

# a₹tha

A NEWSLETTER OF THE FINANCE LAB

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Indian Institute of Management Calcutta

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# Editorial

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The first article is on the crisis at Yes Bank which is clear disregard to the threat of operational risk. The author shows that ignoring signs of operational risk is a sure recipe for disaster and concludes that a sound corporate governance structure with professional management may save the Bank from collapse and regain investor confidence. The second article is a short note on Cryptocurrency. The author seeks to probe into some issues like what has been the RBI rationale for prohibiting Virtual Currency and what has been the regulatory landscape in this regard? In the third piece, the author analyze some of the major Indian mutual funds in terms of assets under management to understand their use of options contracts in their portfolio strategy and their performance. In the fourth article, the author look at Yes Bank's previous audited financial statements for clues but concludes that financial statements often hide more than what they reveal. Investors should take the published numbers with a pinch of salt, and rely on "market intelligence" as well. In the last piece, the author shows as communities and cities across the world self-quarantine to contain the spread of the novel coronavirus pandemic, the big worry confronting economists is the wide-ranging effects on the economy of such an unprecedented turn.

You may send your comments and feedback on this issue to [ashok@iimcal.ac.in](mailto:ashok@iimcal.ac.in)

Happy reading!

**Ashok Banerjee**

# Yes Bank, No Governance

**Ashok Banerjee**



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The March 2020 issue of Artha would have been incomplete without discussions on two important issues- one that has almost locked down the entire world (COVID-19) and the other that has shaken the confidence of people on Indian banks (near collapse of Yes Bank). The present issue looks at economic implications of COVID-19 and there are two pieces on Yes Bank.

Was there any early warning signal for Yes Bank? Or was it like COVID-19- without anyone knowing about this pandemic disease even three months ago? For example, Yes Bank had raised Rs.3,042 crore in September 2018 through issue of listed non-convertible unsecured bonds. The issue had secured a credit rating of CARE AAA and AA+ (India Ratings), signifying highest level of safety for the investors. One year later, in December 2019, Moody's downgraded Yes Bank's ratings to 'b2' (high credit risk) and further to 'ca'(very near default) in February 2020. Thus, the actions of the rating agencies suggest that Yes Bank did something horribly wrong in the past one and half years. This conclusion is not correct. Way back in 2015, an article quoted in *The Quint*<sup>1</sup> showed that almost a fifth of Yes Bank's loans were given to stressed companies and the Yes Bank's exposure to these companies tripled in three years, between 2011-12 and 2014-15. It seems the regulators (RBI), the Board of the Yes Bank, and even the Finance Ministry chose to ignore the warning of the two young analysts of the Swiss investment Bank, UBS<sup>2</sup>.

The present financial year (2019-20) has exposed all ills of Yes Bank (Bank). The Bank reported a quarterly loss of Rs.630 crore in Q2 and a staggering loss of Rs. 18,564 crore in Q3 FY2020. The total loss in the first nine months of the current financial year stood at Rs. 19,098 crore, which is 71% of the equity of the Bank at the end of the previous financial year (2018-19). The Bank has eroded about three-fourths of its equity in just nine months!

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<sup>1</sup> [https://www.goanews.com/blogs\\_disp.php?bpid=1350](https://www.goanews.com/blogs_disp.php?bpid=1350)

<sup>2</sup> *ibid*

The promoters deserted the sinking Bank well in time. Sensing trouble, the former MD and CEO, Mr. Rana Kapoor sold his entire stake in the company and exited before the news became public. While depositors with the Bank were not allowed to withdraw more than Rs.50,000 cash in early March 2020 (the restriction was lifted since 19 March 2020), wife of one of the cofounders of the Bank could sell 2.5 crore equity shares at Rs.65 per share on 18 March (the highest price in past one month), taking home a cool Rs.161 crore.

## Financial Analysis

A survey of the financial statements of the Bank for the past fifteen years (Table 1) reveals some signs of trouble. Deposits grew 343 times in the past fifteen years and so was the advances (317 times). Credit-to-deposit ratio was less than one in most of the years. Yet the Bank had borrowed significant sums in recent years and it stood at almost third of interest bearing debt of the Bank. Did the Bank borrow to invest in financial instruments? Return on investment for 2018-19 was barely equal to the 10-year G-sec yield (7.3%)- definitely not any indication of efficient treasury management. Alternatively, the Bank might have borrowed aggressively in the past six years (Rs.80,000 crore net addition to borrowing during this period) for capital adequacy purposes. If the alternative explanation is true, it raises question on the quality of advances that the Bank was making in the past six years. Where the advances grew five times in the past six years, the provision on advances has risen 21 times during the same period. This is despite the tendency of the Bank to under provide for non-performing loans (NPA). For example, in 2015-16, the Bank had reported an NPA of Rs. 749 crore. Later it was forced to revise it to Rs. 4926 crore- almost seven times bigger. Again in 2018-19, the Bank underreported NPA to the tune of Rs. 3277 crore<sup>3</sup>. Thus, though the balance Sheet size of the Bank increased almost 300 times in the past fifteen years, it severely dented the asset quality. This did not happen in the last eighteen months. It all started about a decade back when the Bank, in pursuit of abnormal growth, had recklessly lent money to big corporates flouting all risk management norms. The other liabilities for FY 2019 included a provision for standard assets to the tune of Rs.3,000 crore (which was only Rs.950 crore in the previous financial year). So, an additional provision of Rs.2000 crore for standard assets in FY 2019 implies that even the quality of standard assets was doubtful.

**Table 1: Financial Statements of Yes Bank (all figures in Rs. Crore)**

Balance Sheet	Mar-19	Mar-13	Mar-10	Mar-05
<b>EQUITY &amp; LIABILITIES</b>				
Equity (incl Reserves)	26904.20	5807.67	3089.55	213.24
Deposits	227610.18	66955.59	26798.57	663.03
Borrowing	108424.11	20922.15	4749.08	369.74

<sup>3</sup> <https://www.businesstoday.in/sectors/banks/6-reasons-why-yes-bank-collapsed/story/397655.html>

Other liabilities	17887.68	5418.72	1745.32	28.40
TOTAL	380826.17	99104.13	36382.51	1274.41
ASSETS				
Advances	241499.60	46999.57	22193.12	760.98
Investments	89522.03	42976.04	10209.94	394.86
Cash and Bank	26889.51	4065.76	2673.25	53.03
Others	22915.02	5062.76	1306.20	65.54
TOTAL	380826.17	99104.13	36382.51	1274.41
INCOME & EXPENDITURE				
INCOME				
Interest income on advances	22922.64	5397.07	1771.50	23.11
Interest income on investments	6048.42	2859.46	585.89	6.24
Fee-based income	3793.17	1142.88	433.47	14.82
Other income	1450.66	152.02	154.38	3.98
TOTAL INCOME	34214.90	9551.43	2945.24	48.15
EXPENSES				
Interest expense	19815.72	6075.21	1581.76	11.85
Operating expenses	6264.28	1334.54	500.15	39.94
Provision on advances	4818.36	222.16	126.47	1.90
Provision on investments	682.49	-2.99	15.41	0.00
Other expenses	276.71	-3.22	-5.03	0.00
TOTAL EXPENSES	31857.55	7625.70	2218.76	53.69
Profit before tax	2357.35	1925.73	726.49	-5.54
Profit after tax	1720.28	1300.68	477.74	-3.76

*Source: Ace Equity*

Performance of the bank during 2018-19 was significantly inferior compared to the immediate previous year (Table 2) and yet no one raised any alarm. Even the rating agency did not notice the deterioration till mid-2019. The asset mix of the Bank changed noticeably between FY 2013 and FY2019. The loan book (63% of total assets) in FY 2019 has grown to almost FY2005 and FY 2010 levels. It is worth noting that the economy was growing at more than 8% in 2005 and similarly the financial stimuli post global financial crisis was at all-time high in 2010. Therefore, a surge in loan book during these periods was more a procyclical phenomenon. But the bulging loan book in FY 2019 was at a time when the economy was under stress and the country witnessed some big ticket corporate defaults. For example, we all know about big defaults by NBFCs in India in recent times and yet the Bank had provided a fresh loan of Rs. 6994 crore to NBFCs during FY2019. The change of asset mix had an adverse impact on return on equity and net profit margin.



