

a₹tha

E - JOURNAL OF FRTL @ IIM CALCUTTA

August 2022, Volume 10, Issue 1

10th Anniversary Issue





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E - JOURNAL OF FRTL @ IIM CALCUTTA



Indian Institute of Management Calcutta

Chief Editor



Dr. Sudhir S Jaiswall,
Associate Professor, Finance & Control Group
Coordinator, Financial Research & Trading Laboratory
Indian Institute of Management Calcutta
Email: sudhir@iimcal.ac.in

Editorial Team



Dr. Arvind Ashta
Senior Professor, Finance, Control & Law
Groupe ESC Dijon-Bourgogne
Burgundy School of Business, France
Email: arvind.ashta@bsb-education.com



Dr. Asish K Bhattacharyya
Distinguished Professor,
School of Management and Entrepreneurship
Shiv Nadar University
Email: asish.bhattacharyya@gmail.com



Dr. Avijit Bansal
Assistant Professor,
Finance & Control Group
Indian Institute of Management Calcutta
Email: avijit@iimcal.ac.in



Dr. B. B. Chakrabarti
Former Professor,
Finance & Control Group
Indian Institute of Management Calcutta
Email: bbc@iimcal.ac.in



Dr. Debarati Basu
Associate Professor,
School of Management and Entrepreneurship
Shiv Nadar University
Email: debarati.basu@snu.edu.in



Dr. Manju Jaiswall
Associate Professor,
Finance & Control Group
Indian Institute of Management Calcutta
Email: manju@iimcal.ac.in



Dr. Radha Mukesh Ladkani
Associate Professor,
Finance & Accounting Group
Indian Institute of Management Indore
Email: radhal@iimidr.ac.in



Dr. Samit Paul
Assistant Professor,
Finance & Control Group
Indian Institute of Management Calcutta
Email: samit@iimcal.ac.in



Dr. Sudarshan Kumar
Assistant Professor,
Finance & Control Group
Indian Institute of Management Calcutta
Email: sudarshank@iimcal.ac.in



Dr. Sudhakar Reddy
Associate Professor,
Finance & Control Group
Indian Institute of Management Calcutta
Email: sudhakar@iimcal.ac.in



Dr. V K Unni
Professor,
Public Policy & Management Group
Indian Institute of Management Calcutta
Email: unniv@iimcal.ac.in



Dr. Vipul Mathur
Assistant Professor,
Economics Group
Indian Institute of Management Calcutta
Email: vipul@iimcal.ac

Editorial Office

Ms. Priyanka Dasgupta
Assistant Manager,
Financial Research & Trading Laboratory
Email: artha@iimcal.ac.in

Indian Institute of Management Calcutta
Diamond Harbour Road, Joka, Kolkata-700104
West Bengal, India
+91-33-7121-1141

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Editorial



You will be happy to know that Artha has completed 10 years. Artha has come a long way in its decade-long journey. From an in-house newsletter, it has now evolved into a peer-reviewed and practitioner-oriented open-access journal with a strong board and reaching over sixteen thousand readers. I am indebted to the editorial team, reviewers, and authors for their contribution to the quality and the reach of Artha.

With this issue, we celebrate the 10th Anniversary of Artha. We have curated eight articles covering a variety of topics drawn from governance, finance, and accounting. The *first* article is about the relevance of independent directors in today's world. The author explores the evolution of the role of independent directors in corporate governance, examines their effectiveness in advising and monitoring management, and argues that the need for independent directors as monitors of management may be over in today's world. The *second* article examines debt issuance in the primary market and the role of blockchain technology and smart contracts in overcoming the challenges in issuing debt traditionally. The author also discusses various debt issuance using blockchain in India and abroad and how these issuers have cut the time and cost of issuance and servicing. The *third* article deals with environment-related stranded assets (assets that have been significantly and prematurely impaired due to environmental and technological reasons). The author discusses how these assets affect corporates and financial market players. The *fourth* article is about a behavioral finance issue. The author provides examples from recent crashes to emphasize an investor's need for emotional discipline in wealth creation and show decisions purely based on emotions could be sub-optimal. The *fifth* article evaluates the zero-coupon yield curve estimates provided by the Clearing Corporation of India since 2003. The author shows these estimates doing a poor job of capturing the mispricing and suggests that it may be better to switch to a more advanced model for estimating the term structure. The *sixth* article deals with ESG funds. The author describes the trends, driving factors, performance, and challenges faced by ESG funds in India. The *seventh* piece is on Special Purpose Acquisition Companies (SPACs). The author discusses the evolving regulatory regime for SPACs in India in general and the IFSCA (Issuance and Listing of Securities) Regulations, 2021, in particular. The article also highlights the need to revamp the existing regulatory framework to support the growth of SPACs in India. Finally, in the *last* piece, the author provides an analysis of the implications of India's adoption of the GST regime since 2017 and brings to the fore the status of the intended consequences of GST and highlights some unintended consequences as well.

We hope that you enjoy reading these articles. Please consider contributing your article and your constructive comments to us at artha@iimcal.ac.in.

Sudhir S. Jaiswall

Chief Editor

Indian Institute of Management Calcutta

Contributors



Asish K Bhattacharyya is a Distinguished Professor at Shiv Nadar University and founder of Nonlinear Insights. He was a Professor at the Indian Institute of Management Calcutta and the Indian Institute of Corporate Affairs. Besides, he was Director of the Institute of Management Technology Ghaziabad and the Head of the School of Corporate Governance, Indian Institute of Corporate Affairs. He served as a Professor at SPJIMR (Mumbai) and was the Technical Director of the Institute of Chartered Accountants of India. Dr. Bhattacharyya started the Centre for Corporate Governance at IIM Calcutta. He was a regular columnist for Business Standard from 2008 to 2020. He is also on the editorial board of A₹tha.



Prof Binay Bhushan Chakrabarti is a former Professor of Finance at IIM Calcutta and ex-Director-in-charge of IIM Ranchi. He is a Mechanical Engineer from Jadavpur University, Calcutta (Gold medalist), PGDM from IIM Calcutta (Gold medalist), Cost Accountant from the Institute of Cost Accountants of India, and Ph. D in Economics from Jadavpur University, Calcutta. He has worked in the industry for 24 years, primarily in the manufacturing and financial services sector. Apart from teaching at IIM Calcutta, he has been a visiting professor at IIM Ahmedabad and other IIMs, including CFVG, Vietnam, ESCP Paris, National University of Singapore, Asian Institute of Technology, Bangkok, Reims Business School, Bordeaux Business School, and ESC Toulouse in France. He has published more than forty research papers in international and domestic journals. He is also on the editorial board of A₹tha.



Utkarsh Majmudar is a professional with over two decades of experience encompassing teaching, research and administration at premier business schools in India (IIM Bangalore, IIM Lucknow, IIM Udaipur etc.) and working with large corporations in India at GE Capital, iGATE and HSBC. Apart from finance, he has done significant work in the area of sustainability – conducting an annual study of the performance of companies on corporate responsibility, working with large companies, publishing cases on sustainability, and writing extensively on the theme. He has co-authored two books. The second book, Shift: Decisions for a Net Zero World, was released recently. Utkarsh is a member of the Board of Governors at IIM Raipur



Prof. Avijit Bansal is a faculty member in the Finance & Control group at Indian Institute of Management Calcutta (IIMC). He has a B.Tech degree from Visvesvaraya National Institute of Technology, Nagpur, and a Ph.D. in Finance & Accounting from IIM Ahmedabad. His primary research interest is in Behavioural Finance and Asset Pricing. He is also on the editorial board of AṚtha.



Prof. Sudarshan Kumar is a faculty member in the Finance and Control group at IIM Calcutta. He is B.Tech. (Hons.) in Civil Engineering from IIT Kharagpur, and PhD in Finance from IIM Ahmedabad. He primarily works in the area of quantitative finance and fixed income and has published in many prestigious journals including European Journal of Finance, Journal of Complex networks, and journal of computational social science. He also has several scholarly research papers in the pipeline. He is also on the editorial board of AṚtha.



Indransh Bhadauria is a student of the 58th batch of the MBA program at IIM Calcutta and expects to graduate in 2023. Having worked in Consulting for a year for global FMCG clients, he shifted his focus toward finance. The works that excite him most are equity research and PE. During his internship, he explored the work in sustainability space across the world. He has worked with NPOs, NGOs, and Investment Banks across Ag-tech and Housing markets. During his work, ESG Investing caught his eye. He is currently researching the impact of federal rates on global capital markets, and lessons on portfolio management.



V.K. Unni is a professor at the Indian Institute of Management Calcutta. His areas of research and teaching include intellectual property rights, competition law and regulatory framework of corporate transactions. Unni is a corporate lawyer by training, and did his Ph.D in Intellectual Property Law at Nalsar University of Law. Later he joined NALSAR University as a lecturer and assistant professor of law teaching subjects like Banking and Finance Law and Intellectual Property Law. Presently he teaches at IIM Calcutta as a professor. At IIM Calcutta he teaches Public Policy and Management courses at the doctoral and postgraduate levels. He is also on the editorial board of AṚtha.



Shabana Mitra has over 10 years of experience working in Development Economics. She is currently an Assistant Professor of Economics at Shiv Nadar University. Prior to joining Shiv Nadar University she worked at IIM Bangalore, World Bank, Washington DC, and the Peace Research Institute, Oslo (PRIO), Norway. She completed her PhD in Economics from Vanderbilt University in 2011. She has published in leading academic journals, including The Economic Journal, Econometric Reviews, Journal of Comparative Economics and Social Indicators Research. She also regularly writes for news outlets both in Hindi and English.

Independent Director – Abolish the Institution

Asish K Bhattacharyya

Introduction

Globally, publicly-traded limited-liability companies (hereafter, companies) dominate the corporate sector. Their corporate governance structure is similar across the globe – centralized management. The board of directors (board) is responsible for the company's management and governance. Shareholders, the residual claimants, have no right to participate in the day-to-day decision-making. This structure results in the separation of ownership from control. The board appoints a CEO and delegates to her the power for the company's day-to-day management.¹ She leads the management team. Her decisions affect shareholders' wealth but do not affect her wealth materially, as she receives the compensation committed by the company with a small variable component. The CEO operates under the guidance and oversight of the board. Shareholders use the voting right to elect the directors, appoint the auditor, and approve proposals placed before the assembly of shareholders. The companies act, and capital market regulations protect the shareholders' interests.²

In Anglo-Saxon countries, a unitary board is responsible for all the board functions. In Germany and some European countries, a two-tier board structure is the norm. The oversight responsibility rests with the supervisory board. The supervisory board appoints the management board responsible for managing the company. I focus is on the unitary board in this article.

Historical perspective

The concept of the monitoring board and independent directors emerged and evolved in the U.S.A. Later, those were adopted by other countries. Cheffins (2018) chronicled the transformation of publicly-traded American companies. Cheffins (2018, p.105) observes that immediately after World War II, internal constraints on managerial discretion were theoretical, as the relationship between the CEO and the board was congenial and dispersed shareholders had no motivation to scrutinize the company (typical rational apathy). External constraints on managerial discretion were significant. Government interventions in a command economy and the strong bargaining power of employee unions are examples of external constraints on managerial discretion. Furthermore, Cheffins (2018, p.41) observes that business leaders behaved more like

¹ The CEO may be a professional or a nominee of the controlling shareholder.

² The law mandates the board to seek the shareholders' approval for certain critical decisions before implementing the same.
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stewards from 1950 to 1970. They focused on fostering the growth of the business without ignoring the interests of important constituencies like employees and consumers and the public at large. Until 1970, the American board of directors model was the ‘advisory model’.

In the 1970s, regulators and investors were shaken by three events/trends: the sudden demise of Penn Central Rail Road (PC), illicit payments and frauds, and bribes to foreign governments. Before the collapse, PC was considered a blue-chip company. Experts and regulators held the PC’s board responsible for the company’s collapse. Townsend (1971) observes that the directors of PC and other companies were in bed with the management. The boards gave the illusion that they knew what was going on and acted to keep the management honest. He further observes that a typical director was a well-meaning person of average intelligence, but she could not do her job because of the boardroom decorum of not to challenge the CEO and ask penetrating questions that would embarrass her. Gordon (2006) observes that the advisory boards were a fraud, as they did not enforce the CEO’s accountability but gave the impression that they were enforcing accountability.

External constraints in the U.S.A. was weakening and the advisory boards failed. This led to the reconceptualization of the board structure. The monitoring board model replaced the advisory board model. The monitoring board requires independent directors. Cheffins (2018, p.133) reported that during the mid-1970s while resolving a substantial number of cases, usually about illicit payments, the Securities and Exchange Commission (SEC) made the companies agree to the appointment of additional outside directors and the creation of an audit committee. In 1977, on the advice of the SEC, the New York Stock Exchange amended the listing rules making the establishment of an audit committee comprised of outside independent directors a listing condition. All stakeholders agreed that the monitoring board was the solution to the problem.

The logic underlying the appointment of independent directors was straightforward. Independent directors would objectively monitor the company’s performance and that of the CEO. The committees constituted of independent directors would focus on issues that required forming independent judgment after in-depth analyses of the issues. The monitoring board would strengthen internal constraints on managerial discretions.

The Cadbury Committee, set up in the U.K., submitted its report in 1992. Its recommendations were in the form of a Code. This led to the issuance of the corporate governance code by various countries. Almost every country adopted the monitoring board model. In 2004, India adopted the same.

Incentives to independent directors

It was expected that independent directors would perform their job effectively because of: (a) the fear of liability prescribed by law, (b) adequate reward (in the form of compensation) for doing the job well, and (c) fear of losing reputation as hypothesized by Fama and Jensen (1983). Fama and Jensen (1983) hypothesize

that opportunities for directorship in other companies open up to those directors who build their reputation as capable directors and demonstrate the same. Therefore, directors care about their reputation and perform efficiently and effectively to protect the same. Unfortunately, none of the three instruments – liability, reward, and reputation – effectively induce independent directors to perform.

Liability

Gordon (2006) observes that except in a few cases (for example, Enron and WorldCom), courts have not imposed monetary liability on independent directors. Courts apply the ‘business judgment’ and ‘good faith’ principles and do not impose monetary or criminal liability on outside directors unless it is established that the decision-making process was tainted by conflict of interest or that bad faith is established. Gordon’s observation gets credence from the fact that no liability was imposed on independent directors of banks that failed in the 2008 financial crisis, although it was established that the boards of those banks failed to manage risks adequately. In the case of Satyam Computer Services, which collapsed due to accounting and management fraud, the court imposed a fine of INR 26.6 million (USD 0.68 million) on Krishna Palepu, a professor at the Harvard Business School, because he provided consultancy services while occupying a seat on the board as an independent director, and a fine of only INR 20,000 (USD 509) was imposed on other independent directors.³

In *Ravindranatha Bajpe v. Mangalore Special Economic Zone Ltd. & Ors*, the Supreme Court of India recently, on 27 September 2021, held that merely because an individual is a Chairman, Managing Director/Executive Director, and/or Planner/Supervisor of a company, they cannot be held vicariously liable unless specific allegations are levied against them concerning their role in a criminal case. It took cognizance of its previously passed judgments on the vicarious liabilities of the key personnel of a company in criminal matters.

Gutiérrez and Maribel (2013) observe that imposition of liability might make directors risk-averse, inducing them to make conservative decisions and over-monitor the CEO, and might result in the flight of talent. However, the Directors & Officers’ insurance policy would lower the likelihood of out-of-pocket payments.

Compensation

Deciding the right amount and form of directors’ compensation is a vexing issue. Low compensation results in a lack of motivation, and high compensation impairs independence. The debate on whether ESOP should be granted to independent directors is yet to be settled. Many consider ESOP a perverse incentive. Tirole (2016, p.183) observes that the variable pay (like performance bonus and ESOP) may not reward good

³ Converted at the exchange rate (USD1 = INR 39.28) prevailing on January 10, 2008, when the court imposed the fine. Indian Institute of Management Calcutta

management as it may induce the manager (and the board) to short-termism and unscrupulous practices, like selling shares immediately before bankruptcy. Currently, in India, the law does not permit giving ESOP to non-executive directors. A proposal by SEBI to grant ESOP is pending for decision. Regulators are yet to find out the right solution to the issue.

Reputation

Empirical research supports the hypothesis developed by Fama and Jensen (1983) that outside directors' reputation impacts the value of their human capital. Gilson (1990) observes that directors who resign from companies that file bankruptcy or privately restructure their debt hold significantly fewer seats on other boards following their departure. Coles and Hoi (2003) provide evidence that those directors who protect shareholders' interests are likely to gain additional external directorships. Fich and Shivdasani (2007) provide evidence that outside directors experience a significant decline in directorship on the boards of other companies following a financial fraud lawsuit. Yermack (2004) concludes that if the firm does well, the likelihood of obtaining additional directorships increases. Ferris, Jagannathan, and Pritchard (2003) observe that firm performance positively affects the number of appointments a director holds.

However, Gordon (2006) observes that the noise in the reputation market limits the reputation-based incentive's effectiveness. A director's reputation is affected only when the company is involved in a financial catastrophe, management fraud, or a major legal problem. The company's underperformance or minor legal issues do not affect directors' reputations because of noise in the reputation market. Fahlenbrach, Rüdiger, Low, and Stulz (2010) analyzed the sudden departure of directors and concluded that to protect their reputation, outside directors resign when they anticipate the firm on whose board they sit will perform poorly or disclose bad news. They observe that outside directors resign when they are required most. In a nutshell, the incentive for performing effectively to protect reputation is weak, although Fama and Jensen's (1983) hypothesis is correct.

