

# a ₹ tha

A NEWSLETTER OF THE FINANCE LAB

March 2021, Volume 6, Issue 4



**Editor**

Dr. Sudhir S Jaiswall  
Faculty Member (Finance & Control Group)  
Coordinator (Financial Research & Trading Laboratory)

**Editorial Office**

Ms. Priyanka Dasgupta  
Assistant Manager (Financial Research & Trading Laboratory)  
Email: [artha@iimcal.ac.in](mailto:artha@iimcal.ac.in)

---

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



# a ₹ tha

A NEWSLETTER OF THE FINANCE LAB



Indian Institute of Management Calcutta

# Contents

- 1** Editorial  
**Sudhir S. Jaiswall**
- 
- 2** Herding and Financial Markets: The case of REDDIT daytraders versus Hedge funds  
**Arvind Ashta**
- 
- 11** Return of the Market Stabilisation Scheme?  
**Balachandran R**
- 
- 16** Corporate Governance in India: Understanding the History and Peeking into the Future (Part II)  
**Asish K. Bhattacharya**
- 
- 26** The Cost of Data Breaches  
**Yash Sharma**
- 
- 35** P2P Lending and the MSME Sector  
**Teerna Chatterjee**
- 

*Note: The views expressed by the authors in their article published in this issue of Artha are personal and do not necessarily represent the views of their employer, or that of Artha, FRTL and IIM Calcutta. Authors are responsible for any permission needed for copyrighted material used in their article.*



# Editorial

---

Welcome to the March 2021 issue, the fourth and final issue of Artha in the current fiscal year.

I am delighted to share with you, what a remarkable year 2020-21 was for Artha. We published 26 interesting articles contributed by our stakeholders from India, Europe, and the USA: 6 articles by current & former IIMC faculty members, 4 by current IIMC students, 11 by IIMC alumni, and 5 by non-IIMC contributors.

The current issue carries five articles. In the *first* article, the author uses a contemporary event, the REDDIT action on GameStop, to lucidly explain various concepts related to financial, trading, security price determination, and valuation. The *second* piece discusses the tools RBI uses to intervene in the foreign exchange market and their intended and unintended consequences on domestic liquidity. The author concludes that open market operation purchases of government securities may be the only option for RBI in the current context. The *third* article is the second part of an extended essay (part I was published in December 2020 issue of Artha) tracing the historical development of corporate governance in India and offering a perspective on the future of governance practices. In the second part, the author outlines the governance practices in India after economic liberalization in 1991. The *fourth* piece is on data breaches, which has affected numerous individuals, companies, and government agencies. The author probes various issues related to breaches of sensitive data, provides examples of some of the significant data breaches in recent years, and suggests what individuals and organizations can do to safeguard themselves. The *last* piece provides a theoretical perspective on peer-to-peer lending and its potential impact on the Micro, Small, and Medium Enterprises (MSME) sector.

I hope that you will enjoy reading it and continue to send your feedback, suggestions, and contributions to us at [artha@iimcal.ac.in](mailto:artha@iimcal.ac.in).

Stay safe and in good health!

**Sudhir S. Jaiswall**

Editor

# Herding and Financial Markets: The case of REDDIT

## daytraders versus Hedge funds

**Arvind Ashta**



*Dr. Arvind Ashta is an alumnus of IIM Calcutta (1980-82). He is now professor of Finance at the Burgundy School of Business, Université Bourgogne Franche-Comté in Dijon, France, and is member of its research center CEREN, EA 7477. His main research area is micro-finance, but he sometimes writes on macro issues. He has over sixty publications in international journals. His most recent book is “A Realistic Theory of Social Entrepreneurship: A Life Cycle Analysis of Micro-Finance” (Palgrave MacMillan, 2020). He is a member of a club of micro-investors.*

### Introduction

The whole world was shocked. On January 28, 2021, the Financial Times reported that a group of small investors beat the hedge funds (Wigglesworth, 2021). These investors made 300% returns in one day, and about 1500% in 2 weeks, while the hedge fund Melvin Capital lost more than \$4.5 billion in January (Schroeder, 2021). The question is, what happened?

It may be good to provide a small introduction for a non-financial audience as a background to the case. As you know, the stock market trades in shares that represent ownership in a company. After obtaining shares from a company, investors buy and sell these shares in the secondary market. They pay a commission to the broker who gets the shares for them. Supply and demand establish the price as shown in the top panel of Figure 1. If demand increases, the price goes up; if supply increases, the price goes down; and there is some equilibrium price. As seen in the bottom panel of figure 1, investors can make profits by buying low and later selling high, hoping that price will go up from  $P_0$  to  $P_1$  in the figure. But one could also sell high and later buy low. Hedge funds backed by high net worth investors do this, hoping the price would go down from  $P_0$  to  $P_2$ .

One problem with the system is that the commission per share charged to big investors is much smaller. If a broker is given a deal of €1 million, he could ask for a commission of €1000, which is 0.1%. But if a small investor wants to make a deal of €1000, the broker may ask for at least €10, which is 1%. The point is that the commission percentage is higher for small investors, and the game is biased in favor of the rich. To compete effectively, small investors get together in mutual funds. Once their collective trades are larger, they get the advantage of smaller

fees, but they have to pay fund management fees. Besides reducing the commission costs, investors in mutual funds also have lower risk since they can diversify into many stocks.

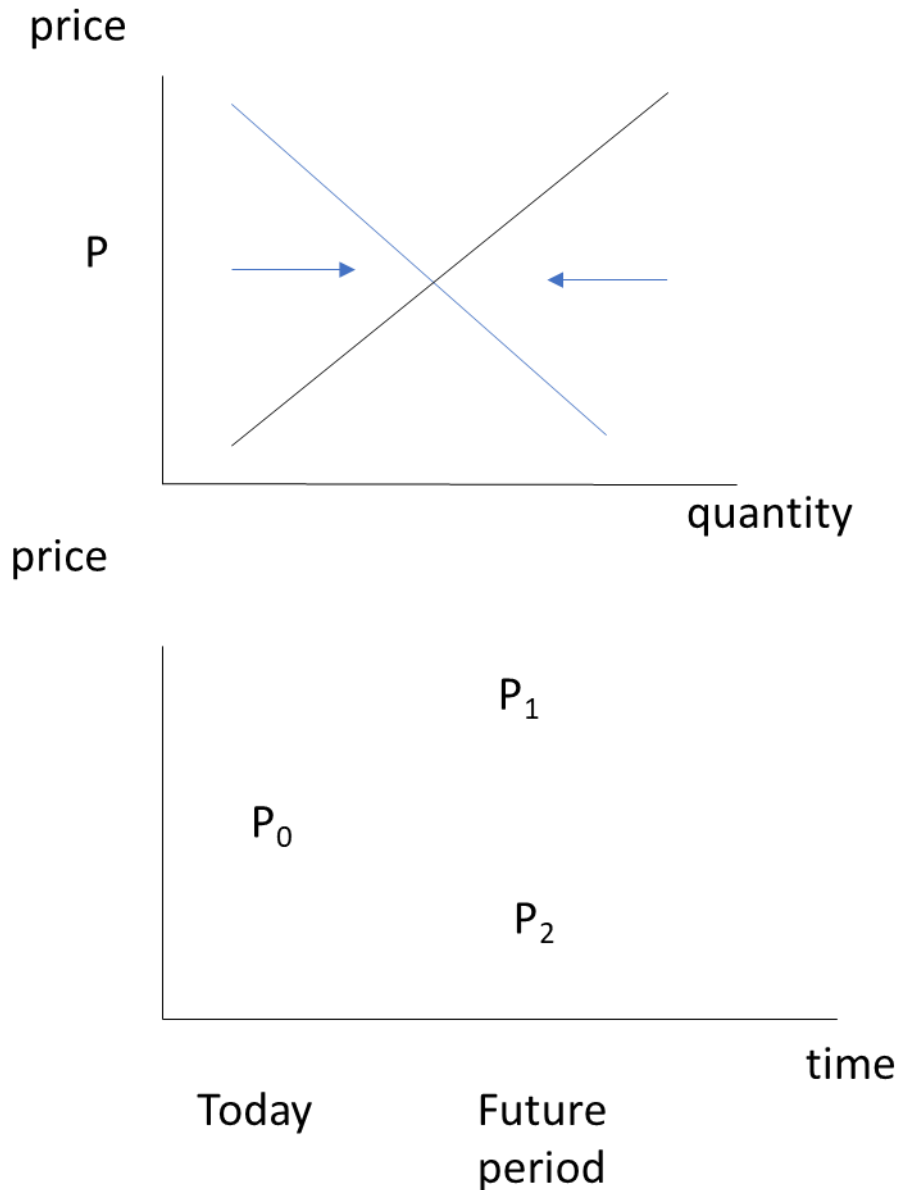


Figure 1: The first panel is a reminder of microeconomics, the lower panel is a reminder of financial economics.

To get higher returns, you need to take high risk, and for this, big investors group into hedge funds. Hedge funds may be managed aggressively or make use of derivatives and leverage to generate higher returns. Hedge fund strategies include long-short equity. For some shares, they sell them before buying.

How do people decide whether the stock price is expected to go up or down? For this, some people do technical analysis. They look at how the stock price has been behaving. They make fancy curves, and based on these, they decide the expected trend. If the price is over this trend curve, they would like to sell. Others do fundamental analysis where they look at the industry, the economic conditions, the past performance of the company itself, and then they try to project future cash flows and decide what should be the expected fair value.

But not everybody is a long-term investor. The stock market has many participants who are speculating, and these speculators realize the role of sentiments. If the market sentiment is optimistic, everybody wants to buy; when it is pessimistic, everybody wants to sell. Speculators try to buy before others when they feel the market will be optimistic and will sell later. Today, market sentiment is gauged by big data analyzed with artificial intelligence tools.

### The case study: Gamestop in the News

We now have the tools to study the case of GameStop, which has been the center of attention. GameStop is a video game, consumer electronics, and gaming merchandise retailer based in Texas. It was founded 37 years ago in 1984 and is the world's largest video game retailer. It has about 5500 retail stores. This company's history shows that it was growing very fast, but it started declining in 2010 due to the shift of video game sales to online channels. It experimented with diversification in selling smartphones, but it didn't work out. However, with the advent of the pandemic, all the tech stocks started booming, people were buying more and more games, which ushered in hope. But no extraordinary change in 2020 justified a dynamic price increase (Badkar, 2021).

From the technical analysis, you can see in figure 2 that prices followed an almost a flat line from February 1, 2016 till recently. Actually, the price was going down to about till January 2020, remaining at this level till July,



Gamestop prices, downloaded from Yahoo Finance 01/02/2020

Figure 2: Gamestop Price trends: 5 years and 1 month.



and then in the last few months of 2020, it started going up till December. There was certainly no reason for it to suddenly boom to €300. Technical analysis cannot explain this increase.

What about the fundamentals? As we mentioned before, there is no significant change in strategy. As shown by the income statement (Figure 3), the business was down. It picked up a little bit in 2020 compared to 2019, but total revenue and profits remained below previous years. Therefore, fundamentals can explain a slight price rise but not a significant shift.

The screenshot shows the Yahoo Finance Income Statement for Gamestop. The table is titled 'Income Statement' and includes a search bar at the top. The data is presented in a table with columns for TTM, 1/30/2020, 1/30/2019, and 1/30/2018. The rows list various financial metrics such as Total Revenue, Cost of Revenue, Gross Profit, Operating Income, and Net Income. The data shows a significant decline in revenue and profit from 2018 to 2020, with a slight recovery in 2020 compared to 2019.

