risk reduction. The government of India recently formed a working group to develop a parametric solution for livelihood protection. These solutions could help mitigate losses by providing a safety net for businesses and individuals impacted by global and regional disasters and help them to recover quickly and reduce the overall impact of the disaster on the economy. It will also work towards reinforcing the customers' trust in the insurance sector.

In FY 2023, general insurance and life insurance markets have continued to progress on the path to recovery after the COVID-19 pandemic by growing at 16% and 18% respectively in comparison to the previous year.[4] The insurance industry is expected to grow at a higher rate in India over the next decade. The near-term improvement in market penetration and growth have been fuelled by easing of regulatory policies, fast-paced digitisation efforts by industry players and increased awareness among customers.

Figure 2: Insurance penetration and density in India

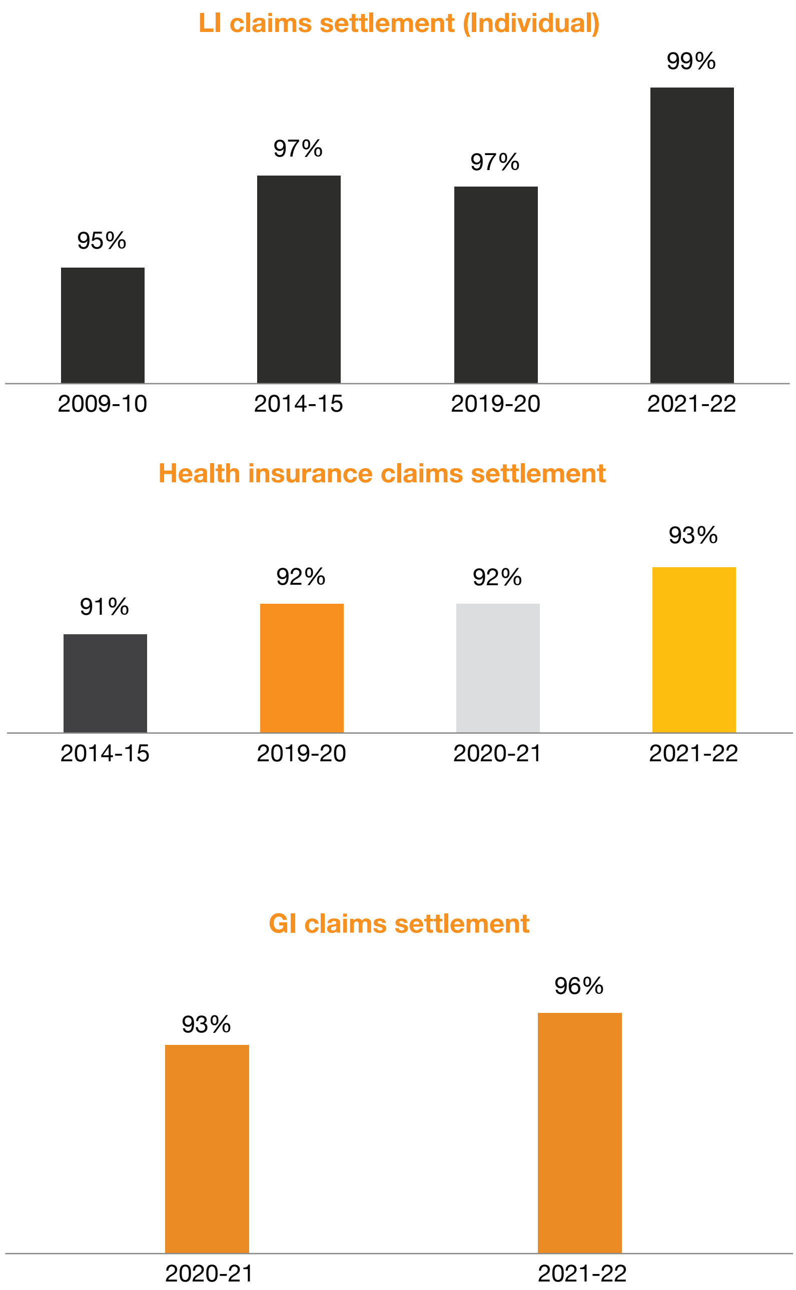


Source: Swiss Re Sigma Reports, Various Issues

4 IRDAI.gov.in

Despite the positive impetus, the protection gap in India continues to widen, which poses a challenge and brings an opportunity for the industry.[5] As of FY 2020, only 18% of the eligible population subscribed to pure retail term offerings and the protection penetration (basis sum assured) was at 12% (approx.).[6] This protection gap is expected to grow further at 4% per annum.[7] As per Swiss Re Institute estimates, the mortality protection gap in India alone stood at USD 40.4 billion (in premium equivalent terms) at the end of 2021.[8] Recognising the need for new protection products that will address evolving risks, accompanied by the recent wave of market entrants with digital-first operating models, increase in reach and ease of doing business through technology interventions, and the overall focus of the Government on driving financial inclusion through far reaching insurance schemes are expected to gradually decrease the protection gap in India.

Figure 3: Insurance claims settlement ratios in India across life, general and health insurance sectors



(Note: Figures have been rounded off.)

Source: IRDAI annual reports and publications

Over the years, insurance carriers have been adopting several self-initiated and regulator-mandated reforms in their operational processes that place the customer at the centre of the insurance ecosystem. Simplification of policy wording and standardisation of terminology, ease of getting serviced by the carrier, hassle-free claims intimation and processing are some of the key interventions which have led to an improvement in the customer's experience with respect to their insurance policies. Claims experience is the single most important factor which determines whether the customer will continue with the same carrier or not. Today, claims settlement ratios across life insurance, general insurance and health insurance elicit greater faith among customers who trust that their interests will be protected.

5 Protection gap is the difference between the insurance amount that is economically beneficial, and the coverage amount purchased

6 Protection landscape in India - Past, Present & Future

7 Ibid.

8 Swiss Re Institute, Jan 2023 publication - India's insurance market: poised for rapid growth

2. Key growth drivers of the India insurance industry

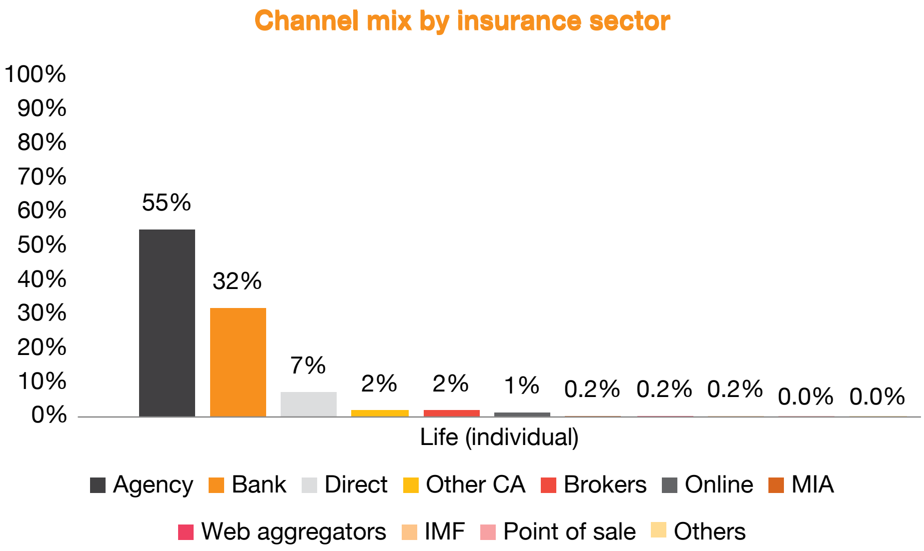
The global insurance sector is transforming at a rapid pace. Innovative product offerings, frictionless purchase and service journeys, technology-enabled risk assessment and processing of claims are changing the way carriers interact with their customers. Given below are the key drivers of growth and evolution in the Indian insurance sector:

New insurers: India has 57 insurance companies, including 24 life insurers and 33 non-life insurers.[9] The Insurance Regulatory and Development Authority of India (IRDAI) awarded two new insurance licenses earlier this year and plans to issue 20 new insurance licenses in 2023.[10] The existing insurance companies have stood the test of time, and many have managed to profitably list their businesses due to their sustained growth, robust distribution networks and customers' trust in the brand. Newcomers, however, will need to tap into the uninsured and under-addressed segment through innovative offerings, focused channels and a digital first outreach.

Product offerings: With the increase in new age risks and growing protection gap, two distinct trends have emerged in the India insurance market. First, the IRDAI is encouraging the standardisation of existing protection products such as life cover under Saral Jeevan Bima or health cover under Arogya Sanjeevani insurance product to simplify the purchase experience for customers and increase insurance penetration. Second, with the introduction of the 'use and file' procedure, insurance companies are looking at launching products with increased speed to market without the regulator's prior approval and exploring innovative product offerings to cover the expanding risk landscape and insurance needs emerging from changing lifestyles. New age insurance covers such as cyber insurance, electric vehicle (EV) insurance, climate risk insurance, bite-size/ sachet insurance (e.g. mobile insurance, disease specific covers), pay-as-you-drive cover and other subscription-based covers will soon form an integral part of the overall insurance market.

Distribution channels: Traditional channels continue to be the dominant players and new regulations regarding corporate agency tie-ups between banks and insurers, and relaxation of commission pay-out norms will further bolster these distribution channels. However, with more than 700 million active internet users pan-India, including nearly 425 million users in rural India at the beginning of 2023[11], the future of distribution channels may change. Digital channels, ecommerce platforms and online ecosystems are expected to be the preferred distribution model ensuring greater reach and connection in remote areas and promoting ease of business for the customers.

Figure 4: Contribution of various distribution channels to insurance sub-sectors (new business)



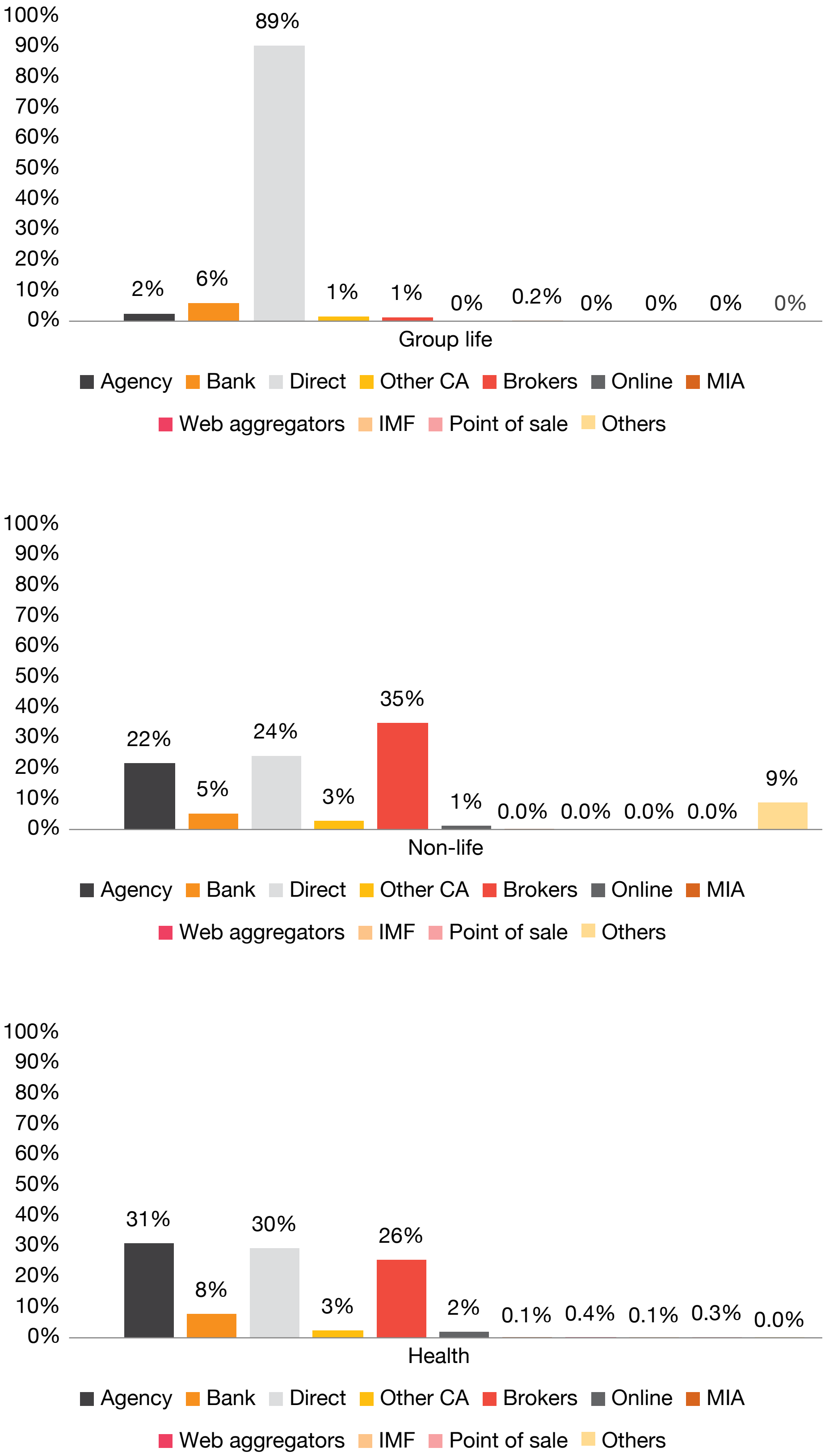
Source: IRDAI Annual Reports and Publications

9 IRDAI.gov.in

10 https://www.bqprime.com/business/irdai-looking-to-issue-licenses-for-20-new-insurance-companies-says-chairman

11 https://economictimes.indiatimes.com/tech/technology/report-says-over-700-million-active-internet-users-in-india-as-of-december-2022/articleshow/98673654.cms

Channel mix by insurance sector



Source: IRDAI annual reports and publications

Government schemes: Several schemes such as Pradhan Mantri Jeevan Jyoti Bima Yojana for life insurance cover and health insurance schemes such as Pradhan Mantri Suraksha Bima Yojana, Rashtriya Swasthya Bima Yojana, Pradhan Mantri Jan Arogya Yojana – Ayushman Bharat, Aam Aadmi Bima Yojana, and Central Government Health Scheme, are ensuring insurance coverage to the marginalised sections of society. Ayushman Bharat alone aims to provide INR 5,00,000 health cover to approximately 107.4 million families which amounts to 500 million beneficiaries. As many as 237.3 million Ayushman cards have been issued till March 2023 in a span of 4.5 years. More than 38 million treatments worth a massive USD 5.49 billion have been provided across the Indian network of 28,000 PMJAY-empanelled hospitals.[12]

Another marquee scheme, Pradhan Mantri Fasal Bima Yojana, was launched in 2016. The crop insurance scheme received around 67 million farmer applications and covered 25 million hectares of farmland in 2022.[13] As of March 2023, the volume of claims paid out under the scheme stood at INR 1.32 lakh crore.[14] These schemes have helped reduce the protection gap in rural areas, where insurance penetration has historically been low.

Digital first and tech-enabled ecosystems: The pace of technology adoption has accelerated exponentially. Insurers have adopted robotic automation platform (RAP), artificial intelligence (AI), cloud and data analytics, application programming interface integration and

12 https://nha.gov.in/PM-JAY; USD conversion at prevalent exchange rate

13 https://pib.gov.in/PressRelease

14 Ibid

developed online platforms and mobile apps to transform front-end and back-end operations across distribution, servicing, claims and product development. Carriers are gravitating towards analytics-driven customer-centric processes to draw in and engage with their targeted customer profile. AI-driven analytics has already made it possible for insurers to offer hyper-personalised products, pricing and product life cycle journeys to their customers. Furthermore, omnichannel servicing is becoming the norm, as customers increasingly expect seamless interactions with the insurers through multiple channels.