Effectiveness of independent directors

Over the past five decades, regulators, across the world, have tightened the definition of independence, defined their roles, and enhanced their liability and accountability. This demonstrates that the independent directors fail to meet the expectations of the regulators, investors, and other stakeholders.

SEBI's consultation paper issued in 2021 reported that in India, the promoter/promoter group holds more than 50% of the voting right in around 60% of the listed companies (publicly-traded companies), which comprise around 67 percent of the market capitalization.⁴ Therefore, the promoter can easily appoint and remove

⁴ SEBI. Review of Regulatory provisions related to Independent Directors. Available at: https://www.sebi.gov.in/sebi_data/meetingfiles/jul-2021/1626155485805_1.pdf. Extracted on July 6, 2022. Indian Institute of Management Calcutta

independent directors of their choice, if the law requires the appointment and removal by a simple majority. Varottil (2010) observes that empirical studies and anecdotal evidence suggest that independent directors do not function effectively in India. Bebchuk and Hamdani (2017) observe that those directors, whose election and retention depend on the controlling shareholder, have little incentive to go against the wishes of the controlling shareholder and protect non-controlling shareholders. In the 2021 consultation paper (referred to earlier), SEBI proposed the appointment and removal of independent directors through a dual process – first, approval by shareholders, and then, approval by the *majority of the minority*. In the UK, the dual process is required for companies that have a controlling shareholder. Companies opposed the SEBI's move. Finally, SEBI amended the law requiring the appointment and removal of independent directors by a special resolution. The new law is applicable from January 1, 2022. The *majority of the minority rule* makes the independent directors accountable to non-controlling shareholders. Opposition by companies demonstrates that the controlling shareholder and the CEOs appoint management-sympathetic independent directors, rather than shareholder-sympathetic independent directors. As a result, in India, a market is created for the management-sympathetic independent directors.

Gutiérrez and Maribel (2013) observe that the empirical literature on board effectiveness is far from conclusive. Adams, Hermalin, and Weisbach (2010) observe that it is difficult to empirically identify any causal relationship between board composition and firm performance or firm value, as the board of directors is an endogenously determined institution. This problem might have resulted in confusing and contradictory conclusions on the contribution of independent directors to firm performance. However, some recent research establishes the fact that the majority of independent directors are not effective.

To alleviate the endogeneity concerns, Nguyen, Dang, and Nielsen (2010) studied the effect of an event (sudden death of an independent director) on the share price. They observe that on the sudden death of an independent director, the stock price drops by 0.85% on average. They further observe that the marginal value of independence is lower when the deceased independent director had a long tenure or was appointed during the tenure of the current CEO. The marginal value of independence is higher when fewer outside directors or the deceased independent director holds an important position like the chairperson or an audit committee member. They conclude that independent directors make valuable contributions to the firm performance. The observation of Nguyen et al. (2010) that the marginal value of independence of directors who hold important positions is higher may be interpreted as those who do not hold important positions do not contribute significantly to the company's performance.

Fogel, Liping, and Randall (2021) observe that more powerful independent directors with better access to information and greater credibility better detect and counter CEO missteps. Thus, they contribute positively to performance. They gauged the independent director's power by a composite of social network

power centrality measures. However, based on a high incidence of powerless independent directors in the data, they conclude that CEOs select independent directors for diffidence. Ma and Khanna (2016) studied the independent director's dissents in the board meetings of Chinese publicly-traded companies, which are mandated to disclose dissents. They conclude that independent directors feel indebted for being offered a director position and, in exchange, support the management. Schwartz-Ziv and Michael (2013) analyzed Israeli-government-controlled eleven business companies' minutes of board meetings and board committee meetings. They observed that independent directors disagreed with the CEO only 3.3% of the time. In sum, independent directors have failed to play the expected role because they could not protect their independence and the incentive mechanisms are ineffective.

Proposal to revert to the advisory model

Tirole (2006, p15) observes that corporate governance is about creating internal constraints on managerial discretion. The monitoring board model has been in existence for around 50 years, and it is taken for granted that the mechanism of independent directors will solve the corporate governance issues, even though the empirical evidence suggests that the institution is ineffective. Moreover, the situation has changed drastically from what prevailed when the monitoring board model replaced the advisory board model.

Companies are now operating in a VUCA world.⁵ Disruption has become a norm. Institutional investment in companies is increasing giving impetus to shareholder activism – within the closed-door meeting with the board and in general meetings. Whistle blowers have access to regulators. Sustainability reporting empowered the stakeholders and social activists. Social media spreads the company's irresponsible behavior fast.

It is well accepted that the CEO is better informed than the outside directors. Zhou, Stephen, and Anastasia (2018) analyzing data from sample firms traded on the Athens Stock Exchange conclude that outside directors lack firm-specific knowledge of the operational activities of the firms on whose boards they serve. Cavaco, Patricia, Antoine, and Gwenael (2017) provide evidence that independent directors experience information deficits. Outside directors cannot monitor the CEO effectively due to the information asymmetry. My conjecture is that in a VUCA world, the information gap between the CEO and outside directors is much wider than that in a less uncertain environment. Demsetz and Kenneth (1985) support this conjecture. These authors observe that in less predictable environments, it is more difficult to monitor the CEO. Therefore, even if we assume that the tightening of the norms by regulators protects the independence of the independent directors, the institution of independent directors will remain an inefficient and ineffective device for monitoring the CEO.

⁵ VUCA stands for volatility, uncertainty, complexity, and ambiguity.
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The monitoring board model assumes that the CEO is an economic person. The economic person is a theoretical construct. However, an individual is not necessarily an economic person as defined in the literature. Jensen and Meckling (1994) posit that every individual cares for respect, honor, power, love, and the welfare of others, not only money. According to Davis, Schoorman, and Lex (2018), organizational relationships are more complex than the underlying assumptions of the agency theory. They posit that CEOs are not predisposed as an agent or a steward. Managers choose to behave like an agent or a steward based on their psychological motivation and perception of the situation. The Principals also choose the agency or stewardship relationship based on their perception of the manager's psychological motivation and the situation.

An organization realizes the maximum reward when both parties choose the steward relationship. The steward perceives that her interests and those of the company are convergent. She takes pride in the company's success and takes the company's failure as her own failure. She is motivated by intrinsic motivational factors. She performs best when she perceives that she enjoys autonomy. In the present volatile environment where innovation is the mantra for survival and growth, the board should create an environment of trust to induce the CEO to choose the stewardship relationships. The monitoring board model induces them to act like an agent. Therefore, in the VUCA world, the monitoring board is dysfunctional, particularly in companies with a controlling shareholder.

An advisory board can effectively perform all the other board functions – providing checks and balances, guiding the CEO, and boundary spanning.⁶ Board diversity is essential and therefore, outside directors must be inducted into the board. Shareholders should be empowered rather than made to focus on strengthening the institution of independent directors. Corporate regulators and GAAP require timely disclosure of price-sensitive and other relevant information. Sustainability reporting communicates hitherto undisclosed information. Social media circulates information widely and speedily. The proxy advisory firms are providing analyses to the institutional investors. Therefore, institutional investors and block holders can make well-informed decisions. Stakeholders can put pressure on the management to act responsibly. Thus, the need for the institution of independent directors may be over in today's world.

Conclusions

Literature reveals that the monitoring board is ineffective due to a variety of reasons – lack of independence, lack of motivation and information asymmetry. In the VUCA world, the information gap is increasing. Innovation is the key to the survival and growth of the company. Innovation prospers in an open environment and an environment of trust. Therefore, control and monitoring should be replaced by the stewardship

⁶ Boundary spanning refers to arranging resources from the external environment and managing the relationships with stakeholders. For example, boundary-spanning includes persuading the government officials to speed up a decision on a request filed by the company pending with the government. Managing relationships includes explaining the company's position to stakeholders when the company is passing through a reputational crisis.

relationships between the CEO and the board. ESG movement will also make the institutional investors and stakeholders, particularly customers and vendors, watchful. It is time that the regulators explore other alternatives and abolish the institution of independent directors.

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Blockchain-based Debt Issues

Binay Bhushan Chakrabarti⁷

Introduction

Debt is a major source of money for governments, corporations, municipalities, special purpose vehicles, and many others. In case of both central and state governments, debt is the only source of money that can be raised from capital markets. For corporations, apart from being a source of money, issuing debt in capital markets also helps in reducing the cost of capital so very important to identify profitable projects for increasing shareholder value.

Outstanding Central Government debt In India at the end of December 2021 is Rs. 128.4 lac crore and is likely to rise further over time. Outstanding corporate bonds in India stood at Rs. 32.5 lac crore at the end of fiscal 2020 and is likely to reach Rs. 65-70 lac crore by the end of fiscal 2025 according to the CRISIL. The additional debt funds likely to be mobilized during FY 21-25 by various issuers/sectors, as per CRISIL estimates, are – infrastructure Rs. 5.5-7.5 lac crore, corporates Rs. 2.5-3.0 lac crore, non-banking/housing finance companies (NBFCs/HFCs) Rs. 14-15 lac crore, banks Rs. 1.5-2.5 lac crore, and infrastructure through innovative solutions Rs. 7-10 lac crore.

There are various markets for debts – primary market, secondary market, repo market and others. Primary markets can be for short-term discount instruments like bills and commercial papers or for longer-term securities like corporate and government bonds and others.

In this article, I discuss the challenges faced by the key players in traditional debt issuance in the primary market and how blockchain technology along with smart contracts can help in overcoming some of the challenges and also reduce the time required for fundraising as well as the cost of issuance and the subsequent servicing. I will end the article by discussing some debt issues made in the recent past by the World Bank, European Investment Bank, and other corporate borrowers.

Key Players in a Debt Issue

Some of the key players are mentioned below.

⁷ Former Professor, IIM Calcutta
Indian Institute of Management Calcutta

- 1) Issuer – The primary motivation is to be able to raise the money at the least cost. As mentioned above, the demand for debt capital by the issuers in India is likely to be approximately Rs. 35 lac crore during FY 21-25 as per CRISIL estimates.
- 2) Investors – They subscribe to earn a satisfactory return on their investments and expect adequate liquidity at the time of exit. The major investors in the Indian market are mutual funds (Rs. 5-6 lac crore), insurance companies (Rs. 6-7 lac crore), retirements funds like Employee’s Provident Fund Organisation (EPFO), National Pension System (NPS), and exempted trusts (Rs. 7-8 lac crore), banks (Rs. 2-3 lac crore), FPI and others (Rs. 2-3 lac crore). The figures in brackets indicate the likely investments by the class of investors during FY 21-25 as per CRISIL estimates. One can observe that the supply of debt funds during FY 21-25 is well below the demand to the extent of approximately Rs. 10 lac crore.
- 3) Merchant Banker/Investment Banker – Their primary function is to prepare the Term sheet and Offer document / Prospectus, undertake due diligence, and obtain regulatory approvals. They help in raising funds by advising the appointment of managers, brokers, and bankers to the issue.
- 4) Managers to the issue – They help in issuing the securities, coordinate with syndicate members, brokers and bankers and arrange book building and allocation of securities to the investors.
- 5) Regulator – All capital issues are regulated by the Securities Exchange Board of India (SEBI) in India. The merchant banker obtains the regulator’s approval before any public issue can be made.
- 6) Credit rating agency – They play a very significant role by rating the debt instruments, which is a mandatory requirement as per the Indian regulator. The agencies obtain the relevant information from the issuer for initial rating and review the assigned rating on an annual basis.
- 7) Bankers – They accept online applications and hold the collected subscriptions till the allotment is made. Any excess subscription is returned to the investors directly from the bank and the balance money is passed on to the issuer.
- 8) Depository institution – It is necessary to hold the debt securities in dematerialized form with National Security Depository Limited (NSDL) or Central Depository Services (India) Limited (CDSL). The investors can access the securities through depository participants.
- 9) Registrar to the issue – The main function is to maintain records of investors, process applications for the allotment of securities, and transfer securities to the demat accounts of the investors.

Process of a Debt Issue

Debt issues can be classified in many ways. They can be issued by the government (considered risk-free in the domestic currency), government agencies like NABARD whose debts are secured by the government, and municipalities who are protected by the ability to raise taxes from the citizens and by the support from the local government. Corporations who depend on their streams of net revenues for meeting the liabilities towards the debt investors. The classification may also be based on tenor – bill, note, bond or long band. Bonds differ in credit rating and get differentially priced. Debts can be secured against assets or be unsecured. Debt capital can be raised domestically or abroad. The underlying interest rates can be fixed or variable. Majority of debts are placed privately with the help of investment/merchant bankers. Public markets are also used in many cases.

The issue of debt securities including commercial papers is governed in India by the SEBI (Issue and Listing of the Non-convertible Securities) Regulations, 2021. The major tasks involved for issuing the debt securities are as follows:

- 1) The Merchant banker has to prepare the offer document after due diligence of all the information mentioned in the document and obtain the approval of the regulator, SEBI.
- 2) In-principle approval of the stock exchanges where the securities will be listed for secondary trading has to be obtained.
- 3) The issuer has to make arrangements with the Depositories for the dematerialization of the issued securities.
- 4) The issuer has to appoint a Debenture trustee to oversee the compliance of the terms of the issue of the securities. A trust deed has to be executed for this purpose.
- 5) All debt issues will have to be rated by approved credit rating agencies.
- 6) The issuer has to appoint a Registrar to the issue for all secretarial matters and coordination with the Depositories.
- 7) All issues will be done electronically.
- 8) The issuer will have to create a debenture/capital redemption reserve as per the Companies Act.
- 9) The issuer and managers to the issue will have to coordinate with the syndicate members, brokers, and bankers for raising the funds.
- 10) The issuer will have to make an allotment of securities as per the provisions of the SEBI regulations and arrange a refund of the excess subscription.

11) The issuer will have to make the necessary arrangement for remittance of the periodic interest amounts and the redemption money at maturity to the investors.

12) The issuer shall make arrangements for redressal of any grievances of the investors.

It is thus apparent that a successful debt issue needs a smooth flow of information – accounting, business, cash flows, commercial, compliance, marketing, investor education, secretarial, and others – among the key players at different points of time during the issue and thereafter.

Time and Cost for a Debt Issue

As is evident from the previous section, any successful debt issue calls for a high degree of coordination among the participants in the issue. Also, it is time-consuming because of the sequential processing of information, some of which are provided by the issuer and others arranged by the merchant banker during the due diligence process. Some time is also needed for getting approvals from the regulator, stock exchange, credit rating agency, and depositories. The time taken for raising money also depends on the process used like public offer or private placement.

The cost of the issue has primarily three components – regulatory expenses, expenses on intermediaries, and marketing expenses. The regulatory expenses include SEBI fees, stock exchange fees for processing, book-building, and listing, and depository fees. The payments to the intermediaries are for the services rendered by merchant bankers, registrars, credit rating agencies, auditors, legal counsels, and bankers. The marketing expenses are incurred for printing and stationery, roadshows, branding, advertising and media campaign, and brokerage and selling commission. One can also break up the activities associated with a capital market issue into three phases – pre-issue, marketing, and post-issue.

Can blockchain-based debt issues reduce the time taken and cost incurred in making a debt issue?

Use of Blockchain in a Debt Issue

A blockchain is a shared, trusted, ledger of transactions that everyone can inspect but that no single user controls. It is a cryptographed, secure, tamper-resistant distributed database. A blockchain is a perfect place to store value, identities, agreements, property rights, credentials, etc. Once you put something like a digital contract into it, it will stay there forever. It is decentralized, disintermediated, cheap, and censorship-resistant.

A blockchain is digitally recorded data in packages called blocks. Each block contains a timestamp and a link to the previous block. The records are saved by each node (user) in the network and are owned, maintained, and updated by each node. It is a peer-to-peer system. Then what could be the advantages of using blockchain technology in making a debt issue?

- 1) Debt securities will be stored as immutable, transparent, fully-digitized, smart securities.
- 2) Smart digital securities will be self-executable with automated computer programs carrying out the terms of the contract like payment of interest. These smart contracts will be more efficient with a reduction of the involvement of intermediaries and of manual intervention.
- 3) The smart digital securities will help maintain the history of transactions and track any change in ownership.
- 4) All participants to the issue will receive a unique shared transaction record maintained on a real-time basis, which will allow efficient direct dealing among all the participants – issuer, investors, merchant banker, and other authorized intermediaries. This will facilitate a quicker issuance of debt securities.
- 5) Issue expenses will reduce due to reduced involvement of multiple intermediaries.

Here are some debt issues using blockchain technology.

World Bank and the First Global Blockchain Bond (Bond-i) in August 2018

The World Bank (IBRD) issues between US\$50-US\$60 billion annually in bonds and has a 70-year track record of innovation in capital markets. The World Bank launched the Bond-i (a blockchain-operated new debt instrument), their first bond, created, allocated, transferred, and managed through its life cycle using distributed ledger technology. The two-year bond, lead managed by the Commonwealth Bank of Australia, was issued in August 2018 and raised AUD 110 million.