Breakdown	TTM	1/30/2020	1/30/2019	1/30/2018
> Total Revenue	7,334,900	6,466,000	8,285,300	9,224,600
Cost of Revenue	5,274,700	4,557,300	5,977,200	6,184,500
Gross Profit	2,060,200	1,908,700	2,308,100	3,040,100
> Operating Expense	1,963,500	1,922,700	1,994,200	2,513,700
Operating Income	96,700	-14,000	313,900	526,400
> Net Non Operating Interest Inc...	-31,200	-27,200	-51,100	-55,300
> Other Income Expense	-803,600	-385,600	-1,015,900	-390,800
Pretax Income	-738,100	-426,800	-753,100	80,300
Tax Provision	19,700	37,600	41,700	45,600
> Net Income Common Stockhold...	-679,600	-470,900	-673,000	34,700
Diluted NI Available to Com Stock...	-274,800	-470,900	-673,000	34,700
Basic EPS	-	-0.0054	-0.0066	0
Diluted EPS	-	-0.0054	-0.0066	0
Basic Average Shares	-	87,500	102,100	101,400
Diluted Average Shares	-	87,500	102,100	101,500
Total Operating Income as Reported	-706,900	-399,600	-702,000	135,600
Total Expenses	7,238,200	6,480,000	7,971,400	8,698,200
Net Income from Continuing & Dis...	-679,600	-470,900	-673,000	34,700
Normalized Income	-171,172	-182,912	-53,193	319,984
Interest Income	13,500	11,300	5,700	1,500
Interest Expense	44,700	38,500	56,800	56,800
Net Interest Income	-31,200	-27,200	-51,100	-55,300
EBIT	-693,400	-388,300	-696,300	137,100
EBITDA	-593,800	-	-	-
Reconciled Cost of Revenue	3,753,600	4,557,300	5,955,900	6,183,300
Reconciled Depreciation	99,600	96,200	126,900	151,900
Net Income from Continuing Oper...	-270,000	-464,400	-794,800	34,700
	-803,600	-385,600	-1,015,900	-390,800

Figure 3: Gamestop Income statements 2018-2021, downloaded from Yahoo Finance

Would sentiments and irrational exuberance have provided such a big boost? We can see that the whole market has been optimistic during the pandemic. This optimism is owing to several factors. First, interest rates are low, which means your discount rate of future cash flows is low, so the firm value goes up. More consumer interest in technology leads to high expected growth, and again the expected value of future cashflows goes up. Public money is pouring in, and so people's income constraint is disappearing. You know there are many new trading platforms like Robinhood that are charging zero commission. So, there's no friction to buying and selling of shares. All these reasons explain the market optimism (Fletcher, 2021; Mackenzie, 2021).

While this is true about technology stocks, what about Gamestop? Should the price go up further? To understand the analysis of the hedge funds, you can look at the monthly and weekly data presented in Figure 4. From the

beginning of February 2020 till July, there was almost no change, and the price was close to \$4. Then the price goes up reasonably fast and by January 2021, you can see that it increased by 300% to \$18. This is a huge increase. So hedge funds at this time said no, they should sell. Since they were confident of their analysis, this time they started placing puts expecting that the price would indeed go down.

Figure 4: monthly and weekly average prices of Gamestop

Monthly data	Close \$	Volume	Weekly data	Close \$	Volume
01/02/2020	3.60	55790000	07/12/2020	13.31	62920200
01/03/2020	3.50	100476400	14/12/2020	15.63	48878800
01/04/2020	5.73	99735200	21/12/2020	20.15	72621300
01/05/2020	4.06	53528000	28/12/2020	18.84	31060600
01/06/2020	4.34	100281700	04/01/2021	17.69	33634000
01/07/2020	4.01	55497200	11/01/2021	35.50	306959600
01/08/2020	6.68	117270800	18/01/2021	65.01	362057800
01/09/2020	10.20	254864200	25/01/2021	325.00	558933700
01/10/2020	10.47	359871700	01/02/2021	247.04	23088822
01/11/2020	16.56	161490800			
01/12/2020	18.84	251298000			
01/01/2021	325.00	1261585100			
01/02/2021	272.168	21159973			

Gamestop, downloaded from Yahoo Finance 01/02/2020

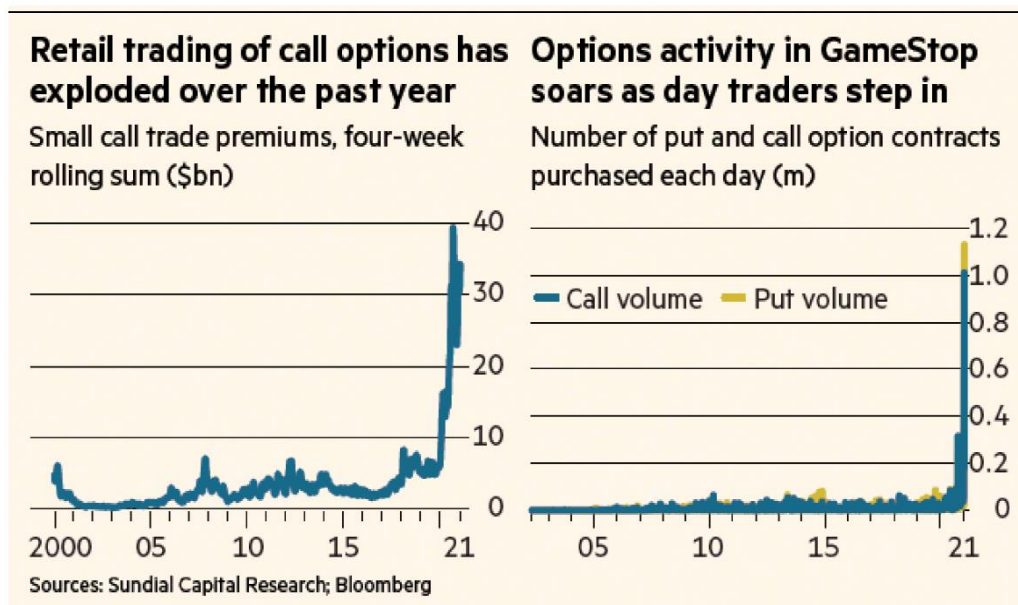
But everything changed this week (11-01-2021). Instead of price going down, it doubled, and then it doubled again, and then it went up five times before coming down. So, hedge funds like Melvin Capital and Citron capital lost money (Aliaj & Platt, 2021).

What can explain this reversal of fortune? It is attributed to social media (Stafford, Kantor, & Lewis, 2021). One of these social media is REDDIT, which is a social networking website with many forums for discussion. One of these forums is a community called WallStreetBets. There were about 7.5 million people in the community (as on January 31, 2020). These members include individual investors, ex-bankers, and traders who exchange their experiences. Together, they decided to do the inverse of what bankers and hedge funds were doing. No small trader could have succeeded in what they did, but with a million small traders buying the same share, their power becomes as much as that of the hedge funds. When hedge funds thought they would make money by selling and then buying later at a low price, the WallStreetbets investors decided to purchase shares or calls options and the price went up, instead of going down. Some of these small investors made extraordinary profits. One person bought and turned \$50,000 of GameStop call options into nearly \$23 million (Wigglesworth, 2021). Another bought shares worth \$4,000, and these were worth \$124,000 before he cashed \$20,000 out (Platt, Smith, Darbyshire, Kantor, & Wigglesworth, 2021).

This situation is called a gamma squeeze. An investor buys a call, in effect building pressure that the underlying stock price will move higher, which happens because call option sellers must buy the stock to hedge their risk. Furthermore, the bank or other firms that have sold the shares have to deliver the shares. This need for delivery means they need to buy, which raises the demand for shares even more, and the price goes up even more. The short sellers lose their money (Smith & Wigglesworth, 2021). As a result, Melvin Capital lost 53% of its value (Aliaj & Platt, 2021).

There's another angle to this story, which is on margin rules. The margin account is used when an investor buys from a broker on credit, hoping to gain a leveraged effect. However, if there is a loss, then there is a leveraged negative effect, and the broker may be worried that the investor will not pay up. The margin rules protect the Stock Exchange from liquidity problems of an investor so that if they think that you're going to make a loss, they will take your margin and buy or sell shares to make sure that they have enough liquidity. The investors who are losing money would need to sell their positions to ensure their commitments. A clearinghouse keeps this margin money. Each day, members of the clearinghouse must put in the margin as insurance for their trades. The killing bit is the limited time to make any shortfall. For example, a clearinghouse ordered one US Bank to find \$10 billion of margin within an hour! In our case, hedge funds had to liquidate all their stocks at market prices because their margin had been eaten. Even platforms, such as Robinhood, feared that they would be disbarred from being a broker, and they halted trading in an attempt to curtail the price increase (Stafford & Rennison, 2021).

A third complication is that people who are not just buying shares and selling shares, they're buying options (Wigglesworth, 2021). Options are like leveraged stock. For example, you can buy an option for \$1.00 on a share priced at \$100. Instead of buying ten shares of \$100, with the same budget, you can buy a thousand options of



(Wigglesworth, 2021, January 28).

Figure 5: A boom in options trading during the pandemic

\$1.00. And if the price goes up, you buy the shares for the price you had agreed on, called the exercise price. What we've seen is that when the markets are going up, people start taking risks. Figure 5 shows that the number of people buying call options is going up for all the shares, but not necessarily for GameStop.

### **Alternative Issues**

These news stories open the way for broader questions. The first question is a kind of political debate: can the small investors win against the rich hedge funds and usher in greater equality? People on one side of the discussion are invoking the Occupy Wall Street movement, indicating that the group of small investors is seeking economic justice (FT, 2021b). The other side replies that such a fight is useless because the rich platforms, banks, and traders make money every time they buy and sell through the trading commissions. Moreover, only a few small investors make money: those who are smart enough to sell once the price goes up (Webb, 2021). Many small investors even lose money because they would have bought the shares at a high price, and the price will eventually fall to its fair market value. A quick "back of the envelope" kind of calculation by the FT (2021a), based on prospective future earnings of \$100 million and a price-earnings ratio of 20, values the share at \$28.

The second issue is about smart money versus dumb money. Smart money is people who invest in research and development before they buy or sell. Hedge funds have colossal research and analysis departments, and they act in an informed way. Retail investors do not have access to such research and follow the smart. But a study of the blogs on Reddit shows that there are intellectual analysis and discussion taking place before the action by the group of small investors. The smart guys are now joining these websites to learn from the dumb. They're using AI and big data collection techniques and then analyzing them (Wigglesworth, 2021).

A third is whether speculation is legal. Certainly, we have the freedom to lose and win our money, but can we manipulate others? Can we induce others to buy and sell? Certainly, you cannot tell lies. But what if you don't lie and you say "I am doing this" or "Lets do this"? When is it called manipulation? The reason the State may want to control speculation is that if it seems that the Stock Exchange is only a gambling den, then maybe companies won't be able to finance their investments. Therefore, the State wants to show that the stock exchange is a fair long-term investment platform and that returns are based on a company's fundamental value. Watchdogs like the SEC in the USA are examining whether this herding was manipulative (Armstrong, 2021; Martin & Platt, 2021).

A fourth issue is whether platforms like Robinhood have the right to close down and keep retail speculators from making money. In examining this issue, one has to keep in mind that the margin money requirement also extends

to platforms that have chosen to net the margins of all their members. The trading platforms would have gone bankrupt if they had not stopped trading (Armstrong, 2021; Martin & Platt, 2021).

## Concluding Remarks

We could make a few concluding remarks. In retrospect, with the benefit of hindsight, it is clear that the prices would fall back towards their fundamentals, as we can see in figure 6, and the best strategy is to be a short-seller or buy puts when prices rise so high.



Figure 6: Gamestop prices fall back. Source: Yahoo finance, downloaded on February 11, 2021

We can see that the press has made a lot of noise about a few small investors making a lot of money. This noise makes people think that they have a chance to win the lottery, and that encourages speculation. As a result, many new people start joining the market. And that boosts the market further, already pumped with the helicopter money that the governments are throwing in to boost the economy.