Technology has also enhanced transparency and facilitated ease of product research, insurance purchase, claims intimation and processing, and provides information on policy inclusions/ exclusions. This has helped in increasing the trust of the customers in insurance providers.

Embedded insurance, though not yet a significant portion of the market, is expected to become increasingly prevalent in the coming years. Digital ecosystems including digital payment apps, ecommerce players, third party application providers and e-tailers will emerge as the primary models driving the penetration of embedded insurance.

Changing risk landscape: Increased use of technology where personal and financial data of customers is collected and stored by service providers at every touch point is a prominent aspect of businesses today. In recent times, several organisations in India faced an average of 2,108 cyber-attacks per week in the first quarter of 2023.[15] Insurers have recognised this risk and are now focusing on cybersecurity threats and ways to counter them. This segment is expected to grow significantly large in the near future as corporates and individuals become conscious of and seek protection against growing cyber threats.

Climate risk has been identified as one of the major disruptors for businesses and individuals alike. Climate risk insurance covers a variety of risks from loss of income to indemnification of damages caused due to natural disasters. The IRDAI has set up a panel to develop parametric insurance[16] in an attempt to address this requirement. Insurers are also looking at offering lifestyle-driven, personalised covers such as pet insurance, shared property insurance among flat mates, nomad insurance for travellers who are on a career break and mental health cover for millennials.

Regulatory intervention: Several initiatives have been undertaken by the IRDAI to create the right environment for carriers to cater to the changing market demands. Relaxation of regulations for companies which are registering for insurance license is expected to encourage even smaller players to enter the market. Launch of the ‘use and file’ procedure and ‘regulatory sandbox’ will spur product innovation and faster go-to-market for new offerings. Recent regulations on handling ‘expenses of management’ and commissioning obligations that include an increase in allowances for rural/government schemes and

15 https://timesofindia.indiatimes.com/gadgets-news/india-records-18-increase-in-weekly-cyberattacks-in-q1-2023-report/articleshow/100015972.cms

16 Parametric insurance is an insurance agreement to make a payment upon the occurrence of a triggering event, and does not cover indemnification of actual loss incurred.

InsurTech expenses will provide the requisite financial incentives to insurance carriers to increase their focus on the rural market and transition to leaner tech-led operations.

Another regulatory initiative in the offing is the risk-based capital (RBC) regime. Considering the severe financial stress that the pandemic had placed on liquidity and capital adequacy of insurance carriers, the IRDAI has renewed the focus on introducing RBC norms in the Indian insurance industry. RBC will ensure that insurers have a sound financial position and hold adequate levels of capital to be better equipped to withstand large risks and reduce the impact of social and economic disruptions.

Additionally, the IRDAI is planning the launch of Bima Sugam, an online portal which will be a one-stop shop for all insurance-related queries, policy purchase, claim settlement and insurance advice.

3. Making rural inroads

At least 65% of India's population resides in rural areas.[17] As per reports, currently less than 10% of people in rural India have life insurance coverage while less than 20% of the rural population have health insurance cover. Apart from government schemes which cater to rural demographics, the life insurance industry also underwrote 6.5 million policies in FY 2022 in the rural sector.[18] General insurers and standalone health insurers underwrote a premium of INR 283 billion and INR 33 billion respectively in the rural sector for the same period.[19] This is primarily driven by regulatory mandates issued by the IRDAI to drive an inclusive agenda in the insurance sector.

One of the key challenges faced by private sector insurance carriers operating in this market is the cost of distribution and servicing vis-à-vis the average revenue per capita. Changes in the last decade in terms of the reach of the telecom sector in rural areas, exponential growth in smartphone and internet users accompanied by the increased coverage of microfinance institutions in these markets are expected to increase the accessibility of the rural customer and reduce the cost of distribution, thus making the rural segment more attractive for insurance players.

So far, the government has played a pivotal role in introducing and disseminating insurance among the rural demography. Increase in rural insurance penetration has essentially been led by various government schemes. In addition to local media campaigns, the government has extensively used the internet-enabled common services centre network for spreading awareness and connecting rural areas to urban India.

The IRDAI's Bima Vahak initiative aims to support women entrepreneurs in remote areas of the country to create awareness and build the trust of the customers in insurance products. Bima Vistaar, a committee to develop an affordable, accessible, and comprehensive cover for the rural population on a benefit based/parametric structure, is another attempt by the IRDAI to drive rural inclusion.

17 https://pib.gov.in/PressReleasePage.aspx?PRID=1894901

18 IRDAI annual report FY2022

19 Ibid

With time, it is expected that carriers will increasingly adopt technology solutions such as the use of drones and image recognition in crop insurance, AI-led, real-time risk assessment for health and life insurance underwriting, digital self-service journeys for claims intimation and processing to drive low-cost, automated operations and customised offerings in rural markets. Leveraging technology and digital solutions will be integral for making inroads in the rural insurance market in the coming years.

4. The insurance watch list – CEO's agenda

CEOs of Indian insurance carriers are cognisant of the dynamic nature of the market they are operating in and know that they have to be adequately equipped to handle future shocks. Continuous transformation could provide the agility and resilience to overcome disruptions, and mindful transformation backed by a carefully defined strategy to monetise investments in technology, develop innovative products and build next-gen customer-friendly processes will ensure profitable growth and market leadership.

Some aspects which the C-suite of an insurance company should consider are:

- hyper-personalisation of product offerings and customer journeys delivered through automation, AI and data analytics
- enhanced customer experience and penetration across urban and rural markets through frictionless purchase, servicing and claims journeys
- hyperconnectivity amidst a changing distribution ecosystem
- seizing opportunities presented by new-age risks and lifestyle-based insurance needs through innovative insurance covers

Key imperatives for insurance leaders:

1. **Keeping customer experience at the front and centre:** With hyper-personalisation moving centre stage, insurance leaders will need to empathise and understand the target customer behaviour and invest in solutions which help deliver personalised experiences that meet specific lifestyle and behaviour-based customer requirements. For starters, insurance carriers need to leverage master data management, deep data analytics and data sciences to garner insights on the customers and translate them into personalised offerings and tailor-made experiences for them.

   CEOs need to look at developing an omnichannel strategy, enabling interoperability among digital assets, and providing access to real time data to transform the customer service experience and improve brand loyalty.

2. **Using technology as an enabler of growth:** Cloud technology enables big data analysis and real-time insights, supports partner and customer apps and delivers an omnichannel experience for internal and external end users. Businesses can also consider using generative AI to deliver greater transparency and first time right (FTR) experiences in the areas of customer service, policy information dissemination and claims interactions.

   Predictive AI and machine learning (ML) models are helping insurers to avoid adverse selection, implement continuous fraud detection and carry out remote claims assessment, thereby improving the customers' insurance experience through faster processing and hassle-free settlements. Drone technology coupled with AI is helping insurers bring down the cost of underwriting crop and climate insurance and in seamlessly conducting surveys and loss assessment in calamity-stricken geographies. AI and behavioural analytics are enabling carriers to conduct hyper-personalised interactions with the customers and provide solutions which are most suitable to their needs. Every little convenience such as the preferred time to call, mode of payment, customised product nudges on life cycle milestones can now be provided to customers for increased responsiveness and customer stickiness.

3. **Adopting digital-first, leaner operations:** The next wave of growth in the market is anticipated through digital penetration of urban and rural markets. Leaders must adopt a digital-first approach in all customer and partner interactions to enhance ease of business. Digitisation and automation of the mid and back-office in conjunction with the front-end user interface will be crucial to draw out the benefits of a digital first strategy for improved customer experience (CX), leaner operations, lower cost per transaction, lower turnaround time and faster go-to-market.

   Online ecosystems, the India Stack and API integration of various platforms for payment and ecommerce present new opportunities for leveraging rich data sources and enabling carriers to reach remote areas through hyper-connectivity.

4. **Focusing on risk assessment and product innovation:** With increasing pressure to offer products that align with digital adoption, altering lifestyles, changing buying behaviour and dramatically evolving risks, insurance carriers will need to adopt alternate pricing techniques and principles of RBC to cater to such demands. Building risk assessment capabilities to decipher the nature and quantify the impact of new-age risks will be imperative and big data analytics and AI will play a huge role in understanding and mitigating such risks.

The CXOs then have their work cut out for them. The time is now to factor in technological innovation as a means to an end, rather than an end in itself. Harnessing technology can act as a great lever for the insurance industry to reach out to potential customers with hyper-personalised products via robust distribution channels. Insurance leaders who want to enter digital marketplaces will need to invest in strong partnerships, alliances and integrated infrastructure. A clear vision and strategic mission coupled with intent-driven execution can help companies stay ahead of the curve and eventually transform the insurance landscape.

Also contributing to this article were **Pragya Shree, Anuja Malvi** and **Vishnupriya Sengupta**

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Assessing vulnerabilities in India's banking sector

A grim global macroeconomic outlook has brought the vulnerability of financial systems to the fore. **Kuntal Sur** and **Rounak Shah** examine the resilience of the domestic banking system, and outline a three-pronged strategy to help banks withstand global headwinds.

Since March 2023, three mid-size banks have collapsed in the US – Silicon Valley Bank (SVB), Signature Bank and First Republic Bank. Despite banking behemoths pumping in a USD 30 billion rescue fund, depositor panic saw First Republic shuttering in May.[20]

In Europe, the collapse of Credit Suisse – fuelled by negative sentiment, following years of mismanagement and frequent changes in top leadership – has sparked fears of a ripple effect, heightening concerns around the stability of banking systems globally.

Interest rate hikes were among the driving forces behind the collapse of mid-size banks in the US, but such a situation is unlikely to occur in India. Loans rather than investments – which are more sensitive to interest-rate risks – comprise the majority share of Indian banks' assets, and relative increase in interest rates was much lower than that in the western world.

Banks are also permitted to hold investments up to 23% of net demand and time liabilities (NDTL) under the held-to-maturity (HTM) category. This regulatory provision provides banks with a secure investment option which can decrease their susceptibility to a fluctuating interest rate.[21] Notwithstanding the resilience, challenges remain in view of an unstable global economic climate, necessitating a reality check of the Indian banking system. Moreover, the relative rate of increase in interest rates in India is much lower than in the US and other developed countries to rein in inflation.

20 https://www.bloomberg.com/news/articles/2023-03-16/first-republic-to-get-30-billion-of-bank-deposits-in-rescue

21 CRISIL (April 2023). Ratings round-up, second half, fiscal 2023: Positive bias amid cautious clouds

Macroeconomic factors driving global uncertainties

- **Synchronised monetary tightening:** Synchronised monetary tightening by central banks to control inflation has led to stricter financial conditions, presenting challenges to the banking system. In its latest annual report, the Reserve Bank of India (RBI) also underlines that recent turbulence in the financial sector in the US and Europe highlights the need for India to reassess risks to financial stability and resilience of its financial institutions in the context of monetary policy tightening.[22] During the pandemic, the RBI's focus was on supporting economic growth. However, currently, the monetary policy is concentrated on balancing inflation targets while withdrawing accommodation.

- **Interest rates at a decadal high:** The Federal Reserve's policy rate is the highest since August 2007. The European Central Bank and Bank of England have increased their policy rates by 375 bps and 400 bps in the current cycle respectively, as on 10 May 2023, from near zero policy rate.[23] India has also witnessed policy repo rate hikes in 2022 after pandemic-induced rate cuts. In the period of May 2022 and February 2023, the RBI hiked the repo rate by 250 bps cumulatively, with an eye on financial stability. The repo rate, currently at 6.50%, is expected to remain stable now that inflation has eased. Several banks raised interest rates on their fixed deposits, with small finance banks (SFBs) offering interest as high as 9% to senior citizens.[24] High interest rates affect bank profitability and debt servicing.

- **Inflation – a cause for concern:** Commodity prices spiked due to geopolitical conflicts but have now moderated, while supply chain bottlenecks have eased. Subsequently, global headline inflation is projected to fall from 8.7% in 2022 to 7.0% in 2023. Core inflation, however, will decline more slowly.[25] India's consumer price index (CPI) inflation is already declining since it touched 7.8% in April 2022. The CPI-based inflation eased in April 2023 to 4.70%, down from 5.66% in March 2023.[26]

- **India exceeds expectations, despite stunted GDP growth:** While growth forecasts for economies have been reduced, India's GDP rose to 6.1% in the January–March 2023 quarter,[27] which was significantly higher than the estimated 5.1%. The GDP growth for October–December quarter in 2022 was recorded at 4.4%. For 2022–23, the GDP growth has been pegged at 7.2% – higher than the previous estimate of 7%.[28]

Foreign banks under the scanner

An uncertain macroeconomic environment has also prompted the scrutiny of foreign banks operating in India. For instance, the failure of Credit Suisse raised concerns on the future of its operations in India. However, whether UBS will surrender Credit Suisse's licence to the RBI or continue operations after the takeover is complete, remains to be seen. UBS had exited the Indian banking system after surrendering its licence in 2016.[29]

Like several other banks, UBS had also felt the impact of the 2008 financial crisis. In the years that followed, western banks re-evaluated their investments across emerging markets. Some curbed their operations and others sold off assets and cut down their exposures to countries increasingly perceived as non-core while some banks withdrew altogether.[30]

The strategy adopted by foreign banks post crisis confirmed the fears of regulators in emerging economies that foreign financial institutions can waver when

22 RBI. Annual Report 2022–23

23 CRISIL (May 2023). Safe zone vibes

24 https://economictimes.indiatimes.com/wealth/invest/highest-fd-interest-rate-of-9-these-banks-have-hiked-fd-rates-in-may-2023/articleshow/100270341.cms

25 IMF (April 2023). World Economic Outlook

26 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1923709

27 https://www.mospi.gov.in/sites/default/files/press_release/PressNoteQ4_FY2022-23_31may23.pdf

28 Ibid.

29 https://www.businesstoday.in/industry/banks/story/will-ubs-shut-down-credit-suisses-india-unit-374077-2023-03-20

30 PwC analysis. Foreign banks in India at an inflection

confronted with a challenge or crisis.[31] In India, the withdrawal of foreign banks did not cause a major disruption due to the Foreign Exchange Management Act (FEMA) and banking regulations' restrictions on capital repatriation and liquidity management.[32] Since then, the RBI has stressed on local incorporation of foreign banks.

Under FEMA, it is mandatory for foreign entities to take permission for remittance of assets on closure, or remittance of winding up proceeds of branch offices. Thus, regulations under FEMA and the Banking Regulation Act restrict cross-border movement of liquidity. Banking regulations also limit the likelihood of free capital repatriation to parent by branches.[33] Banks must keep some of their profits in reserves, and profits can be repatriated to the head office only after the RBI's approval.

Market perception in these circumstances is also crucial, influenced as it is by the regulatory environment, market dynamics, macroeconomic trends and more recently – social media. The day before SVB's fall, venture capitalists had taken to Twitter to express concerns over the stability of the financial institution.[34] The situation was later described by the authorities as the first Twitter-fuelled bank run.[35]

As underlined by the RBI, when dealing with policies and actions associated with complex banking topics, managing public perception, regulation and supervision is a challenge.[36] Accordingly, in the wake of strong global headwinds, the RBI has, as part of its communication strategy, shifted its focus from conveying policy actions to releasing public awareness messages to manage perception, increase awareness and ensure alertness among its stakeholders.[37]

Bank runs driven by social media are also an emerging risk to a bank's financial stability. Financial institutions need to address this through media monitoring and engagement. Shaping public perception becomes especially important as geopolitical tensions and increase in interest rates subject financial markets to periods of uncertainty and instability.