The platform utilized blockchain technology for issuance including launch, book building, allocation and the management of bond holdings throughout the bond lifecycle. The major features were (a) automated bond auction, bookbuild, and allocation, (b) electronic bid capture, (c) real-time updates and enhanced visibility according to participant's permissions, (d) auditable and immutable transaction records for probity and operational risk management, and (e) permissioned network of authorized participants.

The creation of the world's first blockchain bond demonstrated that blockchain can bring a number of potential benefits:

- **Automation** – Smart contracts apply rules, then automate and streamline processes.
- **Efficiency** – Reduced administrative overhead, elimination of manual paper storage due to electronic documentation, and easier reconciliation result in greater efficiency.
- **Transparency** – Real-time record keeping result in Improved price transparency and visibility.
- **Security** – Replicated and synchronized full dataset protects from cyber threats.

- **Risk mitigation** – Immutable records and the possibility of simultaneous oversight mitigates operational risks.
- **Productivity** – The issue management process is more productive due to the reduction of low-value operational activities.

The World Bank raised a further AUD 50 million in August 2019. This issue expanded market participation with three lead managers: Commonwealth Bank of Australia, RBC Capital Markets, and TD Securities. It also expanded the investor community with the participation of offshore investors.

European Investment Bank (EIB) - Digital Bond issue in April 2021

EIB raised Euro 100 million by issuing a 2-year bond. The issue was launched in association with Goldman Sachs, Santander Bank, and Societe Generale Bank. This debt issue was undertaken in partnership with the national bank of France (Banque de France) and the money collected from the investors was represented as CBDC (Central Bank Digital Currency).

Daimler, Germany - Pilot issue of Euro 100 million Bond in June 2017

Daimler AG, the German car manufacturer, floated part of its Euro 100 million German bonds using blockchain technology in June 2017. The pilot project was among the first of its kind and the type of bond referred to as the Schuldschein bond provided access to global investors. In the process, Daimler could borrow money from a small group of private investors. It was issued on the private version of the Ethereum blockchain.

Other Noteworthy Issues

I present now some other noteworthy digital securities issued in the recent past. The examples cover corporate bonds, PTCs (pass-through certificates) issued by a Special Purpose Vehicles (SPV), short-term commercial paper, and structured products in various countries in Europe and Asia including India.

1) Singtel Group Treasury, Singapore - Digital USD 100 million Bond Issue in April 2022

Singtel wanted to support sustainability and digitize the financial ecosystem, and successfully floated 3.56% coupon 5-year USD 100 million digital Sustainability-linked bonds. This was lead managed by United Overseas Bank, Singapore, and issued on the private market investment platform of ADDX, Singapore.

2) Vasakronan, Sweden - Euro 50 million Green Note issue in December 2021

Vasakronan AB is a real estate company in Stockholm. It issued 18-month Euro 50 million digital Green Note. The issue was directly placed with Deka Bank, and settlement and registration of investment were done on

the Firstwire marketplace connected to Deka Bank's SWIAT (Secure Worldwide Interbank Asset Transfer) – a blockchain-based platform for real-time transactions.

3) Societe Generale Bank, France - Structured Product issue in April 2021

Societe Generale Group had set up a subsidiary, Societe Generale – Forge with the objective of offering crypto assets to their professional clients. This subsidiary would structure, issue and exchange crypto assets and provide custodial services. As part of the development process, the bank had offered covered-bond Security Token worth Euro 100 million to be settled in Euros on the Ethereum blockchain in April 2019, and further Tokens worth Euro 40 million to be settled in CBDCs issued by Banque de France in May 2020. Furthermore, in April 2021, Societe Generale issued Euro Medium-term Notes worth Euro 5 million as Security Token registered on Tezos public blockchain.

4) Longbond Ltd., China – Digital Bond issue in November 2020

Longbond Ltd. was a securitization SPV in China with the sole purpose to issue digital bonds and deposit the proceeds with China Construction Bank Corporation (CCB). The bonds were to be fully secured by the balance sheet of CCB, the world's second-largest bank. The target was to raise USD 3 billion in US dollars and Bitcoins at an annualized rate of 6-month LIBOR + 50 bps. The lead arranger was CCB and the blockchain-based debt security was to be publicly listed on the FUSANG digital exchange for direct access by retail investors.

5) Banco Santander, Spain - Digital Bond issue in September 2019

Banco Santander issued digital bonds worth USD 20 million with quarterly coupon rate of 1.98%. The end-to-end digital bond used the Ethereum blockchain platform. The bank wanted to test out the new disruptive blockchain technology. Hence the investor, tokenization agent, and custodian of digital keys, and dealer for issuance and after-sales service were all other units belonging to the Group.

6) YES Bank, India - Commercial Paper issue in July 2019

YES Bank facilitated INR 100 crore commercial paper issue for Vedanta Ltd. using blockchain technology in July 2019, for the first time in Asia. They used the blockchain solution developed by MonetaGo, New York using Corda enterprise technology developed by R3. The solution ensured very efficient mechanism for the commercial paper issuance and redemption.

Conclusion

How then is blockchain technology useful in debt issuance? It enables faster, more diverse, and cost-efficient transactions. Analog methods being practiced since the 19th century are slow, expensive, and heavily dependent on establishing the identity of the participants and legal sanctions and have evolved over decades.

However, though decentralized public blockchain applications as in crypto assets are steadily increasing since their origin in 2009, permissioned enterprise blockchains (accessed by users with permission) are yet to take a firm root in the world of business. Further, global regulations and accounting standards for blockchain-based transactions are yet to evolve. According to Gartner, the leading consultancy organization, it may take about 10 years for large-scale adoption of blockchain technology by business organizations.

So, how would the adoption evolve? According to Capgemini, we would see more prototypes being tested in the first phase like the debt issues undertaken by Banco Santander in 2019 as mentioned above. It would be useful to try out the concept first in a controlled environment with all the participants belonging to the same institution. One can then bring in others like syndicate members to expand the scope, understand the effectiveness and take any corrective actions. The last phase will be to allow all the market participants to join the permissioned blockchain network. The implementation process may take some time but is worth reaping the benefits of the new disruptive blockchain technology.

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Stranded Assets and Finance

Utkarsh Majmudar

The Paris Agreement of 2015 signaled the shift towards net-zero. And the Glasgow summit of 2021 has highlighted the urgency for the change. With climate change becoming a reality, addressing the issue has become critical. The shift to net-zero requires moving away from fossil fuels (coal, oil, and gas) and decarbonizing production processes and supply chains. This move requires dramatic changes. Coal-based plants give way to renewable energy plants. Equipment used in production may need to be replaced with equipment that uses new energy sources or uses energy more efficiently. Thus, new equipment or new methods may be required. All this results in stranded assets. In this piece, I explore stranded assets and their implications and focus on environment-related stranded assets.

What are stranded assets?

There are two terms that are often used interchangeably – stranded resources and stranded assets. Stranded resources refer to assets that cannot be used. For instance, if the production at a plant must be stopped. Take the case of the Nord Stream pipeline that Germany recently refused permission to operate. By contrast, stranded assets are defined as assets that have suffered from unanticipated or premature write-downs, devaluation, or conversion to liabilities (Caldecott, Ben, Howarth, and McSharry 2013). So, what causes stranding? From an environmental perspective, stranding is caused by various factors outlined in Table 1.

Table 1: Typology of Environment-related Risks

Nature	Type	Description
Physical	Environmental challenges and change	Climate crisis, water stress and biodiversity loss.
	Changing resource landscapes	Prices and availability of different resources. For instance, high oil prices lead to shift towards shale gas and liquefied natural gas.
Societal	New government regulations	These can be in the form of introduction of carbon pricing, reduction in subsidies for fossil fuels, regulations on air pollution, increased disclosures required by regulators. EU, SEBI and SEC requiring increased non-financial disclosures.

	Technological changes	Reduced costs of solar panels, improved and cheaper hydrogen-based technologies, new disruptive technologies, etc.
	Evolving social norms and consumer behavior	Consumers increasingly demand sustainable products, Buyers require certification and labeling of products, etc.
	Litigation and changing statutory interpretations	Recent court cases against Royal Dutch Shell, Exxon Mobil etc. Requiring companies to focus on sustainable actions.

Source: Based on (Caldecott 2017)

Where are assets becoming stranded?

1. **Fossil fuels:** Industries that extract fossil fuels (coal, oil, and gas) are becoming vulnerable to stranding as their emissions are a key contributing factor to climate change. Related products are also subject to stranding. Take the case of plastic. Plastic is known for its poor biodegradability and toxicity. Advances in bioplastics and biodegradable plastics are likely to strand conventional plastic producers.
2. **Agriculture and Forestry:** They have a high risk of stranding. The industry faces advances in agriculture, environmental regulation changes, and risk of natural disasters – floods, droughts, forest fires, etc. The shift to natural and organic produce is stranding traditional agriculture. Milk substitutes impact dairy products, plant-based meat is affecting the livestock industry, and so on. With forestry-based products being viewed unfavorably, the demand for forestry appears to be declining.
3. **Fishery:** Aquaculture, particularly clean fish, is fast replacing regular fishing. There is also increasing consumer interest in vegetarian and vegan diets impacting the fishing industry.
4. **Tourism:** With many beaches being cluttered with plastic waste, tourists are shying away from visiting them. Also, coastal areas are increasingly facing the risk of inundation and thus thwarting tourism.
5. **Transport:** The transport industry is witnessing a dramatic shift from ICE (internal combustion engine) technology to electric vehicles. There is also significant progress in the development of hydrogen-based vehicles. With improvements in battery technology and battery management, large vehicles are becoming viable and popular

What are the Implications of Stranded Assets?

1. For financial institutions, it is important to measure investments exposed to environmental risk. Measurements have to be undertaken across sectors, geographies, and asset classes. For instance, the Carbon Tracker Initiative has done significant work in measuring carbon-related risks.⁸
2. Stranded assets also have implications for financial stability (Jenkins 2020).⁹ With an increased focus on net zero, many companies will find themselves saddled with stranded assets. This could lead to asset managers who invest in these companies to lose money. So would banks that have lent money for these assets with risky loans. Insurers will have lower underwriting and higher claims. All of these may impact the stability of the financial system.
3. Stranded assets affect workers, companies, and governments. They create unemployment, lost profit, and reduced tax collection, among others. Mitigating these consequences arising out of stranded assets is important to avoid a potential systemic financial risk. According to Caldecott (2015), the Bank of England has set out three criteria for stranded carbon assets being a systemic financial risk:
 - i. That exposures of financial institutions to carbon-intensive sectors are large relative to overall assets;
 - ii. The impact of policy and technology is not already being priced into the market, either through lower expected returns or higher risk premia; and
 - iii. Any subsequent correction would not allow financial institutions to adjust their portfolios in an orderly manner.
4. The risk and impact of stranded assets will need to be incorporated into a company's corporate strategy and decision-making. Societal action tends to be high in carbon-intensive industries and so these sectors need to evaluate the impact of stranded assets more carefully. Take the recent case where the activist investor took Royal Dutch Shell to court for not paying enough attention to carbon mitigation (BBC News 2021), or take the case of Tesco where investors demanded that Tesco stock healthy products (Retuers Staff 2021).
5. Civil society is making strong arguments for economywide decarbonization to reduce the scale of climate change. While this is truer of Europe, activism is slowly picking up in other parts of the world too.
6. Governments need to keep track of how progress towards reducing emissions is being made and understand how 'committed emissions' should influence the actions of companies and investors.¹⁰

⁸ Carbon Tracker Initiative, <https://carbontracker.org>

⁹ A stable financial system is capable of efficiently allocating resources, assessing and managing financial risks, maintaining employment levels close to the economy's natural rate, and eliminating relative price movements of real or financial assets that will affect monetary stability or employment levels (The World Bank, n.d.).

¹⁰ Committed emissions are the future emissions expected from all existing fossil fuel-burning infrastructure worldwide (Davis, Caldeira, and Matthews 2010).

Stranded Assets and the Investor

Asset stranding is the process of collapsing expectations of future profits from invested capital (the asset) as a result of disruptive policy and/or technological change (van der Ploeg and Rezai 2019). This has significant implications for investors.

Let us think of a coal-based power plant that was set up, say 5 years ago, with an expected life of 50 years. The expected cash flows from the project were \$400 million per year. The initial cost of the project was, say \$3 billion. At the time of the project appraisal the project looked attractive ($-3000 + \frac{400}{1.10^1} + \dots + \frac{400}{1.10^{50}} = 966$). The project is financially attractive and gets approved and is commissioned. After five years there is a drop in price of solar panels leading to customers installing solar power equipment in their homes. This reduces the cash flows that accrue to the power plant. Let us assume that these cash flows drop by 50%. Thus, the annual cash flows now become \$200 million instead of \$400 million. Also, the capital investment of \$3 billion needs to be adjusted for time value by taking the future value of the capital investment to year 5 (which now becomes the new year 0) when the asset starts stranding. We also need to account for the \$400 million received for each of the five years. Thus, the updated capital investment is $-2389.5 (-3000(1.10^5) + 400(1.10^4) + 400(1.10^3) + 400(1.10^2) + 400(1.10^1))$ This reduces the NPV of the project today ($-2389.5 + \frac{200}{1.10^1} + \dots + \frac{200}{1.10^{45}} = -417$) making the project completely unviable. From the shareholder's perspective there is a destruction of value, and she suffers a capital loss. This will lead a capital reallocation and a flight of capital from the stranded asset.

Another way of looking at the same problem is that easy availability of solar technology leads to an increased risk for the power plant. This can be translated into a higher rate of expected returns by capital providers. Let us assume that the capital providers (shareholders and bond holders) now demand a 15% rate of return on these assets. This translates into a significantly lower NPV than the original project ($-2389.5 + \frac{400}{1.15^1} + \dots + \frac{400}{1.15^{45}} = 272.22$). I have assumed that the cash flows remain the same. However, in most cases there will be a double whammy of higher risks and lower cash flows. Combining the impact of lower cash flows and higher discount makes the NPV far worse ($-2389.5 + \frac{200}{1.15^1} + \dots + \frac{200}{1.15^{45}} = -1059$).

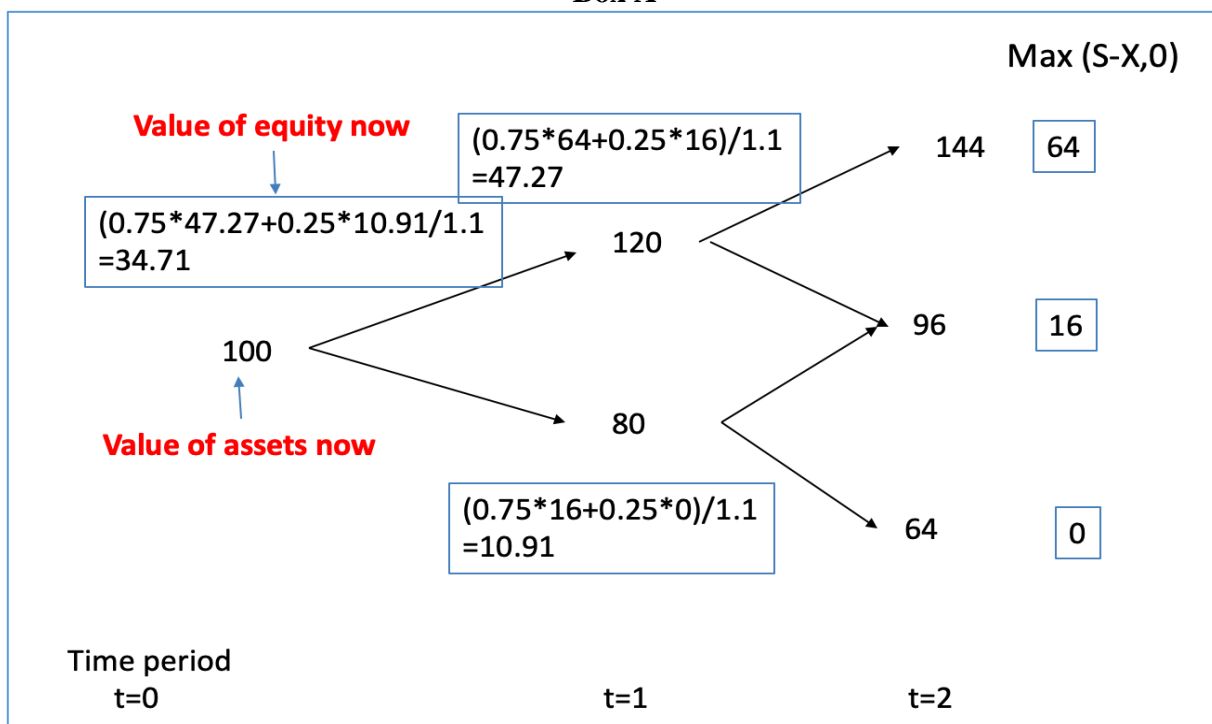
Thus, stranding assets are bad for the shareholders. Let us, now look at it from the bondholder's perspective. The higher risk due to asset stranding translates into a lower credit rating for the bonds. This higher risk also means that the expected yield on the bonds increase and consequently the bondholders face a capital loss.