## References

- Aliaj, O., & Platt, E. (2021, February 1). Melvin assets drop 53% in January after Reddit assault. *Financial Times (Europe)*, p. 6.
- Armstrong, R. (2021, January 30). Redditors throw down challenge to watchdogs. *Financial Times (Europe)*, p. 12.
- Badkar, M. (2021, January 29). Retail chain dragged into amateur traders' war games on Wall Street: Coordinated effort by army of lay investors pushes GameStop to a 28bn market capitalisation. *Financial Times (Europe)*, p. 8.
- Fletcher, L. (2021, January 29). Tech rally pits old-school investors against followers of digital dream. *Financial Times (Europe)*, p. 9.
- FT. (2021a, February 13). Lex: GameStop: eye of the beholder. *Financial Times (Europe)*, p. 20.
- FT. (2021b, January 30). The wave of populism shaking Wall Street: Retail investors are using social media to take on the short sellers. *Financial Times (Europe)*, p. 6.

- Mackenzie, M. (2021, January 30). Army of small traders rages at the short-sellers. *Financial Times (Europe)*, p. 18.
- Martin, K., & Platt, E. (2021, January 29). Overheated Online brokers slam the brakes on extraordinary Reddit-fuelled stock rally. *Financial Times (Europe)*, p. 1.
- Platt, E., Smith, C., Darbyshire, M., Kantor, A., & Wigglesworth, R. (2021, January 30). Reddit traders take on Wall Street's elite: WallStreetBets trade tipping forum rocks investment establishment with dizzying rise in GameStop stock. *Financial Times (Europe)*, p. 10.
- Schroeder, S. (2021, Feb 1). Hedge fund Melvin Capital is down \$4.5 billion after epic squeeze by Reddit traders, report says. *Mashable.com*.
- Smith, I., & Wigglesworth, R. (2021, January 30). Day traders learn to 'weaponise' dynamics. *Financial Times (Europe)*.
- Stafford, P., Kantor, A., & Lewis, L. (2021, January 29). Reddit battle drives trading volumes past 2008 peak. *Financial Times (Europe)*, p. 9.
- Stafford, P., & Rennison, J. (2021, January 30). Betting mania puts clearing houses in the spotlight. *Financial Times (Europe)*, p. 11.
- Webb, M. S. (2021, January 30). Reddit investors' real power is over WallStreet's future behaviour. *Financial Times (Europe)*, p. 7.
- Wigglesworth, R. (2021, January 28). 'Weaponised' options trading turbocharges equity rally: Unloved shares are being propelled to record highs, raising fears of wider impact. *Financial Times (Europe)*, p. 10.

\*\*\*\*\*

# Return of the Market Stabilisation Scheme?

## Balachandran R



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

The Indian economy saw a surge in capital inflows in 2020, despite the Covid-19 pandemic, through foreign direct investment (for example, in Jio Telecom) and foreign portfolio investment (in the secondary markets). Despite this, the Rupee was reportedly the worst-performing Asian currency in 2020. Blame it on the RBI!

Why would the Reserve Bank of India keep the exchange rate low, risking the United States' wrath by potentially being labeled a currency manipulator? A Dollar deluge puts upward pressure on the Rupee. Imports become cheaper while exports can become uncompetitive. India, with the rare exception of the current financial year 2020-21 (till date i.e. February 2021), has been running a perennial current account deficit; in other words, our exports of goods and services and NRI remittances are not sufficient to meet our import bill. Exports are critical to managing the current account. RBI, therefore, needs to step in to curb excessive Rupee appreciation (which can make exports uncompetitive) in the face of capital inflows.

### **RBI's intervention in the FX markets**

RBI's exchange rate policy is termed *managed float*. Unlike the developed market currencies (the US Dollar, Euro, Japanese Yen, Pound Sterling, Swiss Franc, etc.), which float freely with market conditions, RBI intervenes in the Foreign Exchange (FX) markets to curb volatility and speculative activity. In the scenario of excessive capital inflows, RBI purchases Dollars and sells Rupees.

### **Unintended Consequences on Domestic Liquidity**

RBI's intervention in the FX markets leads to unintended consequences. In buying foreign currency assets (US Dollars), RBI unleashes an equivalent amount of Rupee liquidity into the system; when purchasing Dollars, RBI credits banks with Rupees, increasing the money supply. Where does RBI get the Rupees? It's from thin air!

Central banks not only print fiat currency, but they also create electronic currency when paying for the purchase of foreign currency assets and domestic assets (e.g., open market purchase operations of government securities). The former Chairman of the US Federal Reserve Ben Bernanke acquired the nickname of “Helicopter Ben” for his allusion to the central bank dropping money from a Helicopter!

### **Sterilization Operations**

The Rupees infused into the system through RBI’s FX market intervention can be potentially inflationary and cause short-term rates to fall below the policy repo rate. RBI has monetary policy tools for neutralizing or “sterilizing” the excess domestic liquidity. It can conduct open market sale operations of government securities. Such securities are purchased by banks and paid out of their “excess reserves.” Here the purchase consideration is debited to their current account maintained with RBI, and the Rupees in the accounts of banks vanishes into thin air. It moves out of the system, thereby negating the rupee liquidity injected through RBI’s intervention in the FX market.

Such sterilization can impact the central bank’s surplus (profits). For example, RBI replaces higher yield domestic government securities (about 6.20% now for 10-year Indian government security) with a lower yield foreign currency asset (about 1.6% now for a 10-year US government Treasury bill).

Table 1 depicts the effect of RBI’s FX market intervention, both for purchase and sale of FX.

**Table 1: The effect of RBI’s FX market intervention**

<b>Nature of Intervention</b>	<b>Effect on Foreign Currency Assets (FX Reserves)</b>	<b>Effect on Domestic Assets (Government Securities)</b>	<b>Effect on Liquidity in the Banking System/Money Supply</b>
Non-Sterilized FX Intervention (Purchase)	Increases	No Impact	Increases
Sterilized FX Intervention (Purchase)	Increases	Decreases	No Impact
Non-Sterilized FX Intervention (Sale)	Decreases	No Impact	Decreases
Sterilized FX Intervention (Sale)	Decreases	Increases	No Impact

(Adapted from RBI’s “Report on Currency and Finance”)



## **MSS scheme**

RBI has built up a war chest of about USD 600 billion of foreign currency assets through such interventions in the FX market. Continuous open market sale operations of domestic government securities to sterilize the consequent impact on Rupee liquidity can deplete RBI's stock of such securities. Therefore, the Market Stabilisation Scheme (MSS) was envisaged by which the Central Government would provide RBI with adequate stock of government securities to undertake sterilization activity. In paying for its subscription to the securities, RBI credits a separate cash account of the Government held with RBI. The original idea was that the funds would be sequestered and not form part of the Consolidated Fund of India. In other words, the money is not for the Government's use but for subsequent redemption of the securities issued under the MSS scheme. RBI can use the securities under MSS (on its balance sheet) to mop up the excessive domestic liquidity (arising from its FX market intervention) from banks. It is noteworthy that RBI does not appear to have conducted sterilization operations in the Covid-19 era, perhaps to keep domestic liquidity in surplus and mitigate the pandemic's impact on the economy.

## **Demonetization**

RBI was not using MSS as a tool for a while, until demonetization. When Rs 500 and Rs 1000 currency notes were demonetized in November 2016, customers deposited the old notes into their savings accounts with banks. Next, banks deposited the demonetized currency with RBI, reducing the currency in circulation by a whopping amount of nearly Rs 9 lakh crores. When retail customers deposit currency notes into their savings account, their bank balance goes up accordingly. Subsequently, if banks deposit these currency notes with RBI their balances in their current accounts with RBI go up (in this case the balances went up by nearly Rs 9 lakh crores).

Demonetization led to a strange situation: the economy was starved of physical cash, while the banking system was awash with an unprecedented amount of liquidity. The excess liquidity in the system could potentially cause the rates in the interbank call money market to fall to the lower end of the interest rate corridor (the reverse repo rate). This sharp decline would negate the objective of RBI's day-to-day liquidity management operations to keep the weighted average call money rate around the repo rate.

RBI initially used its monetary policy tool, reverse repo, to absorb the excess liquidity. In this operation, RBI sells government securities to banks, with an agreement to repurchase them within a short tenor (usually overnight). In the first leg of the transaction, banks pay for their purchase from their current account with RBI. Thus, funds will move out from the banking system, thereby meeting RBI's objective of absorbing the excess liquidity created through demonetization. Open market sale operations are not the appropriate tool here since they

result in long-term draining of banking system liquidity; the need was to absorb temporary surplus liquidity conditions until “remonetization” happens.

### **100% Incremental CRR**

Reverse repo operations too are constrained on account of the finite availability of stock of government securities on RBI’s balance sheet. RBI could absorb only about Rs 5 lakh crores through reverse repo auctions out of the Rs 9 lakh crores excess liquidity in the system due to demonetization. Therefore, RBI used the ultimate weapon in its armory: an incremental cash reserve ratio (ICRR) of 100 percent on the increase in net demand and time liabilities (NDTL) of banks between September 16 and November 11, 2016, was applied. This drained the balance excess liquidity of Rs 4 lakh crores. Along with the reverse repo operation, the 100% incremental CRR thus led to the absorption of the entire excess liquidity of Rs 9 lakh crores created in the banking system on account of demonetization.

However, the use of 100% incremental CRR led to fresh issues. CRR balances maintained by banks with RBI are not remunerated. On the one hand, banks were paying interest on the savings account balances that had surged due to demonetization. On the other hand, banks were not allowed to lend or invest this amount, to the extent of the incremental CRR. As a result, banks’ income was being hit for no fault of theirs. RBI was forced to roll back its 100% incremental CRR mandate, leading back to excess banking system liquidity, to the extent not absorbed by reverse repo operations.

Subsequently, in an unprecedented move, RBI deployed the MSS tool, which was originally conceived for a different purpose: sterilizing banking system liquidity on account of intervention in the FX market. The Government provided about Rs 6 lakh crores of securities under MSS to RBI. Armed with this, RBI sold the securities to banks and absorbed the surplus liquidity. As “remonetization” in the economy happened over the next few months, the securities issued under MSS were redeemed, and normalcy returned to RBI’s balance sheet.

In today’s context of surging liquidity on account of RBI’s intervention in the FX markets, talk of MSS is again doing the rounds, with a notable mention in the latest “Report on Currency and Finance” published on RBI’s website.<sup>1</sup> However, neither RBI has endorsed the report as its official point of view, nor the Government has made any statement on an agreement with RBI to provide securities under the MSS scheme.

---

<sup>1</sup> [https://www.rbi.org.in/Scripts/BS\\_PressReleaseDisplay.aspx?prid=51187](https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=51187)

## **Standing Deposit Facility**

Except for CRR, the other monetary policy tools of RBI for absorbing the excess liquidity in the banking system depend on the availability of government securities, as RBI cannot “borrow” unsecured from banks. Therefore, the Standing Deposit Facility (SDF) was announced in the Union Budget 2018-29, through which RBI can absorb liquidity from banks without selling an equivalent amount of government securities.

## **Conclusion**

With a sharp upswing in the yields on government securities post the February 2021 budget and an inadequate market appetite to finance the massive government borrowing plans, open market operation purchases of government securities may be the only option for RBI. The resultant surplus liquidity can be absorbed by the Standing Deposit Facility. However, RBI is yet to activate this monetary policy tool, though the Governor alluded to its use in a recent speech.