Importance of timely regulatory intervention

Although credit ratings help determine the robustness of banks, it might not be the sole parameter. Most Indian banks are rated in the 'AA' (high safety) and 'AAA' (highest safety) category. However, ratings might not be the only important factor to determine a bank's stability since Credit Suisse (which crashed in March 2023) carried a credit rating of 'A' (adequate safety). Timely resolution by regulators prevented further panic in the market as the Swiss Central Bank quickly brokered the deal in which Credit Suisse was bought by rival UBS for CHF 3 billion in stock.[38] Both banks were also promised CHF 100 billion (USD 108 billion) in liquidity assistance by the Swiss Central Bank.

Another instance of swift regulatory action closer to home was when in 2020, the RBI intervened to support Lakshmi Vilas Bank (LVB) that was struggling with continuous losses and low liquidity. Soon after placing LVB under moratorium, the central bank announced that it would be merged with DBS Bank India Ltd (DBIL) – the subsidiary of Singapore's DBS Bank.[39]

A few months before LVB went under, the RBI had rescued Yes Bank with a restructuring plan. In March 2020, the RBI imposed a moratorium and replaced the bank's management. Under the restructuring, domestic banks led by the State Bank of India injected INR 10,000 crore in Yes Bank.[40]

Regulatory intervention, therefore, is key to protecting the interest of depositors and minimising a contagion effect. However, to restore market confidence, regulatory measures have to be implemented in a timely and decisive manner.

31 Ibid.

32 Ibid.

33 PwC analysis. Foreign banks in India at an inflection

34 SVB collapse

35 McHenry statement on regulator actions regarding SVB

36 RBI. Annual Report 2022–23

37 Ibid.

38 https://www.reuters.com/business/finance/ubs-take-over-credit-suisse-central-bank-2023-03-19/

39 https://theprint.in/economy/how-rbi-moved-quickly-to-save-lakshmi-vilas-bank-and-why-it-chose-singapores-dbs-for-merger/546608/

40 How central banks navigated bank collapse

Vulnerability indicators in the Indian banking system

Certain parameters that can help determine vulnerabilities in the Indian banking system indicate that banks in India maintain a higher-than-mandated capital to risk-weighted assets ratio (CRAR) with sufficient liquidity buffers in case of adverse events. It is to be noted that the minimum CRAR requirements for Indian banks is 100 bps higher than BASEL II mandated minimum CRAR. Banks have also succeeded in bringing down their non-performing assets in the last few years while generating consistent profits. However, robust risk management practices are a must to curb not only operational and business risks but also emerging risks around digital transformation strategy failures.

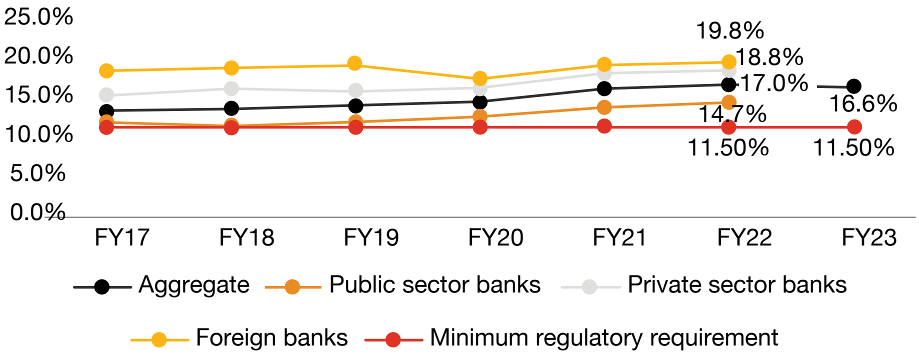
Parameters to determine vulnerabilities in the Indian banking system include:

1. CRAR
2. asset quality
3. liquidity
4. profitability.

1. CRAR:

CRAR remains above norms

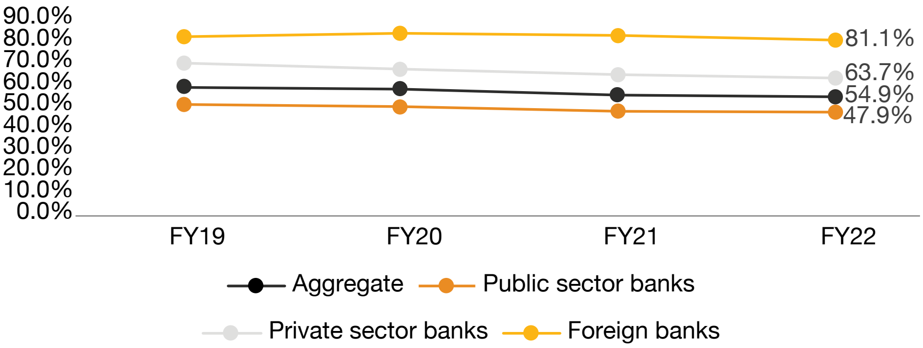
Capital to risk-weighted assets ratio



Note: For FY23, an aggregate CRAR of 16.6% is calculated for 17 SCBs.

Source: PwC analysis, RBI

Risk-weighted assets to total assets



Source: PwC analysis, RBI

Highlights: While CRAR for banks is above regulatory requirements, it is only marginally so. It is thus important that the CRAR is closely monitored, as a dip may pose challenges for the banks. In case of PSBs, an improvement in CRAR was mainly due to capital infusion. In terms of capital reserves, though the banking sector has a strong footing, it may need to adopt stronger risk management practices to counter market volatility and current macroeconomic conditions.

As indicated in the charts, banks have maintained a CRAR well above the minimum regulatory requirements of 9% (11.5%, including a capital conservation buffer of 2.5%). The CRAR and common equity tier 1 (CET1) ratio of scheduled commercial banks (SCBs) stands at 16.0% and 13.0% respectively.[41]

The RBI's macro-stress tests for credit risk found that SCBs are well-capitalised and can comply with the minimum capital requirements – even under adverse conditions. Under the baseline scenario, the aggregate CRAR of 46 major banks is projected to go down to 14.9% by September 2023. Moreover, it may slip to 14.0% in the medium-stress scenario and under a severe-stress scenario, it may fall to 13.1% by September 2023. In all three scenarios, the CRAR will remain well above the minimum capital requirements.[42]

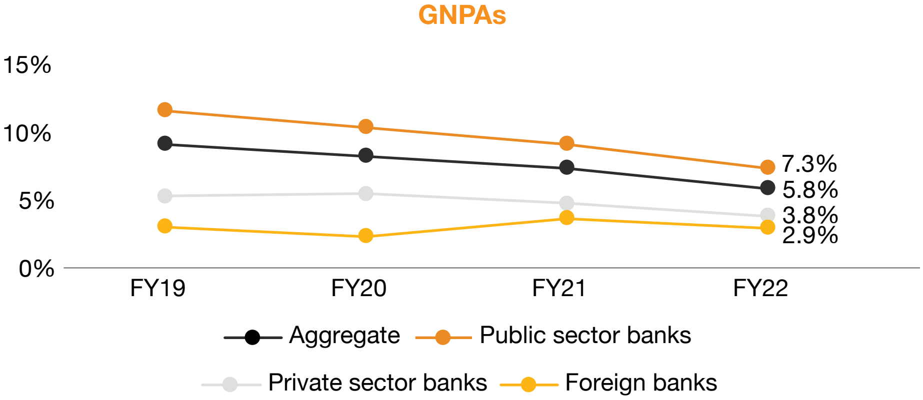
Foreign banks (FBs) have a stronger CRAR compared to public sector banks (PSBs) and private sector banks (PVBs). The asset quality of FBs has improved over the last five years in that they now have the lowest slippages in the industry, thus ensuring higher CRAR.

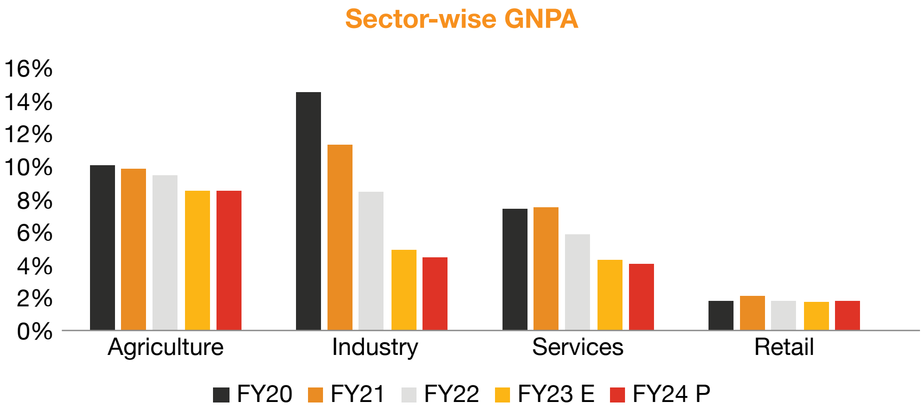
41 RBI. Financial Stability Report 2022

42 Ibid.

2. **Asset quality:**

Decreasing gross non-performing assets (GNPA) improves asset quality



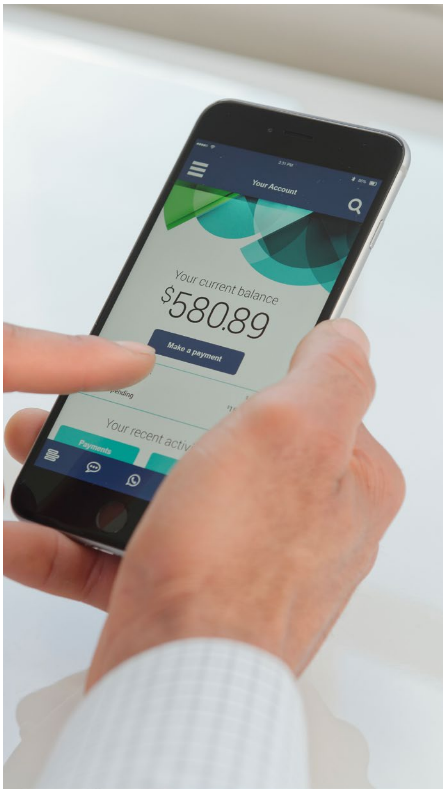


Source: PwC analysis, RBI

Highlights: PSBs and FBs saw a major dip in slippages in FY22, while PVBs saw an increase in the same. GNPAs show a declining trend overall, but PSBs may need to monitor the ratio more closely as GNPA for PSBs was 7.30% in March 2022 against the aggregate GNPA at 5.60% in the same period. Borrower concentration is another area banks should keep an eye on. Share of large borrowers in loans and NPAs stood at 47.7% and 62.3% respectively in March 2022. This could expose banks to risks in case of default.

GNPA, a major source of worry for lending institutions, has been decreasing, reflecting improved asset quality. The ratio of GNPA to gross advances fell from 5.9% in March 2022 to 5.7% in June 2022. The GNPA ratio stood at 5.0% in September 2022.[43]

The RBI expects the downward trajectory of the GNPA ratio to continue. Under the baseline scenario of stress tests, it is projected to fall to 4.9% in September 2023. According to CRISIL, GNPA will hit a decadal low of 3.8% to 4% in FY24 due to ongoing recoveries and upgrades for corporate accounts as well as expectation of recovery through the National Asset Reconstruction Company Ltd (NARCL).[44]



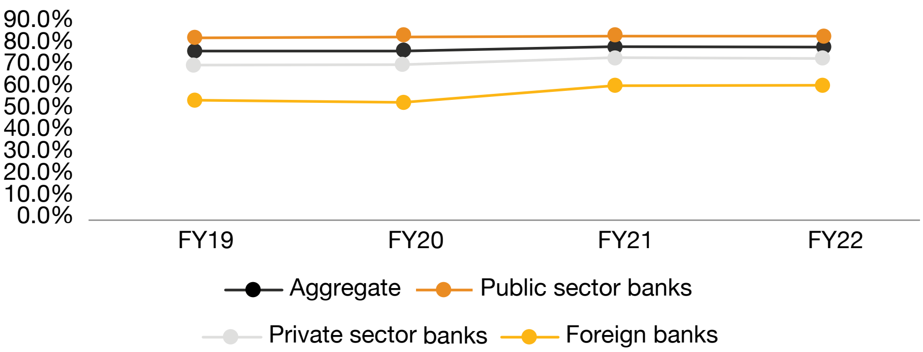
43 Ibid.

44 CRISIL. Cutting Edge

3. Liquidity:

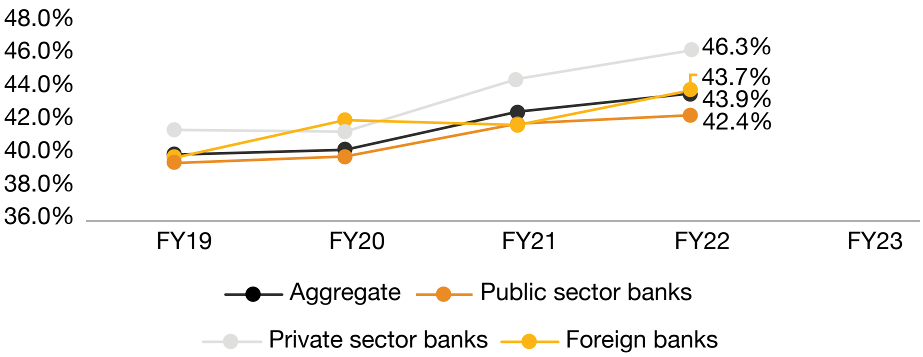
Banks maintain sufficient liquidity buffer

Deposits as a % of total liabilities



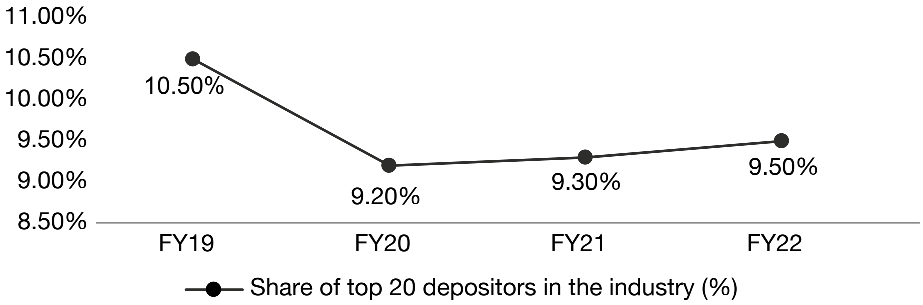
Source: PwC analysis, RBI

Share of CASA in total deposits



Source: PwC analysis, RBI

Share of top 20 depositors in the industry



Note: Includes data from 17 SCBs

Source: PwC analysis, RBI, annual reports of banks

Average ticket sizes of deposits in India

India	FY22	FY23
Total deposits (INR crore)	1,71,82,709	1,78,54,724
No. of accounts (in '000s)	22,55,000	22,55,000
Average ticket size of deposits (INR)	76,198	79,178

Source: PwC analysis

As indicated by the charts and table above, banks had a liquidity coverage ratio (LCR) of 135.6% in September 2022, which is significantly more than the prescribed 100%. However, this number has dipped from the previous LCR of 173.0% in September 2020 as banks have been using high-quality liquid assets (HQLAs) to fund credit growth.[45]

Our analysis showed that depositor concentration does not appear to be a risk factor. The top 20 depositors in SCBs only account for less than 10% of the total deposits, which indicates that a run on the bank – as in the case of US regional banks – is unlikely in India.