**Table 2: Select Financial Health indicators**

Indicators	Mar-19	Mar-13	Mar-10	Mar-05
Credit-Deposit	106%	70%	83%	115%
Advances (% of total assets)	63%	47%	61%	60%
Investments (% of total assets)	24%	43%	28%	31%
Net Profit Margin	5.0%	13.6%	16.2%	-7.8%
Return on investments	7.7%	8.1%	6.8%	1.6%
Return on advances	10.3%	12.7%	10.2%	3.0%
Cost of fund	6.5%	8.0%	6.2%	1.1%
Return on equity	6.5%	24.8%	20.3%	-1.8%
Provision on advances (% of interest income)	21.0%	4.1%	7.1%	8.2%

*Source: Author's estimates*

### **Auditors' Role**

Did the auditors of the Bank highlight any trouble in their audit report? The audit report for the FY 2019 (the worst year for the Bank) was a clean report. In fact, there was hardly any material difference in the observations of the auditors with the report of the previous year. There was no qualified opinion on any matters. Rather the auditors mentioned that the Bank had adequate internal financial controls and it had made provisions as per extant laws. The auditors did not mention anything about the under-provisioning of advances or quality of advances. The same auditors, while commenting on the third quarter results of the Bank in FY 2020, mentioned material uncertainty related to the going concern assumption at a time when the entire world came to know about the poor corporate governance in the Bank. Responding to allegations on the quality of financial statements of the Bank, the institute of Chartered Accountants of India (ICAI) has decided to review the financial statements of the Bank for FY2018 and FY 2019<sup>4</sup>. This is not a good news for the auditors of the Bank.

### **Conclusions**

The crisis at Yes Bank is not a manifestation of poor market or credit risk management. It is another example of clear disregard to the most dangerous risk that every bank faces-the threat of operational risk. Mishandling of credit and market risks may result on loss of revenue or profit. But ignoring signs of operational risk is a sure recipe for disaster. The entire supply chain of corporate governance has to share the blame- the regulator, auditors, and the Board. The bailout package hurriedly put together under the Yes Bank Reconstruction Scheme 2020 may

<sup>4</sup> <https://www.livemint.com/companies/news/icai-to-review-books-of-yes-bank-for-fy18-fy19-11583941262292.html>

provide some temporary relief to the deposit holders of the Bank and much needed capital to the Bank, but it is surely not going to solve the main ailment of the bank- poor governance. The Bank witnessed a reduction of deposit of more than Rs. 18,000 crore in the first six months of FY2020. The State Bank of India and the consortium of a few more Banks that have agreed to invest more than Rs.6,000 crore in Yes Bank should find out, as early as possible, a strategic investor with a proven track record on governance. A sound corporate governance structure with professional management may save the Bank from collapse and regain investor confidence.

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# Cryptocurrency and Indian Regulatory Environment: Generation Gap or Central Bank *Dharma*?

**Partha Ray and Soumik Roy**



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*Soumik Roy is a MBA Student of 56th batch (2019-20201), IIM Calcutta*

It may not be an exaggeration to say that excitement on crypto-currencies / crypto-assets of generation Y (or Z, may be) has not necessarily been shared by the global regulators, perhaps belonging to an earlier generation. Christine Lagarde, then Managing Director of the International Monetary Fund (IMF) compared the “dizzying gyrations of crypto-assets such as Bitcoin” with the “tulip mania that swept Holland in the 17<sup>th</sup> century and the recent dot-com bubble”, and went on to say, “With more than 1,600 crypto-assets in circulation, it seems inevitable that many will not survive the process of creative destruction.”<sup>5</sup>

While the initial idea of crypto-currency perhaps dates back to 1998 when Wei Dai first discussed the idea of digital money named “B-money”, for all practical purpose its popularity / emergence can be traced since October 2008, when a presumed pseudonymous developer(s) Satoshi Nakamoto published a nine-page paper titled, “Bitcoin: A Peer-to-Peer Electronic Cash System” (<https://bitcoin.org/bitcoin.pdf>).<sup>6</sup> In broad terms, a cryptocurrency is a virtual or digital money that takes the form of tokens or “coins.” The prefix “crypto” owes its origin to complicated cryptography that allows for the creation and processing of digital currencies and their transactions across decentralized systems. Primarily, cryptocurrencies are developed as code by teams who build in mechanisms for issuance (often through a process called “mining”) and other controls. Over the last five years Bitcoin price has increased more than 700 times; and there are at least 35 Bitcoin exchange markets where Bitcoin prices are quoted in standard currencies, each with the daily transaction volume above one million USD (Pichl and Kaizoji, 2019).<sup>7</sup>

<sup>5</sup> Lagarde, Christine (2018): “An Even-handed Approach to Crypto-Assets”, IMF Blog, available at <https://blogs.imf.org/2018/04/16/an-even-handed-approach-to-crypto-assets/>

<sup>6</sup> The actual cryptocurrency software was released in the open source domain in January 2009.

<sup>7</sup> Pichl, Lukas and Taisei Kaizoji (2019): “Volatility Analysis of Bitcoin Price Time Series”, Quantitative Finance and Economics, available at [https://www.researchgate.net/publication/321827427\\_Volatility\\_Analysis\\_of\\_Bitcoin\\_Price\\_Time\\_Series](https://www.researchgate.net/publication/321827427_Volatility_Analysis_of_Bitcoin_Price_Time_Series)

Interestingly, while the ambit of crypto-currencies was confined to a relatively closed community till about 2016, since the beginning of 2017, the demand for crypto-currencies increased exponentially. Notwithstanding their popularity, regulators were somewhat cagey about their financial stability implications. Accordingly, different countries exhibited inhibitions of differing degrees. India was no exception. After an initial period of informal instructions, the Reserve Bank of India (RBI), on April 6 2018, issued a circular prohibiting all commercial banks to deal with, what RBI termed as, “virtual currencies” (VCs). More recently, on March 4, 2020 the Supreme Court of India in a judgment quashed this RBI circular. Much excitement has been generated among the VC community about this judgement.

What has been the RBI rationale for prohibiting VCs? What has been the regulatory landscape in this regard? Will the Supreme Court judgment pave the way for VCs in India? This short note seeks to probe into some of these issues.