\*\*\*\*\*

# Corporate Governance in India: Understanding the History and Peeking into the Future

## Asish K Bhattacharyya



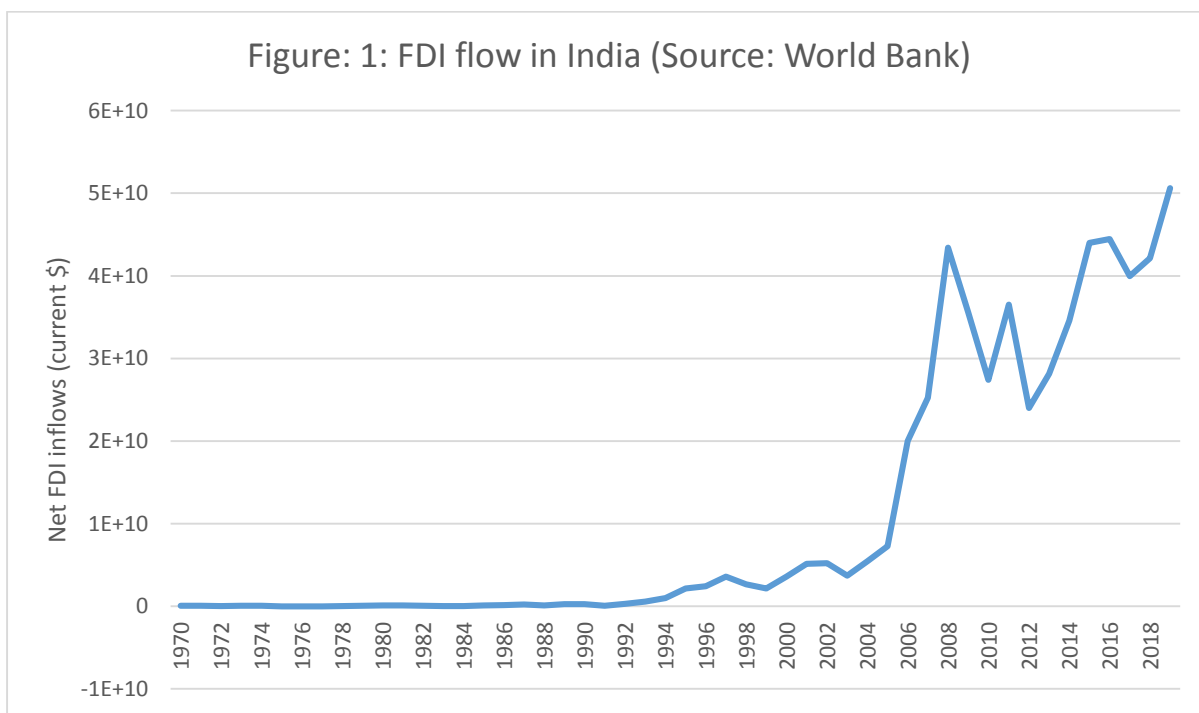
*Asish K Bhattacharyya is Distinguished Professor at Shiv Nadar University and Founder of Nonlinear Insights. He was a Professor at the Indian Institute of Management Calcutta and Indian Institute of Corporate Affairs. Also, he was Director of the Institute of Management Technology Ghaziabad and the Head of the School of Corporate Governance, Indian Institute of Corporate Affairs. Dr. Bhattacharyya started the Centre for Corporate Governance at IIM Calcutta. He was a regular columnist for Business Standard from 2008 to 2020.*

*(This article is Part II of the essay. [Part I](#) dealt with corporate governance practices in India from the colonial period until the command capitalism – 1950 to 1990 – period; it was published in the previous issue of Artha. Part III will be published in the next issue.)*

### **CORPORATE GOVERNANCE POST ECONOMIC LIBERALISATION**

With Economic liberalisation in 1991 India ushered into the market economy from a command economy. Indian economy got integrated with the world economy. It opened up new opportunities and transformed the sellers' market to buyers' market with easy availability of foreign consumer products. The government dismantled the license raj, opened up most sectors (including the infrastructure sector) for the private sector enterprises, and liberalized foreign investment in Indian companies through foreign direct investment (FDI) and foreign portfolio investment. All those policy changes opened up new avenues for Indian business and a vast Indian market for foreign multinationals. Although the government adopted the policy of privatisation of or disinvestment in public sector enterprises (PSE), existing PSEs continue to occupy dominating position and securities some of the large well-run PSEs have been listed in stock exchanges.

During this period, business groups diversified into sectors that were earlier reserved for state-owned enterprises and new business groups emerged. For example, the growth of Reliance Industries Limited (RIL), which was established by ambitious Dhirubhai Ambani in 1973, accelerated only after 1991. Adani group, which was established in 1988, is a name to reckon in the infrastructure sector. Another example is the Bharti group, which was incorporated in 1976. It established Bharti Airtel in 1995, which is now among the top three telecommunication companies in India. During this period, multinational companies either established their subsidiaries or collaborated (such as through joint ventures) with Indian companies to enter the market. In 1992 the government allowed FPI in Indian companies and FDI norms are being relaxed gradually. Figure 1 shows that the inflow of FDI has increased sharply starting from 2004.



The opening up of the economy also increased competition in the product market and managerial labour market. This resulted in the reversal of the trend of unrelated diversification (demerger and disinvestment) and started the merger and consolidation of related businesses.

### Capital market reforms

Securities and Exchange Board of India (SEBI), which was established in 1988 as a non-statutory body, became an autonomous body on 12 April 1992. It was accorded statutory powers with the passing of the SEBI Act 1992 for protecting the interests of investors in securities and promoting the development of the securities market and regulating the same. Capital Issue Control Act was repealed, and the control over volume and pricing of capital

issues was abolished. SEBI initiated several reforms after the mega security scam in 1992 perpetrated by Harshad Mehta, a stockbroker. SEBI's regulations are comparable with those in advanced economies.

National Stock Exchange (NSE), the digital stock exchange, was incorporated in 1992 and was recognised as a stock exchange by SEBI in April 1993. In 1995, the Bombay Stock Exchange (BSE) switched from an open cry floor trading system to an electronic trading system. The Indian capital market, particularly the equity market (cash segment) has grown significantly after the liberalisation (Acharya, 2019). Acharya (2019) reported that “segments of the Indian capital market are comparable with counterparts in many of the advanced economies in terms of efficiency (price discovery), tradability (low impact cost), resilience (co-movement of rates across product classes and yield curves), and stability.”

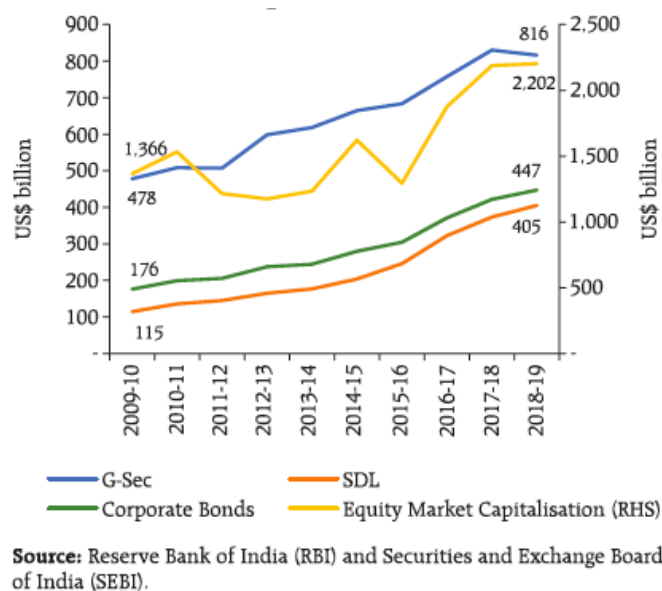


Figure 2: Growth of the Indian capital market (Source: Acharya, 2019)

### Indian code of corporate governance – the emergence of the monitoring board

Only in 1976, the term corporate governance, the concept of monitoring Board and audit committee surfaced in the U.S.A. (Cheffins, 2013). Earlier the Board of directors in the U.S.A. was a management board. Top executives strongly influenced the selection of directors, and the Board was expected to be collegial and supportive to the management. It acted only in a situation of outright crisis. The concept of corporate governance and monitoring board caught the imagination of the government and stock market regulators of countries – other than the U.S.A. and the U.K.– after the Cadbury Committee in the U.K. submitted its report in 1992. The Committee incorporated its recommendation in the Code of Best Practices, which became the model for developing a code of corporate governance in different countries. India was no different. SEBI, for the first time, issued the code of corporate

governance in 2000. Stock exchanges, under the direction of SEBI, incorporated the Code of corporate governance in the Listing Agreement (Clause 49). This is the first time that the listed companies were required to induct independent directors on their board and the boards to form an audit committee. Earlier, boards in India were similar to the boards the U.S.A. had prior to 1976. The Code of corporate governance failed to improve the functioning of the boards and corporate governance did not improve. Boards got transformed into ornamental boards with big names, who used to lend their names. Promoting families invest money, time and emotions in the company. They do not like outsiders to interfere in the management of the company. Therefore, they select independent directors known and sympathetic to the promoter family and the senior management. Most companies take the 'tick-the-box' approach to comply with the corporate governance regulation.

Clause 49 was revised many times, and in 2015, it was replaced by the SEBI (Listing Obligation and Disclosure) Regulation 2015. This too was revised on many occasions to incorporate emerging global best practices. Every board is now required to constitute the Nomination and Remuneration Committee, but it does not function independently of the controlling shareholder. The question, 'how independent are independent directors' continues, although the Companies Act 2013, which came into force on April 1, 2014, includes several provisions for strengthening the institution of independent directors. It also introduced audit reforms like the rotation of auditors in order to protect the interest of the company and minority shareholders.

## **CURRENT STATE OF GOVERNANCE**

### **The corporate landscape**

The National Stock Exchange (NSE) is ranked as the third largest stock exchange globally in terms of the number of equity trades, as per the World Federation of Exchange (WFE) Report - 2019. NSE has over 1900 securities listed on NSE with a market capitalisation of over Rs 154.32 lakh Crores (U.S. \$ 2.10 trillion), as of Dec 2019. The NIFTY 200 Index represents about 86.7% of the free-float market capitalization of the stocks listed on NSE as of March 29, 2019.

I have analysed the shareholding pattern of companies in the NIFTY 200 index for understanding the composition of the types of firms included in the index and getting insights into the shareholding pattern of those companies. There are various definitions of family business (Diaz et al., 2019). Researchers use various characteristics to define family business, and most use the ownership of ordinary shares and membership in the board of directors. International studies on corporate ownership typically establish some minimum control threshold such as 5%, 10%, or 20% (Villalonga, 2010). La porta et al. (1999) define a controlling shareholder as having more than 20 percent voting rights. Using the 20 percent threshold, I have classified a company as family-

controlled if the promoter holding is 20 percent or more. I have used the term professionally managed companies for other companies (i.e., companies with promoters holding less than 20 percent of shares). I have also treated the subsidiaries of professionally managed companies as professionally managed companies.

The Nifty 200 index has 114 family-controlled companies (57%), 23 subsidiaries of multinationals (11.5%), 28 professionally managed companies (14%) and 35 state-owned enterprises (17.5%). If we go by the narrow definition, which uses an additional parameter in defining family business – the business should continue in the second generation, a few companies cannot be classified as family-controlled companies as they are controlled by the first-generation entrepreneur.