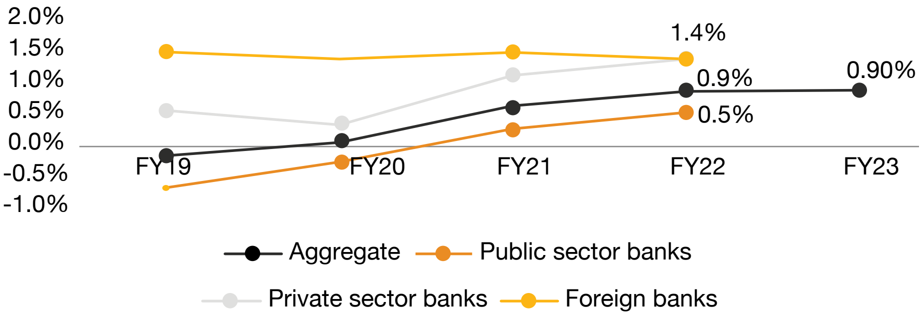
Highlights: Effective management of asset-liability mismatch should be a key focus area for banks. Banks that collapsed in the US were exposed to uninsured deposits due to asset-liability mismatch. Active management of the balance sheets with efficient tracking of assets and liabilities can help banks to avoid pitfalls in the future.

45 RBI. Financial Stability Report 2022

4. Profitability:

High credit demand and lower provisioning boost profitability

Return on assets (%)



Source: PwC analysis, RBI

Highlights: While credit risk outlook for various sectors is positive, banks may need to factor in sector exposures for efficient risk management practices, as some sectors may be more at risk on account of macroeconomic uncertainty. A post-pandemic slump in the technology sector impacted a substantial portion of SVB's client base, which ultimately led to the bank's downfall.

This underlines the need for banks to examine their sector concentration. Currently, in terms of deployment of bank credit, retail loans account for 29.90%, while industry makes up for 24.40% and agriculture for 12.30%. Agriculture and industry sectors also have high GNPAs at 9.40% and 8.40% respectively. Banks need to adopt prudent credit risk management practices to regularly monitor financial health of sectors with both higher share of bank credit and high GNPA. To manage sector-specific risks, banks may need to further diversify credit exposures across sectors and sub-sectors.

In the US, expensive regulation, rising competition and new customer demands are putting pressure on profitability.[46] Indian banks, however, are experiencing considerable profitability due to:

- robust credit demand
- lower provisioning requirements
- improvement in asset quality.

The profit after tax of SCBs grew to 40.7% in September 2022, fuelled by an increase in the net interest income and a reduction in provisions. Return on equity (RoE) showed improvement, reaching 11.2% in September 2022. Return on assets (RoA) – negative until FY20 – climbed to 1.0% due to a decrease in provisions and contingencies.[47]

Bank credit growth, which was a single-digit value for three years, touched 17.5% in September 2022 – a figure last seen in December 2011. Moreover, PVBs recorded a higher credit growth than PSBs. Bank credit is expected to grow to 13–15% during 2023, with the retail segment driving a major chunk of this growth – mainly due to an increased demand for home and vehicle loans. Other growth drivers include recovery in the services segment, with a pent-up demand in non-banking financial companies (NBFCs) and trade segments.[48]

46 Strategy& European banking vulnerabilities analysis

47 RBI. Financial Stability Report 2022

48 https://www.crisilratings.com/en/home/newsroom/press-releases/2022/11/bank-credit-to-grow-15-percent-in-this-and-next-fiscals.html

Building investors' trust

Our analysis suggests that Indian banks remain largely shielded from global spillovers on account of prudential regulations, regulatory oversight coupled with improved asset quality and profitability. However, a worsening global macroeconomic outlook leaves no room for complacency. Therefore, capital buffers, liquidity position, and credit risk practices must be constantly reviewed and strengthened.[49] It is also important for banks to build resilience by enhancing risk management, embracing innovation and upskilling their resources, and focusing on transparency and vigilant governance to build investors' trust.

Key considerations

Higher deposit insurance can enhance trust in banks, but there's a catch

Uninsured depositor runs triggered the failures of Silicon Valley Bank (SVB) and Signature Bank in March 2023.[50] With digital banking, depositors can withdraw funds at an unprecedented rate, sparking fears of more costly bank runs. Just before it collapsed, SVB depositors withdrew USD 42 billion in a single day, leaving the bank with USD 1 billion in negative cash balance.[51]

This underscores the need for banks to secure depositors' trust and perception. Following the SVB and Signature Bank collapse, regulator shored up confidence in the banking system by announcing that the banks would get 'systemic risk exceptions', meaning all deposits at both the institutions would be fully covered.[52] SVB had deposits worth USD 175 billion when it shut down, with over 90% of the deposits uninsured.[53] At present, the Federal Deposit Insurance Corporation (FDIC) guarantees deposits of up to USD 250,000 per person, per bank. As of December 2022, more than 99% of deposit accounts in the US were under the deposit insurance limit.[54]

In the past two decades, Asia and Europe have witnessed significant increases in coverage, and so has the US which provided a coverage of USD 100,000 until 2008. Canada provides a coverage of CAD 100,000,[55] while in the UK, deposits up to GBP 85,000 are insured.[56]

Amongst BRIC countries, India has the lowest deposit insurance coverage amount. In February 2020, the Deposit Insurance and Credit Guarantee Corporation (DICGC) raised the insurance amount from INR 1,00,000 to INR 5,00,000 per bank account. The number of fully protected accounts in the country stood at 294.5 crore as on 31 March 2023. This constitutes 98.1% of the total number of accounts (300.1 crore). In terms of value, deposits worth INR 83,89,470 crore were insured as on 31 March 2023, constituting 46.3% of assessable deposits of INR 1,81,14,550 crore. This means that the insurance cover in India is 2.91 times of per capita income in 2022–23.[57]

49 RBI. Annual Report 2022–23

50 FDIC. (May 2023). Options for Deposit Insurance Reform

51 SVB Collapse.

52 https://www.fdic.gov/news/press-releases/2023/pr23017.html

53 https://www.business-standard.com/article/finance/deposit-insurance-how-do-countries-protect-bank-depositor-s-money-123031300528_1.html

54 IADI Annual Trends Report: Deposit insurance in 2023

55 Ibid.

56 https://www.theguardian.com/business/2023/apr/13/why-move-to-bolster-uk-savings-protection-harks-back-to-financial-crisis

57 RBI. Annual Report 2022–23

In comparison, insurance cover in countries like the US and Australia is three times of per capita income. In Malaysia, it is 5.39 times of per capita income, while in Brazil and China it is 5.98 and 6.17 times of per capita income respectively.

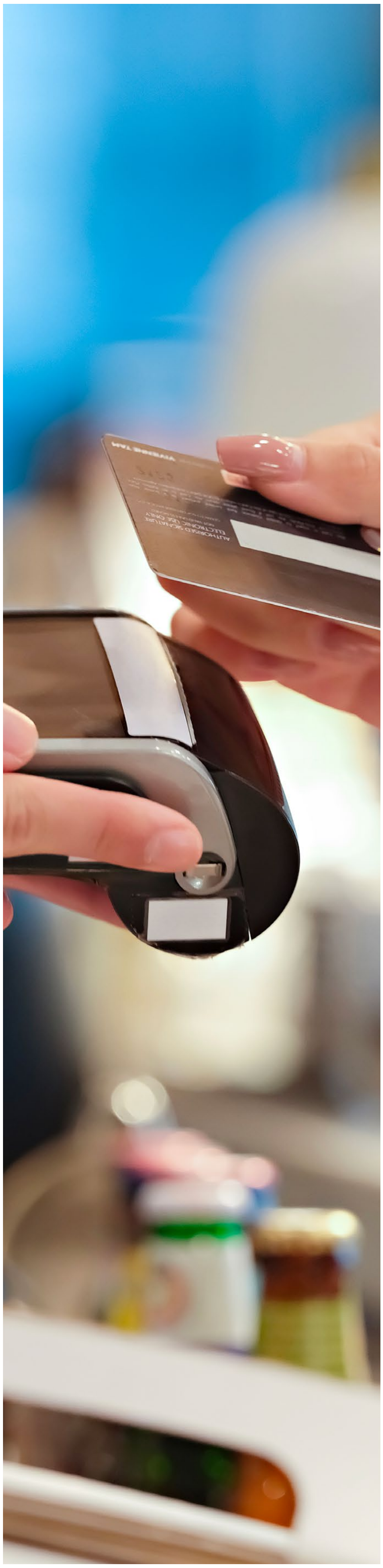
Country-wise deposit insurance (DI) cover

Countries	DI in local currency	DI in USD	Per capita income (USD)	DI/PCI cover
US	250,000	250,000	70,249	3.56
Australia	250,000	181,712	60,443	3.00
Switzerland	100,000	109,685	91,992	1.19
Japan	10,000,000	86,878	39,313	2.20
UK	85,000	116,935	46,510	2.51
Canada	100,000	79,780	51,988	1.54
Singapore	75,000	55,613	72,794	0.76
India	500,000	6,710	2,257	2.97
China	500,000	77,500	12,556	6.17
Mexico	155,000	7,562	10,046	0.75
Malaysia	250,000	59,861	11,109	5.39
Brazil	250,000	44,874	7,507	5.98
Bangladesh	100,000	1,166	2,458	0.47

Note: Data as of December 2021

Source: 2022 International Association of Deposit Insurers (IADI) Annual Survey, World Bank

The average ticket size of deposits in India stands at INR 79,178. As per the data available, in terms of the value of deposits covered, India covers 49% of the deposit value. The value of deposits covered in the US is 55.3%, while in Canada it is 26%. In Japan, 90% of the deposit value is covered.



Deposit insurance value covered

Country	Deposit value covered (%)	Deposit insurance fund (DIF) as a % of total deposit value	DIF reserve ratio (deposit insurance fund as a % of insured deposits value)
US	55.3%	0.70%	1.26%
Japan	90.2%	0.35%	0.39%
Canada	26.0%	0.19%	0.71%
India	49.0%	0.89%	1.81%

Source: PwC analysis based on secondary research

The turmoil in the US banking sector has forced the UK to revisit its insurance guarantee scheme, and the Bank of England is working towards increasing the insurance cover.[58] This gives rise to the question of whether countries like India – which have low deposit insurance rates – should follow suit.

Higher deposit insurance amounts have certain benefits such as

- enhanced depositor confidence and
- lower chances of bank runs.

But fully insuring all deposits can be counterproductive and lead to 'moral hazard'. Moral hazard refers to increased risk taking by banks as they do not have to bear any losses arising from this risk taking due to full coverage for deposits. Complacency and negligence could set in amongst the top management as they have less incentive to monitor the banks, its lending policies or asset-liability management. Since depositors are protected, they are also less likely to withdraw their funds from a bank with poor risk management, allowing risks to build up in the system.[59]

Changes to deposit insurance must consider both the financial stability benefits of higher coverage and the implications for risk taking in the banking system.[60] Regulation, such as mandating strict capital requirements, liquidity regulation and supervision of lending activities and balance sheets can combat moral hazard.

Countering headwinds

To ensure that banks in India remain resilient and stay on course to successfully manage the balance sheet, a three-pronged strategy is necessary:

- enhanced risk management practices
- vigilant governance
- artificial intelligence (AI)-driven innovation.

These measures can help banks to be future-ready and risk-resilient amidst a volatile economic environment.

Enhanced risk management practices

Banks in India follow prudential requirements drawn by the RBI to focus on credit market, liquidity and operational risks. Business leaders are increasing overall spending on risk management, including technology. Executives feel the need to actively seek external insights to assess and monitor risks in the increasingly disruptive business environment.[61] Operational risk has become a major concern over the past few years on account of cyber risk and the risk of transformation failures as banks undertake a multiyear digital transformation journey. Organisations globally are therefore upping their cyber budgets. India business executives, including those from the financial sector, list a major cyberattack among the top three risks affecting organisations. The other two are a resurgence of COVID-19 or a new health crisis and a new geopolitical conflict.[62]

58 https://www.theguardian.com/business/2023/apr/13/why-move-to-bolster-uk-savings-protection-harks-back-to-financial-crisis

59 FDIC (May 2023). Options for deposit insurance reform

60 Ibid.

61 PwC's 2022 Global Risk Survey

62 2022 PwC India Digital Trust Insights Survey

Another aspect of risk management which banks need to improve upon is climate change-associated financial risks. The RBI has already announced regulatory guidelines on climate risk and sustainable finance which will be released in a phased manner.[63] But these mitigation plans are still largely at the discussion stage and yet to be widely implemented,[64] although key stakeholders have started taking action. State Bank of India (SBI) has already developed a Climate Change Risk Management Policy which aims to integrate climate-related risk (and opportunity) considerations within day-to-day operations, lending portfolios and overall decision making.[65]

Climate events can pose both physical and transition risks – risks that arise from moving towards a low-carbon economy. For instance, banks with more exposure to industries reliant on fossil fuels could be at risk. A climate stress test conducted for India suggests that PSBs are more prone to climate risks than their private sector counterparts and may face capital shortfalls in case of adverse climate shocks, particularly in the rarest event of banks being necessitated to repay their borrowings and deposit liabilities simultaneously.[66] Banks recognise the urgency of the issue, and most of them consider climate-related financial risks a threat to their business. But only a few banks have included climate risk and environmental, social and governance (ESG) related key performance indicators (KPIs) in the performance evaluation of their top management.[67] To factor climate risks into a bank's business strategy and risk management, it is necessary to review the current status of sustainability activities and map them to climate-related and environmental (C&E) risks and opportunities.[68]

Lending institutions can also harness bond investors' preference for green and sustainable investment opportunities. Green issuance can also strengthen the sustainability strategy of banks in the eyes of investors and rating agencies.[69] India made its debut in the sovereign green bond market in January this year, with the government selling USD 1 billion of securities.[70]

Vigilant governance

Banks must regularly review and align their balance sheet strategies to the changing market dynamics or economic changes. Risk management professionals can help banks tap into more effective ways of interest rate risk management, liquidity risk management, capital management and management of investment portfolios – key areas of balance sheet management.

At present, Indian banks make loan loss provisions based on an incurred loss model where provisions are made after the occurrence of a default. The RBI has proposed the expected credit loss (ECL) framework which will allow banks to make provisions based on forward-looking scenarios of credit losses.[71]

Banks can remain solvent and absorb potential economic shocks better with a 'forward looking' approach for capital management. Setting capital targets, focusing on capital optimisation, performing stress tests and having solid contingency plans are key focus areas for banks. Strong governance structures can also help banks in regular monitoring of capital-related matters as well as overall complacency over control environment and culture of compliance.

For proactive and effective balance sheet management, investment portfolio is another primary point of emphasis. The central bank has been looking at providing banks more flexibility in the management of their investment portfolio while addressing transparency concerns through enhanced disclosures.[72]

63 https://economictimes.indiatimes.com/news/economy/policy/rbi-announces-regulatory-guidelines-on-climate-risk-and-sustainable-finance-for-res/articleshow/97718777.cms?from=mdr

64 RBI. (2022–2023). Report on Currency and Finance (RCF)

65 SBI. Annual Report (2021–2022)

66 RBI. (2022–2023). Report on Currency and Finance (RCF)

67 RBI. (2021–2022). Report on trends and progress of banking in India

68 https://www.pwc.com/cz/cs/assets/Risk-management-and-Modelling-eBook-A4.pdf

69 Ibid.

70 https://economictimes.indiatimes.com/markets/bonds/india-joins-sovereign-green-bond-club-with-1-billion-sale/articleshow/97305968.cms

71 RBI. (2021–2022). Report on trends and progress of banking in India

72 Ibid.

AI-driven innovation

Banks can use digital technologies powered by AI and machine learning (ML) to boost risk management, automate manually intensive processes and cut costs. AI applications are estimated to help banks make potential cost savings worth USD 447 billion by 2023.[73] Predictive models are being employed by banks in areas such as credit scoring, loan loss provisioning and internal stress testing.[74] Banks are applying AI/ML models to identify patterns in high-volume transactions and flag potential fraudulent scenarios such as trade spoofing and wash trading.[75]

Financial firms are already leveraging AI to assess the creditworthiness of customers and predict their future behaviour. In the underwriting process, loan providers aim to assess as efficiently as possible the applicants' ability to repay. Later in the loan lifecycle, information on customers' habits can help estimate their behavioural credit score.[76] Machine learning is also proving to be useful to improve security and transparency in systems for payments fraud detection and prevention, as well as for identity verification to meet regulatory requirements associated with anti-money laundering (AML) and know your customer (KYC).[77] Specialised algorithms for transaction monitoring and client risk rating can help banks not only with their AML efforts but also in fraud prevention.