Another impact would be the reallocation of wealth between shareholders and bondholders. I will illustrate this with an example using real options. Let us take the case of a power utility with the value of assets worth \$100 million. Also, let the value of assets move up in each period by a factor of 1.2 and move down by a factor

of 0.8. With a risk-free rate of 10% and the company's zero-coupon bonds (due two years from now) have a face value of \$80 million, the value of equity is \$34.71 million and the value of the bonds is \$65.29 million (see Exhibit 1: Box A). To arrive at these values, we use the Binomial Option Pricing Model (Cox, Ross, and Rubinstein 1979). As a first step, we compute the risk neutral implied probability as $p = \frac{(1+risk\ free\ rate)-down\ factor}{up\ factor-down\ factor} = \frac{(1+0.10)-0.8}{1.2-0.8} = 0.75$. Next, find the value of the option at maturity. If stock price is greater than the exercise price, the value of the option is the stock price minus the exercise price, else the value of the option is zero. With the option values known at the outermost nodes, we work back recursively at each node in the earlier period being evaluated by $c = p \times C_u + (1 - p) \times C_d)/(1 + risk\ free\ rate)$. Thus, the value on the top node at time period $t = 1$ is evaluated as $\frac{0.75 \times 144 + 0.25 \times 96}{(1+0.10)} = 47.27$. We repeat the same with lower node and move back recursively.

Now, assume that the company adds a stranding asset with a negative NPV of (-)\$2 million. This increases the risk and increases the up and down factors to 1.5 and 0.8, respectively. As a result, the value of equity rises to \$38.55 million but the value of debt declines to \$59.45 (Exhibit 1: Box B) using the Binomial Option Pricing Model as described above. Clearly, the value of shareholders has gone up by \$3.84 million and the value of bondholders has gone down by \$5.84 million. Thus, there is a shift in value from bondholders to shareholders. However, the shift is asymmetrical with bondholders losing more than what the shareholders are gaining. Bondholders suffer a lot more than the value of stranded asset.

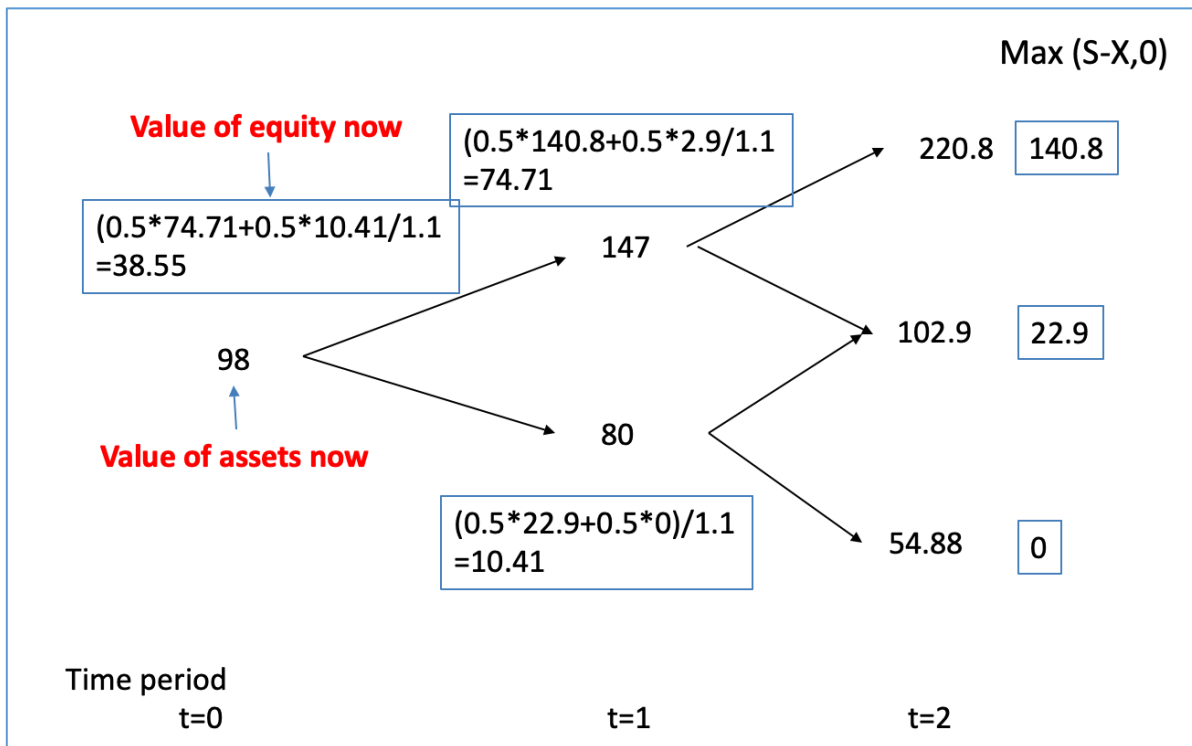
Exhibit 1: Impact of Stranded Assets on Capital Providers
Box A



Value of firm (S) =100, value of equity (S-X) =34.71, Value of debt (X) = 100-34.71 = 65.29

Exhibit 1 (continues):

Box B



Value of firm (S) =98, Value of equity (X) = 38.55, Value of Debt =98 – 38.55 =59.45

Box C

	Value without stranded asset	Value with stranded asset	Difference in value
Value of Equity (S-X)	34.71	38.55	3.84
Value of Debt (X)	65.29	59.45	-5.84
Total (S, Firm Value)	100.00	98.00	-2.00

Source: author

Stranded assets and insurance

Another important stakeholder is the insurance company that is impacted by stranded assets. Note that for an insurance company, the liability side of the balance sheet comprises of policyholders’ funds, whereas the asset side has the investments made by the insurance company to earn a return. Stranded assets impact both sides of an insurance company’s balance sheet. On one hand, as more assets underwritten become stranded in an economy, there is a greater likelihood of a fall in the value of the insurance company’s investment. This is because an insurance company may own equity and bonds of these companies (including those whose assets it has insured). Thus, the value of assets of an insured company goes down as stranded assets increase in the economy. On the other hand, as the assets underwritten become stranded, the insurance company will be liable

to compensate the insured. Consequently, the value of liabilities of an insurance company increases with stranded assets. Furthermore, as stranded assets are no longer insured in the future, the underwriting amount in the future will also reduce thereby impacting its future revenues.

As the probability of an asset becoming stranded increases, the risk to the insurance company increases. This will drive up the premiums being charged. As the risk increases, the premium being charged will at some point become too high, making the asset uninsurable. Given that climate change events tend to be unpredictable and are highly non-linear events, insurance may become unaffordable and unavailable at some point. For insurance companies, it will mean that they will need to develop appropriate processes for readjusting premiums to account for the risks faced. This process is also likely to be impacted by social and political pressures to keep premiums low.

High insurance premiums are likely to impact people living in areas that are most likely to face climate risks. Higher premiums may make it uneconomical for people, say in coastal areas, to afford insurance, especially those who are economically weak or migrants. Governments will need to subsidize insurance to them.

Insurers will have to make difficult decisions. By denying insurance to businesses, farmers, and communities in high-risk areas, they will disincentivize investment in these areas. The lower investment would lead to lower income generating opportunities and lower capacity to pay premiums. It becomes a vicious cycle. Government incentives like subsidies may distort asset values. The insurance industry will need to find ways to protect itself, educate corporate customers on climate imperatives, and avoid high climate risk deals. Thus, the insurance companies can contribute to building resilience in the economy and at the same time earn a reasonable rate of return.

Accounting for Stranded assets

According to a study by RBC Global Asset Management, oil majors are showing significant impairment charges (Table 2).

Table 2: Global oil majors impairment charges (2019)

USD billion

Chevron	10.4
Repsol SA	5.3
Equinor	2.8
BP	2.3
Royal Dutch Shell	2.2

Source: Richardson and Rusin (2020)

There are two approaches to accounting for asset impairment. The US GAAP specifies that if there is a trigger event suspected to be causing the impairment, the carrying value (original cost – accumulated depreciation – accumulated impairment) must be compared to the undiscounted future cash flows generated by the asset. If the undiscounted future cash flows are lesser than the carrying value then the asset is said to be impaired.

Under IFRS and Indian Accounting Standards, the carrying value is compared to the recoverable amount, which is the maximum of the following two values:

- 1) the fair/market value of the asset minus any cost to sell the asset, and
- 2) the value in use (the present value of future cash flows generated by the asset).

If the recoverable amount is less than the carrying value, then the asset is considered to be impaired.

Given these write-offs, it is important to understand how these write-offs are being accounted for. Take the case of an oil platform operator adopting the US GAAP for accounting. With the increasing popularity of electric vehicles, the company realized that the current carrying value of \$6,000,000 will only be able to generate an undiscounted cash flow of \$4,000,000. This requires an asset write-down of \$2,000,000.

Given that stranded assets are becoming a part of life we will need to evolve a framework that enables us to deal with them. According to Dougans et al. (2022), companies may adopt the following approach:

- a. Build assets that have shorter life spans, are convertible to other purposes, and can be invested in incrementally: This requires building in small chunks which is in contrast to the conventional wisdom of building to economic scale. With small chunks, it is easier to upgrade and build the new chunk of assets. This also requires companies to assume shorter asset lives and will require shorter periods over which assets are depreciated. Wherever possible design in such a way that that lower carbon use is anticipated and design in a manner that value is realized quickly. Shorter investment cycles also imply quicker recovery and may have implications for pricing.
- b. Quantify each project’s “uninvestable” moment: Here the managers will have to look at projects to provide quicker returns before the asset turns uninvestable. It requires managers to make an assessment of useful asset lives and estimate the risk of stranding early and figure out how to manage the write-down risk. Shifting to low carbon technology is a real options problem that managers will need to resolve.

- c. Consider the project as a part of an evolving portfolio: Managing the risk of stranded assets becomes increasingly important every year. Management of these risks along with a compelling proposition to stakeholders becomes critical to the manager in the new economic reality.

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Emotional Discipline is the Most Critical Aspect of Investment Journey

Avijit Bansal

When we hear “emotion,” we attach a human experience to terms such as joy, cheerfulness, fear, and anger. From an evolutionary perspective, emotions are considered “rational” as they enhance our chance of survival. For instance, the fear we experience when we see a bush shaking triggers an involuntary response to step back. In most instances, there may be no apparent threat to our life, but in the rare case where a poisonous snake is present in the bush, the response triggered by fear can save our life. While emotional responses benefit us in the wild, they can lead to poor decision-making when transacting in financial markets. Hence, it becomes crucial to act in a disciplined manner so that our emotions don’t trigger actions that reduce our wealth. In the article, I will highlight instances/scenarios where decisions purely based on emotions may be sub-optimal. While the article will not offer any ready-made solutions on how to deal with biases, being aware of the shortcomings of our decision-making process can help us analyze our choices more objectively.

Every day, we are bombarded with stock tips by financial analysts and investment gurus regarding what to buy/sell. As retail traders¹¹, we tend to react to every piece of news that grabs our attention, thinking that we ought to trade based on it or otherwise lose out. Colloquially this is also called fear of missing out (FOMO), but it stems from overconfidence that we can identify the information content of a particular news item. Furthermore, we are overly sure of our ability to take advantage of such information and trade, thinking that we can beat the other market participants who have access to the same news item. But empirical research on trading behavior unequivocally documents that excess does not result in higher returns (Barber & Odean 2000, Barber, Huang, Odean, and Schwarz 2021).

In a tweet in January 2022, Nithin Kamath, the founder of Zerodha, stated that only 1% of active traders make more money than bank fixed deposits over three years.¹² Does it mean that retail traders should not participate in the stock market? The answer is no. Nevertheless, they need to be cognizant that they are at the mercy of the broader market, and trying to time the market is futile.¹³

What Kamath said about Zerodha’s users is also valid for US traders, specifically Robinhood traders. Barber et al. (2021) document that most actively traded stocks by the Robinhood traders underperform the S&P 500

¹¹ I use the terms "trading" and "investing" interchangeably in the article. Same for the words "trader" and "investor."

¹² Link to Nithin Kamat’s tweet: <https://twitter.com/nithin0dha/status/1478260639105622019>

¹³ Timing the market refers to strategically buying an asset when its price is below its fundamental value and selling it when its price is above the fundamental value.

index. In other words, if Robinhood traders had invested their money in passive index fund, they would have been better off. Furthermore, market participants who trade excessively earn a lower return (Barber & Odean, 2000).

So why do people trade excessively and earn lower returns than buy a passive index fund? The answer is that there is no scope for seeking a thrill from passive investing. On the other hand, regularly following the developments in the stock market and trading based on tips theoretically gives us a chance to beat the market (despite being statistically unlikely). Hence, when combined with our overconfidence, the need to seek an adrenaline rush results in excess trading.

Put differently, trading actively in stock markets satisfies the urge to participate in a lottery, which becomes a source of thrill-seeking. Furthermore, the most popular products demanded by retail traders have lottery-like characteristics, such as stocks with a right-tailed distribution, IPOs, and out-of-the-money options. Such instruments have a small probability of earning extremely high returns but have a negative expected return. While retail traders focus on the possibility of earning high returns, they ignore the negative expected returns from such financial instruments.

Worst of all, retail traders exhibit trend-chasing characteristics; they enter the market following a period of high equity returns and exit the market after a steep decline. Put colloquially, retail traders buy high and sell low, which is a quick way to lose money. Rather than taking advantage of financial markets by investing to grow their wealth over the long period, people lose money by unsuccessfully chasing trends over the short period. Many retail investors, scarred by their memory of losing money in stocks, may never invest in equity again.

As commonly advised by many knowledgeable investment advisors, the best way for retail traders to invest is through mutual funds. If confused about which fund to buy, the simplest is to buy an index fund. Such a strategy has two advantages, (i) investing in index funds is cheap as the expense ratio is minuscule, and (ii) usually, they do not carry an exit load.

Another reason retail investors should consider index funds is that there is no evidence to suggest that a particular fund manager can consistently beat the benchmark index. A fund manager outperforms in some years and underperforms in some. Overall, it is improbable for a retail investor to pick a fund manager who can consistently beat their competitors. Hence, rather than getting confused by the plethora of choices available in the active fund category, retail traders can invest in passive funds. The critical point is to invest consistently and for an extended period.

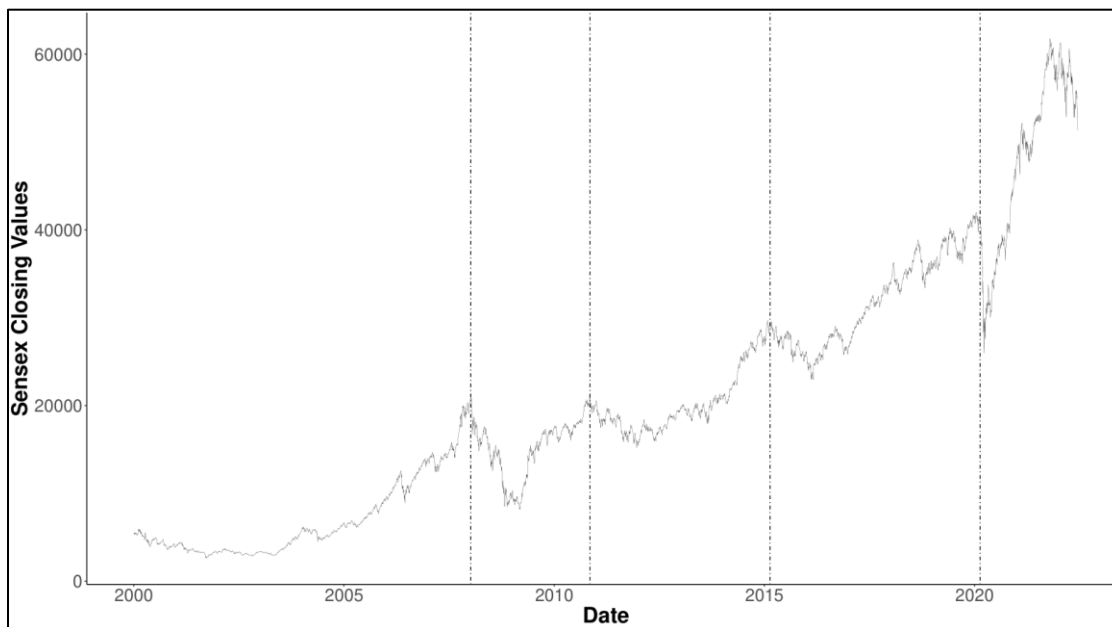
Consider an investor who invested in the market at the worst possible time, just before a major crash. For the sake of this example, I will assume the dates of investment to be January 8, 2008, November 9, 2010, February

19, 2015, and February 19, 2020. Details of the crash following these dates are provided in Table 1. A chart depicting the BSE Sensex index's closing price and the dates preceding the major crashes is in Figure 1.

Table 1: Major Crashes of Sensex

Date of crash	3-month returns	6-month returns	12-month returns
January 8, 2008	-24%	-33%	-56%
November 9, 2010	-16%	-12%	-18%
February 19, 2015	-6%	-6%	-20%
February 19, 2020	-22%	-6%	23%

Figure 1: Major Declines in Sensex



All four instances are characterized by a significant fall in the index, with the most severe being the 2008 crash. In the 2008 crash, the market fell by 24% over three months and 56% over a year. The fall in Sensex on the announcement of the Covid lockdown was similar, with the index falling by 22% over three months. However, the recovery was far quicker, with the markets ending up +23% by February 2021.

Table 2 documents the recovery of Sensex over seven years following the crash. The values indicate that Sensex not only recovered the loss but also posted phenomenal returns over a long period.