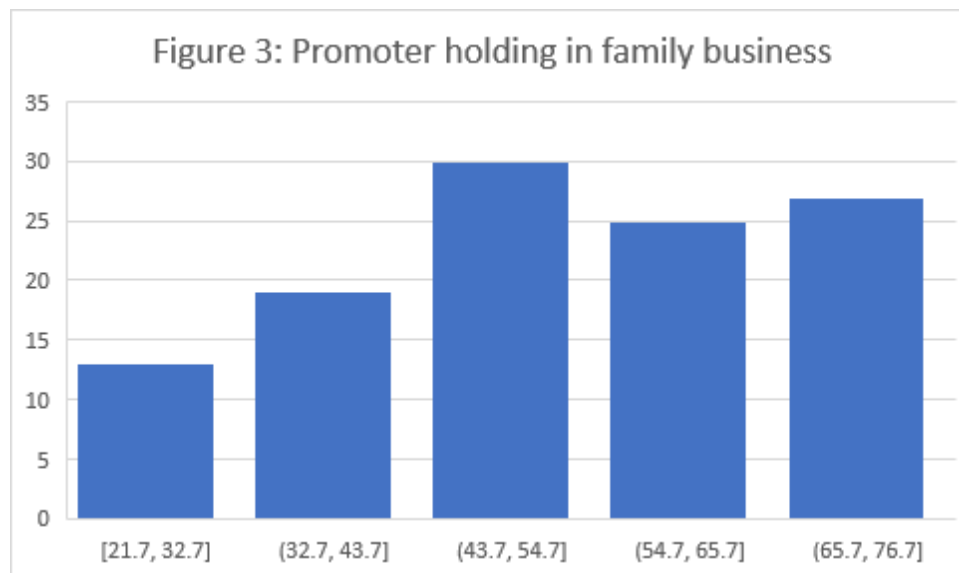


Figure 3 shows that the promoters are tightening their grip on the companies controlled by them. However, some promoters are selling their shares to multinationals, venture capitalists and asset management companies. For example, ACC and Ambuja Cement were acquired by Lafarge Holcim in 2017. In 2016, New-York based Blackstone, an Alternate Asset Management company, acquired a 60.5% stake in IT service firm Mphasis Limited and subsequently sold 8 percent. Again in March 2020, it acquired 4.01 percent shares of the company. At present, it holds 56.21 percent shares of Mphasis. Another example is Crompton Greaves Consumer Electricals Limited. This company was born in 2016 when Crompton Greaves Limited (a Karan Thapar Group company) demerged the consumer goods business from power and industrial systems segment. Its September 30, 2020, shareholding report shows three foreign body corporates (promoters) are holding 26.19 percent voting rights.

### Startups

As per Hurun Research Institute's 2020 Report, India has 21 unicorns with an average age of seven years (two are less than four years old) and a total valuation of \$73.2 billion. As per the report, almost all promoters



of these 21 unicorns are IIT and/or IIM graduates and some have completed their education in universities abroad.

Usually, the promoters enjoy the venture's growth and share only a small portion of the enormous wealth they create. A case in point is Housing and Development Finance Corporation Limited (HDFC). At the age of 65 years, H.T. Parekh set up HDFC in October 1977, when the concept of housing loan was unknown in India. ICICI promoted the company. Deepak Parekh, the nephew of H.T. Parekh, nurtured HDFC and retired as its chairman in 2009 holds just 0.7 percent of the voting rights (Times of India, 2020). At present, HDFC has no promoter. The company and its three subsidiaries are included in Nifty 200.

### Institutional investments

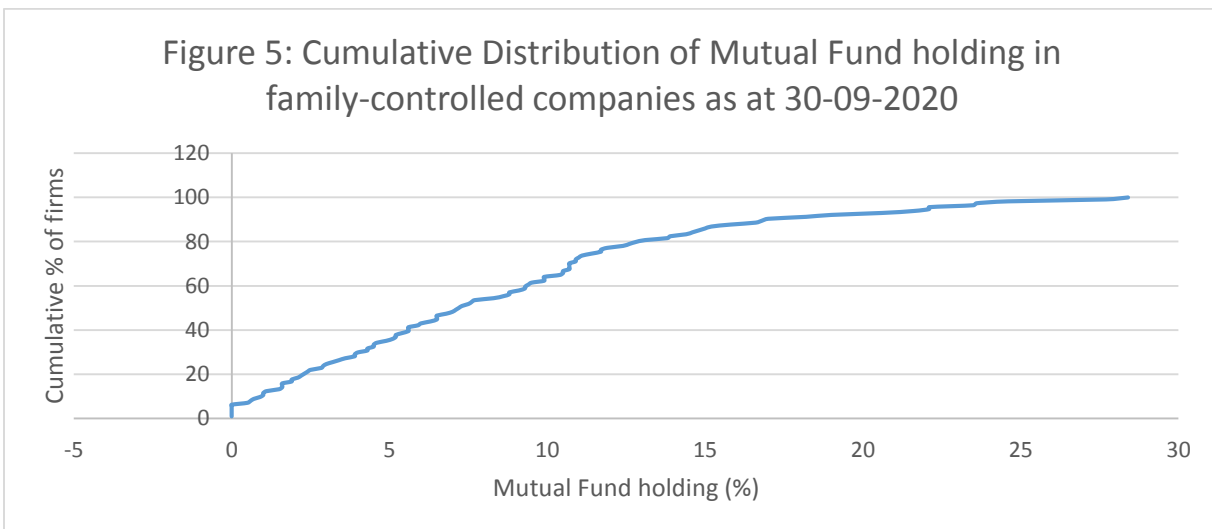
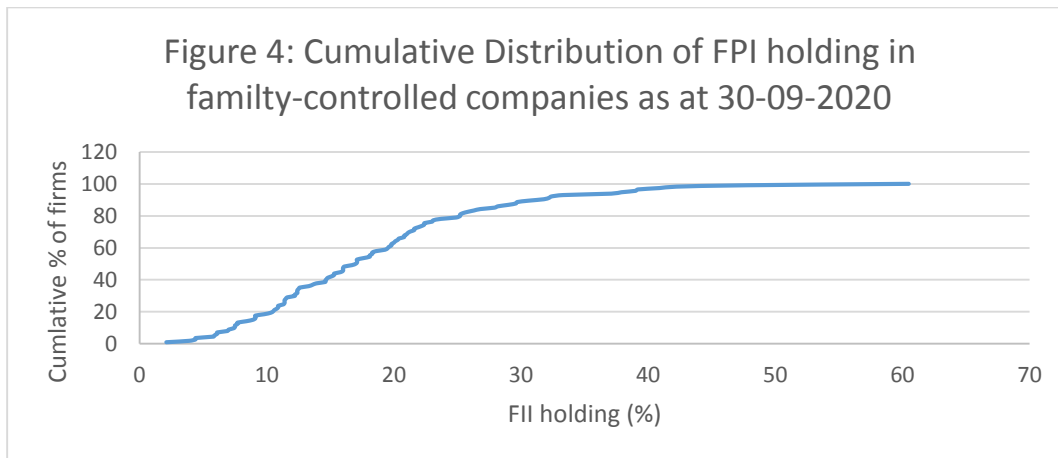
The interest of foreign portfolio investors (FPI) in the Indian market is increasing. It is evident by the number of FII registered with SEBI. It was 997 at the end of 2006-2007 and increased to 9,136 at the end of 2017-2018. The research concludes that foreign portfolio investment improves corporate governance (Aggarwal et. 2011; Gillan and Starks, 2003). I have examined the percentage of foreign portfolio investment in different types of companies. Table 1 below provides a summary of the shareholding pattern of Nifty 200 companies.

**Table 3: Shareholding pattern Nifty 200 companies as at September 30, 2020**

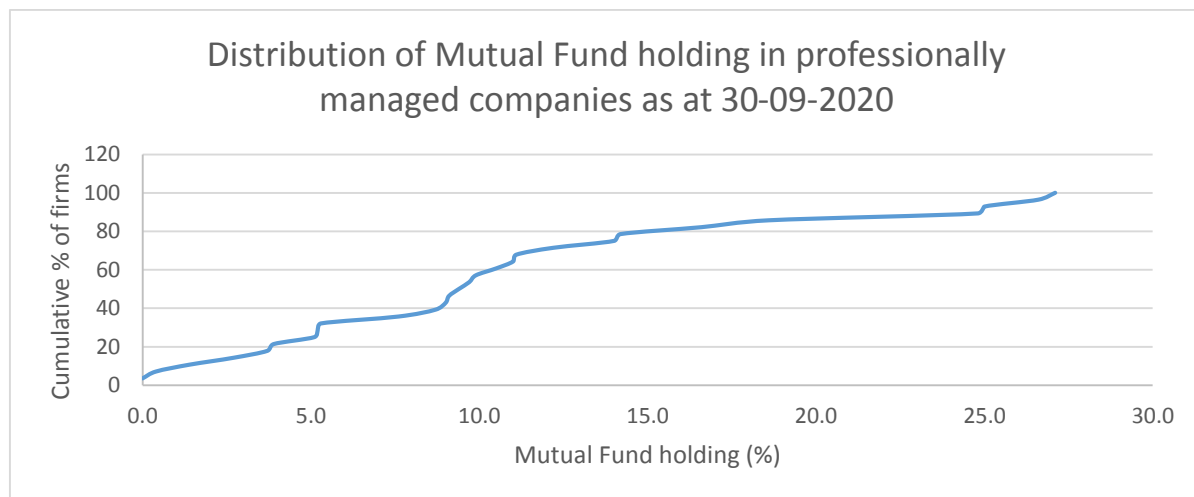
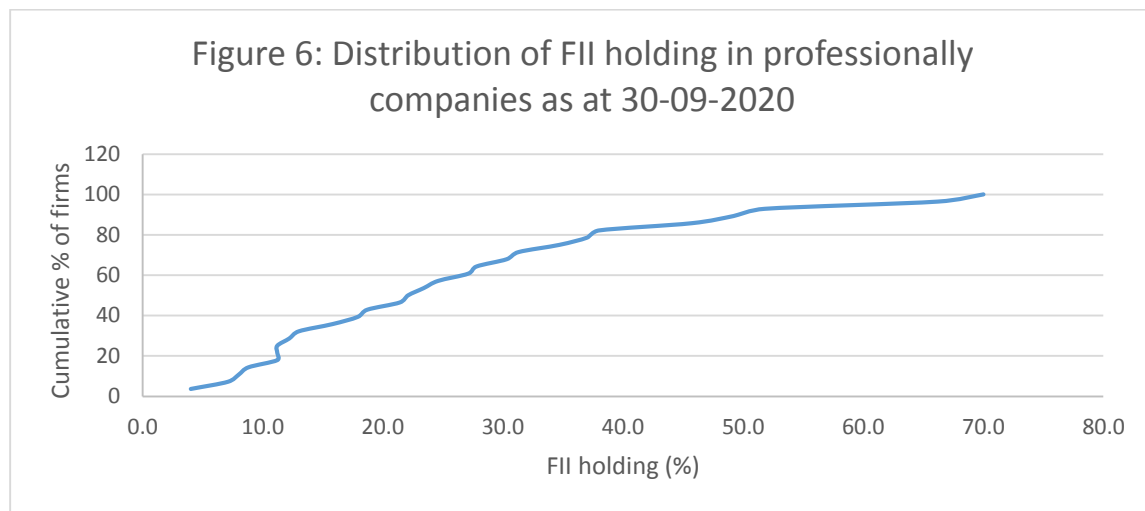
	Family-controlled companies (percentage)		Professionally managed companies (percentage)		Public sector enterprises (percentage)		Multinationals (percentage)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Foreign portfolio investment (FPI)	18.40	17.05	26.40	22.80	11.07	7.70	10.91	10.70
Mutual Fund	8.46	7.25	10.80	9.50	7.61	7.10	6.98	6.20
<b>Total</b>	<b>26.86</b>		<b>37.20</b>		<b>18.68</b>		<b>17.89</b>	
Other institutions	4.53	3.90	9.20	5.80	8.24	6.40	6.67	6.80
<b>Total institutional investment</b>	<b>31.40</b>	<b>28.20</b>	<b>46.40</b>	<b>51.20</b>	<b>26.91</b>	<b>29.20</b>	<b>24.57</b>	<b>25.40</b>
Public	15.47	12.85	20.50	14.30	11.27	9.10	13.20	13.10
Promoter	52.95	53.55	32.80	26.20	61.80	57.60	62.24	62.80
<b>Total*</b>	<b>98.8</b>		<b>98.7</b>		<b>100.0</b>		<b>100.0</b>	

\* variation from 100 is due to approximation; Source: Compiled by the author

Table 1 clearly indicates that the average FII shareholding in family-controlled companies (18.40 percent) is non-trivial and total institutional holding at 31.40 percent is significant. Therefore, institutional shareholders together can influence the corporate governance practices in family-controlled companies. However, FPI holding was less than 15% in around one-half of all family-controlled entities included in the Nifty 200 index percent(see figure 4).