Reputation management is another area where AI can be helpful for banks. AI-powered tools can be used to scan news and regulatory reports, social media posts, and customer feedback in real time to assess a bank's reputation. Sentiment-analysis algorithms can help AI to determine whether online mentions are positive or negative. Financial institutions can also use AI to receive real-time alerts and take proactive steps to avoid a potential adverse situation.

In the case of top depositors, banks may leverage AI to track depositor behaviour, feedback and account activity, and use these insights to address concerns and enhance trust. AI can also help assess depositor behaviour during events that impact a bank's reputation. For instance, AI can be used by banks to check if news about a cyberattack led to deposit withdrawals by the top depositors.

There are many success stories of AI use. A leading private Indian bank implemented predictive analytics to identify borrowers who were highly likely to default by studying patterns in historical data. A global company assisted another bank to leverage AI to curate unique personalised experiences through customer profiling and micro segmentation.[78]

In a bid to boost public confidence in the financial system, the RBI is currently embedding AI/ML and other technological tools in its online complaint management system.[79] The Reserve Bank's regulatory sandbox (RS) mechanism, launched in 2019, also enables institutions to test innovative products, services or business models, usually in a live but controlled environment with certain safeguards and oversight. Products related to retail payments, cross-border payments, micro, small and medium enterprises (MSME) lending, and prevention and mitigation of financial frauds have already been tested by previous cohorts.[80]

While AI can be a valuable tool for online reputation management, fraud detection and customer insights, human supervision is necessary for the ethical use of AI tools. Harnessing AI responsibly, and ensuring AI-driven systems are aligned with ethical and regulatory standards can pay rich dividends to banks for years to come.

Also contributing to this article were **Vishnupriya Sengupta, Ashutosh Satsangi, Ruchika Uniyal and Venkatesh Joshi.**

73 PwC, FICCI (February 2022). Uncovering the ground truth: AI in Indian financial services

74 https://www.pwc.com/cz/cs/assets/Risk-management-and-Modelling-eBook-A4.pdf.

75 PwC, Data and analytics (D&A)-driven risk transformation for banks

76 https://www.pwc.com/cz/cs/assets/Risk-management-and-Modelling-eBook-A4.pdf

77 Ibid.

78 PwC, FICCI (February 2022). Uncovering the ground truth: AI in Indian financial services

79 RBI. Annual Report 2022–23

80 RBI, (2021–2022). Trends and progress of banking in India

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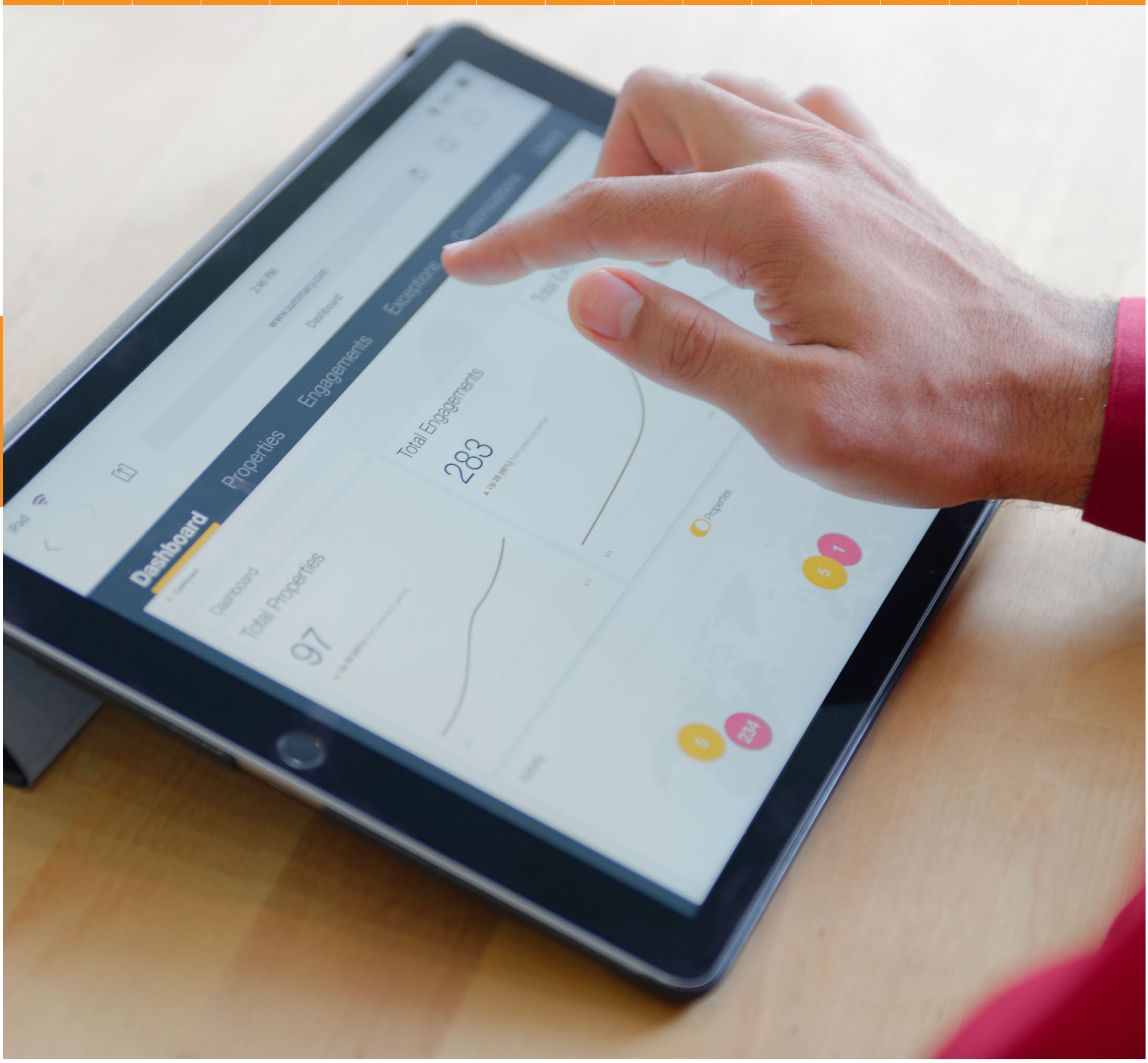


Future of digital currency in India

114 countries including India are exploring digital currency, and as is known, India has also launched its own retail CBDC on pilot. The RBI foresees e-Rupee issued and regulated by the central bank as the next-generation seamless, ubiquitous and anonymous payment mode that delivers value to customers. **Mihir Gandhi** and **Zubin Tafti** examine the pros and cons.

The need for changing payment modes

The Reserve Bank of India (RBI) has decided to withdraw INR 2,000 denomination banknotes from circulation. In a move reminiscent of demonetisation in 2016, people will now be required to exchange these notes by September 30 of this year.

This development may give the payment industry, which has witnessed a revolution through digital business models and innovative systems, a further boost. Banks are collaborating with third-party providers to boost innovation in the payment ecosystem. The government has provided platforms such as Unified Payments Interface (UPI) to encourage digital payment adoption. Consequently, the RBI has reported a two-fold increase in digital payments in India since 2018.

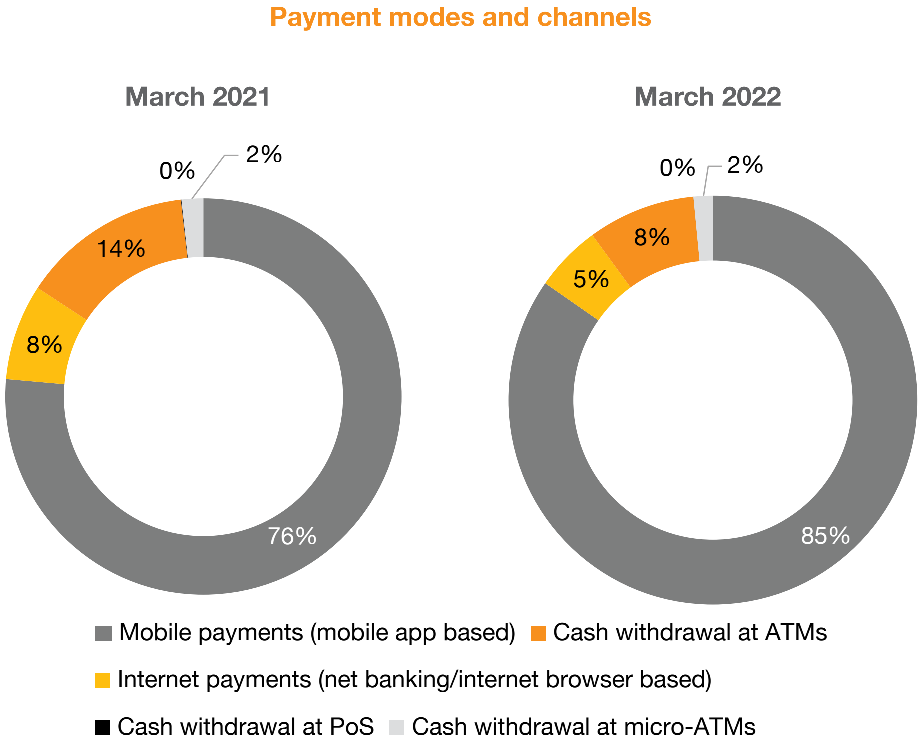
In 2022, India registered a record INR 149.5 trillion UPI and card transactions.[81] As per the India Digital Payments Annual Report, UPI clocked over 74.05 billion transactions in volume and INR 126 trillion in terms of value.[82]

81 https://www.livemint.com/news/india/india-saw-record-of-rs-149-5-trillion-upi-card-transactions-in-2022-this-city-tops-the-list-11681789465771.html

82 Ibid

The popularity of channels by transaction volumes is shown in Figure 1.

Figure 1: Payment system indicator – March 2021 vs March 2022



Technology is evidently evolving in parallel with the end user, and use cases are increasing with the emergence of new avenues of payments. Payments form the core of any financial institution and it's becoming imperative for central banks to provide avenues that offer new world functionalities for relevance. Central Bank Digital Currency (CBDC) is one such avenue that aims to help central banks facilitate financial services widely. The RBI foresees e-Rupee/Indian CBDC – that is, the digital form of the fiat currency issued and regulated by it – as the next-generation payment mode that is seamless, ubiquitous and anonymous, delivering customers value and a satisfying experience.

e-Rupee can act as a viable alternative to paper currency, the issuance and circulation of which entail a long process with the government incurring heavy costs. For example, for every INR 100 note, the cost estimate is around 15%–17% of the entire expense in a four-year lifecycle, including printing, distribution and returning due to soilage.[83] As cash circulation increases, it puts pressure on distribution and storage channels, along with the environment, owing to its carbon footprint. A larger amount of cash in circulation means pressure on regulators and governance in terms of printing, distribution and storage, thus posing several risks such as counterfeits, spoilage and security risks. Counterfeits are a huge risk with the RBI reporting an increase in fake 2,000 and 500 currency notes in fiscal year 2021–22.[84] A major risk with carrying cash is the risk of loss or theft. e-Rupee gives central banks better control over usage and distribution. This is one of the primary motivations for the RBI to launch CBDC.

Launching the e-Rupee in India would also mean taking a step towards a digital economy, given the rise in the adoption of mobile and internet-based payments, besides improving the cumbersome cross-border transaction process. One of the top priorities of the G20 has been to enhance cross-border payments and it has been implied that CBDC can be an appropriate tool. Cross-border transactions have always involved time-consuming processes laden with strict compliance checks owing to their dependency on the correspondent bank's availability and time zones. Financial institutions which have reserves in the RBI can transact in CBDC and make it easier to reduce counterparty risks. CBDC is also expected to accelerate the process by automating the method of transaction and settlement. Some other potential areas where CBDC can be leveraged to ease the process of transactions include government securities and international forex trade.

The design of CBDC depends on the functions it is expected to perform, as the RBI has underlined in its concept note.[85] The implications of CBDC for payment systems, monetary policy, and the structure and stability of the financial system will be determined by the design.

83 https://economictimes.indiatimes.com/news/economy/finance/digital-rupee-to-save-costs-of-printing-distributing-and-storing-cash/articleshow/89413532.cm

84 https://www.thehindu.com/business/Economy/circulation-of-fake-currency-notes-continues-to-pose-challenge/article66330058.ece

85 Concept note of CBDC

A primary consideration is that the design features of CBDC should be least disruptive. Accordingly, the key aspects include:

Types of CBDC or e-Rupee issued: Retail and wholesale[86]

Retail CBDC

- Intended for the private sector, non-financial consumers and businesses
- Electronic version of cash primarily meant for retail transactions
- Direct liability of central bank, and hence provides access to safe money with 24/7 availability, offering real-time to near real-time payment settlement

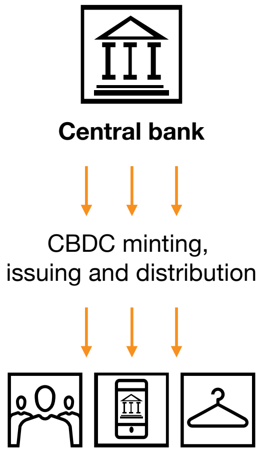
Wholesale CBDC

- Intended for interbank transfers and related wholesale financial transactions like bond settlement and nostro transfers
- Restricted to use for only select financial institutions
- Could transform settlement systems, making them secure and efficient

Models for issuance: Direct, intermediary/indirect and hybrid[87]

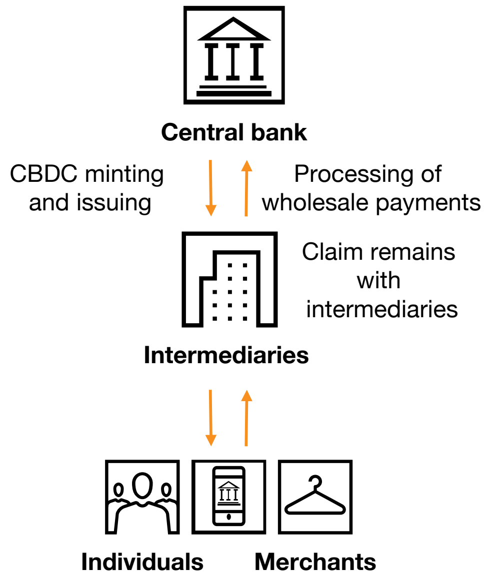
Direct model

- The central bank manages the end-to-end aspects such as issuance and account keeping.
- The central bank controls the ledger, and its server is involved in all payments.