Table 2: Recovery of Sensex after Major Crashes

Date of crash	2-year returns	5-year returns	7-year returns
January 8, 2008	-22%	-5%	40%
November 9, 2010	-12%	22%	59%
February 19, 2015	-2%	16%	96%
February 19, 2020	39%	NA	NA

Keep in mind that for constructing this artificial example, I had assumed that the investor entered the market at the worst possible time (right before a major crash) and invested a lumpsum amount. The picture would have been far more attractive if the trader had instead invested regularly via SIP in any Sensex index fund (Table 3).

SIP stands for Systematic Investment Plan, where investors can contribute a fixed amount at a monthly/quarterly frequency in a particular scheme. For example, in the case of a monthly SIP, a fixed amount of money flows into a mutual fund on the same date every month. Depending on the NAV of the fund, the appropriate number of units are allotted to the investor.

Table 3: CAGR of Monthly SIP Starting from the Date of the Crash

Date of crash	2-year returns	5-year returns	7-year returns
January 8, 2008	11.86%	4.21%	7.29%
November 9, 2010	3.31%	5.68%	5.19%
February 19, 2015	0.65%	5.81%	8.41%
February 19, 2020	16.57%	NA	NA

The figures in Table 3 clearly show that even during the worst possible crashes of Sensex, if retail traders had continued with their SIPs, they would not have lost money in any of the instances. Hence, maintaining the discipline to invest regularly even when the market is plummeting is not a bad strategy. The fear of losing wealth can hijack the rational thought of continuing with the SIPs. Hence, retail traders are also given counterintuitive advice not to look at their portfolios very often. The more a trader looks at their portfolio and follows the market, the more likely they will liquidate their portfolio when the market crashes. As a result, retail traders may withdraw their money from the market at the worst possible time.

While investing via SIPs helps us avoid making poor financial decisions due to our overconfidence and fear, it also helps us guard against another common bias – the tendency to over-extrapolate. In financial markets, participants extrapolate the returns experienced in the past to continue into the future. Greenwood and Shleifer (2014) document a high degree of correlation between what the respondents forecast about future returns and what they have experienced in the recent past. Following a period of high returns, people expect the market to give high returns in the near future as well, but more often, the opposite happens. The researchers also document a strong negative correlation between what people forecast and what is realized.

In other words, when people expect high returns, the market performs poorly, and when people expect low returns, markets usually do well. Greenwood and Shleifer (2014) provide very strong evidence that we are terrible at forecasting the future. But why do we continue to extrapolate the past into the future? The answer again lies in the evolutionary process. From an evolutionary perspective, repeating a strategy that worked well in the past made sense in the wild—for example, avoiding an area where a predator was spotted or repeatedly going to a place where essential resources such as food and water were found previously. Essentially repeating a successful strategy and avoiding a failed strategy makes perfect sense when one understands our evolutionary origins. However, financial markets are different. More often, a period of high returns is followed by a period of low returns and vice versa. Hence, extrapolating a previously observed trend into the future leads to erroneous forecasts. When we invest via SIPs, we naturally refrain from the urge to study the past trend and make predictions about the future. Hence, the tendency to time the market also diminishes if one invests on a fixed date every month, irrespective of the state of the market.

Hence, the financial markets are the last place where we should seek thrill and try our forecasting skills. As iterated by many professionals, the more boring the investment journey, the better the likelihood of achieving the investment objective. Therefore, maintaining emotional discipline during the journey is more important than spending time and energy picking funds and fund managers.

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Harvesting the yield curve mispricing: Evidence from the Indian government bond market

Sudarshan Kumar

Introduction

The yield curve represents the prevailing interest rates in the economy for different times to maturity and is essential for pricing a well-functioning bond market. Yield curve modeling is a crucial area of research in finance. In an efficient bond market, any arbitrage opportunity is driven away immediately by the traders. Therefore, the no-arbitrage restriction is an important consideration to model the yield curve. Affine term structure models (ATSM) are the most popular class of arbitrage-free term structure models. Notwithstanding their theoretical consistency, ATSMs suffer in terms of empirical performance (Duffee, 2002).

Nelson and Siegel (1987) proposed to fit the cross-section of the yield curve using the simple functional form:

$$y(\tau) = \beta_0 + \beta_1 \left(\frac{1 - e^{-\tau/\lambda}}{\tau/\lambda} \right) + \beta_2 \left(\frac{1 - e^{-\tau/\lambda}}{\tau/\lambda} - e^{-\tau/\lambda} \right) \quad (1)$$

Nelson-Siegel form provides a good fit of the cross-section of the yield curve and can also predict most of the observed yield curve shapes. These observed benefits of the Nelson-Siegel model are driven by the fact that the loading of the three factors (β_0 , β_1 , and β_2) of the Nelson-Siegel framework has loading similar to the loadings of the first three principal components of the yield curve (Diebold, 2013). Over time because of its empirical tractability, Nelson-Siegel and its extensions have emerged as a workhorse model for most central banks and practitioners.

In the last three decades, the Indian central bank has taken several reform measures such as shifting to auction-based market borrowing, reducing statutory reserve requirements and introducing an anonymous electronic order matching trading system called NDS-OM. These measures have helped improve liquidity in the Indian fixed income market (Fleming et al., 2016).

In April 2001, the Clearing Corporation of India Limited (CCIL) was set up to provide clearing and settlement for the government securities and foreign exchange markets. After February 2002, all trades in the government securities are mandated to be routed through CCIL. Since 2003, CCIL also publishes zero-coupon yield curve estimates using the Nelson-Siegel model (Nath, 2012). It uses the estimated yield

curve to evaluate the securities' margin requirements and valuation. These are also used as an input in many term structure studies of the Indian government debt market (Foundation, 2011; Nath et al., 2012). With such material importance and academic relevance, CCIL estimates suffer from important inconsistencies such as unstable factor estimates and heteroscedastic error terms (Kumar and Virmani (2022) provide the details). Kumar and Virmani (2022) have analyzed the in-sample performance of the term structure estimation framework adopted by CCIL.

This study analyzes CCIL term structure estimates from the trader perspective. We evaluate the CCIL model's ability to capture the profitable mispricing in the bond market. We create duration neutral trading strategy by buying undervalued bonds and selling the overvalued ones implied by the CCIL model. Such pair trading/ statistical arbitrage strategy aims to earn almost risk-less profit by capturing the model implied mispricing. Trading returns generated through this strategy are statistically greater than zero. However, the returns are not risk-free but rather extremely risky with a standard deviation of more than 800%. This finding casts serious doubt on the utility of CCIL estimates from the statistical arbitrage perspective.

The rest of the paper is organized as follows. In the next section, I provide a brief background of the evolution of the Indian government bond market and describe the data. Section 3 details the trading strategy and results. Finally, section 4 concludes.

Background and Data

Post the recommendation of the Narasimham Committee, the Reserve Bank of India (RBI) has taken a number of reform measures to promote various segments of the financial markets. National Stock Exchange (NSE) started the Wholesale Debt Market (WDM) segment in June 1994, which introduced the screen-based trading facility in the Indian debt market. Using the trade deals reported on its electronic platform, NSE started publishing zero-coupon yield curves in 1997. In April 2001, the Clearing Corporation of India Ltd (CCIL) was set up to provide clearing and settlement for government securities, foreign exchange, and money market instruments. Post-February 2002, all trades in the government securities are mandated to route through CCIL (Nath, 2012). Because of this, CCIL has access to all the transactions of the government security markets. Using this information, CCIL also started estimating and publishing the zero-coupon yield curve from February 15, 2003.¹⁴

Both CCIL and NSE publish estimates of the yield curve using Nelson-Siegel (Nelson and Siegel, 1987) and its extension, on a daily basis. These estimates are used as an input in many term structure studies of the Indian government debt market (Sowmya and Prasanna, 2018; Virmani, 2006; Rathi and Pradhan,

¹⁴ <https://www.ccilindia.com/AboutUs/Pages/MileStones1.aspx>

2017). CCIL also uses the estimated yield curve for evaluating the margin requirements and valuation of the securities. Many trading firms and banks use government bonds as collateral for borrowing. With such material importance and academic relevance, it is important for the CCIL estimates to be theoretically consistent and numerically robust.

We evaluate the trading returns using daily bond prices and term structure estimates provided by CCIL from September 2009 to December 2017. The aggregated data set has 82149 observations. Following Gürkaynak et al. (2007), I exclude bills and bonds with less than three-month maturity from the sample. The final sample has a total of 52358 observations spanning over 1997 trading dates. Table 1 summarizes the in-sample fit of the CCIL estimates over the years and across the maturity bins. The first row provides the mean of the estimation error of YTM (Yield to Maturity) of the CCIL estimates. The value in parentheses below provides the standard deviation of the same.

Table 1: Summary of in-sample fit: Table summarizes the in-sample fit of the CCIL estimates over the years and across the maturity bins. First row provides mean of the estimation error of YTM of the CCIL estimates in the particular year (given in row heading) for the given maturity segment (provided in column name). The value in parentheses provides the standard deviation of the same

Year	<1Y	1Y- 2Y	2Y- 5Y	5Y- 7Y	7Y- 10Y	10Y- 12Y	12Y- 15Y	15Y- 20Y	20Y- 25Y	25Y- 30Y	30Y- 50Y
2009		0.020 (0.111)	0.030 (0.116)	-0.018 (0.100)	-0.070 (0.201)	-0.020 (0.103)	0.118 (0.098)	0.104 (0.043)	-0.017 (0.063)	-0.074 (0.057)	
2010	0.048 (0.167)	-0.055 (0.156)	-0.021 (0.125)	0.010 (0.091)	-0.100 (0.111)	-0.094 (0.086)	-0.045 (0.120)	0.066 (0.034)	0.029 (0.065)	0.013 (0.050)	0.048 (0.018)
2011	-0.018 (0.103)	-0.052 (0.092)	0.083 (0.124)	0.046 (0.059)	-0.067 (0.075)	-0.064 (0.048)	-0.006 (0.041)	0.052 (0.031)	0.024 (0.030)	0.010 (0.031)	-0.007 (0.012)
2012	-0.002 (0.089)	-0.037 (0.065)	0.005 (0.054)	0.051 (0.037)	-0.014 (0.068)	0.006 (0.039)	-0.032 (0.049)	0.026 (0.040)	-0.002 (0.038)	-0.027 (0.028)	-0.076 (0.028)
2013	0.081 (0.130)	-0.035 (0.108)	0.0002 (0.087)	0.028 (0.057)	-0.019 (0.125)	0.061 (0.056)	-0.021 (0.057)	0.016 (0.048)	-0.024 (0.031)	-0.010 (0.044)	-0.066 (0.014)
2014	0.084 (0.123)	-0.124 (0.098)	-0.048 (0.066)	0.030 (0.060)	-0.016 (0.109)	0.018 (0.056)	0.002 (0.063)	-0.019 (0.026)	-0.030 (0.038)	-0.026 (0.029)	-0.038 (0.013)
2015	-0.003 (0.093)	0.003 (0.058)	-0.012 (0.045)	0.029 (0.030)	-0.030 (0.092)	0.008 (0.055)	-0.017 (0.077)	0.008 (0.049)	-0.002 (0.047)	0.004 (0.043)	-0.090 (0.070)
2016	0.093 (0.067)	0.022 (0.059)	-0.029 (0.040)	-0.016 (0.095)	-0.050 (0.113)	0.016 (0.093)	-0.034 (0.098)	0.008 (0.063)	-0.045 (0.126)	0.029 (0.055)	-0.074 (0.058)
2017	0.090 (0.079)	0.029 (0.061)	-0.010 (0.053)	-0.067 (0.073)	-0.072 (0.160)	0.030 (0.065)	-0.093 (0.159)	-0.023 (0.109)	0.043 (0.125)	0.035 (0.083)	-0.088 (0.073)

Table 1 shows that CCIL estimates have around 10 basis points of the standard deviation of the error term, which is comparable to most of the emerging market term structure estimates. However, Kumar and Virmani (2022) have highlighted four important limitations of the existing term structure estimation framework adopted by CCIL:

1. CCIL includes liquid and illiquid securities in the term structure estimation without considering the possible liquidity-induced heterogeneity. Subramanian (2001) argued that liquid and illiquid securities are a heterogeneous class, and one should incorporate that in the term structure estimation. Further, CCIL includes T-bills along with the coupon bonds in the estimation without considering the possible segmentation of these two markets, as highlighted by Gürkaynak et al. (2007).
2. Nelson-Siegel and Nelson-Siegel-Svenson (NSS), both the methods used by CCIL, are not arbitrage-free (Bjork and Christensen, 1999; Filipovic, 1999). No-arbitrage is an important theoretical consistency restriction for the term structure estimation.
3. De Pooter (2007) highlights that independent cross-sectional estimates of betas in the Nelson-Siegel specification display strong variation in the time series. CCIL cross-sectional estimates also show strong variation in their factor estimates. This seems unreasonable considering the slowmoving nature of interest rates.
4. Nelson-Siegel estimation procedure assumes constant variance (homoscedasticity) of the yield error (observed yield- predicted yield). However, there is a large variation in the yield error for the less traded securities. Further, the homoscedastic yield error assumption with respect to the duration also seems to be violated.

This study further evaluates whether CCIL is still doing a reasonable job of fitting the yield curve with all the above-mentioned limitations. In particular, I explore the utility of CCIL model from the statistical arbitrage perspective, where traders try to earn almost risk less profit by buying undervalued securities and selling overvalued securities implied by the model. I discuss the details of the trading strategy and the results in the next section.

Trading Strategy and Results

Every day, I sort all the observations in 5 quintiles in terms of yield error calculated as the difference between observed yield and yield predicted by the CCIL estimates. Indian government bonds also suffer from infrequent trading. To address this issue, I consider only those observations that trade at least one more day after the trading date. This allows me to close the position in the future.

Everyday, I buy bottom quintile bonds and sell top quintile bonds to create duration neutral portfolio of bonds. Since duration is the most important systematic risk factor for the government bond, such construction allows us to control for the return attributed to the duration exposure. We re-balance the portfolio daily with the exception of non-traded bonds.

First, I summarize returns across different maturity buckets in table 2. Most of the profitability comes from the 7-15 year maturity bucket, where strategy is usually short. These segments of bonds are usually overpriced, with the maximum demand around the 10 year maturity. On the other hand, the strategy is not profitable at the short end of the yield curve, with net long in that segment. It is important to note that while trading portfolios are duration neutral, they are not convexity neutral. Convexity captures the second order risk of the bond price. However, there is no correlation between the portfolio convexity and returns (correlation is 0.02).

Table 2: Maturity-wise return profile: Table provides distribution of return distribution across different maturity buckets

Maturity	position	return
<1Y	16.60	-206.12
1-2Y	-0.60	-17.06
2-5Y	3.60	1.01
5-7Y	7.10	15.77
7-10Y	-6.80	16.31
10-12Y	-4.40	19.38
12-15Y	-6.60	24.95
15-20Y	5.90	81.46
20-25Y	1.00	25.33
25-30Y	-1.40	18.52
30-50Y	-10.80	50.12

Figure 1 plots the histogram of the annualized trading returns generated with this strategy. With the median annualized return of 8.68%, CCIL estimates seem to capture some profitable mispricing. Wilcoxon rank test of the trading return also confirms this assertion with p-value < 0.0001. However, this profit is not statistically risk-free, but rather extremely risky, with a standard deviation of more than 868%. From the trading point of view, it would require large capital in terms of VAR (Value at risk). Under the assumption of a risk-free rate of 6%, it would result in a meager Sharpe ratio of less than 0.0025. This should be seen as a serious red flag for using CCIL estimates for the purpose of statistical arbitrage.

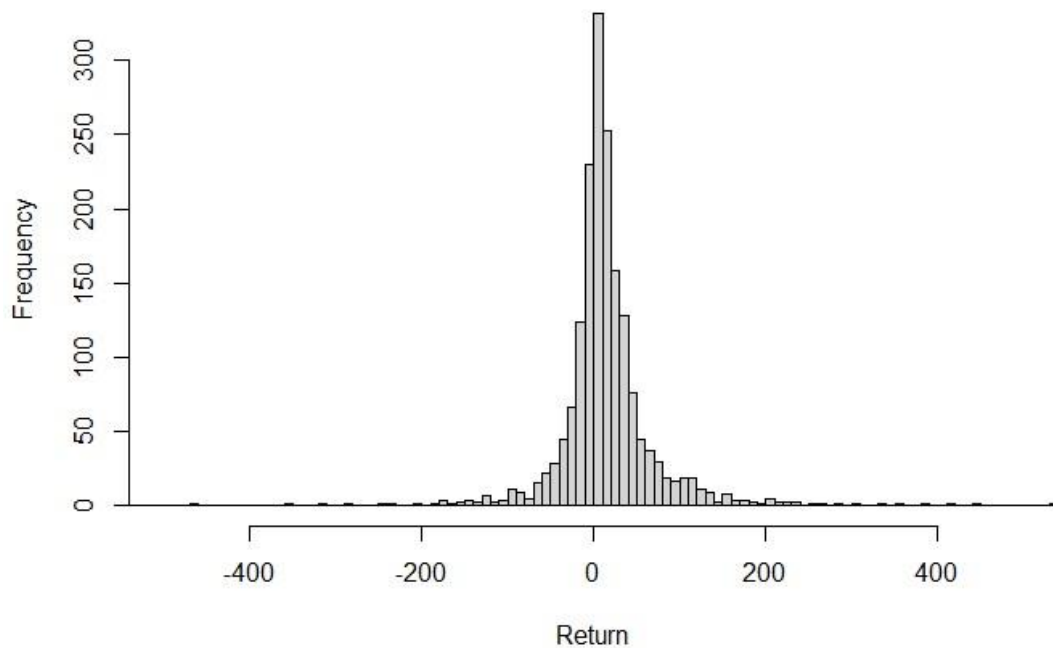


Figure 1: Histogram of the return: This represents histogram of the returns generated through the trading strategy

Conclusion

CCIL term structure estimates are important for the bond market participants, regulators and researchers. Given the importance, the estimates should be theoretically consistent and capture mispricing in the government market. Term structure estimation literature has evolved considerably in recent decades. Christensen et al. (2011) combined the theoretical appeal of the no-arbitrage term structure model with the empirical tractability of Nelson Siegel models. Andreasen et al. (2019) extended the same in the big data settings, where they fit the yield curve directly from the bond prices. Kumar and Virmani (2022) used a similar approach in the Indian setting, while incorporating liquidity heterogeneity across bonds.