Average FPI holding in professionally managed companies is significant (26.40 percent), average total institutional holding is very substantial (46.40 percent). However, around 35 percent of the professionally managed companies have less than 15 percent of FPI investment (see figure 6).



### Code of corporate governance

Indian corporate governance code (CG Code) embedded in the SEBI (Listing Obligation and Disclosure) Regulations 2015 is a hard law (comply or else), whereas, in the U.K. and some other countries, it is a soft law (comply or explain). SEBI tracks the emerging global best practices and incorporates them in the CG Code without delay. CG Code was last revised in 2019.

In September 2017, the government amended the Companies Act 2013 to restrict step-down subsidiaries to two. In counting the number of subsidiaries, one 100 percent subsidiary will be excluded. A company may have as many direct subsidiaries as it desires. The new rule is applied prospectively. Therefore, companies are not required to close down existing step-down subsidiaries. Although the primary aim of this rule is to plug the loophole for

money laundering through shell companies, it will stop the use of the pyramid structure for controlling companies with low cash flow rights.

The government created the National Financial Reporting Authority (NFRA) in October 2018 with a broad authority to oversee the auditing profession and punish the auditor found guilty of negligence. NAFRA has already taken penal actions against partners of one of the Big 4 firms. Effective from April 1, 2018, all listed companies must apply Indian Accounting Standards (Ind AS), which is a clone of International Financial Reporting Standards (IFRS). Indian Standards of Auditing are aligned with the international standards of auditing. Those initiatives have improved the quality of financial reporting and audit quality leading to improved corporate governance.

In India, Stewardship Code has been implemented effective from July 1, 2020. Under the code, institutional investors need to monitor investee companies and intervene in their governance through meetings with the management. Also, they need to have a policy on voting and disclose the voting behaviour.

SEBI mandated responsibility reporting by top 100 listed companies from 2012, top 500 listed companies from the financial year 2015-2016, and top 1,000 listed companies from the year 2019-2020. In 2017, SEBI recommended Top 500 companies to use of the Integrated Reporting <IR> Framework for annual reporting.

Awareness has been created about the benefits of good corporate governance. Some companies have good governance practices. Still, many companies have adopted the ‘tick-the-box’ approach in implementing the code of corporate governance. The institution of independent directors has remained weak and demand for management-sympathetic independent directors continues. Most boards are somewhere between ‘rubber stamp board’ and advisory board. The Satyam scam (2009), Kingfisher airlines failure (2012) and IL&FS scam (2018) brought to the surface the poor corporate governance practices in companies in which big names were board members. It is not that the board members colluded with the management. They did not fulfill their responsibilities of applying due diligence while approving financial statements or strategies proposed by the controlling shareholder. The auditing profession is adjusting to the new reality that they can no more act as a friend, philosopher, and guide of the management. Shareholders, regulators and society expect the auditor to be their friend and demonstrate a very high level of independence. Family-controlled companies are yet to come out of the hangover of the managing agency system fully. However, the change is visible. India is at the cusp of transformational changes in corporate governance.

### **In a nutshell**

In 1991, India transited from the command economy to the market economy: Licensing raj was dismantled; the capital market has been reformed to make it comparable with the capital markets in advanced countries in terms

of efficiency. FDI and FPI are encouraged; and the sellers' market has been transformed into the buyers' market. A corporate governance code with the best corporate governance practices has been implemented. The government has taken initiatives to improve the accounting and audit quality. A new corporate law (Companies Act 2013) has been enacted and the government and regulators have taken steps to strengthen the institution of independent directors. Moreover, the companies are now operating in a competitive environment and FPI investment in Indian companies has increased.

All these measures have improved the corporate governance practices in only some of the companies. In general, the family-controlled companies are yet to implement the corporate governance code in spirit. They have taken the tick-the-box approach and look for management-friendly independent directors. In most companies, the audit committee may be working at less than the desired level and the Nomination and Remuneration Committee may be the most underrated committee. Still, a change towards the better is visible, and India is at the cusp of a transformation in corporate governance.

## References

- Acharya, Viral V. Development of viable capital markets – the Indian experience. RBI Bulletin July 2019.
- Aggarwal, Reena, Isil Erel, Miguel Ferreira, and Pedro Matos. "Does governance travel around the world? Evidence from institutional investors." *Journal of Financial Economics* 100, no. 1 (2011): 154-181
- Cheffins, Brian R. 'The history of corporate governance' in Oxford Handbook of Corporate Governance. Oxford University Press (2013). Pp 47 (Kindle edition)
- Gillan, Stuart, and Laura T. Starks. "Corporate governance, corporate ownership, and the role of institutional investors: A global perspective." *Journal of Applied Finance* 13, no. 2 (2003).
- La Porta, R., Lopez- de- Silanes, F. and Shleifer, A., 1999. Corporate ownership around the world. *The Journal of Finance*, 54(2), pp.471-517.
- Times of India (January 29, 2020)Deepak Parekh holds just 0.7% in HDFC that helped build. Available at: <https://timesofindia.indiatimes.com/business/india-business/deepak-parekh-holds-just-0-07-in-hdfc-that-he-helped-build/articleshow/73717399.cms>; Extracted on November 23, 2020
- Villalonga, Belén, and Raphael Amit. "Family control of firms and industries." *Financial Management* 39, no. 3 (2010): 863-904

\*\*\*\*\*

# The Cost of Data Breaches

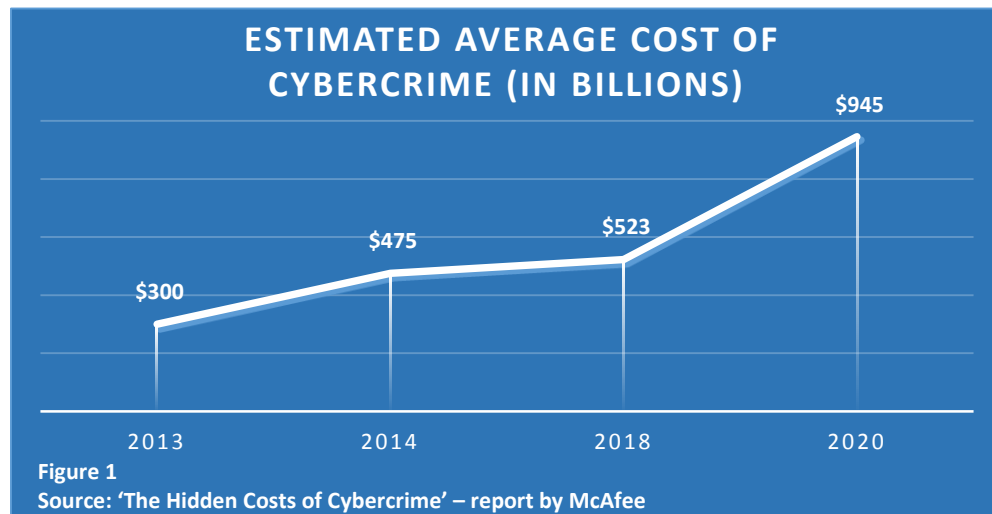
**Yash Sharma**



*Yash Sharma is a Chartered accountant by profession, currently working with Swiggy. He cleared his CA in 2018 and is interested in the world of startups and ecommerce. Outside work, he likes badminton & swimming.*

## Introduction

Instead of starting with a cliché statement, I will start with a fact. In the year 2020, the estimated loss to the global economy due to data breaches is pegged at around \$945 billion, or about 1% of global GDP. This is up about 80% from two years ago and in addition to about \$145 billion spent on cybersecurity in 2020.<sup>2</sup>



In this article, we understand what data and sensitive data mean, what incentivizes data breaches, and what does it cost everyone, financially and otherwise. Besides, we look at some of the biggest data breaches in the past few years and understand what is changing to prevent them in the future.

## Data, Personal Data, and Sensitive Data

To understand why breaches (both intentional and unintentional) happen and why it sounds so serious, we need to understand what data and its variants mean.

<sup>2</sup> 'The Hidden Costs of Cybercrime' – report by McAfee

In simplest of terms, any activity which takes place -- from the level of a little ant nest to a gigantic planetary-scale -- generates data. In that sense, data is simply bits of information. Even our existence gives rise to many data like age, gender, residence, and the list is practically endless. But not every data piece is economically attractive.

Personal data, on the other hand, means any detail through which one can identify, with some accuracy, a living person. However, every bit of personal information cannot be termed as personal data. For example, only by the name Yash Sharma you cannot identify me. There can be many others by the same name. If you however have the address and a phone number coupled with it, the name becomes a part of personal data.

And finally, the last piece of the puzzle, sensitive personal data. If any person's ethnic origin, political opinion, or similar detail can be identified by any information, it will be considered sensitive personal data. This data requires the highest level of scrutiny and security because it can bias judgment and opinion towards another person. To understand the importance of data privacy & security, imagining what could happen if someone with malicious intent or opportunistic mindset gets hold of your sensitive personal information.

### **What are Data Privacy and Data Security?**

Access to sensitive data always yielded power. If someone knew any personal detail about you, he could have always used it for his gain or your loss. So, why the debates on the security of data now? Earlier, the data used to be collected and stored on paper and its summarization and use was a time-consuming process. As we entered the digital world, everything went paperless and you started getting notifications from shopping websites as soon as you googled any product.

In that context, a plethora of data can be summarized in minutes and can be turned into tangible profits with a specific area of focus. The sheer volume and speed of availability of data are what makes data privacy and security more important today.

Data privacy can be explained as policies and steps taken to ensure proper collection and usage of data. It is concerned with ensuring that the data is obtained with the user's consent and is accessible only to people and for the purpose consented by the owner of data.

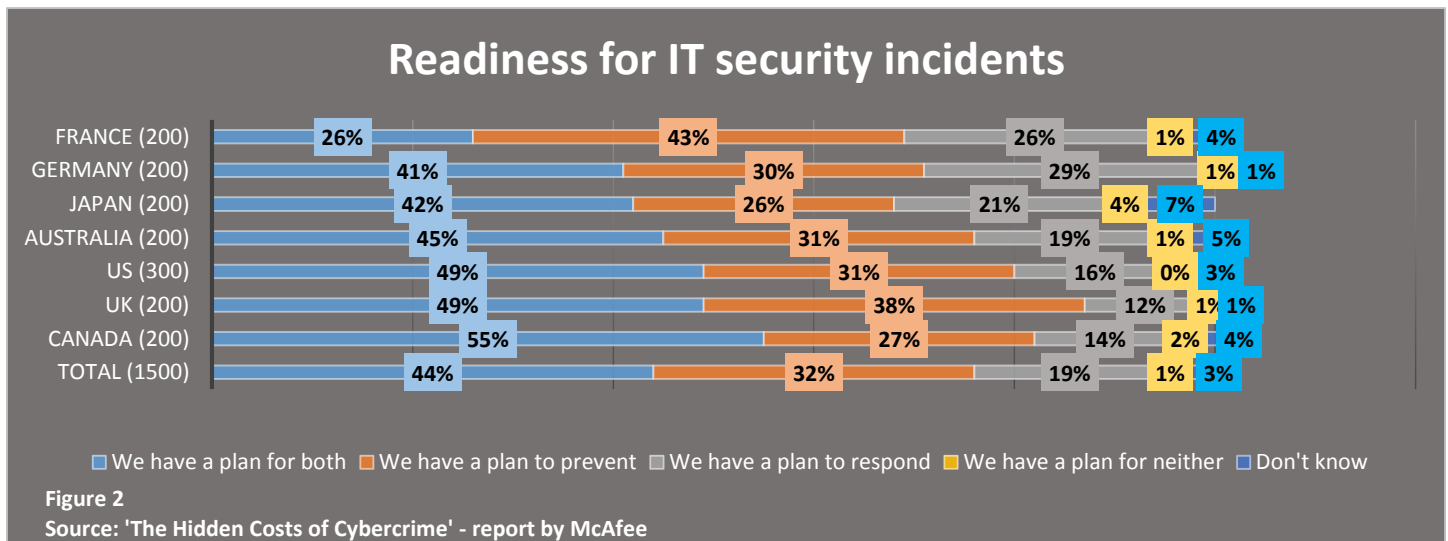
Data security, on the other hand, is the method to ensure data privacy. These can include both physical controls, like locking the data servers in a cabin, as well as logical controls, like restricting access to limited authorized users.