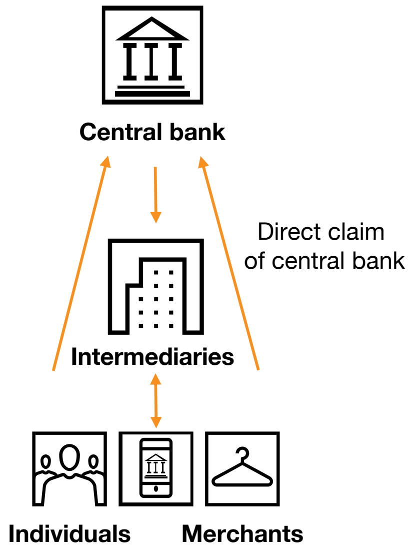
Intermediary model

- The central bank distributes the CBDC to intermediaries and tracks only the wholesale balances of the intermediaries.
- The intermediaries are responsible for the distribution of the CBDC to the general public.



Hybrid model

- There is a direct claim on the central bank combined with a private sector messaging layer and control of ledger.
- The central bank issues the CBDC to other entities and those entities are then responsible for all customer-associated activities.



86 https://rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=1218#CP4

87 https://rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=1218#CP4

Form of design: Token based and account based[88]

Account-based CBDC

- Account-based CBDC requires maintenance of record of balances and transactions of all holders of the CBDC and indicates the ownership of monetary balances. The intermediary will verify the identity of the account holder.
- It is a preferred mode for wholesale CBDC.

Token-based CBDC

- Token-based CBDC will function as a bearer-instrument like banknotes – whosoever holds the tokens at a given point in time would be presumed to own them.
- It is a preferred mode for retail CBDC, given its proximity to physical currency.

Around 114 countries are exploring CBDCs, and as many as 60 are at an advanced stage. Countries that have already launched a retail CBDC (R-CBDC) are the Bahamas, Cambodia, East Caribbean Union, Nigeria, China and Jamaica. Central banks which are exploring an exclusive wholesale CBDC (W-CBDC) include Singapore, Australia, Saudi Arabia and the European Union.

Figure 2: Status of the status of CBDCs across 114 countries as of December 2022[89]

4%	13%	27%	30%	16%	10%
Cancelled/other	Inactive	Research	Development	Pilot	Launched

Sweden's central bank has already tested two phases of its R-CBDC starting in 2020.

South Korea, Thailand and Russia have started testing their R-CBDCs in 2021 and 2022.

The European Central Bank has outlined plans to implement digital euro in 2023.

Contrary to their counterparts, the US and Canada are still researching the possibility of an R-CBDC.

88 https://rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=1218#CP4

89 https://www.atlanticcouncil.org/cbdctracker/

The following are a few notable collaborative development projects for wholesale initiatives:[90]

Name	Participants	Motivations	Details
Project Dunbar	• Bank Negara Malaysia • South African Reserve Bank • Reserve Bank of Australia • Monetary Authority of Singapore	• Assess the function of a multi-CBDC platform in terms of key challenges, benefits, design and settlements	• Initiated in November 2021 • Final report was published in May 2022
Project Helvetia	• BIS Innovation Hub • Swiss National Bank (SNB) • Financial Infrastructure Operator SIX • Included 5 commercial banks in Phase II	• Experiment with the integration of core banking system into W-CBDC in tokenised form based on distributed ledger technology (DLT)	• Phase I concluded in December 2020 • Phase II concluded in January 2022 • This test proved that it was possible to instantaneously execute payments ranging from 100,000 to 5 million Swiss francs while eliminating counterparty risks[91]
Project M-bridge	• Bank of Thailand • Hong Kong Monetary Authority • People's Bank of China • Central Bank of UAE	• Explore a specialised platform for the implementation of multi-currency CBDC for cross-border payments	• Initiative lasted for six weeks starting in August 2022 • Over USD 12 million was issued on the platform, facilitating over 160 payment and FX PvP transactions totalling more than USD 22 million in value[92]
Project Aber	• Saudi Central Bank (SAMA) • Central Bank of United Arab Emirates (CBUAE)	• Explore the feasibility of dual-issued digital currency for domestic and cross-border settlements	• Announced in January 2019 as a joint initiative between Saudi and the UAE

Benefits of CBDC in India

Several central banks in emerging markets and developing economies are implementing retail CBDCs. Globally, if we consider the reasons behind the implementations across China, Mexico, Nigeria, Bahamas, Jamaica and the Caribbean Union, one of them is enhancing the efficiency of payment systems. In the case of India, the concept note published by the RBI in October 2022 has listed the following additional motivations:

Widen financial inclusion

Lack of infrastructure, poor connectivity and socioeconomic barriers contribute to lower financial inclusion (as per RBI reports, India's FI-Index as of March 2022 is 56.4%[93]). A digital mode of currency that does not require a fully functional bank account and can work offline will provide a major boost to inclusion.

Promote a cashless economy

Precautionary cash holding during COVID-19 and the anonymous nature of cash transactions led to a rapid increase in cash usage during 2021–22. The introduction of CBDC with conditional anonymity will boost cashless transactions and thus be a step towards promoting a cashless economy.

Boost payment innovation

CBDC can serve as a platform for payment innovation and provide diverse options to consumers. It is also free from credit and liquidity risks and hence removes

90 https://www.bis.org/

91 Switzerland tests digital currency payments https://timesofindia.indiatimes.com/business/international-business/switzerland-tests-digital-currency-payments-with-top-investment-banks/articleshow/88875811.cms

92 Connecting economies through CBDC https://www.bis.org/publ/othp59.pdf

93 RBI's financial inclusion index rose to 56.4 in March 2022

barriers for firms to innovate new capabilities.

Curb money laundering

There is often a concern about privately issued digital assets and a sizable share of the population transacting, holding and trading in such assets. Unlike cryptocurrencies, CBDC is less vulnerable to volatility and instability, thus safeguarding individual rights.

Reduce operational costs and help achieve ESG goals

The cost of cash management in India has been immense. The expenditure incurred on printing between April 2021 to March 2022 was INR 4,984 crore – a figure that excludes the ESG impact.[94] Apart from the high printing costs, it should be noted that the Government of India subsidises the usage of UPI. The introduction of CBDC will ease the pressure on the government in terms of printing, distribution and storage of currency, and also contribute to India's ESG goals by helping reduce the carbon footprint.

Simplify securities settlement

Government securities can be settled using wholesale CBDC in India through a process known as delivery versus payment (DvP) settlement. DvP settlement is a mechanism used to ensure that the delivery and settlement of securities occur simultaneously. In India, the RBI has launched a pilot wholesale CBDC called the 'Negotiated Dealing System-Order Matching (NDS-OM) CBDC' which allows banks to buy or sell government securities.

CBDC initiative in India

In December 2022, the RBI launched the pilot for retail e-Rupee. This pilot was launched with the aim of creating a digital version that is similar to paper currency and gauge usage for ensuring a seamless transition to CBDC. The RBI is rolling out the digital currency via an intermediary model, with initial participation from eight banks in the country. As of February 2023, this pilot project was being conducted in five cities within closed user groups comprising merchants and customers on an invitation-basis only. Under this project, the RBI issues CBDCs to intermediary banks that issue digital wallets to the end users. Transactions will be performed in the same way as those involving physical currency. While the e-Rupee will not earn any interest, it can be converted into deposits.

Some features that the RBI plans to incorporate into the e-Rupee include:

- offline functionality to support usage of CBDC in low/no network conditions
- programmability for restricting government benefits/grants usage for a defined purpose at identified merchants
- interoperability for enabling both newer and legacy payment systems to operate seamlessly and improve the likelihood of adoption
- anonymity to guarantee an individual's right to privacy as in the case of physical cash.

As the RBI moves ahead with its plan to implement a digital twin that can complement physical currency, boosted by state-of-the-art technology that offers a fast, efficient and seamless experience, our paper delves deeper to triage the best use cases and assess the challenges and potential risks with implementation and the way forward.

94 Digital currency to reduce RBI's cash management costs

How does Indian CBDC compare with global retail CBDC?

The table below shows some of the key differences and similarities.

Country	Instrument type	Live/pilot	Technology	Design	Regional motivation for CBDC
India (digital rupee)	• Token • Non-interest	Pilot	• Central ledger works on hyperledger fabric and uses API-based interfaces • Non-native security protocol that represents token held on a wallet on the back of local digitally held balance • NPCI Switch enabling interbank transactions from existing payment rails	• Two-tiered model wherein issuance and minting of CBDC token takes place on DLT and the user- based interface on API-based application • Commercial banks are providing customer interface which is separate from the minting layer • Partial anonymity: Even though transactions are recorded in the central ledger, the owners of the wallets are anonymous and won't be known to the government or intermediaries. Beyond a certain amount, the owner may be required to submit PAN.	• Financial Inclusion and enablement of offline payments • Restriction on the use of privately held cryptocurrencies • Alternative resilient and interoperable digital payment rail
China (e-CNY)	• Account and token • Non-interest	Live	• Hybrid ecosystem as there is a central ledger which is compatible with all DLT frameworks that intermediaries might choose to use • Software and hardware wallet depending on the carrier • Software wallet provides services through APIs, software development kits and hardware that uses security chip • Digital certificate, signature and encrypted storage to avoid any misuse	• Two-tiered structure: Central bank for issuing and redemption, intermediaries help circulate • Anonymity for small-value transactions and traceable for high-value payment transactions • System collects minimum transaction information and restricts information flow to third parties or other government agencies • Internal firewall that implements privacy protocols to limit access to transaction data • Programmability deployed by smart contracts – self-executing with predefined limits and conditions	• Support financial inclusion and need for digital cash • Reduction in friction among other payment platforms • Counter the popularity and risks posed by cryptocurrencies
Nigeria (e-Naira)	• Account • Non-interest	Live	• Same DLT technology as some cryptocurrencies, to be stored in digital wallets • Hyperledger fabric variant of DLT for enterprise users with robust security architecture • Stringent access rights control by the central bank	• Minting and issuance with the central bank • Intermediaries ensure distribution through a digital wallet platform • Intermediaries to provide transaction limits depending on risk • Transaction information, if required, may be shared with government authorities	• Enabling households and businesses to accelerate payments through reliable, resilient and innovative means • Economic growth in terms of inclusivity and competitiveness

Key takeaways

- Central banks don't intend to use CBDCs for monetary policy operations as making CBDCs interest bearing carries several risks such as cannibalising other short-term investment vehicles. Such a move could lead to adverse effects on the economic structure, such as shifting of deposits from banks to CBDC tokens.
- Most countries follow a hybrid model so that user interactions are seamless, and the end-to-end framework can be easily scaled up on the back of an application programming interface (API), which can support a higher throughput compared to the pure DLT framework on the user interaction end.
- Global central banks have realised that offline payments on CBDCs can provide a real value proposition to the economy's objectives.

UPI versus CBDC

With the launch of e-Rupee, there is confusion around how UPI differs from CBDC. The table below explains the differences:

Parameters	UPI	CBDC
Form of payment	UPI is a real-time payment system that transfers money from one account to another instantly. It is not a digital rupee, but a facilitator of transactions.	CBDC or e-Rupee is akin to sovereign paper currency. A wallet is loaded with e-Rupee which can then be transferred to another wallet.
Dependency	UPI transactions happen between bank accounts, and hence they are dependent on banks, the National Payments Corporation of India (NPCI) and payment service providers (PSPs). When a payer makes a UPI payment to a payee, the transaction flow involves the NPCI, payer bank, payee bank, payer PSP and payee PSP.	A CBDC wallet is independent of the bank account and transactions can happen using the wallet balance. When a payer CBDC wallet scans or adds details of the payee CBDC wallet, the money is sent from one wallet to another like cash balances without any involvement of third parties.
Settlement	Settlement for end users happens instantly as the money gets immediately debited or credited. However, interbank settlement happens on a deferred net basis.	There is no settlement as the wallet balance gets transferred to another wallet.
Anonymity	UPI transactions are recorded by banks and reflected in the statement. When a payer makes a transaction through UPI, the money gets debited from the payer's bank account and credited to the payee. This gets reflected in both bank statements and the bank's ledger, making it non-anonymous.	Anonymity is a key feature of the CBDC. No data is captured on transactions from one wallet to another. During CBDC wallet transactions, there is no dependency or intermediation by the bank. This implies that the transaction will not be recorded in the statements, making it anonymous. This is true for all transactions lower than INR 50,000.
Liability	The liability lies with the users and bank accounts.	The liability lies with the central bank, i.e. the RBI.

With rapid adoption and widespread usage, UPI has become a very popular mode of payment in India. UPI has been instrumental in accelerating the penetration of digital payments in India, making it a potential platform that can be merged with CBDC. This blend will serve as a better payment solution offering instantaneous fund transfers and accessibility.

Architecture of the retail CBDC (R-CBDC) ecosystem

India's CBDC architecture is based on the two-tiered model which supports a majority of CBDC implementations across the globe.

Under this model, banking intermediaries distribute CBDCs to the population based on the MO supply provided by the central bank. A hyperledger fabric powers the interaction between central banks and commercial banks. Commercial banks and other authorised intermediaries are present as nodes in the distribution tier through which minted R-CBDC tokens are transferred from the central bank.

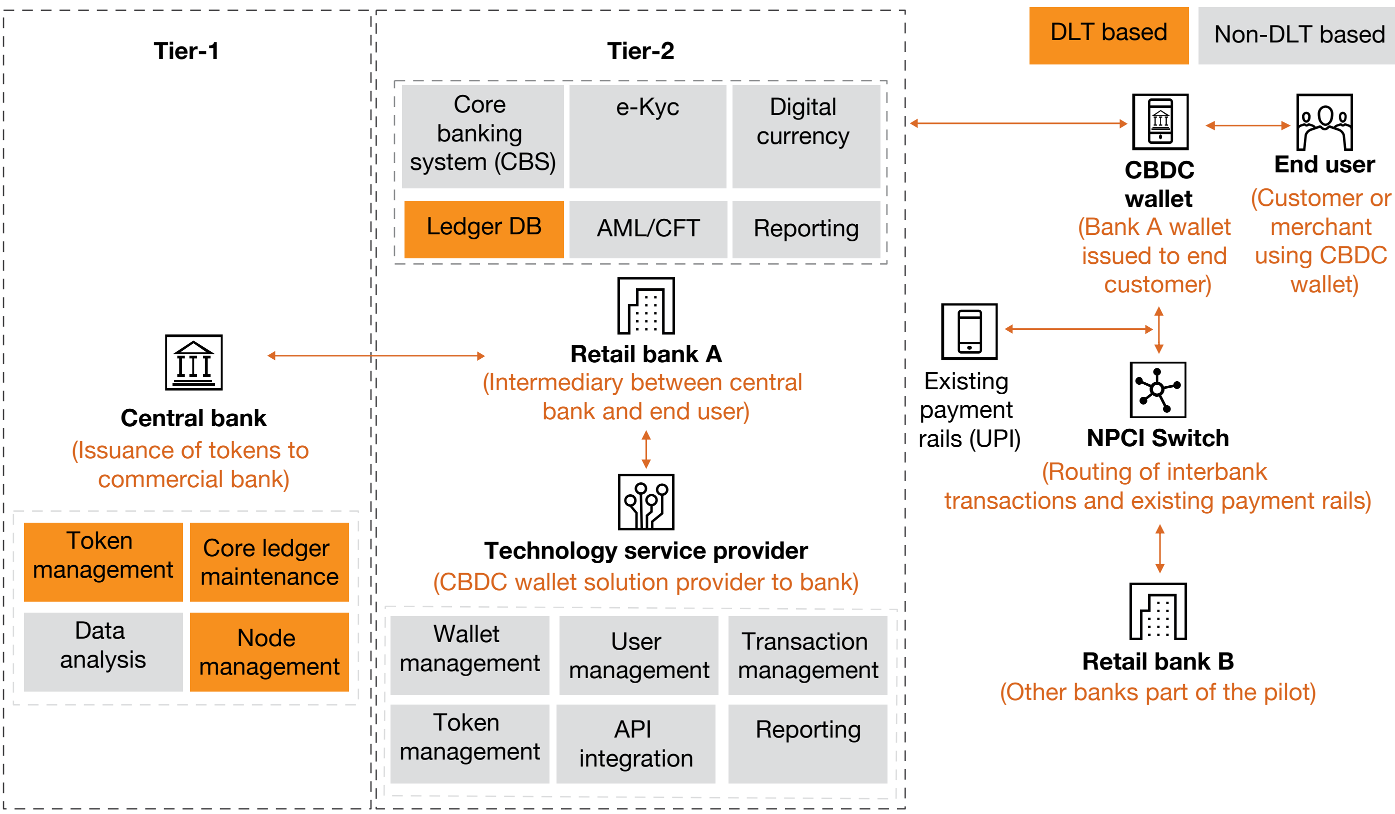
The utilisation/end-user interaction layer takes place on an API-based framework supported by an NPCI switch for routing interbank transactions.