In his book, *An engine, not a camera*, MacKenzie (2008) argues ‘financial models do more than analyze markets; it alters them. It is an “engine” an active force transforming its environment, not a camera passively recording it.’ As regulators are trying to increase participation in the secondary bond market by opening up direct retail participation and other initiatives. They must also upgrade CCIL’s existing methodology, which is dated and does not seem to capture mispricing in the bond market consistently.

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ESG Investing: Is it the Right Time for Indian Investors to Consider ESG?

Indransh Bhadauria

1. INTRODUCTION

In the past few years, Environmental, Social, and Governance (ESG) investing has seen colossal growth across the world, and more and more investors are beginning to either invest in ESG funds or incorporate ESG factors in their investment decisions. With such fast-track growth in the world, hurdles are guaranteed sooner or later. ESG investing suffers from a dearth of reliable data and performance issues that are not been thoroughly analyzed yet. With India beginning to take on ESG, there is a need for further study of ESG investing.

2. ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG)

We know that non-financial factors can also be the drivers of return and financial performance of an investment (Boffo and Patalano 2020, 10-20). Financial analysts are aware of the risks associated with financial factors, but quantifying non-financial factors is complex. These issues, in general, are referred to as Environmental, Social, and Governance (ESG) issues.

While pure financial investing aims to maximize shareholder and debtholder value considering financial risks only, social impact investing considers both social and financial returns. ESG investing fits somewhere in the middle where investors consider ESG issues to maximize the long-term value of their investments by incorporating long-term environmental, social, and governance issues of investments. ESG investing is a good tool for risk management and helps investors align their investments with their values and ethics (Boffo and Patalano 2020, 14-15). All Social impact investing, Impact Investing, and ESG Investing utilize ESG metrics and methodologies, but they differ in their focus on the types of returns they pursue. While the former two are focused more on social return, ESG investing is focused more on financial returns that provide long-term value. The former two tend toward philanthropy in some respects, while ESG investing tends towards pure financial investing.

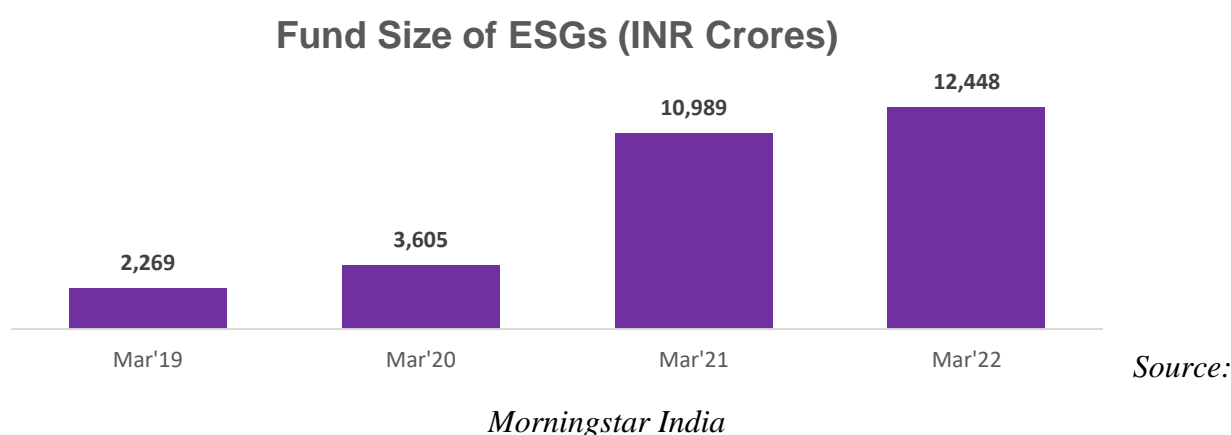
3. TRENDS

ESG investing has been growing around the world. ESG-focused exchange-traded funds and sustainable mutual funds grew by 53% globally to \$2.7 trillion as per Bloomberg. In November 2021, ESG-focused funds saw money flow at a record of \$649 billion, a growth of more than 18% over the previous year (Kishan 2022).

As per reports from Morningstar Inc., the estimated net flow in sustainable funds across the globe is around \$600 billion, showcasing a consistent growth from the previous values of \$200 billion and \$400 billion in 2019 and 2020, respectively. Year-end total net assets in sustainable funds are estimated at around \$2.7 trillion, considerably higher than those in the previous two years, \$1.0 trillion in 2019, and \$1.8 trillion in 2020 (Kishan 2022).

India's story is no different when looking from a bird's eye view of the sector. ESG funds in India grew to Rs. 12,448 crore by March 2022, a jump of more than 13% over 2021 (Madia 2022). The fiscal year 2021 was an exceptional year for ESG funds, which recorded a growth of more than 200% over 2020 as there were several fund launches in FY21. In India, investors tend to focus on ESG funds more during New Fund Offerings (NFOs), and the traction seems to reduce afterward. ESG funds showcased a net outflow of INR 315 Crores in FY22 against an inflow of INR 4,844 Crores in FY21. Despite their growing interest in ESG funds, Indian investors are yet to accept them like the rest of the world. Most inflows occurred during new fund offerings. India's story is still in the early stages of adopting ESG, but investors have found options due to past fund launches.

Figure 1:



4. DRIVING FACTORS

As per an OECD report, global drivers of ESG are primarily social/moral considerations (77%), risk mitigation (14%), and desire for alpha (6%). Another survey by BNP reveals various other factors pushing investors toward ESG, such as improved long-term returns, higher brand recognition, decreased investment risk, reduced regulatory demands, lower external stakeholder requirements, etc. (Boffo and Patalano 2020, 16-17).

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Table 1:

Drivers of ESG Investing	2017	2020
Managing investment risks	65%	64%
Clients/investors demand	45%	59%
Fiduciary Duty	36%	43%
Reputational benefits	32%	41%
Better financial returns	N/A*	35%

Source: Advisor Channel – Visual Capitalist; based on a survey done by CFA Institute where 2800 members were asked members who were asked: ‘Why do you or your organization take ESG issues into consideration in your investment analysis/decision?’

India’s story is no different, and the Securities and Exchange Board of India (SEBI) is focusing on standardizing the regulatory requirements. The SEBI introduced a new ESG reporting structure named the Business Responsibility and Sustainability Report (BRSR). Top 1,000 listed companies are required to submit BRSR, where they assess their material ESG risks and opportunities, provide strategies for mitigating or adapting to those risks, and specify the financial implications of such risks.

BRSR is a standard framework that has been developed keeping in mind the dynamic global sustainability reporting scenario. The Indian reporting scenario is evolving rapidly in line with international norms and regulations, and corporates are expected to run business conscientiously and maintain transparency in reporting. BRSR is supposed to become a single source for sustainability-related disclosures in India. The SEBI has made BRSR based reporting voluntary for FY 2021-22 and mandatory from FY 2022-23 onwards. BRSR questionnaire has three sections, namely general disclosures, management & process disclosures, and principal-wise performance disclosure.

The first section, General disclosures under BRSR deal with details of the listed entity, products/services including details of business activity, operations, holdings, subsidiary & associate companies (including joint ventures), CSR, transparency, and disclosure compliances. The second section, Management & Process disclosures deal with policy, governance, leadership, and oversight. The third section, Principle-wise performance disclosures further classify KPIs which are to be reported into two subcategories, namely essential indicators and leadership indicators. Essential indicators are mandatory and include data on training programs, environmental data on energy, emissions, waste, water, social impact generated by the company, etc. Leadership indicators are voluntary, and companies might report for better accountability and responsibility. Disclosures here include data on life cycle assessments, conflict management policy, supply

chain disclosures, etc. The questions under the leadership category are likely to be shifted towards the essential category to bring in more comprehensiveness and standardize the reporting process (PwC 2021).

5. PERFORMANCE OF ESG FUNDS IN INDIA

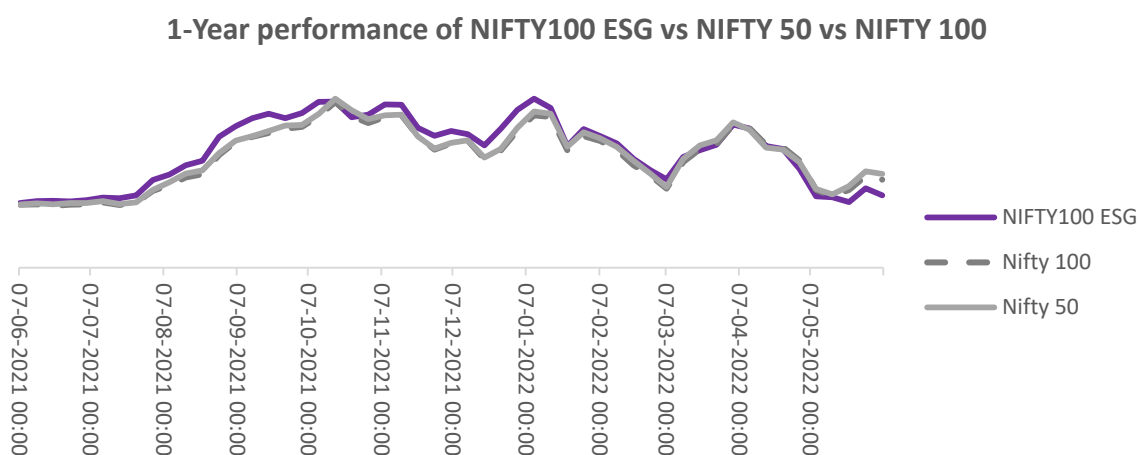
Analysis of the performance of ESG funds in India is slightly challenging as these funds are relatively new and many were launched in the past year itself. One way to estimate the performance from a bird's eye view is an analysis of the NIFTY100 ESG, a benchmark index. The NIFTY100 ESG tracks the performance of companies contingent on their Environment, Social & Governance (ESG) score within the NIFTY100 Index. Each index constituent's weight is determined by its free-float market capitalization and modified ESG risk score, which is modified based on the ESG score given to the firm. Table 2 provides the top five sectors and companies included in the index.

Table 2:

Sector	Weights	Companies	Weights
Financial Services	28.64	Infosys Ltd.	6.68
Information Technology	22.66	TCS Ltd.	5.58
Automobile and Auto Components	8.57	HDFC	4.72
FMCG	7.15	HCL Technologies Ltd	3.21
Healthcare	5.70	Bajaj Finance	2.77

Source: NSE https://www1.nseindia.com/content/indices/Factsheet_NIFTY100_ESG_Index.pdf

Figure 2:



Source: NSE

One year return of the NIFTY100 ESG index is 2% compared to 5.7% return of the NIFTY 50 and the 4.7% return of NIFTY 100. Such a low performance presents a problematic picture at first, as ESG funds are supposed to theoretically beat the market considering that they consist of the best-performing companies on parameters that are increasingly becoming important. But again, this doesn't seem right as we need to consider the overlap between indices and funds to gauge what is the accurate picture. Also, ESG reporting has a lot of issues that we will delve into later. But, for now, it seems we might need to look at individual fund performance to find out the performance differences and presence of alpha if any.

Most funds have of ESG stocks, equities, debt, money market securities, and cash. ESG stocks are the stocks of companies having high standards of corporate governance, having a primary focus on environmental issues, and addressing employee issues and social issues at large. The ratings are provided by ESG rating providers, such as MSCI, Morningstar, and Bloomberg, based on ESG parameters. Companies having a higher rating can be identified as ESG stocks. Each rating provider has its own criteria, which are a point of contention for the regulators as there is not a standardized process as such. The SEBI plans to standardize this through a regulatory framework where all rating providers would have to be accredited. The SEBI has further said that only credit rating agencies and research analysts would be eligible to be registered as ESG rating providers with the SEBI. These rating agencies rely on ESG scores to finally assign ESG ratings. MSCI provides ESG ratings on a seven-point scale consisting of AAA, AA, A, BBB, BB, B, and CCC where the first two are considered leaders, the second three are considered average, while the last two ratings are considered laggards.¹⁵

Factors that are used to calculate ESG ratings are grouped under three categories namely environmental, social, and governance factors. Environmental factors include factors such as carbon emissions, product carbon footprint, financing environmental impact, climate change vulnerability, water sourcing, biodiversity, land use, raw material sourcing, etc. Social factors refer to health and safety practices and protocols, worker training, supply chain labor standards, chemical safety, consumer financial protection, privacy, and data security, etc. Governance factors on the other hand include factors such as the composition of the board in terms of diversity and independence, executive compensation, ownership, and accounting practices (Brock 2022).

I have considered the top four ESG funds by assets under management (AUM), namely SBI Magnum Equity ESG Fund (AUM 4,246 INR crore), Kotak ESG Opportunities Fund (AUM 1,336 INR crore), Axis ESG Equity Fund (AUM 1,769 INR crore), and ICICI Prudential ESG Fund (AUM 1,396 INR crore). SBI Magnum Equity Fund invests 80% in ESG stocks and 20% in equities, debt, and money market instruments. Kotak ESG fund designs a portfolio based on ESG ratings and a business, management, and valuation framework. Other

¹⁵ <https://www.msci.com/our-solutions/esg-investing/esg-ratings>
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funds also follow the same lines. Each of these funds focuses on picking the best available stocks fulfilling ESG criteria.

Most of these funds were launched recently, so a 1-year performance comparison between them and the NIFTY 50 index seems appropriate. And direct plans are considered due to lower expense ratios and ultimately better returns. The analysis revealed that only SBI Magnum could generate some alpha and beat the NSE NIFTY50 index over a 1-year time frame. But, since SBI Magnum is an old fund when we look at its 5-year performance, it becomes clear that it performed poorly (11.87% returns) compared to the NSE NIFTY 50 index (14.15%).

Table 3: Comparison of returns of various ESG Funds with the NSE Nifty 50 index returns

Fund/Index	Returns (1Y)	Returns (5Y)
NSE NIFTY50 index	2.80%	14.15%
SBI Magnum Equity ESG Fund	4.26%	11.87%
Kotak ESG Opportunities Fund	-2.87%	
Axis ESG Equity Fund	-0.95%	
ICICI Prudential ESG Fund	0.71%	

Source: Moneycontrol

The 3-year Jensen's alpha of the SBI Magnum ESG fund is -2.43%.¹⁶ ESG funds are not as significant as they seem initially, not at least in India yet considering their returns do not match up to the expected levels. SBI Magnum Equity ESG fund is the biggest ESG Fund and it is not able to generate a positive alpha over a 5-year five period. The other primary ESG funds have generated negative returns over a time frame of one year. ESG funds are not able to compete with major benchmark indices such as NIFTY 50 despite having considerable overlap with NIFTY50.

Most ESG funds have considerable overlap with the NIFTY50 index. SBI Magnum has the highest overlap with NIFTY50 with the intersection portfolio being 71.14%, followed by Kotak ESG fund at 66.44%.¹⁷ Axis and ICICI lag at 46.64%.^{18 19}

¹⁶ Source <https://www.moneycontrol.com/mutual-funds/nav/sbi-magnum-equity-esg-fund/MSB085>

¹⁷ <https://www.moneycontrol.com/mutual-funds/nav/kotak-esg-opportunities-fund-direct-plan/MKM1356>

¹⁸ <https://www.moneycontrol.com/mutual-funds/nav/axis-esg-equity-fund-direct-plan/MAA901>

¹⁹ <https://www.moneycontrol.com/mutual-funds/nav/icici-prudential-esg-fund-direct-plan/MPI4488>

Table 4: The overlap between the Portfolios of Top 4 ESG Funds with the NSE Nifty50 index

Fund/Index	Portfolio overlap with the NIFTY50
SBI Magnum	71.14%
Kotak ESG Opportunities Fund	66.44%
Axis ESG	46.64%
ICICI Prudential ESG Fund	46.60%

Source: Coin-Zerodha, Groww, and NSE

The fund portfolio overlap is dynamic and changes continuously, the above table represents data as of June 2022. Even if someone invests in index funds, along with some other good funds, they won't even need to think about ESG investing as there is a considerable overlap unless moral grounds are the primary reason like that for sustainable impact investors. Even in that case, simple index funds have companies that are anyway performing well on various ESG metrics. Despite a considerable overlap with NIFTY50, ESG funds are not able to generate good alpha, and the nascent firms are already underperforming.