### **Towards a Cookbook on Cryptocurrency**

At the risk of appearing to write a cookbook, one needs to note that the origin of crypto-assets can be traced in blockchain, which is essentially “electronic ledger that records and verifies transactions made using crypto-assets”.<sup>8</sup> Bank of England in a submission to a Treasury Committee to the UK Parliament explained how blockchain emerged with crypto-assets:

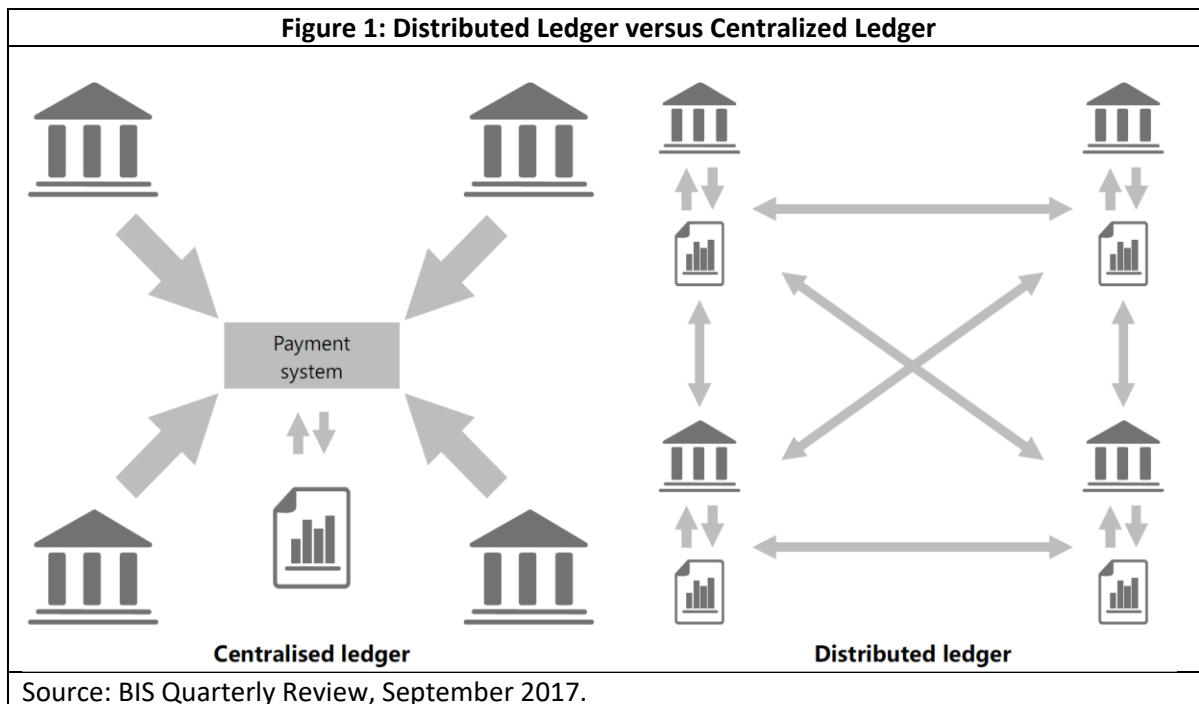
“The innovations behind blockchain emerged from the initial cryptoasset, Bitcoin,.... Bitcoin was an attempt to build a payment system that did not rely on a trusted authority (such as a commercial or central bank) to maintain the record of payments and balances (the ‘ledger’). Importantly, anyone can participate in the validation of Bitcoin transactions—the network is ‘permissionless’ and its underlying blockchain (the database or ledger of transactions) is public. The Bitcoin network relies on multiple participants maintaining identical copies of the ledger and employs a process to come to consensus on the contents of, and updates to, this ledger.”<sup>9</sup>

Thus, the crucial difference between bitcoin and a standard paper currency lies essentially in the backing of the centralized register in case of currency by the central bank.<sup>10</sup> The new system of Distributed ledger technology (DLT) is of key importance here (Figure 1).

<sup>8</sup> UK Parliament (2018): Crypto-assets, Twenty-Second Report of the House of Commons Treasury Committee, available at <https://publications.parliament.uk/pa/cm201719/cmselect/cmtreasy/910/910.pdf>

<sup>9</sup> UK Parliament (2018): Crypto-assets, Twenty-Second Report of the House of Commons Treasury Committee, available at <https://publications.parliament.uk/pa/cm201719/cmselect/cmtreasy/910/910.pdf>

<sup>10</sup> While over the years, number of other cryptocurrencies appeared, in terms of transactions bitcoin maintained its prime position in the cryptocurrency market. Ethereum (ETH); Ripple (XRP); Litecoin (LTC); Tether (USDT); Bitcoin Cash (BCH); Libra (LIBRA); or, Monero (XMR) all are examples of cryptocurrencies to name a few.



It is useful to refer to the research of Bank for International Settlement which puts it succinctly:

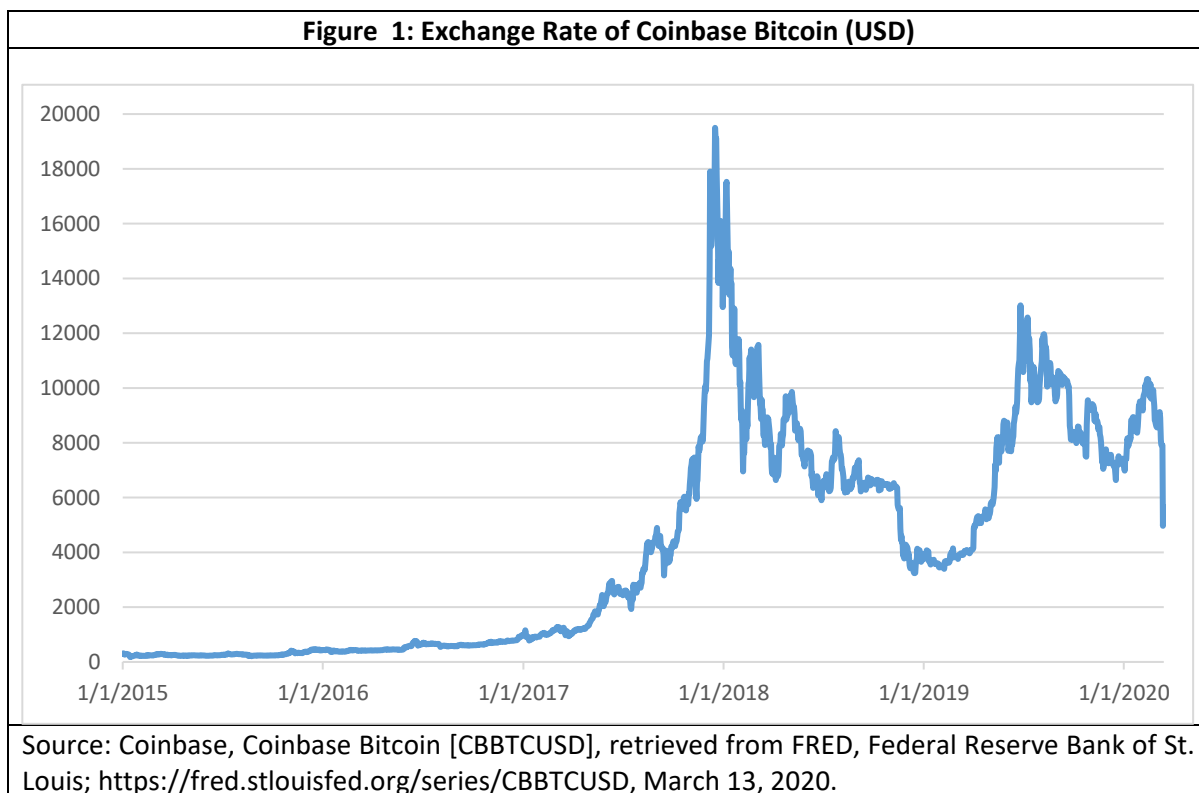
“DLT refers to “the protocols and supporting infrastructure that allow computers in different locations to propose and validate transactions and update records in a synchronised way across a network. The idea of a distributed ledger – a common record of activity that is shared across computers in different locations – is not new. Such ledgers are used by organisations (eg supermarket chains) that have branches or offices across a given country or across countries. However, in a traditional distributed database, a system administrator typically performs the key functions that are necessary to maintain consistency across the *multiple copies* of the ledger. The simplest way to do this is for the system administrator to maintain a master copy of the ledger which is periodically updated and shared with all network participants. By contrast, the new systems based on DLT, most notably Bitcoin and Ethereum, are designed to function without a trusted authority. Bitcoin maintains a distributed database in a decentralised way by using a consensus-based validation procedure and cryptographic signatures. In such systems, transactions are conducted in a peer-to-peer fashion and broadcast to the entire set of participants who work to validate them in batches known as “blocks”. Since the ledger of activity is organised into separate but connected blocks, this type of DLT is often referred to as “blockchain technology”.<sup>11</sup>

<sup>11</sup> Morten Bech and Rodney Garratt (2017): “Central bank cryptocurrencies”, BIS Quarterly Review, September 2017.