Why has India chosen a two-tiered model?

- Separation of the core payment rail and utilisation improves throughput and ability to handle many transactions as the system achieves critical mass in the future.
- It is not the central bank's domain to distribute money and provide payment services to end users.
- Through a bespoke model, the central bank wants to reduce disintermediation risk and is inclusive of PSPs that are already providing digital payment services through alternative payment rails like UPI.
- For the system to scale up, it is a prudent measure to reuse/recreate an existing framework with enhanced functionalities to achieve the core objectives for the digital rupee.

The following is an illustrative representation of the end-to-end architecture for the pilot phase of the Indian CBDC:

End-to-end architecture for the digital rupee pilot

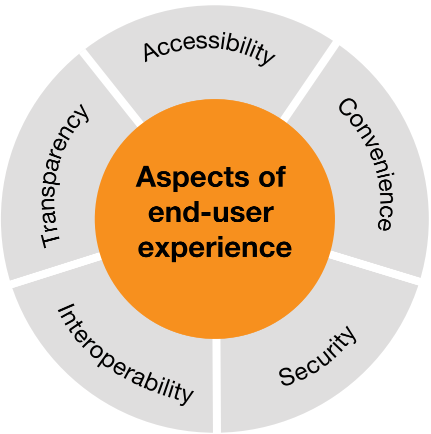


The RBI is in charge of issuing tokens and has direct liability. As mentioned earlier, the core ledgers are based on a DLT-based hyperledger fabric which has one or many nodes for the central bank and commercial banks to issue tokens as a primary objective. The core system oversees the governance of nodes and communication with the core infrastructure.

The retail layer of the solution is inspired by the API infrastructure of UPI and leverages and reuses many API libraries to create minimum disruption for the ecosystem players. The retail layer has not been placed on DLT intentionally, primarily because of scalability and throughput challenges faced related to this technology.

The tiers consist of intermediaries who play a vital role in onboarding customers, providing digital wallets and overseeing the distribution of tokens. Thus, the role of intermediaries includes account management, e-KYC, wallet management, transaction reporting and API integration with the RBI. The distribution layer is connected to the retail layer through APIs and directly issues tokens to the digital vault. The digital vault is the source of funds for wallets which connect to the issuer switch and CBDC switch for distribution, issuance and transactions. The wallet interface is connected to the bank's retail token service layer through API integration.

The end-user experience for an R-CBDC would depend on the specific design and implementation of the digital currency. However, in general, the following aspects can be expected:



Accessibility: An R-CBDC is typically designed to be easily accessible to the general public, allowing anyone with a compatible device to hold and use the currency. 24/7 access to the digital wallet will allow end users to make a transaction and manage their funds at any time.

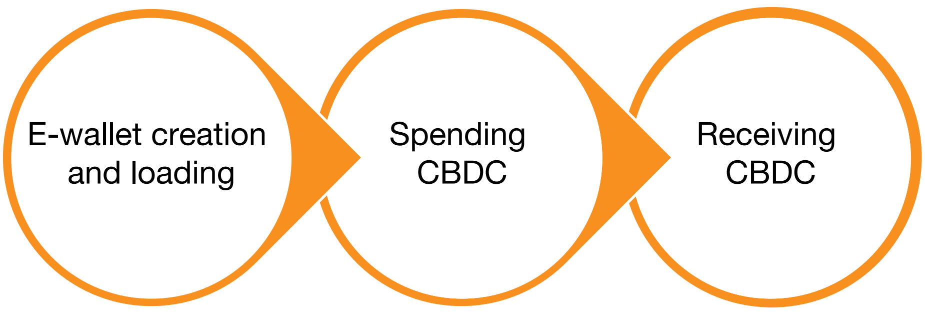
Convenience: With an R-CBDC, users can transact and transfer funds digitally without needing a physical currency or intermediaries such as banks. This can make the process faster and more convenient.

Security: R-CBDCs are often built with advanced security features to protect users' funds and ensure the integrity of the currency. This can include encryption, multi-factor authentication, biometric authentication and secure storage solutions.

Interoperability: R-CBDCs are typically designed to work seamlessly with existing payment systems and infrastructure, making it easy for users to use the currency in their day-to-day transactions.

Transparency: CBDCs can offer a more transparent and accountable monetary system, allowing for better tracking and management of monetary policy by the central bank.

For the current R-CBDC pilot in India, the following end-user experience has been designed:



End-user experience

A. **Creating a wallet**

E-wallet: The e-wallet interface is a front-end solution with effortless onboarding. With its low cost and simplified features, an e-wallet can act as a catalyst for CBDC adoption.

Account creation: Account creation would typically involve providing personal information, verifying identity and setting up authentication methods for accessing e-wallets. Account management can be enabled with a strong identity and access management feature with underlying fraud and cybersecurity monitoring.

There are three main categories of KYC (no KYC, minimum KYC and full KYC) and the user self-registration process has been defined accordingly. Aadhaar-based OTP is being used for one-time user authentication.

Loading and unloading: The user has to link any one of the onboarded banks to load and unload R-CBDC tokens from their bank account.

Wallet features: The wallet allows the user to check the current balance along with the denomination of the tokens available. A user can view his/her past transaction history as well as individual transaction receipts or acknowledgment copies.

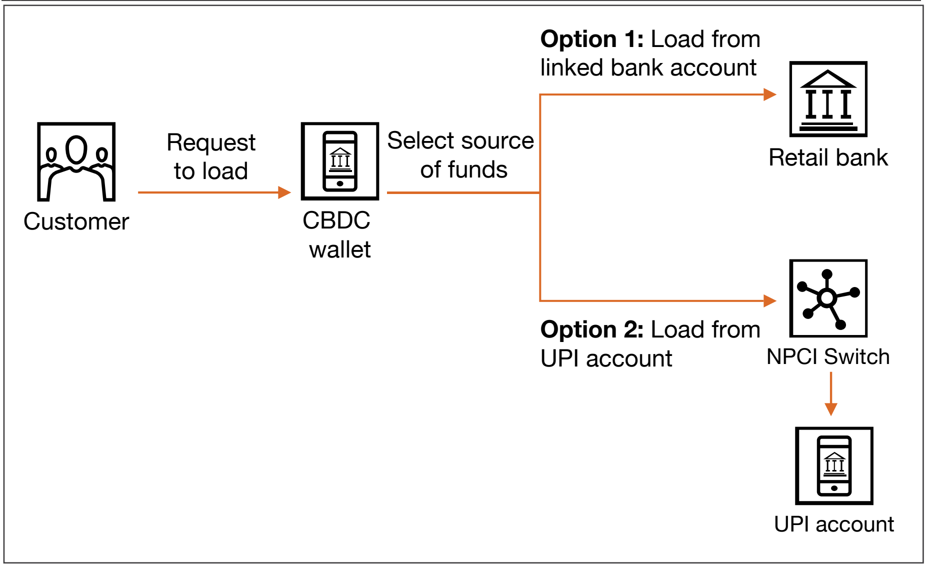
Security: Token management will entail robust anti-counterfeiting measures, auto-locking, freezing of breached accounts and continuous availability of systems. Additional measures must be taken to counter the potential vulnerabilities and safeguard the stored value of tokens.

B. Spending CBDC

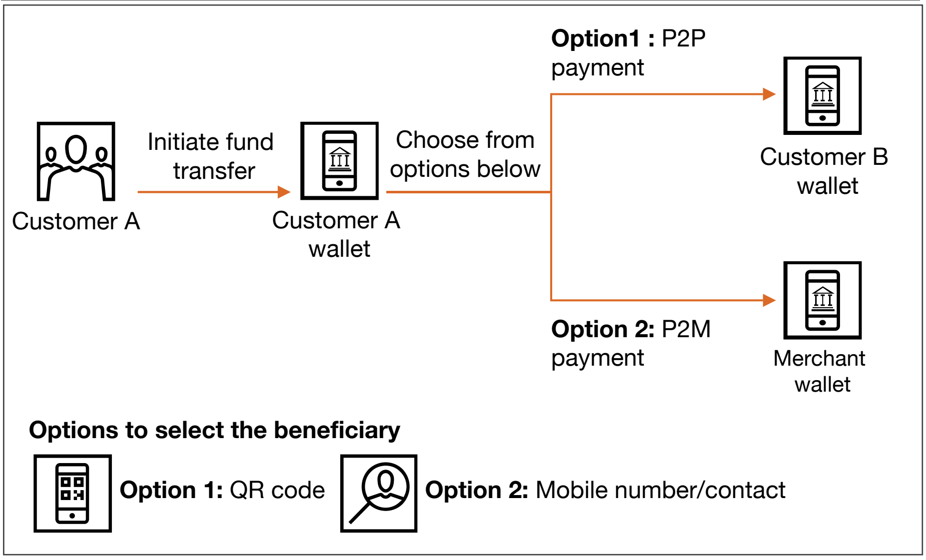
The end user can spend CBDC by making purchases at merchants, i.e. P2M payment, or by transferring it to another person, i.e. P2P. For this, the user has two options for searching for a beneficiary – scanning the QR code or by entering the mobile number that accepts CBDC. The end user would simply need to use their digital wallet to initiate the transaction and confirm the details. There is an authentication password/PIN similar to UPI which the user needs to input to authenticate the payment.

Transactions should be enabled for continuous 24x7x365 functionality, offering operational resilience with minimal latency. This will enable real-time transaction settlement with minimal failure rates, leading to rapid adoption.

Wallet loading and redemption



Fund transfer



C. Receiving CBDC

The end user can receive CBDC in their digital wallet through various means such as direct deposit from an employer, peer-to-peer transactions or a central bank-operated platform.

The overall user experience of the R-CBDC e-wallet has intentionally been made to closely resemble the UPI user journey to minimise the user's learning curve and foster quick adoption.

Functions and role considerations of the end-to-end CBDC framework[95]

Core system

1. **Core rulebook:** The RBI is the apex body for defining the principles of CBDC usage, outlining the legal basis, governance, risk management and access requirements for participants.
2. **Core infrastructure:** Issuing and redeeming CBDC is a core central bank function with certain technical aspects outsourced to third-party vendors.

Broader ecosystem

1. **Processing infrastructure:** The open infrastructure at the payment layer is facilitated by APIs between commercial bank participants to aid in message preparation, processing and reconciliation.
2. **Processing services:** Banks run the following functions which are inherent to guiding transactions from initiation to completion: (a) limit check and fund availability, (b) authorisation, verification and validation, and (c) screening.
3. **End-user interaction:** The following services are provided by banks through payment applications: (a) pre-transaction – channel access and onboarding of users, (b) execution – payment instruction and authentication, and (c) post-transaction – advice statements and confirmations.
4. **Use case arrangements:** Technical and business rules on how a use case should flow within an application are determined by the bank maintaining the CBDC application.

Potential challenges with implementation

The introduction of any new system in a vast market like India will entail some challenges. Some of the major challenges related to the implementation of CBDC are discussed below:

Ensuring consumer privacy and wallet security

- The governance policy should make up for the lack of personal data protection regulations and be flexible enough to adapt to the dynamic socio-economic system.
- Robust data security systems and stringent data access rules such as multi-level protection strategies and advanced intrusion detection systems must be examined before implementation to prevent any cyberattacks and breaches.
- Absolute anonymity may fuel money laundering and terrorist financing activities. Hence, defining the right regulatory framework with restrictions and gatekeeping conditions is a must.

System scalability

- DLT-based implementations are faced with potential scalability issues and performance concerns; proper research must be done on permissioned DLT to counter these concerns.
- Ensuring consistent transaction processing across all channels is paramount and hence correct execution of transactions is necessary even in the case of unforeseen events.
- Precise estimation of volumes of users and transactions is key to evaluating multi-server computing systems and data syncing needs for performance.

Data management and retention

- The KYC process should have stringent data processing and controls in place that make payment data accessible to end users and intermediaries only.
- Data management for anonymous low-value transactions and large-value transactions can be challenging, but the challenges can be mitigated by implementing identifiers or hash codes.
- Absolute anonymity within transactions will offer little insight into the movement of CBDCs and payment trends. Hence, striking a balance between data utilisation and consumer privacy is key to designing the right data model.

Accelerated adoption

- Policymakers should consider incentivising adoption of e-Rupee by not only end users but also intermediaries as the requisite technologies to implement the e-Rupee infrastructure may not be financially viable.

95_https://www.bis.org/publ/othp42_system_design.pdf

- Intermediaries can capitalise on e-Rupee by ensuring that the underlying technology is interoperable with legacy payment rails and enabling smooth integration with third-party PSPs for innovations.
- Features such as programmability, offline modes, stability, language support, etc., must be incorporated to drive adoption among end users in both urban and rural areas.

Awareness and acceptability

- Establishing the right use case and motivations for the masses to move away from bank accounts to CBDC wallets can lead to increasing stickiness.
- Driving acceptability by conducting awareness initiatives in the right forums based on audience type, namely urban and rural.
- Initiatives like Jan Dhan Yojana should be implemented in the case of CBDC wallets to make it mainstream and increase financial inclusion among the rural population.

Future roadmap

India is one of the largest economies in the world with a large and diverse population, so there are varied expectations from the CBDC pilot with several use cases and business models expected to emerge as the ecosystem scales up. Future use cases and key considerations related to the CBDC ecosystem are outlined below:

Retail use cases

1. **Retail cross-border remittances:** A retail CBDC can help reduce the cost and increase the speed and reliability of remittances, especially for migrant workers who send money back to their families in India.
2. **Microfinance:** R-CBDCs can help support microfinance activities such as small loans and savings by providing a secure and accessible digital platform that embeds features like programmability and supports alternative underwriting models, digital onboarding, documentation, etc.
3. **Programmability:** The programmability of CBDCs can streamline direct disbursal, thereby widening financial inclusion.
4. **Offline payments:** Enabling payments in the offline mode is imperative for reaching the last layer. Given that CBDCs represent tokens, they are suited to offline transactions.

Wholesale use cases

1. **Interbank settlements:** One of the primary use cases of W-CBDC is facilitation of interbank settlements. Atomic swaps could improve the efficiency of settlements through automation based on predefined conditions. W-CBDC also helps in reducing counterparty and liquidity risk between banks, as well as settlement times and costs. DLT-based smart contracts could enable round-the-clock settlement with a wider range of assets and a broader range of participants like non-financial corporations.
2. **Improvement in cross-border transactions:** India has the highest inward remittances in the world at USD 89,127 million in FY21–22[96] and the cost of sending these remittances assumes critical relevance. Cross-border payment transformation via CBDC will address challenges such as low speed, high costs, and lack of transparency in settlement. The CBDC will accelerate the settlement process and overcome time zone issues and exchange rate differences.
3. **Money market:** W-CBDC can also be used to facilitate trading in money markets, such as repo markets and interbank lending. This can lead to more efficient and transparent pricing of money market instruments. Additionally, it can reduce counterparty risks and increase transparency.