6. CHALLENGES

6.1 Track record: ESG funds in India are quite a recent phenomenon with three out of four top funds launched in the past two years. There is not just enough historical data and track record yet to rely on. However, growing with time, this challenge might not be any hurdle, and if the funds perform well, it might also act as a driver for intelligent investors.

6.2 Data reliability: ESG reporting is not of the highest order in India. The SEBI is trying to standardize it with the new BRSR ESG reporting structure and has raised the ESG reporting requirements for the top 1,000 listed companies. However, companies may greenwash the results to secure higher ESG ratings and mislead an investor into believing that they follow environmentally conscious business practices. If this issue can be resolved, ESG investing will have cleared away one of the biggest hurdles in its path.

6.3 Market scenario: Despite the SEBI mandating that 80% of the companies in any ESG fund need to be ESG compliant, or to be precise meet the schemes' objectives. It is not always possible for fund managers to build an efficient portfolio. As many Indian companies such as ITC, Reliance, etc. have both ESG and Non-ESG components. ESG market in India has a dearth of sustainable and green companies. It comprises of rather those who are performing well for now and are transitioning towards sustainability.

7. CONCLUSION

ESG funds in India are a recent phenomenon, the world is accepting them with open hands, but that is yet to be seen in India at that scale. India has its own share of problems from data reliability and reporting regulations to market scenarios. As such ESG funds haven't been able to perform as well as expected. Many investors subscribe during new fund offerings and leave later on account of poor performance. There is considerable overlap with simple index funds and it can be assumed that as more sustainable businesses come up in India and data reporting infrastructure becomes better, ESG investing will become an attractive option, which doesn't seem to be the case now.

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Special Purpose Acquisition Companies – The Evolving Regulatory Regime

V.K. Unni

SPACs (Special Purpose Acquisition Companies) have become popular during the last few years, with a large number of SPAC Initial Public Offerings (IPOs) on US stock exchanges in the first three quarters of 2020 which is almost the same number of non-SPAC IPOs on those exchanges in the same time span. There could be many reasons for the recent interest involving SPAC activity and SPACs tend to become more attractive when markets are experiencing a lot of uncertainty in the wake of the Covid-19 pandemic. Even though it is very early to predict whether current interest in SPACs will continue or not, recent trends seem to suggest that there exists ample space in the market for SPACs as a viable option for taking private companies public.

SPAC- The U.S. Model

A SPAC is, in fact, a shell company that undertakes an IPO to raise capital with the objective of utilizing the funds so raised to complete a business combination with another company having some operations. The entire funds raised from the IPO are safely kept in a trust/escrow account and are only made available to the SPAC when it completes a business combination. After the completion of the IPO, a SPAC generally has about 18-24 months to acquire one or more operating businesses with a value equal to at least 80% of the value of the funds in the trust account. But on many occasions, SPACs often target larger operating companies so as to offset the potentially dilutive impact of the SPAC capital structure, which is a mix of the public shareholders of the SPAC and the SPAC sponsor with the legacy shareholders of the operating business. As a result of the 80% rule, relatively smaller companies are generally not considered suitable acquisition targets for larger SPACs, even though on some occasions the target is combined with one or more additional targets to comply with the 80% threshold. However, such multi-target business combinations are not common.

Shareholders of the SPAC will need to approve the business combination, and they have the opportunity to redeem their SPAC shares for a pro-rata share of the funds in the trust account, i.e., the IPO investment plus interest, instead of having those shares rollover into shares of the combined business. If for some reason the SPAC is unable to execute a business combination transaction within the prescribed timeline, the SPAC will be liquidated and funds in the trust account will be refunded to its shareholders. The underwriting discount is structured in such a manner that the underwriters usually receive 2% of the gross proceeds at the time of

closing the SPAC IPO. Along with this, another 3.5% shall be deposited in the trust account and will be paid to the underwriters only upon, and subject to, successful execution of the business combination.

According to the regulations, SPACs may not identify acquisition targets before the closing of the IPO. In case a target is under consideration at the time of the IPO, then by definition, the offering is *not* a SPAC IPO. SPACs are generally sponsored by a financial sponsor or investment team, who would be having a track record of acquiring growth companies and thereafter realizing value through the public markets. The sponsor shall be responsible for providing capital for IPO expenses and other operating expenses during the search for a business combination target and would be allotted shares in the SPAC which generally represents about 20% of the shares outstanding post-IPO.

Once a target is identified, the SPAC will acquire the target through a transaction which is generally termed “de-SPAC”. In case additional funds are needed to pursue the acquisition, the SPAC will evaluate options to raise funds from private equity investors. After a successful de-SPAC, the target company will become the subsidiary of the SPAC or a new holding company whose shares will be listed on the stock exchange.

For the last two decades, SPACs have been around in the US. However, their popularity has grown manifold in recent years for various reasons, such as well-established and highly credible sponsors involved in SPAC transactions, high growth potential of the target businesses, shorter timelines compared to traditional IPOs, etc. According to a Harvard Law School study, the year 2021 saw 679 SPAC IPOs globally worth US\$172.2 billion.

Indian Scenario

In India, SPAC deals are still at a very early stage. Before India can emerge as a sought-after destination for SPAC transactions, more clarity is required on certain legal and regulatory issues. In August 2021, India's largest renewable energy company – Renew Power started trading on NASDAQ through a SPAC listing and this has naturally generated a lot of interest in SPACs from Indian investors.

In March 2021, the Securities and Exchange Board of India (**SEBI**) constituted an expert committee to evaluate the feasibility of bringing regulations for SPACs in India. The SEBI has recently informed the Parliamentary Standing Committee on Finance that it is having widespread discussions about building a dedicated framework for SPACs in the Indian capital markets.

Apart from SEBI, the Ministry of Corporate Affairs (Government of India) in its Company Law Committee Report published in March 2022 has made some interesting observations on SPACs. The Committee recommended introducing an enabling provision to recognize SPACs under the Companies Act 2013 and allow entrepreneurs to list a SPAC incorporated in India on domestic and global exchanges. The Committee further recommended some changes in the Companies Act 2013, such as relaxing the requirement to carry out

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businesses before, and laying down the provisions on exit options to the dissenting shareholders of a SPAC if they disagree with the choice of the target company identified. The Committee also noted that foreign listing of Indian SPACs could be considered under Sections 23(3) and 23(4) of the Companies Act, 2013, which allows certain classes of companies to list their securities on stock exchanges in permissible foreign jurisdictions.

IFSCA (Issuance and Listing of Securities) Regulations, 2021

In 2019, India passed the International Financial Services Centres Authority Act (**IFSCA Act**). The regulator set up under the said statute, i.e., the International Financial Services Centres Authority (IFSCA) has come up with IFSCA (Issuance and Listing of Securities) Regulations, 2021, to enable SPACs in IFSCs like GIFT City. According to the Regulations, in order to be eligible for raising money through an IPO in an IFSC stock exchange, a SPAC must not have identified the target business combination prior to the IPO and should adhere to certain provisions for redemption and liquidation in line with the regulations. Furthermore, the sponsors of a SPAC should have a good track record in SPAC transactions, business combinations, fund management, or merchant banking activities. As per the Regulations, a sponsor is a person who is sponsoring the formation of the SPAC and shall include persons holding any specified securities of the SPAC prior to the IPO. The Regulations prohibit the issuer from listing its securities if the issuer or any of its sponsors is – (a) debarred from accessing the capital market, (b) a wilful defaulter, or (c) a fugitive economic offender. As regards the timing of the offer, the Regulations specify that the offer shall be made by the issuer within a period of one year from the date of issuance of observations by IFSCA.

The IFSCA (Issuance and Listing of Securities) Regulations, 2021, also deals with the content of the offer document. As per this, the offer document shall contain all material disclosures which are true, correct, and adequate to enable the investors to take an informed investment decision. It shall be the responsibility of the lead manager to exercise due diligence and satisfy themselves about all aspects of the issue including the veracity and adequacy of disclosures in the offer document. The issue size shall not less be than \$50 million and the sponsors shall hold between 15% and 20% of the post-issue paid-up capital. Furthermore, the sponsors shall also have an aggregate subscription in terms of amount in the SPAC company prior to or simultaneous to the IPO, amounting to at least 2.5% of the issue size or USD 10 million, whichever is lower.

With regard to pricing, the Regulations prescribe that the issue shall be undertaken through a fixed price mechanism, and the issuer shall determine the price in consultation with the lead manager(s). The price of the equity shares in the IPO shall not be less than \$5 per share. The IPO shall be kept open for between three and ten working days. The minimum application size in a SPAC IPO shall be \$100,000.

The Regulations state that the IPO will be successful only if the following conditions are satisfied: (a) The minimum subscription received in the issue shall be at least seventy-five percent of the issue size, and b) The minimum number of subscribers shall be 50. The Regulations also mandate that no single application shall be allotted more than 10% of the post-issue capital and the allotment to investors shall be on either a proportionate basis or a discretionary basis, as disclosed in the offer document.

The Regulations further stipulate that the SPAC issuer shall ensure that the entire proceeds of the IPO are kept in an interest-bearing escrow account controlled by an independent custodian until the consummation of the SPAC's business combination. The escrow funds shall be invested only in instruments disclosed in the offer document and shall include only short-term investment grade liquid instruments. The interest and other income derived from the amount placed in the escrow account may be withdrawn by the SPAC issuer for the following purposes: (a) Payment of taxes; and (b) General working capital expenses, subject to prior approval by way of a special resolution of the shareholders other than sponsors.

The SPAC shall seek prior approval by way of a majority of shareholders other than the sponsors, for the proposed business combination. In case any shareholder (other than the sponsors) has voted against the proposed business combination, then that shareholder shall have the redemption right for converting its securities into a pro-rata portion of the aggregate amount held in the escrow account. Similarly, if there is any change in control of the SPAC, the SPAC issuer shall provide the redemption option to the shareholders (other than the sponsors) for converting their securities into a pro-rata portion of the aggregate amount held in the escrow account. The SPAC issuer shall complete the business combination within the timeline disclosed in the offer document and in any case, within 36 months from the date of listing on a recognized stock exchange.

If the business combination is not completed within the permitted time frame, the escrow account shall be liquidated. In the event of liquidation and delisting, the sponsors shall not participate in the liquidation distribution. It shall be the duty of the SPAC issuer to ensure that the businesses acquisition shall have an aggregate fair market value equal to at least 80% of the aggregate amount deposited in the escrow account, excluding deferred underwriting commissions held in escrow and any taxes payable on the income earned on the escrowed funds. The SPAC and the sponsors shall also ensure that there is no related party transaction or connection of the sponsors or any of their associates with the business combination.

With respect to the post-business combination, the Regulations specify that the *resulting issuer* shall immediately disclose details regarding the completed transaction to the recognized stock exchange. The resulting issuer is the resultant entity that trades on the stock exchange after the completion of a business combination by a SPAC. The resulting issuer shall be required to meet the listing eligibility criteria set out in these regulations within 180 days, in order to continue listing on the recognized stock exchange. The shareholding of the sponsors of the SPAC in the resulting issuer shall be locked up for a period of one year

from the date of closing of the business combination. The shareholding of the promoters, promoter groups, controlling shareholders, directors, and key managerial personnel of the resulting issuer shall also be locked up for a period of one year from the date of closing of the business combination.

The regulations also contain some detailed provisions if any warrants are issued as part of the IPO. In such cases involving the issuance of warrants, the SPAC ensures the following

- a) Each unit may consist of one share and no more than one share purchase warrant;
- b) The exercise price of the warrants shall not be lower than the price of the equity shares offered in the IPO;
- c) The warrants may be detached from the equity shares and traded separately (from the equity shares) on the recognized stock exchanges provided that details have been appropriately disclosed in the offer document;
- d) The warrants shall not be exercisable prior to the completion of the business combination;
- e) In case of liquidation of SPAC, the warrants shall expire; and
- f) The warrants shall not have any entitlement to the funds lying in the escrow account upon liquidation or redemption.

IFSCA (Issuance and Listing of Securities) Regulations, 2021 is India's first attempt to allow and regulate SPACs, and it is expected that SEBI will soon come up with its own regulations to facilitate listing of SPACs on Indian stock exchanges.

Legal and Regulatory Barriers regarding SPACs in India

Under the Indian Company law whenever a company is formed it should have a Memorandum of Association (MoA) which contains various important clauses like the objects clause of the company. For a SPAC, it would be almost impossible to specify the objects because at the time of its constitution, SPAC has not identified a target to accomplish a business combination. This can prove to be a barrier for transactions involving SPAC in India.

Furthermore, when it comes to fundraising, the existing regulatory framework prescribed by the SEBI, i.e., Issue of Capital and Disclosure Requirement Regulations 2018 (ICDR) has detailed provisions regarding the eligibility criteria that the issuer must satisfy. A SPAC might find it very difficult to comply with these conditions. According to ICDR, a company undertaking an IPO shall have during the last three years an average operating profit of at least Rs. 15 crores, net tangible assets of at least Rs. 3 crores, and a net worth of at least Rs. 1 crore. Furthermore, if the company has changed its name within the last one year, at least 50% of the revenue, should be earned by the company from the activity indicated by its new name. If the abovesaid conditions are not satisfied then the only option available to the company is to undertake an IPO through the

book-building process, where it allots at least 75% of the net offer to qualified institutional buyers and to refund the full subscription money if it fails to do so. All these conditions can pose serious challenges to SPACs in India as they will not be able to satisfy most of the conditions mentioned under the ICDR 2018.

Conclusion

SPAC is a specialized operating and investment entity that brings together various stakeholders like sponsors, private operating companies, and public market investors. While there are numerous challenges to the success of SPACs in India, the US experience demonstrates that SPACs can offer a viable alternative to traditional IPOs for publicly listing their shares. By framing IFSCA (Issuance and Listing of Securities) Regulations, 2021, the International Financial Services Centres Authority has laid the foundation for regulating SPACs, and in the process, it has encouraged a wider group of investors to utilize the IFSC platform to explore the burgeoning investment opportunities within and outside India. It is anticipated that domestic regulators like the SEBI will soon come up with regulations covering SPACs to open up new vistas for such companies and domestic investors.

Additional Readings

International Financial Services Centres Authority. 2021. International Financial Services Centres Authority (Issuance and Listing of Securities) Regulations, 2021. <https://ifsc.gov.in/Viewer/Index/202>

Securities and Exchange Board of India (Issue of Capital and Disclosure Requirements) Regulations, 2018. <https://www.sebi.gov.in/legal/regulations/sep-2018/securities-and-exchange-board-of-india-issue-of-capital-and-disclosure-requirements-regulations-2018-40328.html>

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GST and Governance: Unintended Implications on the Poor and MSMEs

Shabana Mitra

1. Introduction: GST as a Tax Structure

Goods and Service Tax (GST) or Value Added Tax (VAT) was first introduced in France in 1954 and now more than 160 countries around the world have the system. Any type of tax on goods and services is an indirect tax and is by nature a regressive tax. Palil and Ibrahim (2011) found that rates of GST in high-income or developed countries range from 7% (Singapore) to 42.58% (Argentina). The average rate of GST in developing and developed countries is 12% and 21% respectively. Table 1, shows the GST rates for some countries.

Table 1: GST rates and their inception across a selection of countries around the world

Country	GST Rate	Year of Introduction
Australia	10	2000
Brazil	10	1984
Canada	5	1991
China	17	1980
France	20	1954
India	18**	2005
Indonesia	10	1985
Japan	8	2014
Malaysia	6	2015
New Zealand	15	1985
Pakistan	17	1990
Singapore	7	1994
Thailand	7	1991
United Kingdom	20	1994

Sources and Notes: Collect by authors from multiple sources.

***India has multiple tax rates and two tiers of taxation.*

Though GST has been implemented in several countries, its success has been mixed and restricted predominantly to developed countries. Gober and Burns (1997) and Gold (1991) have found that changing even one of the components of the tax structure of a country has a very varied impact on the economic growth of that nation. It is, therefore, important for a country to predict and find the optimum rate of each tax when designing and before implementing a new tax structure, to avoid burdening the consumption as well as economic growth of the country. Palil and Ibrahim (2011) study the short-term effects of the implementation of GST in Australia in 2000. They find that GST had a significant impact on inflation only in the period just after the implementation. Further, the anticipation of GST increased consumption just prior to implementation and reduced it in the quarter after implementation, indicating the inflationary impact was due to pre-GST hoarding and not GST itself. Hakim et al. (2016) concluded that though GST was implemented in more than 140 countries, it had a positive impact only in developed countries. Given the mixed experiences that countries have had with GST implementation, a developing country deciding to shift to this particular regime has to have pertinent reasons, and yet, is a change that intrigues academic curiosity.

2. GST in India

2.1 The Need for GST

Tax policies are critical for a country's progress and has a direct impact on the economy. An effective tax policy has often been thought of as a regime that cares for the entire income distribution in the economy and does not cause any market distortions or failures, while generating higher tax revenues for the Government (Nayyar and Singh, 2018). Designing and implementing a new tax regime is, therefore, a colossal task and a country needs pertinent reasons to embark on such a task.

In the particular case of India, the current indirect tax structure has had many issues such as complexity, tax cascading, definitional issues with respect to manufacturing, the inclusion of services, etc. Thus, there are many reasons why India would change its tax regime.