Suppose an organization collected my name and age through an online form. The bottom of the form described how the data would be used and who could use the data, and the organization asked for my consent for the same.

This would be part of the data privacy policy. Once the data got stored on the organization's servers, the data was encrypted, the servers were put into a locked room and access to my data was protected by a password available to certain people only. This would be data security to ensure what the organization told me under the data privacy policy is upheld.

### Data Breaches: What and Why

The collection and usage of data are taking the center stage while policy formulations of any function in almost all organizations. Hence, having robust data privacy and security policy becomes of paramount importance. Yet, as visible from Figure 2, only a small proportion of organizations have a plan to both prevent and respond to IT threats.



In such a situation, there is a good chance of the occurrence of a data breach. Simply put, a data breach occurs when sensitive information is accessed by someone who was not authorized to have it. Such breach can even be unintentional. For example, at the beginning of 2018, the Defense Travel System (DTS) of the US Department of Defense (DOD) accidentally sent out an unencrypted mail with an attachment to a wrong distribution list. The mailer exposed personal details of about 21,500 U.S. marines, sailors & civilians; the details also included their bank account numbers, truncated Social Security numbers and emergency contact info.<sup>3,4</sup>

There is an even more significant threat of intentional data breach, referred to as 'hacking'. Traditionally, the people who wanted to hack into a piece of code had to be the people who had the ability and knowledge. And

<sup>3</sup> <https://www.venafi.com/blog/7-data-breaches-caused-human-error-did-encryption-play-role>

<sup>4</sup> <https://www.marinecorpstimes.com/news/your-marine-corps/2018/02/28/major-data-breach-at-marine-forces-reserve-impacts-thousands/>



then there were problems of doing the research, arranging the infrastructure, and selling the spoils after a successful attack, which not every hacker wanted to do.

Enter outsourcing and e-marketplaces. Any common person, with no knowledge of coding but only an intent, can now outsource all the services: from research to infrastructure to the entire attack. Outsourcing provides convenience to both sellers and buyers. Some of the variants for services include:<sup>5</sup>

- i. Research as a service, which covers finding vulnerabilities in a system and tools to exploit them
- ii. Crimeware as a service, where code development and malware are provided
- iii. Cybercrime infrastructure as a service, which covers spamming services and botnets, and lastly
- iv. Hacking as a service, which covers cracking passwords and launching distributed denial-of-service (DDoS) attacks.

All the foregoing arguments beg the question, why do data breaches, at least intentional ones, take place? The answer: it is a profitable undertaking. To understand this, let us briefly look at the value of various data pieces in the market and the cost to acquire them.

When it comes to the dark web, everything is a fair game. You can find bulk Instagram account, credit card details, bank account details, citizenship & identity details and even the tools used to obtain all the above. From a value perspective, Figure 3 depicts their price in the black market. Figure 4 outlines the costs to organize different



Figure 3

Source: 'THE BLACK MARKET REPORT - A look inside the Dark Web' - report by Armor

<sup>5</sup> 'Cybercrime exposed: Cybercrime-as-a-service' – report by McAfee

forms of data breaches. A banking trojan, for example, costs an average of \$3,500. The number of total accounts affected globally (only a limited set of Kaspersky protection users) was around 900,000.<sup>6</sup> Assume a trojan campaign sends spam to only 500 US accounts. Even if we consider a 70% click rate of spam and assuming the hacker can get bank info of about 50% of the people who clicked the spam mail, it makes 175 accounts.<sup>7</sup> The median savings bank balance in America \$4,500.<sup>8</sup> So, on average, the campaign can yield about \$750,000.

**Criminal enterprise operation cost**

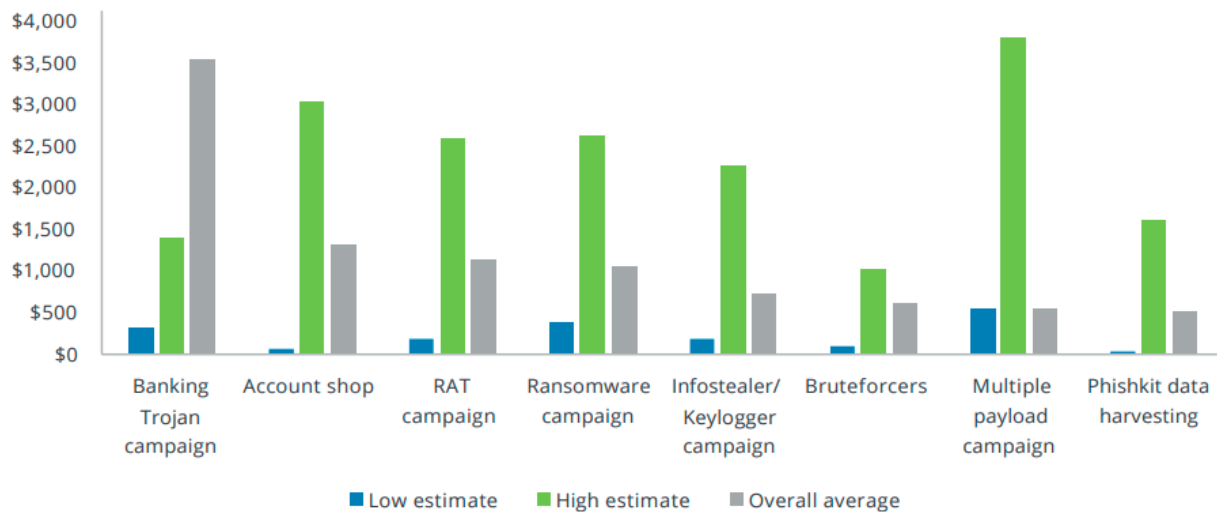
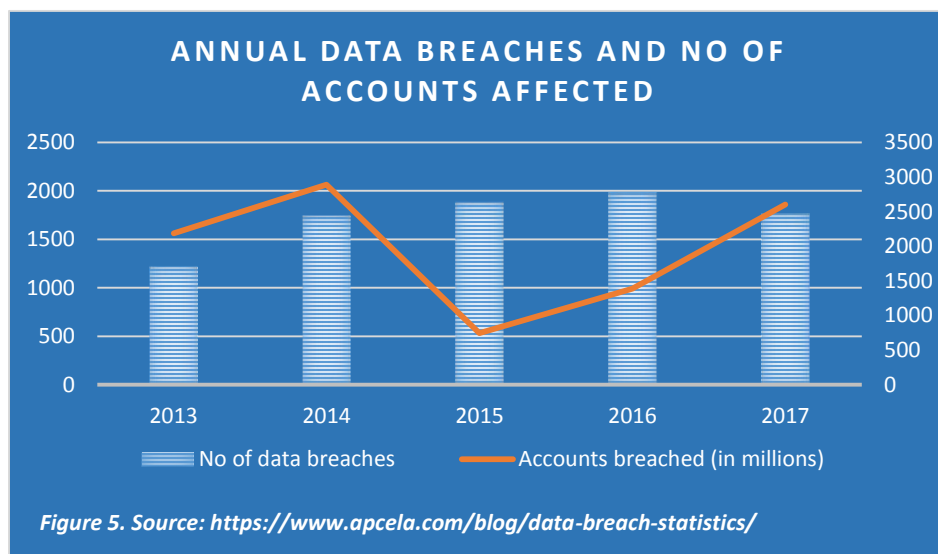


Figure 4  
Source: 'Black Market ecosystem' - report by Deloitte

As is visible from Figure 3 and 4, a data breach can be quite profitable. The high profitability, the ease of access to the dark web, and the availability of ‘hacking as a service’ have led to an increase in breach incidents.



<sup>6</sup> [https://www.kaspersky.com/about/press-releases/2019\\_number-of-users-attacked-by-banking-trojans-grew](https://www.kaspersky.com/about/press-releases/2019_number-of-users-attacked-by-banking-trojans-grew)

<sup>7</sup>  $500 * 70% * 50% = 175$

<sup>8</sup> <https://www.thebalance.com/what-is-the-average-bank-account-balance-4171574>

## Cost of Data Breaches

India ranked fifth in the world in terms of the number of attacks initiated during 2013-2017 (the US ranked first).<sup>9</sup> In 2020, the average total cost of a breach in India was \$2 million while the world average \$3.86 million. However, the time taken to identify and contain a data breach in India is 318 days while the world took 280 days on average.<sup>10</sup> Apart from the detection and remedial costs, data breaches also result in loss of business, disruption of operations, loss of reputation and loss of employee confidence. Let us look at some examples of large data breaches of the past and what did they cost.

### i. LinkedIn

In 2012 and again in 2016, around 107 million LinkedIn user accounts (6.5 million & 100 million respectively) were hacked and posted online for sale.<sup>11 12</sup> LinkedIn has become a trusted forum for professional interaction, and a breach of this size can hamper this trust. LinkedIn sent change password emails to the affected accounts. For the 2012 breach, the company incurred more than \$1 million towards forensic investigation and recovery cost alone.. An additional \$2 - 3 million was spent on strengthening security. If we extrapolate the same cost for the 2016 fiasco, we get around \$50 million in additional expenditure.

### ii. Equifax

In 2017, Equifax, one of the largest credit bureaus in the US, disclosed that an application vulnerability in one of their websites exposed the personal data of about 163 million customers. The information included Social security number, date of birth, address, and driver's license number.<sup>13</sup> Such information leak can cause serious issues like identity theft for the owner. The company reached a settlement of \$425 million with the FTC in January last year.<sup>14</sup>

### iii. Multi-Specialty Private Hospital Chain

In an attack unprecedented in size, a large multi-specialty hospital in Kerala, India, had its complete patient records from the past 5 years exposed. The details included hundreds of test results and complete patient histories. The hospital also has one of the 101 NABL-accredited private labs in Kerala for RT-PCR testing resulting in a leak of a large number of COVID-19 test results also.<sup>15</sup>

<sup>9</sup> <https://www.apcela.com/blog/data-breach-statistics/>

<sup>10</sup> <https://www.ibm.com/security/digital-assets/cost-data-breach-report/#/>

<sup>11</sup> <https://www.computerweekly.com/news/2240160962/LinkedIn-data-breach-costs-more-than-1m>

<sup>12</sup> <https://blog.linkedin.com/2016/05/18/protecting-our-members>

<sup>13</sup> [https://en.m.wikipedia.org/wiki/2017\\_Equifax\\_data\\_breach](https://en.m.wikipedia.org/wiki/2017_Equifax_data_breach)