Impact of CBDC on global trade

- The impact of an Indian CBDC on global trade would depend on a variety of factors, including the adoption rate of the Indian CBDC, the functionality and features of the CBDC, and the overall state of India's economy and trade relations with the world.

96_India received highest ever foreign inward remittances in a single year https://pib.gov.in/PressReleasePage.aspx?PRID=1897036#:~:text=During%202021-22%2C%20India%20received,question%20in%20Rajya%20Sabha%20today.

- Given the current global geopolitical situation and the willingness of at least the BRICS countries to move away from US dollars as the primary instrument for global trade, there could be widespread adoption of an Indian CBDC. If that happens, it could have several benefits for India's global trade. For one, it could make cross-border transactions faster, cheaper and more secure, potentially increasing the efficiency of global trade with India. Additionally, an Indian CBDC could help reduce currency exchange risks and costs for international buyers and sellers, making Indian goods and services more attractive in the global market.

- However, the impact of an Indian CBDC on global trade could also be influenced by external factors, such as the stance of other countries on CBDCs and the overall global economic climate. For example, if other major trading partners of India do not adopt CBDCs, the benefits of an Indian CBDC may be limited. Additionally, if the global economy is experiencing a downturn, the impact of an Indian CBDC on trade may be mitigated.

- There could even be technological limitations with respect to the integration of the country's CBDC networks given that there is no single standard of implementation and various technologies are being adopted by other countries.

- Overall, it is difficult to predict the exact impact of an Indian CBDC on global trade till such time that there is more information available on the broader economic conditions at play.

Key considerations for increasing adoption/ usage

1. Policy framework

- **Anonymity:** There are expectations of a tiered anonymity framework with a threshold value for transactions. Beyond that, additional KYC requirements might be sought.

- **Data privacy:** There is a need for stronger and bespoke data privacy frameworks based on the following principles:

  - Prioritise the best interests of citizens, especially vulnerable populations, when collecting data.

  - Limit the collection of personally identifiable information to what is necessary.

- **Double down on resiliency:** Layer built-in risk controls like fraud protection and compliance.

2. Technology

- **Scaling up central infrastructure:** Given that CBDC demands controllable decentralisation and supervision, emphasis should be laid on modular DLT architecture as transactions and throughputs increase within the framework.

- **Operational efficiency:** Expand computing or operational capacity by setting rules for the distribution layer and let ecosystem players determine on-demand computing capacity as per adoption.

3. Business case

- **Viable business case:** It will be important to define a viable business case that players can target which includes not only typical CBDC features but also new ones such as programmability and offline-based features.

- **Technology enablers:** Open APIs are expected to play a key part in creating a level playing field that can help ecosystem players to innovate and create new use cases with supervised access to the backend.

- **Services:** Banks and non-banks need to build core value propositions to build a CBDC portfolio with key areas including access-based services, user applications, e-wallets, processing support and technology vendors.

The rollout of CBDC or e-Rupee is a giant leap in India's digital transformation efforts. In view of the recent phasing out of the INR 2,000 denomination banknote, CBDC may just be the apt currency for financial transactions that the country needs to usher in more trust, resilience and efficiency in currency management. If the potential challenges in its implementation are addressed, CBDC could increase ease of doing business by overcoming geographical barriers. Cash usage has declined, paving the way for the emergence of alternative payment currencies and modes that are mostly decentralised. In this context, CBDC can ensure financial and environmental stability and financial inclusion, and catalyse innovation.

Also contributing to this article were **Kanishk Sarkar, Karan Mahajan, Pratik Sinha** and **Antara Dutta.**

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Executive Director, Payments Transformation

‘All our attention is on **organic growth**’

As technology advances, the human connection becomes even more important, says **Shyam Srinivasan**, MD and CEO, Federal Bank. In conversation with **Venkata Peri**, Partner and Research and Insights Hub Leader at PwC India, Srinivasan throws light on the changing nature of banking.

Venkata Peri (left); Shyam Srinivasan (right)

Excerpts from the interview

Venkata Peri: Hi, welcome to Immersive Outlook. We have with us Shyam Srinivasan, MD and CEO of Federal Bank, who will share his perspectives on banking and its future. You have had a very interesting journey in the banking world. Take us through the highlights of your journey – the highs and lows and the interesting detours.

Shyam Srinivasan: Thanks. You know, when I'm often asked this question, I try and see if there's any story to tell. I discovered that I became a banker because I was a bad engineer. Right after engineering, I started working with Lucas TVS as a graduate trainee, but I was quite sure that I didn't want to get stuck as an engineer or in that technical space. During my early days of graduate traineeship, I was keen to get into an IIM. The first time I appeared for the entrance exam, I found myself on the waiting list at 73. The admission procedure ended at 72. I told myself that I was almost there. I had to give it one more shot and that's how I made it to IIM-Calcutta. Even when I was at IIM-Calcutta, I wanted to get into banking.

One thing led to another, and I got into Wipro and worked there for over two years. Though I quite enjoyed my stint at Wipro, the banking bug was always there in me. If you remember, in the late '80s and the beginning of the '90s, Citi was setting up its consumer unit in India and its headquarters was in Chennai. Many of my friends had already joined and somebody just gave me a call asking if I would like to be interviewed. I showed up there and was hired in under five minutes, not because I was good but because I played cricket all my life and I'm an obsessive cricket fan. I was a captain at IIM. The gentleman who interviewed me saw that I was a cricket captain and hired me. That's how I ended up being a banker. It's been one happy phase as a banker, and I've never looked back. In hindsight, I was always interested in learning about technology and that's probably helping me at the bank.

At Federal Bank, the mantra is 'digital at the fore, human at the core'. We're quite excited by the mantra and try to live up to it quite genuinely. The bank has been ahead of many other banks in adopting technology. In fact, ours is one of the few banks whose IT capabilities have been developed in-house.

I had earlier seen some of the foreign banks using technology to reach out as they had distribution weakness. Around the time I joined our bank, the board was quite inspired to make the bank a more prominent national player from being a largely regional one. I think a combination of homegrown strength, my past experiences and the appetite for technology, the need to scale up and grow and be more prominent across the country and meet our growth aspirations, all sort of converged quite nicely.

As the years passed, we started framing our multi-year view – what we want to be, what we want to project to the market – but I didn't want to move away from who we are, which is human. And if you see the latest advertisement campaign, we are saying 'Rishta aapse hai, sirf app se nahi'. In a world that is getting hugely tech-driven, if you can bring out the human and the relationship aspect and find a way to merge them too, you have a story to tell.

I think 'digital at the fore, human at the core', 'perfect banking partner', 'relationship theme' are all beginning to connect, as opposed to separate.

Venkata Peri: Excellent. Speaking of that, when you make such a paradigm shift, it's not just about you, but you also have to carry along with you the cohort of stakeholders as well as employees. You have to almost empower the employees to use technology and make the right decisions. How do you ensure that the stakeholders, including all the employees, get upskilled constantly?

Shyam Srinivasan: Organisations can either be digital slaves or go totally against it. There is a spectrum. We tend to believe that technology is adopted easily by the younger workers, which is not necessarily true. The consensus, however, is that they have sort of grown up on a diet of technology, right? When our journey started, the average age of Federal Bank employees was 47. The average age is 33 today. As part of the bank's natural growth process, we've taken in over 8,000 to 9,000 employees who have joined at 20–21, straight out of their campuses. This cohort of people has grown up on technology, so it's not alien to them. We don't have to teach them technology, but get them to use technology, right? The IT capabilities that we started providing naturally led people to gravitate to technology, and the environment was also conducive. In more recent years, the FinTech world is sort of exploding. I would with reasonable pride tell you that if anybody is starting FinTech today in India, it is almost for sure that the first bank that they would call on is Federal. We created an ecosystem where FinTech could plug in and get on with life. All FinTechs need a bank partnership because they can't lend or collect deposits on their own. They need a partner. Most of the products at Federal Bank are developed digital first. The younger workforce and those who are inclined to be technology friendly are the pioneers who get started with technology, and the rest don't want to be left out, so they catch on.

What is interesting is that as technology advances, the human connection gets even more important. Nothing can match the human connection.

Venkata Peri: Amazing. I mean the human connection is so critical, not only in banking but also across the spectrum of industries. I think technology is needed as an accelerator, a conduit to do some things better, faster and quicker. And probably it also gives you traceability, but it's not going to replace the human element of the equation.

Shyam Srinivasan: I use a line – the future of digital is human, not the other way round. Because AI is just humanising technology, right? Technology is capturing human experiences.

Venkata Peri: Yeah, very perfectly said. The bank has performed exceptionally well, firing on all cylinders. Growth, profitability, the key metrics around margins, capital adequacy – all of these are

healthy. Obviously, there's always scope for improvement. And as you look into the future, there are two questions I want to ask. Given the macro headwinds that we are hitting on one side, there is a crisis that is a few days away. That's how CEOs are thinking about running their businesses. There is also a conundrum of managing capital. Where do you see the Federal Bank heading and where are the next set of growth vectors for the bank? Also, do you contemplate any possibilities or ideas around mergers and acquisitions of certain specific skills or capabilities?

Shyam Srinivasan: I think I'll anchor my response on one statement, which is our vision statement – to be the most admired bank. And I say that with some pride and worry. I am worried because admiration is never bought, it's earned, and you can lose it anytime.

What we preach to everybody is that being admired can't be taken for granted. That keeps us happily dissatisfied. I'm happy but never satisfied and I want the institution to be happily dissatisfied, restlessly dissatisfied. Now if that is the sort of mantra which we are preaching, and hopefully practising all the time, nothing can be taken for granted. To my mind, a crisis is never weeks away, we are always facing one. You have to just accept it as the way of new life, right?

I say that we have done well, but our good is never good enough, right? We have to keep pushing ourselves endlessly and hopefully get better with each passing day. There is no silver bullet. You have to work 1% better every day. In the journey of our bank, we've come to a reasonable place in terms of profitability and growth. But if you benchmark that against our own aspirations and the top 4–5 players, we are still behind in size or scale. We've told ourselves that we want to be among the top five private sector banks in the country. Our aspiration is not unachievable. We have to be purpose-driven and hopefully claim our rightful spot.

Venkata Peri: Any specific areas of growth that you are focused on?

Shyam Srinivasan: We continuously evaluate the make-or-buy kind of decisions. Often, we think, for a bank of our size, where we still have only 1% to 1.5% of the market share in most of our businesses, there is an enormous growth opportunity, right? Even if the rest of India is flat, there is 98% of the market that we have not begun to chase. The second is that you can grow organically and look for inorganic opportunities, too. In the case of inorganic opportunities, the issue that I find is that any integration, whether it's a small INR 2,000-crore portfolio integration or an INR 25,000-crore bank purchase, the effort is almost similar. We are quite thoughtful about the kind of integration that we want to do and for what reason. So, the bulk of our operational time is on organic strengthening, growing and execution, which I mentioned. We do make an effort occasionally, look at portfolios or companies and institutions that are worth pursuing, but what is good is never available and what is available is never that good. So, we have to balance that out. To answer your question, all our attention is on organic. As for inorganic, there are some areas like microfinance, credit cards and commercial vehicles, and these are businesses that are new to us. We are growing quite well, and if some opportunities were to come, we would look at those, but let me add that we're not burning the midnight oil for that. A large part of the bank's time and the board's time is on organic momentum because we still have huge headroom to grow.

Venkata Peri: Given the advent of new technologies, are we looking at a fundamentally different banking architecture? A whole lot of things have to fall in place to make that architecture work, such as regulations, capital adequacy, security and privacy of data, and customer transactions. What kind of changes do you foresee in the short term and in the medium term in the fundamental banking business?

Shyam Srinivasan: Let me try and give you two to three insights. I think the debate around whether branches will exist or not has been there, at least in the last 10–15 years, and it is likely to be there for some more time. First, I am going to argue that the definition of a branch in our mind is physical infrastructure with a teller and a counter and an ATM. And there are some

10 people walking in and out, right? By definition, even a phone is a branch. And we've also launched fully equipped mobile buses in Madurai and Lucknow, which are serving as branches. Regulations are now coming up with a definition of what can be considered a branch. Anything that is available for 'X' hours a day for four days a week in a particular location can be considered as a branch. So, I think regulatory changes and environment changes are determining what may be construed as a branch. To fulfil the requirements of a very digitally advanced and economically advanced population, you could have a completely self-serviced model. We don't need a branch. To fulfil the need of people who are economically very well-off but digitally unaware, you may still need branch engagement. Then there are people completely underserved, digitally unaware and economically unfortunate – they need facilities for growth.

I would think branches, in some form, will exist. It's already beginning to morph. The nature of the branch is becoming lighter, more sales- and service-oriented and less process-oriented. That's because technology is enabling processes to be straight through, but you still need someone to sell and someone to serve. Branches won't disappear for five to ten years.

Venkata Peri: Any perspective on e-Rupee and how that will evolve, especially in a country like India, and the kind of regulatory push and pull required to manage that transition?

Shyam Srinivasan: As I see it, the current central bank digital currency (CBDC) that is being worked on is only a substitute for paper currency, right? If you see it in that context, I think it's a great initiative from the point of view of avoiding fraud, transportation cost, inventory storage, logistics of movement of money, and counting cash. And that saves annual printing and stationery expenses of INR 4,000–6,000 crore. That's the first benefit. Like any other movement, shifting from physical currency to a digital currency is a multi-year activity. The use cases may emerge as technology and regulations emerge. I think this is a fairly long-haul activity. Initially, as I see it, e-Rupee is set to be a measure of productivity enhancement and operational loss reduction.

I'll give you a live example. Banks like ours, and I'm sure bigger banks too, sit on excess currency. As you know, the banks collect currency from customers. The cash that is placed in the bank's vault is our money. Once I shift the money into the regulator's currency chest, the RBI takes care of that currency. Excess cash held by the bank is loss-making for it.

Venkata Peri: The next question is about the future of currency. The evolution of e-Rupee and cashless transactions are already upon us. Tell us if you think this is a good thing for Indian banks, and whether the regulators can manage such a transition effectively, keeping in view the security and privacy aspects.

Shyam Srinivasan: If you are referring to the CBDC, at this point in time, my view is that it's an experiment that has started. The exchequer spends INR 4,000 crore to INR 6,000 crore to print, preserve, transport, hold and inventorise currency, and build in safety and security features.

I think with more and more of that becoming digital, there's a cost reduction opportunity. Banks carry the excess cash and there's a cost of doing so. As we get more digital and the need for physical notes disappears, and therefore the attendant benefits can be availed, and that's an upside waiting. Now this is a three-to-five-year journey or maybe even longer. In that journey, regulations are likely to evolve, so are the use cases. I do believe that with the passage of time, CBDC will get another kind of life. But I would say, at the early stage, it is a digital form of currency addressing issues of fraud, safety, security, inventory and logistics management. And we are also working with the RBI on CBDC as a pilot bank, trying to get this going very soon.

Venkata Peri: Finally, I would like to ask a very personal question. What drives you?

Shyam Srinivasan: I don't want to sound bombastic but in 1983, I watched this movie Flashdance which had the song 'Take your passion and make it happen'. That has stuck with me. The kick of building something special is very, very inviting. I have got many, many reasons to feel dejected and feel bad, but there are so many more overpowering and exciting reasons to stay the course.

Venkata Peri: **Amazing. Thank you so much. I have gathered so much while speaking to you today. I am definitely inspired and walking away more learned from this conversation. Thank you.**

Shyam Srinivasan: Thank you.

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