## Volatility in the Exchange Rate of Cryptocurrency

The exchange rate of Bitcoin exhibited huge volatility since the end of 2017 (Figure 2).<sup>12</sup> Pichl and Kaizoji (2019) highlighted the following traits of exchange rate of Bitcoin.

- The log return distribution of the Bitcoin exchange rate shows the fat tail covering the extreme event region of bubbles and crashes.
- The price of Bitcoin is highly volatile and not supported by “fundamentals” that is, any real economy in behind of cryptocurrency, and may have random walk (martingale) property.
- Arbitrage opportunities in the Bitcoin market cannot be ruled out.



These features of exchange rates of cryptocurrency formed the basis of regulatory concerns.

## Regulatory Oversight

Most of the regulators have shown concern about the unbridled growth of the cryptocurrencies. Very recently, in February 2020, Randal K. Quarles, Chairman of Financial Stability Board, mentioned, “Technology is changing the nature of traditional finance”.<sup>13</sup> Federal Reserve’s Chairman Jerome Powell described the rise of Libra project by Facebook as a “wake-up-call” for the regulators. During G20 Summit 2019 in Osaka, all the member countries had agreed to create a regulatory framework for cryptocurrency and crypto-assets following

<sup>12</sup> Similar volatility is noticeable in other cryptocurrency market as well.

<sup>13</sup> FSB CHAIR’S LETTER TO G20 FINANCE MINISTERS AND CENTRAL BANK GOVERNORS: FEBRUARY 2020

the standards set by the Financial Action Task Force (*FATF*), the global money laundering and terrorist financing watchdog.<sup>14</sup>

Over the past few years cryptocurrency became more systemically important, and have emerged as estate assets. In this environment as there is no agreed upon definition of cryptocurrency different countries have enacted different regulatory policies. Some countries like China have prohibited the use of any cryptocurrencies entirely and some countries (Example Switzerland and Venezuela) have embraced the idea of cryptocurrency to attract foreign investments, while the other have taken the “wait and watch policy”.

**USA:** In the United States, there is no separate regulatory framework for cryptocurrencies. Though cryptocurrencies are not legal tender in the United States, the trading activities are not entirely prohibited, though heavily monitored. They are regulated by different regulatory bodies under the existing legal framework. Currently, the Security and Exchange Commission (the SEC), the Commodity and Futures Trading Commission (the CFTC), the Federal Trade Commission (the FTC), and the Department of the Treasury regulate the cryptocurrency related activities. The digital assets and the tokens are considered as an “investment contract”. In 2019 The SEC also released a framework to determine when a digital token should be considered as securities.<sup>15</sup> A cryptocurrency exchange and the administrator who has the authority to issue and redeem the cryptocurrency is regulated by the Department of Treasury through the Financial Crimes Enforcement Network and prohibits any anonymous accounts. In 2019 a new legislation “Crypto-Currency Act of 2020” was brought into the congress aiming to create a robust regulatory framework with clear power and regulatory liability distinction.<sup>16</sup>

**UK:** Like the USA, the United Kingdom does not have any specific law to regulate the cryptocurrency. All the cryptocurrency-related activities are regulated through already existing law like Financial Services and Markets Act 2000, the Payment Services Regulation 2017, and Electronic Money Regulations 2011. The UK Crypto-assets Taskforce has defined cryptocurrency as “a cryptographically secured digital representation of value or contractual rights that uses some distributed ledger technology and can be transferred stored or traded electronically.”<sup>17</sup> Regulators in the country have been cautious about cryptocurrency regulations. Thought in the country, there is no blanket prohibition on activities related to cryptocurrencies, regulators have advised to restrain from cryptocurrency investments and warned about the risk involved through repetitive public notice.

<sup>14</sup> Global Finance, G20 Osaka Leaders’ Declaration: 28-29 June 2019, available at [https://www.mofa.go.jp/policy/economy/g20\\_summit/osaka19/en/documents/final\\_g20\\_osaka\\_leaders\\_declaration.html](https://www.mofa.go.jp/policy/economy/g20_summit/osaka19/en/documents/final_g20_osaka_leaders_declaration.html)

<sup>15</sup> Security Exchange Commission (the USA, 2019): “Framework for “Investment Contract” Analysis” available at: <https://www.sec.gov/files/dlt-framework.pdf>

<sup>16</sup> As per the draft bill there are three types of digital assets i) cryptocurrency ii) crypto-commodity (Goods and services with substantial fungibility) iii) crypto-securities (debt, equity and derivative instruments). The draft version of “Crypto-Currency Act 2020” available at: <https://www.crowdfundinsider.com/wp-content/uploads/2019/12/Draft-Crypto-Currency-Act-of-2020.pdf>

<sup>17</sup> Cryptocurrency taskforce: Final Report available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/752070/cryptoassets\\_taskforce\\_final\\_report\\_final\\_web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/752070/cryptoassets_taskforce_final_report_final_web.pdf)

**Switzerland:** Since the beginning, the position of the government of Switzerland has been encouraging for the cryptocurrency industry. The government of Switzerland is open to new development in this front. In December 2018, the Swiss Federal Council's report on the regulatory framework for cryptocurrency had concluded that the existing laws provide a sufficient regulatory framework for cryptocurrencies.<sup>18</sup> On March 22, 2019, the Swiss Authorities proposed a new law to regulate the cryptocurrency. Currently, the Swiss Financial Market Supervisory Authority (FINMA) does not consider cryptocurrencies as security; instead, it is a “medium of exchange” and “storage of value.” Though trading involving cryptocurrencies constitute security, and those activities are regulated as normal trading activities like dealer license requirement, platform regulation, or prospectus requirements.

**Singapore:** Singapore is one of the most progressive countries in terms of regulation of cryptocurrency. Due to the regulators' balanced approach towards cryptocurrencies, the cryptocurrency market is thriving. Cryptocurrencies are not regulated in Singapore through any legislation or by the Monetary Authority of Singapore (MAS, the central bank of Singapore). In Singapore, cryptocurrencies are not considered as a means to store values; instead, they are recognised as assets and personal properties. Regulatory authorities encourage cryptocurrencies as “a mode of payment, and are a means of making payments.” However, some of the activities related to cryptocurrency are regulated as Securities by MAS. If cryptocurrency-related activities are classified as securities, then the parties engaging those activities are required to be registered. On 20 November 2019 MAS also proposed to allow payment token derivatives' trade in Singapore.<sup>19</sup> The government and the monetary authority encourage this new distributed ledger technology. The MAS also has partnered with a private company R3 and a consortium of financial institutions to develop a payment platform using blockchain technology.<sup>20</sup>