There were three predominant reasons stated when the Indian Government decided to shift from a broad-based CENVAT-Service Tax-VAT structure to a new GST regime. All of these reasons viewed the GST regime as a governance mechanism aimed at improving tax revenue and reducing collection cost. The first is the simplification of the indirect tax system. Poddar and Ahmad (2009) in their exploration of GST reforms highlights the need for a simpler regime. Most countries that have adopted GST have a single tax rate and thus, this is simpler to implement. This would also help increase the tax base. Secondly, this system by its nature was intended to improve tax compliance, as the linked chain-like process highlights missing links (i.e.,

the tax evader) and so reduces tax evasion. This would also disincentivize businesses from transacting with the informal economy and would help, reduce the size of the informal economy. Finally, the GST regime was expected to kickstart the digitization of indirect tax filing and would hence, improve efficiency in tax collection.

All of these reasons viewed the GST regime as a governance mechanism aimed at improving tax revenue and reducing collection cost. It was also aimed at formalizing the informal economy. A simple tax regime would be an incentive to formalize while the digital linked processes would dis-incentivize businesses from transacting with the informal economy. These would reduce the size of the informal economy

The rollout of GST in India happened with a lot of anticipation and expectation about these potential positive effects. Vasanthagopal (2011) and Dash (2017) expected the new regime to improve the economic outcome of the country.

2.2 The Indian GST Structure

In 2017, GST was implemented in India, replacing 17 different indirect taxes with six different tax slabs and a dual-GST structure for the state and federal governments. The Indian GST has a dual structure (like Canada and Brazil) that gives both the Centre and State equal stakes. The tax to be levied falls under three heads – Central GST (CGST), State GST (SGST)¹⁰ and Integrated GST (IGST). CGST and SGST are for all taxable intra-State goods and services supply. IGST is for inter-State taxable supplies. Largely, four GST rates have been implemented, 5%, 12%, 18% and 28%. The tax reform primarily altered the tax collection mechanism. Prior to GST, the indirect taxes were levied as a combination of VAT and other indirect taxes. Post GST, all taxes were subsumed under GST. VAT was applicable only on goods while GST is applicable on goods and services (Agarwal et al., 2020). Also, GST had to be paid monthly or quarterly, rather than the annual tax earlier and it had to be paid online whereas VAT was paid offline.

2.3 Expected Impact of GST

The primary idea with the implementation of GST was to simplify the tax structure. Most countries that have done so, have used only a single tax slab and have exempted certain goods entirely. The secondary idea behind its implementation was that since tax compliance is vertically linked, there is less tax evasion in the GST system as it is easier to identify missing or incorrect links (i.e., tax evaders or someone paying incorrect taxes).

Further, by reducing the complications in filing taxes the system was supposed to encourage more business activity. This would imply that in the first few years of GST implementation there would be a sharp rise in tax collections as the individuals and firms who were evading taxes will not be able to do so (including the informal economy). Further, there will be a boost in economic activity, and consequently an increase in GST collection.

In the case of India, the GST structure with multiple slabs and dual structure did not make the new tax regime easier and many filing deadlines required extensions. Even three years after the introduction of GST, many businesses had not been able to file the returns even for 2017, the first year.²⁰

It was also hoped that an easier regime would encourage business activity, formalize the informal economy, and boost the overall economy. If this is the case, then we would expect a positive association between GST collection and economic activity, i.e., GST collection would increase with increased (and formal) economic activity. However, Figure 1 reveals otherwise. We find an increasing GST collection trend, even though economic activity is volatile. The post-GST period for India has been hit by the COVID pandemic and this has been a period of slow economic progress and even shrinking of GDP, as is reflected in Figure 1. This period should see a fall in GST collection, since the size of the pie (the country's GDP) shrank. However, as is evident from Figure 1, there is no growth of per capita income but GST collection has continued to increase during the whole pandemic. One alternate explanation for the continuous increase in GST filing even during the economic downturn could be that there has been increased compliance. However, there has been enough evidence and reporting about the loopholes in GST implementation, for us to reliably say that evasion continues in India. Unearthing of the Manpasand Beverages tax fraud is a prime example of how the new GST regime's loopholes can and have been exploited.²¹ This is only one of many such examples and the fraud cases continue to increase in number and value.²² Tax authorities have detected GST evasion of ₹40,000 crore across 5,700 evasion cases in just over a year (2020-21), mostly on account of fake invoices and fraud input tax credit claims.²³ Therefore, there appears to be no economic boost or reduction in evasion due to GST. Yet, we see an increase in GST collection.

²⁰ <https://www.thehindu.com/business/gst-return-form-too-complex-to-meet-filing-deadline/article29325413.ece>

²¹ <https://www.businesstoday.in/latest/corporate/story/manpasand-beverages-cf-md-arrested-gst-fraud-case-abhishek-singh-paresh-thakkar-tax-invasion-mangosip-company-manpasand-gst-fraud-case-manpasand-200363-2019-05-25>

²² <https://timesofindia.indiatimes.com/business/india-business/gst-evasion-tax-officers-unearth-rs-52-crore-input-tax-credit-fraud/articleshow/92855822.cms>

²³ <https://economictimes.indiatimes.com/news/economy/finance/gst-evasion-of-40000-crore-detected-from-fake-invoicing-itc-claims/articleshow/88603551.cms?from=mdr>

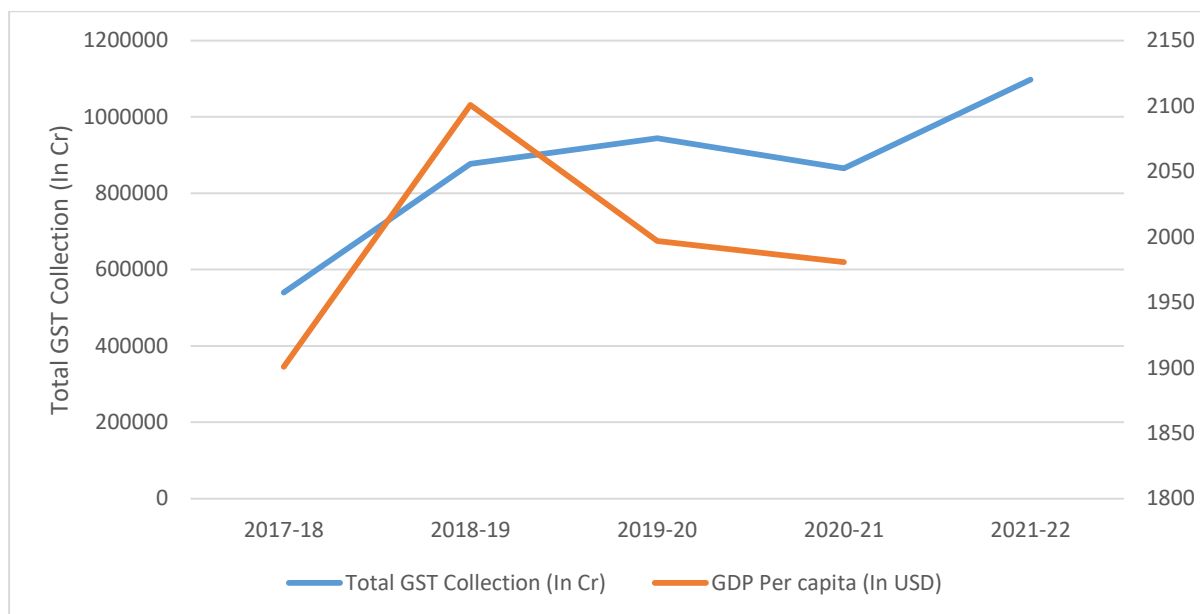


Figure 1 Trends in GST Collection and economic growth in India. Sources and Notes: The GST data is from the Official Government of India records and is given in INR cr. and the GDP per capita (in USD) is from the World Bank.

2.4 Unexpected impact of GST

Further, there has been significant down side to the introduction of GST. First, using multiple slabs and a multi-tier structure with a state and federal tax have complicated the process significantly. This has implied that small businesses have found it harder to understand the tax they owe the government and the tax credit that they have to claim. If we were to compare the system in India with that of Singapore (one of the successful cases of GST implementation) we will see some stark difference. First, Singapore has one flat rate of 7% which is much lower than the level in India, as most commodities in India have a rate above 10% and going up to even 28% for certain commodities. There are very few commodities that come in the 5% bracket which is the lowest possible tax rate. Further, India has a dual-GST due to the federal nature of the country. This causes two issues, first the burden on the consumer is high and secondly, the onus on the tax payer, to file both taxes and get the appropriate input credit increases their paper work manifold.

If we take into account the structure of the Indian economy the challenges that a GST type of tax regime would face are even more severe. India has a thriving informal economy with about 40% of value added being done

by the informal economy.²⁴ If this is the case, then in an tax filling system that needs to be vertically linked to all your suppliers, they there will be many firms that are buying or selling to firms that are actually not registered and so this creates loopholes in the system and compliance to GST is then hampered. Apart from these fundamental issues, Kour et al. (2016) have identified 12 barriers to GST implementation including the lack of skilled manpower, lack of clarity of GST provisions, political unwillingness, and lack of policy for proper division of tax.

Small and medium size manufacturing are an important part of the Indian Economy. India has more than 93 lakh registered MSMEs and 63 lakh unincorporated non-agriculture MSMEs in the country engaged in different economic activities in 2015-16, and this number has only been growing. They contributed approximately 30% to India's GDP in 2018-2020. Also, the sector contributes to employment significantly. According to the 73rd Round of NSS, the estimated number of workers employed in the MSME sector was 11.10 crore in 2015-16.²⁵ Given the importance of the sector to the economy, it is challenging when the sector faces difficulty due to the new tax regime. The first issue was that since firms with less than 1.5 crore turnover were exempt from GST, their downstream supply chain could not claim input tax credit and so, preferred GST registered supply chain partners. This negatively affected these MSMEs²⁶, creating more pressure on small businesses. Further, since taxes are filed digitally, the MSMEs have had to invest in learning how to use and adopt technology. This has increased costs further and put immense pressure on the sector. Yet, we see an increase in GST collection.

3. Discussion

The collection of taxes is one of the main sources of revenue generation for any government. There are two ways that this can be done. The first is direct taxation, where individual and corporations pay a direct tax on their income and profit to the government. The second is the indirect taxes that are levied by the governments on all economic activity, including the tax of consumables, that is, goods and services and also tax on imports and export. Most countries have a progressive direct tax policy, in that people who earn more, pay more. They also exempt people with low incomes from paying taxes. This ensures that the tax burden is greater on people

²⁴ <https://www.imf.org/-/media/Files/Conferences/2019/7th-statistics-forum/session-ii-murthy.ashx>

²⁵ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1744032>

²⁶ <https://economictimes.indiatimes.com/small-biz/gst/five-years-of-gst-is-it-a-gamechanger-for-msmes/articleshow/92587574.cms>

with lower marginal cost of paying the tax. However, indirect taxes, by their nature are implemented irrespective of the capacity to pay of the consumer, which makes these taxes regressive.

In developing countries, where there is a significant section of poor and lower middle class populations, the reliance of governments on indirect taxes can have major negative welfare implications. However, developing countries, also have the challenge of high level informalization of the economy and so the base of individuals and corporations that can pay direct taxes is lower. This implies that it is easier for governments in developing countries to levy indirect taxes. This is a difficult situation for most countries to balance. Further, direct taxes take away income from the segment of the population that has the surplus to invest and so growth may be affected by having high direct tax rates.

The Indian experience so far points out that there has been a governance failure with respect to the primary reasons for implementing this tax regime: that it would simplify the tax filing process and there would be increased economic activity since there is less pressure on direct taxes and so, there can be more investment. Also, GST would increase compliance. However, this has not happened. There is still tax evasion and the process is complicated with a dual system with multiple slabs. While formalization of the informal economy has added to GST collections, it has also created large-scale disruptions to supply chains, increased compliance costs, and muted business growth.²⁷ Can the increase in GST collections then be associated with regressive indirect taxation of the lower and middle income echelons of the Indian economy?

Alternatives to GST for India

In India, due to the pressure of revenue generation and the limited increase in the income tax base, since 2017 the government has been under constant pressure to revise the GST rates upwards and to bring additional goods and services under the GST system. This has resulted in the average level of GST paid being high in India, which has resulted in increased inflation. Further with the governance failure in curbing tax evasion after the GST as well, the anticipated increase in income due to this tax has been lesser. Finally the Dual-GST structure with multiple slabs has made tax in India even more complicated, negatively affecting the country's attractiveness as a destination for business. There has thus, been a continuous demand by all stakeholders to revise the regime (Mukherjee, 2021).

²⁷ The formalization of the Indian economy has also been possible due to multiple efforts like the formalization of the EPFO report, emergence of the gig economy, large-scale digitization, creation of the e-Shram portal, etc.
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A regressive tax is always more harmful for the poor, since the marginal effect of one dollar of additional tax is felt more by them than is felt by the rich. This implies that the use of indirect taxation creates additional burden on the poor and therefore, should be used with caution in the context of developing countries like India. Using direct taxation would imply that one can target the people who have higher capacity to pay. However, the argument put against this is that they are also the segment that can invest in future growth, and therefore keeping direct taxes lower is beneficial for growth. However, with a great degree of informalization of the economy and a large vulnerable population, the burden of the indirect tax in on this segment. Looking at the current situation in India, the downside to using direct taxes seems to be low, and the government should focus on increasing the tax base and reducing the complications in filing taxes and should refrain from over-reliance on GST as a source of revenue or as a governance mechanism.

While a lot has been written about GST, the analysis has been only piecemeal. Despite large-scale digitization, there continues to be lack of data and clarity. It is imperative to undertake extensive assessments of the impact GST is having on a) the functioning of the informal and MSME sectors in India and b) the consumption of lower and middle income segments of the population.

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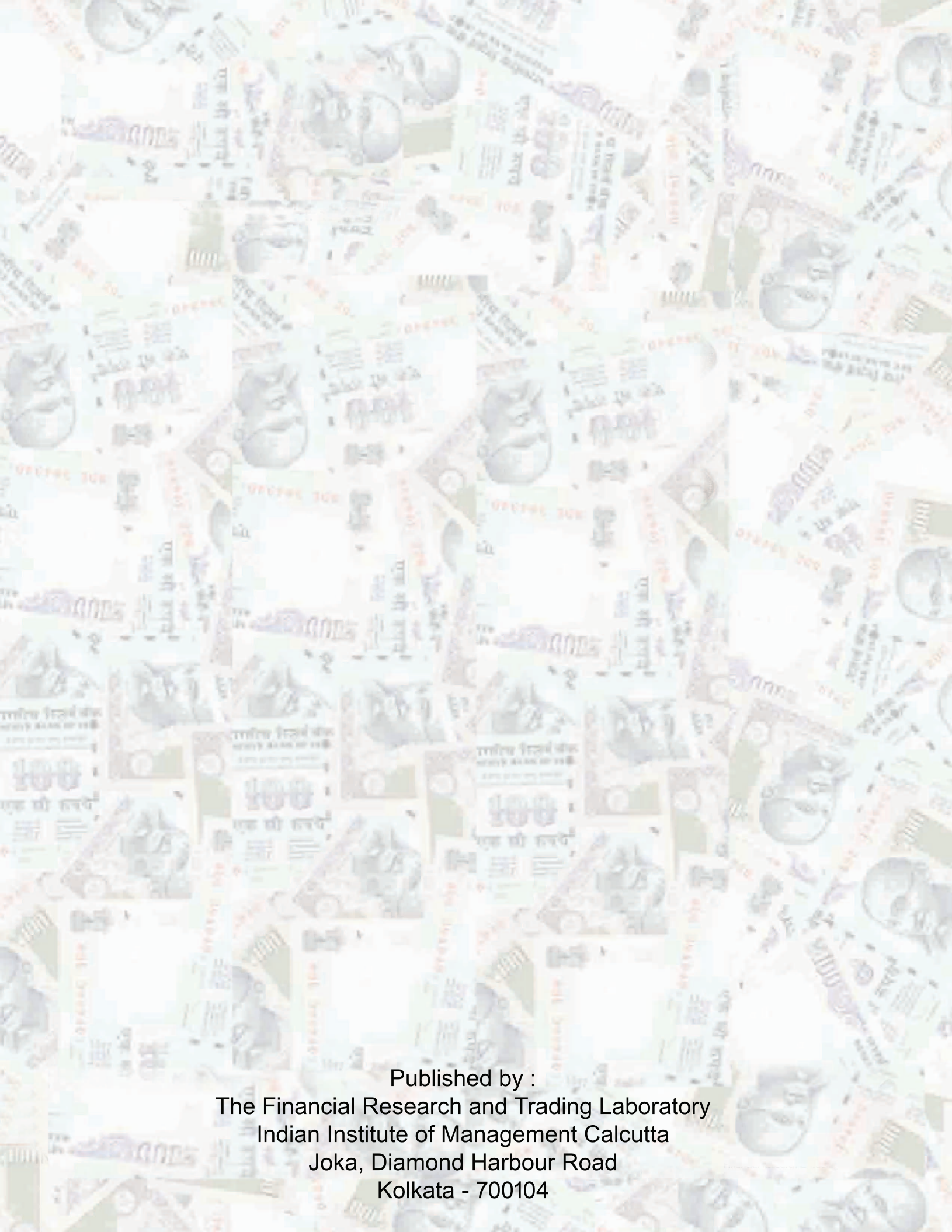
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Published by :
The Financial Research and Trading Laboratory
Indian Institute of Management Calcutta
Joka, Diamond Harbour Road
Kolkata - 700104