**Japan:** Though the Government of Japan and the Bank of Japan do not recognise any cryptocurrency as security nor it treat it as “money,” Japan is one of the first countries to embrace cryptocurrencies. In February 2014, a Japanese company MTGOX Co, Ltd, started the cryptocurrency exchange services between the cryptocurrency and different legal tender. It quickly became the world's largest cryptocurrency exchange, and soon more business came into existence. With the booming business environment in the country, Japan was one of the first countries to regulate the cryptocurrencies and bring specific laws specific to cryptocurrencies. According to the law of Japan, cryptocurrency is a method of payment rather than currency. Cryptocurrency is defined as “proprietary value that may be used to pay an unspecified person the price of any goods purchased or borrowed or any services provided and which may be sold to or purchased from an unspecified

<sup>18</sup> The Federal Council (Switzerland)(2018): “Legal Framework for distributed ledger technology and blockchain in Switzerland” available at: <https://www3.unifr.ch/webnews/content/166/file/Attachments/Report%20Blockchain%20ICO.pdf>

<sup>19</sup> Monetary Authority of Singapore (2019): “Proposed Regulatory Approach for Derivatives Contracts on Payment Tokens.” Available at: <https://www.mas.gov.sg/-/media/MAS/News-and-Publications/Consultation-Papers/2019-Payment-Token-Derivatives/Consultation-Paper-on-Proposed-Regulatory-Approach-for-Derivatives-Contracts-on-Payment-Tokens.pdf>

<sup>20</sup> Monetary Authority of Singapore (2019), Media Release, Available at: <https://www.mas.gov.sg/news/media-releases/2016/mas-experimenting-with-blockchain-technology>



person and that may be transferred using an electronic data processing system.”<sup>21</sup> To stop financial crimes, illegal trade, and terror financing, it mandatory for any services dealing with cryptocurrencies to register with the Financial Service Agency. Through different legislation, they have been empowered to regulate cryptocurrency-related services. Failing to register is a criminal offense for any entity or individual.

### **The Stance of the RBI**

Indian Authorities do not consider cryptocurrency a legal tender or as a coin. Due to the lack of any regulatory norms, during the mid-2010s, businesses based on crypto-currencies grew. Trading volumes in the cryptocurrency markets reached as high as about \$50 million to \$60 million per day by the end of March 2018.

Different regulatory bodies in India, including the Reserve Bank of India (RBI) was somewhat uncomfortable with this development. Accordingly, in December 2013, RBI issued a warning to the general population about the risk involved in dealing with the cryptocurrency. Later in December 2016, in the financial stability report, RBI mentioned the establishment of a regulatory sandbox<sup>10</sup> and innovation hubs to understand and support the development of new financial instruments and services. The report also highlighted the risk and concerns involving “virtual currencies,” the effectiveness of the monetary policy, and financial crimes.

On February 1, 2017, the RBI again issued a notice to the public about the usage and risks involved in using the cryptocurrencies. On July 25, 2017, an Inter-Disciplinary Committee released its report on the “virtual currencies” and the measures to regulate the “virtual currencies.” The report clearly distinguishes the distributed ledger technology and cryptocurrency. Inter-Disciplinary Committee recommended an explicit prohibition on the use, hold, and trade of any cryptocurrencies. The committee also recommended positively about the underlying distributed ledger technology and its potential usage “other than that of creating or trading in crypto-currencies.” On December 5, 2017, the RBI issued a notice reiterating its concerns about the usage of cryptocurrencies.

Finally, the RBI in its Statement on Developmental and Regulatory Policies of April 5 2018, talked of ring-fencing regulated entities from virtual currencies and went on to say:

“... Virtual Currencies (VCs), also variously referred to as crypto currencies and crypto assets, raise concerns of consumer protection, market integrity and money laundering, among others. Reserve Bank has repeatedly cautioned users, holders and traders of virtual currencies, including Bitcoins, regarding various risks associated in dealing with such virtual currencies. In view of the associated risks, it has been decided that, with immediate effect, entities regulated by RBI shall not deal with or provide services to any individual or business entities dealing with or settling VCs.”<sup>22</sup>

Accordingly the next day, i.e., on April 6, 2018 the RBI issued a circular prohibiting all entities regulated by the RBI from dealing in Virtual Currencies (VCs). Specifically, the prohibition included “maintaining

<sup>21</sup> For more detail see: <https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/japan>

<sup>22</sup> For more detail see: <https://rbidocs.rbi.org.in/rdocs/PressRelease/PDFs/PR264270719E5CB28249D7BCE07C5B3196C904.PDF>

accounts, registering, trading, settling, clearing, giving loans against virtual tokens, accepting them as collateral, opening accounts of exchanges dealing with them and transfer / receipt of money in accounts relating to purchase/ sale of VCs”.<sup>23</sup> Regulated entities which already provided such services were asked to exit the relationship within the next three months.

Though the prohibition did not extend beyond the entities regulated by the RBI, due to lack of access to capital, banking infrastructure like maintaining the accounts, trading, payment settlement, or access to credit choked the new businesses dealing with crypto-currencies.

Later on, December 5, 2019, in the Monetary Policy Press Conference, to a question on RBI’s stance on cryptocurrency, RBI Governor categorically stated:

“... With regard to digital currency, there are two aspects. One is private digital currency. RBI is very clearly against any kind of private digital currency. And let me also add that it is not RBI which is against it, world over, the central banks and the governments are against private digital currency. Because currency issuance is a sovereign function, it has to be done by the sovereign. A private currency cannot overwrite what is in the sovereign domain. And there are huge challenges with regard to money laundering and other aspects. With regard to digital currency to be issued by a central bank, that is central bank digital currency, this is very early. Some discussions are going on. The technology has also not yet fully evolved, it is still evolving. This is still in a very incipient stage of discussion and at the RBI, we have examined it internally. And we are continuing to have internal discussions. And we do have consultations and discussions with other central banks also. But it’s too early to talk about central bank digital currency. But as and when the technologically evolves, with adequate safeguards, I think it is an area which the Reserve Bank will certainly look at seriously, at an appropriate time.”<sup>24</sup>

It is in this context that the Supreme Court judgement of March 4, 2020 assumes critical significance.

### **Supreme Court Judgement of March 4 2020**

On 4 March 2020, the Supreme Court of India gave the verdict on RBI’s prohibition for financial institutions to deal with any entity engaging in the cryptocurrency-related activity.<sup>25</sup> In the verdict, the Apex Court told that RBI in some sense had violated Article 19(1)(g) of the Indian constitution, providing fundamental right to practice any profession. As the businesses involving cryptocurrency is not illegal in India, RBI cannot deny any business dealing with cryptocurrencies access to the formal financial infrastructure. In the verdict, the Apex Court has said the arguments made by RBI on financial crimes lacks empirical evidence and that RBI has not

<sup>23</sup> These instructions are issued in exercise of powers conferred by section 35A (read with section 36(1)(a) of Banking Regulation Act, 1949), section 35A (read with section 36(1)(a)) and section 56 of the Banking Regulation Act, 1949, section 45JA and 45L of the Reserve Bank of India Act, 1934 and Section 10(2) read with Section 18 of Payment and Settlement Systems Act, 2007.

<sup>24</sup> Available at [https://www.rbi.org.in/scripts/bs\\_viewcontent.aspx?ld=3798](https://www.rbi.org.in/scripts/bs_viewcontent.aspx?ld=3798)

<sup>25</sup> Two different petitioners went to court against this move: (a) the Internet and Mobile Association of India; and (b) a group of corporations that were in the business of running of crypto exchange platforms.

proposed any alternative measures to mitigate those risks, though, the judgment also acknowledged that this verdict based upon article 19 (1)(g) and does not cover any individual as stated in the verdict “Persons who engage in buying and selling virtual currencies, just as a matter of hobby cannot pitch their claim on Article 19(1)(g), for what is covered therein are only profession, occupation, trade or business.”

Interestingly, it was pointed out that that multiple reports both by RBI and Inter-Ministerial Group have given conclusive evidence that the distributed ledger technology and cryptocurrency are two separate entity, and call cryptocurrency as the “by-product” of the distributed ledger technology. The Apex court has also acknowledged after going through all the definitions a significant number of regulators that though “VCs are not recognized as legal tender,” “they are capable of performing some or most of the functions of real currency.” According to the verdict, money has three primary functions; “*It provides, namely (1) a medium of exchange (2) a unit of account and (3) a store of value. Finally, a fourth function, namely that of being a final discharge of debt or standard of deferred payment, was also added*”. Any cryptocurrency satisfies all but the fourth functionality, which is the conferment of the legal tender status by a Government/central authority. Thus, cryptocurrency satisfies the functionality of currency, and the Reserve Bank of India has authority over any cryptocurrency to regulate it. As per the Apex court, “the users and traders of virtual currencies carry on an activity that falls squarely within the purview of the Reserve Bank of India.”<sup>26</sup>

The verdict stated, “anything that may pose a threat to or have an impact on the financial system of the country can be regulated or prohibited by RBI, despite the said activity not forming part of the credit system or payment system.” Hence the verdict has strengthened the regulatory authority of the Reserve Bank of India, and in case of any legislative or executive actions on the ground of financial stability, the verdict will not hold. Thus, the verdict leaves room open for the proposed bill banning any activities related to cryptocurrencies in the parliament gets enacted into law and that will not violate any clause of the verdict nor it will be a violation of the fundamental rights of any individual under Article 19 (1)(g).

## Way Ahead

While accepting the RBI’s jurisdiction over the cryptocurrency market, this Judgment could trigger a spurt of activity in this now moribund market. However, lot will depend on the regulatory and legislative action / reaction in this regard. The Government of India has already prepared a Draft of the “Banning of Cryptocurrency & Regulation of Official Digital Currency Bill, 2019” in August 2019. This Bill proposed to prohibit mining, holding, selling, trade, issuance, disposal or use of cryptocurrency in India.<sup>27</sup> While under the draft Bill, mining, holding, selling, issuing, transferring or use of cryptocurrency is punishable with a fine or imprisonment of up to

<sup>26</sup> The verdict by Supreme Court of India (2020) is available at: [https://main.sci.gov.in/supremecourt/2018/19230/19230\\_2018\\_4\\_1501\\_21151\\_Judgement\\_04-Mar-2020.pdf](https://main.sci.gov.in/supremecourt/2018/19230/19230_2018_4_1501_21151_Judgement_04-Mar-2020.pdf)

<sup>27</sup> As per this Draft Bill, cryptocurrency is defined as any information, code, or token which has a digital representation of value and has utility in a business activity, or acts as a store of value, or a unit of account.

10 years, or both, there is a provision that the central government, in consultation with the RBI, may issue digital rupee as legal tender”. However, the government refrained from introducing the draft bill in the winter session of the parliament during November – December 2019. Going forward the future of cryptocurrency in India will depend upon a number of unknown unknowns. Illustratively, we do not know whether, in the days to come, cryptocurrencies could be replaced by Central Bank Digital Money. What would be interaction between the market participants and regulators / legislative actions? What stance would international bodies like G-20 or FATF is going to take? Future of cryptocurrency, like any other financial innovation, will lie in the outcome of such a cat and mouse game between the regulators and market players.

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# Which Indian Mutual Funds Employ Options in their Portfolios?

**Sudhakara Reddy**



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The use of derivatives by mutual funds is closely monitored by regulators across markets. Indian market regulator, Securities and Exchange Board of India (SEBI) has recently taken measures to allow Indian mutual funds to underwrite call option contracts under certain strict conditions<sup>28</sup>. In general, call options refer to an agreement between two parties where the buyer gets the right to buy an underlying asset in the future at a predetermined price whereas the seller has the obligation to sell the underlying. Till recently, mutual funds were allowed only to take positions in derivative contracts but can now write option contracts. However, this is allowed under covered call strategy and also restricted to index constituents of NIFTY 50, and SENSEX. This implies that they cannot write options without being long on the underlying.

Derivative contracts, especially option contracts are a very useful tool available to mutual funds in several ways. It is a fact that mutual funds herd and Indian mutual funds are no exception. However, we don't have concrete information on how different mutual funds employ different types of derivatives and to what extent they use them to enhance their portfolio performance. It has been discussed in the popular press that mutual funds using options have several advantages and these funds are seen as better investment funds. These funds have superior risk management ability; demonstrate superior performance. Other important arguments put forward by popular academic research which supports the above are; informed investors with their superior information find it attractive to trade in the options markets. Hence, mutual funds which use options integral to their trading strategies are informed investors that best use their superior information to attain stock specific exposure with a fraction of a cost that they have to otherwise pay for directly taking exposure in the stocks. Also, using options efficiently requires in-depth knowledge of option pricing and working of options markets. These qualities are generally beyond the orthodox skills of mutual fund managers and hence suggest that funds which use options effectively are sophisticated funds. Information on these aspects will throw light on the advantages and

<sup>28</sup> Retrieved from <https://www.businesstoday.in/current/economy-politics/sebi-issues-norms-for-mutual-funds-investments-in-derivatives/story/310750.html>

disadvantages of derivatives use by mutual funds and help regulators to take appropriate measures to improve the overall health of the mutual fund industry. The heterogeneous use of derivative instruments by different mutual funds impact their portfolio return and risk characteristics. In this context, I analyze some of the major Indian mutual funds in terms of assets under management to understand their use of options contracts in their portfolio strategy and their performance.

I analyze the data of 200 open-ended mutual fund schemes for a period of five years from 2015-2020 to understand their options use.<sup>29</sup>

**Table 1: Statistics on Option Positions<sup>30</sup>**

Option Type	Equity Options	Index Options	Equity and Index
Call	4945	530	5475
Put	2904	648	3552
Total	7849	1177	9026

Table 1 above reports the some statistics on the option positions held by our sample mutual funds. Out of the 9026 total reported option positions, 7849 positions are of equity options and the remaining 1177 relate to index positions. The call option positions represent the majority positions in equity option category whereas, put option positions are higher in the index category. The call option positions also include the written call positions as well as long call positions. The written call option positions allowed with restrictions by SEBI are mainly used by the fund houses for income generation. Long put positions are lesser than long positions and this suggests that mutual funds use them mainly for insuring their portfolios.

I examine the sample mutual funds to understand the motives behind their option positions; more specifically to see if there is information content about the future performance of the underlying stocks. For this, portfolios replicating the underlying option positions are constructed for each period separately for calls and puts and then held for a period of one to twelve months. These portfolios are rebalanced at the end of each of the holding period and their returns are benchmarked against the standard market benchmark portfolios. Table 2 reports the risk-adjusted returns of the above options portfolios.

**Table 2: Performance of Equity Portfolios Mimicking Option Portfolios**

Option Portfolios	Risk Adjusted Returns (%)			
	1-month	3-month	6-month	12-month

<sup>29</sup> I use ACE mutual funds database to analyze the data. Funds with non-missing data is considered and please note that the ACE mutual funds data has some errors which could not be rectified.

<sup>30</sup> Author's own computations.

Calls	-0.180 (-1.21)	-0.08 (-0.98)	1.151 (1.46)	-0.752 (-1.31)
Puts	-0.233 (-0.45)	-0.825 (-0.75)	-0.842 (-1.58)	-0.636 (-0.11)
Difference	0.053 (0.87)	0.745 (1.32)	1.993 (0.98)	-0.116 (-1.49)

It can be seen from the table above that all the risk-adjusted returns are insignificant. Hence, there is no evidence to support that there is a significant variation in the future prices of the underlying equities over the different buy-and-hold periods. The above results should be read with caution as the portfolios are constructed without knowing the exact date when the mutual funds bought the underlying, took long/short position in options and also we do not have reliable disclosed information.

To understand which type of mutual funds use options in their portfolios, I perform univariate analysis for the sample funds after reclassifying the sample funds into growth, income, large-cap, mid-cap, small-cap, and other types of funds. Table 3 reports the frequency of option users versus nonusers. In the options user category, growth funds with a 39% are the highest users of options followed by large-cap and mid-cap funds. The remaining funds have underrepresentation in the sample. If we look at the fund characteristics of option users versus nonusers it is seen that option users are not consistent in using the options and similarly nonusers too use them in the times of volatility to protect their portfolios.

Table 3: Mutual Fund Characteristics of Option Users and Nonusers

Users	Growth	Income	Large-cap	Mid-cap	Small-cap	Others
Percentage of funds	39.2	10.8	15.4	14.3	8.8	11.5
Number of funds	27	8	11	10	6	8
Nonusers	Growth	Income	Large-cap	Mid-cap	Small-cap	Others
Percentage of funds	37.8	9.11	17.83	16.11	6.06	13.09
Number of funds	49	12	23	21	8	17

It is also observed that most of the option users are from small fund houses with lesser assets under management. On an average, the size of option users is approximately 40% less than nonusers. One more interesting observation is that options user mutual funds charge a higher fees and their expense ratios are higher. The portfolio turnover of options users is higher compared to nonusers. Finally, option users generate lesser overall returns because of their high risk exposure than the nonusers.

**ALUMNI CORNER**

# As Yes Bank unravels, a look at its previous audited financial statements for clues

## Balachandran R



*Balachandran R is an alumnus of IIM Calcutta (1987-89) with extensive experience in corporate banking, investment banking and product management.*

When IDBI Bank's non-performing assets touched 29% with resultant erosion in capital, the government quietly organized a takeover by the Life Insurance Corporation of India. Shareholders, depositors/bond investors and holders of hybrid instruments (which rank between equity and bonds) did not lose money or face a write down. The financial markets shrugged away the deal. A public sector bank being rescued by a public sector life insurer, was a nonevent.

In contrast, Yes Bank's rescue orchestrated by India's largest bank, State Bank of India, with blessings of the government, preceded by a moratorium on the bank on 5 March 2020, created shock and awe in the financial markets, threw depositors into a tizzy on account of partial restrictions on withdrawal, impacted payment systems relying on Yes Bank, resulted in market losses for equity shareholders and led to the ultimate nightmarish scenario of a 100% prospective loss for holders of hybrid instruments, the Additional Tier 1 bonds.

The issues faced by Yes Bank have been in the public domain for a while, starting with divergence in asset classification compared to RBI's norms, governance issues, whistleblower complaints, denial of the promoter/CEO's extension etc. While its stock price cratered from a yearly high of Rs 285 to Rs 36 before the rescue, many depositors (though not all) and AT1 Bond holders were lulled into complacency as the problems were festering for a while without any overt panic.

### **Prompt corrective action framework**

Strangely, the bank was not brought under the RBI's Prompt Corrective Action (PCA) framework. In line with the Basel Committee's recommendations, the banking regulator in India, RBI, has put in place an early warning mechanism for banks, the PCA framework. Yes Bank's collapse without going through PCA first, does not show the regulator in a good light. Merely relying on technicalities/ratios which are largely dependent on the bank management's timely recognition of problem loans as NPA's, will not help. Yes Bank's case would call for a



review of the current PCA mechanism. Perhaps depositors and investors would have acted differently if the bank had been brought under PCA.

It is therefore worthwhile to examine the bank's Annual Report/audited financial statements for the last two years, to see if investors could have discerned some clues which would have been a harbinger of the sudden descent of the bank into moratorium and administration.

### **A marketing document**

Yes Bank's latest available Annual Report for 2018-19 proudly show cases various awards it had bagged, and claimed to have emerged as the national champion for "governance and financial excellence". It proclaimed that it was poised to be the "cutting edge digital bank in India".

Its corporate banking business segment, which has since turned out to be the primary reason for the bank's downfall, claimed that it "prioritized credit quality and all offerings were made following a rigorous analysis of the client's risk profile, as well as proactive monitoring of credit, market and operational risks". The bank was built on its "robust risk management system".

The audited financial statements as on 31.3.2019 indicated that the Gross NPA% and Net NPA%, the most widely watched measures for the banking industry were "3.22%" and "1.86%", significantly better when compared to its ultimate rescuer State Bank of India's figures at 6.94% and 2.65% respectively. Common Tier 1 capital adequacy ratio (CET1) was at "8.4%" against a mandated 7.375%. Subsequently, the Gross NPA% and Net NPA% more than doubled at the end of 30.09.2019, but the levels, as per the audited statements, were less than the banking industry's average. Capital adequacy ratio as on 30.09.2019, was at "16.3%", well above the regulator's requirement of 10.875%.

### **No pointers on festering NPA's**

The Annual Report for 2018-19 stated that there were no disclosure requirements under the RBI regulations on disclosures of divergences in asset classification and provisioning, pursuant to the conclusion of its FY 2017-18 RBI Annual Supervisory Process.

On 14 March 2020, when the December 2019 quarter's results were published soon after the bank being placed under administration and a moratorium, they revealed a shocking state of affairs. The Gross NPA% shot up to a whopping 18.87%, losses amounted to Rs 18,564 cr, and capital was all but wiped off, with CET1 ratio at 0.6%.

The results boil down primarily to one factor: a sudden increase in non-performing assets. Did NPA's treble in just one quarter, or did the bank finally recognize the long standing problem loans, reclassify them, and make provisions for them? Why was NPA classification delayed, were the regulator and the auditor mute spectators when the bank's management did not recognize them earlier? These questions are all the more troubling as the

bank's problem loan accounts pertaining to large corporate borrowers, have been bandied about in the public domain.

To be fair, one also wonders if this was a "big bath" strategy, in which new management, wishing to wipe the slate clean and start anew, makes humongous provisions for bad loans at one go, by enhancing provision coverage ratio as well as recognizing stressed loans as NPA's, hitherto classified as standard loans.

### **Corporate governance**

The latest Annual report for 2018-19 declares that the Corporate Governance Structure of the Bank, "provides a comprehensive framework to (i) enhance accountability to shareholders and other stakeholders, (ii) ensure timely implementations of the plans and accurate disclosures of all material matters, (iii) deal fairly with shareholders and other stakeholder interests, and (iv) maintain high standards of business ethics and integrity".

According to the previous Annual Report for 2017-18, when the promoter was still at the helm, "there were no materially significant transactions with related parties including promoters, directors, key managerial personnel, subsidiaries or relatives of the Directors during the financial year which could lead to a potential conflict with the interest between the Bank and these parties".

Cut over to March 2020, and we have reports of the Enforcement Directorate, functioning under the Ministry of Finance arresting the bank's founder for alleged money laundering offences and kickbacks to the promoter. In an egregious deal being investigated by the CBI, a prime property offered as a collateral to the bank by a stressed borrower, was released, and then allegedly purchased by a related party of the bank's founder at below market prices. If these allegations are proven in a court of law that would indeed mark a new low for India's banking industry already reeling under non-performing assets, partly on account of promoters of defaulting corporate borrowers, treating the company as their personal piggy bank through related party transactions; and now we have an instance of a bank's promoter allegedly flouting basic corporate governance standards for related party transactions, for his personal benefit.

Perhaps the flawed organizational structure of the bank's Chief Risk Officer reporting to the MD and CEO contributed to the malaise; not that reporting to the Board would have helped much. Rarely have board members in the Indian corporate world, demonstrated courage in standing up for small shareholders and in this case depositors, when faced with dubious investment/credit proposals floated by the promoter/CEO.

### **Credit rating**

Non-Convertible, Redeemable, Unsecured, BASEL III compliant Tier II Bonds of the bank, were rated "AAA" at the time of issue. The stellar track record of the rating agencies speak for themselves.

## Lesson for investors

Financial statements often hide more than what they reveal. Extreme cases like Enron and Satyam are well known.

Asset quality as represented by Gross NPA% and Net NPA%, is the main indicator of the health of a bank, in addition to the unpublished Special Mention Account figures. Banks move heaven and earth to postpone recognition of NPA's. It often becomes a cat and mouse game between the bank's management and auditors/bank supervisors. The divergence between a bank's own asset classification and that of the banking supervisor, as published in financial statements, demonstrate this. But even this disclosure is likely to be only the tip of the iceberg.

Investors should take the published numbers with a pinch of salt, and rely on "market intelligence" as well. Some may dismiss this with disdain as mere gossip and rumour and claim to take decisions only on data. But in Yes Bank's case, the market it appears, knew much more than the "independent" Board, regulators and auditors, or at least, what they cared to admit. As to our inimitable credit rating agencies, not much can come between them and the award of rosy "AAA" or "AA" ratings for their large fee paying customers.

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*VOICE OF AMERICA***Pandemics and Economics****Ayan Bhattacharya**

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Most universities in the US have shut down their physical offerings over the past few weeks and educators everywhere are scrambling to get their courses online. This is quite an onerous transition for everyone involved in the process because the overnight change has caught teachers, students and administrators off-guard. Nevertheless, with high-speed internet commonplace in the US, the move will be made, albeit with many hiccups.

Not all commodities in the economy are as “online moveable” as education. Movie halls, sports arenas, theme parks, stores, and a host of other venues need physical footfalls to generate revenue. As communities and cities across the world self-quarantine to contain the spread of the novel coronavirus pandemic, the big worry confronting economists is the wide-ranging effects on the economy of such an unprecedented turn.

**1. Running an Economy**

At the most basic level, an economy is simply a group of humans that decide to work together, because doing so is to the mutual advantage of everyone in the group. Small groups organize themselves into bigger communities, small communities band together to form bigger societies, small firms align with each other to create bigger enterprises, so on and so forth till you reach the stage of giant corporations with supply chains and consumers spread all over the world. The apple on your breakfast table might have been harvested on a farm in Costa Rica owned by a Spanish farming company, transported on a ship that docked in Amsterdam or Doha or Singapore, before it reached the shore of your country.

The real ingredients of any economic system are the expectations of the agents that volunteer to be a part of it. Modern economics provide a unifying template for the coordination of disparate enterprises spread across diverse regions of the planet – say, manufacturing in China, production in Vietnam, marketing in the US, consumption in

India, and a host of other activities in different parts of the world – through the coordination of expectations. A manufacturer tries to figure out the how much to make by using the economic marketplace that allows him to gauge the strength of the demand; the consumer tries to determine the best price to pay by using the economic marketplace that allows her to gauge how much other rival sellers might charge; and so on at every step of the value chain. No individual economic agent knows for sure what the actual outcomes will be tomorrow, but by gauging the expectations of others in the system, all agents have a much better sense of what the tomorrow holds for them collectively. The crucial function of the economy is then the synchronization, and the objects that are being synchronized are expectations of agents in the economy.

## 2. Hermit Kingdoms

The adage of the hermit kingdom is often used to emphasize the importance of trade and exchange. A hermit kingdom has no contact with the outside world and lives and dies by its own means. Humans soured on the idea of hermit kingdoms way back in the antiquities when they discovered trade: tablets and scrolls from Indus valley and China have been found in Mesopotamia and Egypt dating back thousands of years. The fathers of modern economics like Adam Smith or David Ricardo built entire theories extolling the advantages of trade, the basic idea being that trade allowed communities to specialize – you focused on what you did best and bought from the rest of the world for your other needs. This led to more efficient resource allocation all through the value chain, improving the productivity of all stakeholders.

A pandemic like Covid-19 turns the clock back to the era of hermit kingdoms — at least in the short run. As communities start to quarantine and isolate, they are largely confined to their own resources. Of course, the presence of worldwide internet and communications means that there is still ample flow of information. However, the physical flow of goods and services — the lifeblood of modern economies — is grinding to a standstill. Equally important, there is a pervading sense of gloom and panic among economic agents because they expect the system to fall apart. In a sense, the actual failure of the economic system is becoming a quid pro quo consequence of the expectation of failure among the agents in the economy.

## 3. Economic Expectations

Managing a modern market economy well is really an exercise in managing the expectations of its agents. While the functioning of the actual economic machinery is an important component, what is equally crucial—but often overlooked—is the careful calibration of expectations of the participating agents in the economic system. In the language of policymaking, economic expectations are self-fulfilling. If agents believe that the economy is on a downward trend, they cut back on their investments, and this in turn pushes the economy further down south. On

the other hand, if agents believe that the economy is doing well, they spend and consume more, and this in turn boosts the economy.

Navigating one's way out of a crisis thus often comes down to adroitly playing the expectations of the agents in the system, and all important schools of macroeconomic thought concede the centrality of economic expectations — though the precise strategy for revival differs from one school to another. Such macroeconomic strategies and tools, however, were created for more conventional economic crises — problems with debt, or price rise, or banking, or housing, etc. — and the real unknown for economists is whether they work for crises arising out of unknown phenomena such as the Covid-19 pandemic.

#### 4. Curing Economic Infections

The economic policy response to the pandemic across most of the developed world has been to unleash the tools of macroeconomic support. The Federal Reserve has slashed interest rates close to zero this weekend and announced a massive program of bond purchase, dubbed QE4. Europe's central bank, too, has been considering asset repurchases, while China has been preparing its own stimulus program. Despite all these measures, there is a great deal of uncertainty among policy makers, because we have little experience with crises of this variety.

In a conventional crisis, the fundamental reason for the problem is economic in character — things like excessive debt, or lax oversight, or some other inherently economic failure. In the case of a pandemic induced crisis the core reason is biological in nature, so economic policy makers have little control or understanding of the root issues. Further, for politicians across the world the first order concern is to prevent a massive outbreak of disease, and the effects on the economy are, at present, a second order worry at best.

Yet, with time, the economic strain will start to show as massive cutbacks in travel and meeting inevitably soften economy-wide production and spending. In fact, as a precursor, financial markets everywhere have already started to tank. It is not clear, however, if flooding the system with cash will revive spending and growth as it did earlier. Unlike the crisis in 2008, there is not just a deficit of trust in the system, but a very real physical reason why individuals are choosing to keep away from each other. Would it help more if businesses were encouraged to move their offerings online? For example, Disney has begun to offer online streaming of all its movies running in the halls at present. However, such a strategy involves dangers of its own — what if people decide to forego going to the movies even after the crisis winds down? Disney earns much more when people physically go to the movies than when they sit at home and stream. Is Disney digging its own grave by moving its releases online?

Questions like these do not have easy answers. At a deeper level, many of the economic questions raised by the sudden spread of a pandemic like Covid-19 are completely new to the profession. Just as the crisis in 2008 led to

the growth of new lines of inquiry and research, it is likely that the Covid-19 induced breakdowns will lead to a fresh look at many of the fundamental assumptions underpinning modern economics.

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