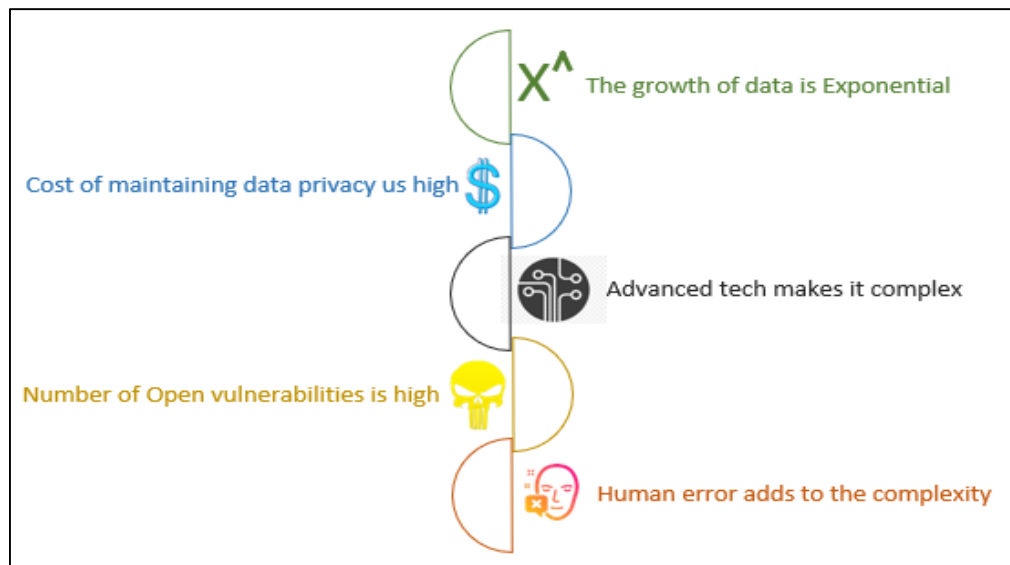
<sup>14</sup> <https://www.ftc.gov/enforcement/cases-proceedings/refunds/equifax-data-breach-settlement>

<sup>15</sup> <https://www.orfonline.org/expert-speak/data-privacy-pandemic-india-just-had-the-biggest-medical-records-breach-ever/>

Healthcare remains the favorite target of hackers worldwide and even in each country. The average cost of a data breach is also higher: \$7.13 million in healthcare.<sup>16</sup> One reason could be the price that a complete medical profile may be worth. While identification numbers and credit card info can fetch a few dollars, a complete medical information dossier can get prices anywhere between \$300-\$1000.<sup>17, 18</sup>

## Regulations around Data Protection

One might ask a question that given the importance of data and its protection, why do organizations fail to protect it? The answer lies in the form of specific challenges that data protection presents.



There are standards for data protection both in India and elsewhere.

### i. In Indian context:

- a) **Personal Data Protection Bill, 2019** – Still under consideration, one of the bill's highlights is the *right to be forgotten*, which provides for removing private information about a person from internet directories under certain circumstances. Critics, however, argue that this may result in the government taking control of people's data in the name of public welfare.<sup>19</sup>

<sup>16</sup> <https://www.ibm.com/security/digital-assets/cost-data-breach-report/#/>

<sup>17</sup> <https://resources.infosecinstitute.com/topic/hackers-selling-healthcare-data-in-the-black-market/>

<sup>18</sup> <https://www.forbes.com/sites/mariyayao/2017/04/14/your-electronic-medical-records-can-be-worth-1000-to-hackers/amp/>

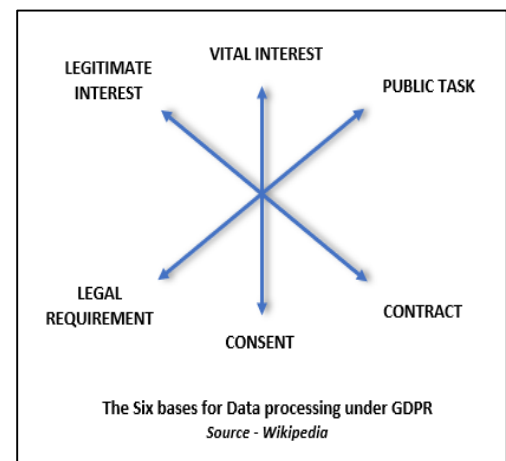
<sup>19</sup> [https://en.wikipedia.org/wiki/Personal\\_Data\\_Protection\\_Bill,\\_2019](https://en.wikipedia.org/wiki/Personal_Data_Protection_Bill,_2019)

- b) **Relevant sections of IT Act** – Section 43A provides compensation to anyone who has suffered a loss due to improper handling of their data by a body corporate. Section 72A, on the other hand, has provisions for the imprisonment of any person who inappropriately utilizes information gained during a work engagement.<sup>20</sup>
- c) **Digital Information Security in Healthcare Act (DISHA)** – Still in the plans, DISHA makes the individuals the owners of their own healthcare data and lays down the purposes for which digital healthcare data can be collected and used by any entity.<sup>21</sup>

## ii. In Global context:

- a) **General Data Protection Regulation (GDPR):** GDPR was one of the first legislations to focus on general personal data security in the European Union and gives individuals control over their personal data. It provides six lawful bases under which any personal data may be processed and a fine of up to € 20 million for violation.<sup>22</sup>

- b) **Payment Card Industry Data Security Standards (PCI-DSS):** It is a standard for organizations handling branded credit cards from major card schemes. Along with the requirements for protecting cardholder data, it also provides for Validation of Compliance, including a third-party audit.<sup>23</sup>



## Best Practices

Your data is your property, and no one has the right to access or use it without your consent. Yet, just like in the case of your other properties, there would always be parties with mala-fide intentions wanting to gain at your expense. Still, there are certain things that both individuals and organizations could do to prevent such things from happening.

<sup>20</sup> <https://www.lexology.com/library/detail.aspx?g=08197ebe-aeb4-41d6-a855-ce57a313ea6d>

<sup>21</sup> <https://www.lexology.com/library/detail.aspx?g=08197ebe-aeb4-41d6-a855-ce57a313ea6d>

<sup>22</sup> [https://en.m.wikipedia.org/wiki/General\\_Data\\_Protection\\_Regulation](https://en.m.wikipedia.org/wiki/General_Data_Protection_Regulation)

<sup>23</sup> [https://en.m.wikipedia.org/wiki/Payment\\_Card\\_Industry\\_Data\\_Security\\_Standard](https://en.m.wikipedia.org/wiki/Payment_Card_Industry_Data_Security_Standard)

FOR IT & SECURITY TEAMS	FOR INDIVIDUALS
Train your employees on how to identify suspicious activity	Do not click on suspicious links or open email attachments from unknown senders
Find, classify, and protect your most sensitive data, particularly data covered under compliance regulations such as PCI-DSS	Use anti-malware software
Deploy patches as promptly as possible to shorten the vulnerability window	Update your software regularly for security patches
Employ data encryption to protect sensitive data in transit and at rest	Be cautious accessing online banking sites, email, or other sensitive sites, especially when using public connections
Monitor cloud usage, manage access to cloud services, and secure any data/applications during migration	Do not use the same password for multiple websites or services and allow a single compromised account to turn into many
Utilize security technologies such as anti-malware software and intrusion detection systems to build a shield around your environment	Consider using credit monitoring services to detect suspicious activity

## Conclusion

We have seen that not even the largest organizations are entirely safe against the threat of data breaches, no matter how tight the security. While locks may deter the public from entering your house, they do not deter thieves. The financial incentives for data breaches (like every other major crime) are just too large. Still organizations must follow the given standards and adopt best practices so that the instances can be timely identified and even reduced to a greater extent.

\*\*\*\*\*

# P2P Lending and the MSME Sector

## Teerna Chatterjee



*Teerna Chatterjee is currently working as a credit manager at the Indian Bank (formerly Allahabad Bank). She has close to ten years of work experience in the banking sector, working in the agricultural credit as well as in the general credit departments. She did her Masters in Agriculture from Bidhan Chandra Krishi Viswavidyalaya (BCKV), West Bengal.*

### 1. Introduction

Over the years, we have witnessed the emergence of several e-commerce business models in the financial domain. One such business model is Peer-to-Peer (P2P) lending, a form of crowdfunding through which money is raised for the disbursement of credit and then gets repaid with interest (Dhawan, 2018). Crowdfunding is a method of funding through money raised from a large group of individuals, usually with the help of a platform, including online platforms that act as intermediaries (RBI, 2016). Thus, P2P Lending is "*the use of an online platform that matches lenders with borrowers in order to provide loans that are typically unsecured*" according to Dhawan (2018). This article explains Peer-to-Peer (P2P) lending and discusses its benefit and challenges for the MSME (Micro, Small, and Medium Enterprises) sector.

A P2P lending platform is a marketplace, matching a set of borrowers directly with the group of investors (or lenders). The platform, in turn, charges a transaction fee for every transaction encountered through it. Individuals register themselves on the P2P platform by providing key information like personal details, professional details, and financial details. The platform then performs due diligence by verifying the information itself for assessing the creditworthiness of the individuals. Thereafter, the platform lists all approved borrowers and lenders who can participate in lending or borrowing on its portal.

On P2P lending platforms, lenders can observe borrower loan listings, borrower's personal, professional, and financial information, loan purpose, and a brief description as to why lenders should make the loan offers to them. These details help lenders make an informed decision about making a loan to a borrower. The borrowers receive offers from numerous lenders, and likewise, lenders can also propose lending offers to multiple borrowers, thereby diversifying the default risk (Thanawala, 2020a). When the funding for a loan becomes 100%, the loan can be ready for disbursement, subject to the borrower's acceptance. Disbursal occurs only after signing of the agreement

of loan between borrower and lender. After that, the money is transferred to the borrower's account from the lender for the loan amount, and EMI begins to transfer from the borrower to the lender.

According to the RBI, India had 21 P2P Lending companies as of 2018 (RBI, 2018). Some of them are involved in businesses directed at microfinance activities. The main aim of the P2P lending firms is to create a social influence and provide easier access to credit to small entrepreneurs and MSME. Thus, "*P2P Lending platforms are largely tech companies registered under the Companies Act and acting as an aggregator for lenders and borrowers thereby, helping create a match between them*" (Roy and Lele, 2016).

## 2. FinTech and its importance in MSME lending

The words "finance" and "technology" can together be abbreviated as FinTech. FinTech is defined as "*any technology that's used to augment, streamline, digitize or disrupt traditional financial services*" (Walden, 2020). Peer-to-Peer (P2P) lending platforms are one of the most commonly used FinTech products across the industry. Apart from P2P lending, FinTech also encompasses intermediaries like crowdfunding, Blockchain technology, cryptocurrency, and payment gateways (RBI, 2018). Further, these advanced technologies facilitate the efficient functioning of the credit process and access to credit by drastically reducing the transaction time. Initially, P2P lending involved one-to-one matching, but now it has evolved into a marketplace for institutional and individual investors to lend to borrowers through a portal. Sometimes the P2P lending firms also follow a reverse auction mechanism where both the lender and the borrower enjoy complete liberty to accept or reject the borrower and the lender's bid for the borrower's loan proposal (Lee and Lee, 2012) respectively.

## 3. Theoretical Perspective of P2P Lending

In this section, we will explain the P2P lending process through five theoretical lenses.

### 3.1. Social Capital Theory

According to Coleman (1994), social capital is "*the structure of relations between actors and among actors.*" The theory of social capital entails the necessity of social bonds and social norms forming an indispensable part of our livelihoods' sustainability (Pretty & Ward, 2001). P2P lending platforms use some unique features, for instance, a) assessing risks on soft information and b) employing social collateral for loan screening (Liu et al., 2020). Thus, both soft information and social collateral act as the most crucial considerations while screening the unsecured loans. P2P lending differs from the traditional lending market because the loan is not guaranteed against tangible collaterals (Ba, 2001). The rationale, as suggested by Egli et al. (2006), is that the entrepreneurs seeking credit are likely to maintain a good reputation as they require credit repeatedly in the future, which could also



help them to lower the cost of financing. Such accumulated reputation forms social capital, which can serve as social collateral, and hence enables the lenders to participate in the credit process.

When it is challenging to access tangible information, lenders can leverage soft information such as the wisdom of the crowd, which may be qualitative or quantitative. They may use soft information to assess the risks and increase the loan availability for the borrower. Thus, soft information loosens the constraints for the borrowers by reducing the collateral requirements. Further, compared to a credit score-based risk evaluation, a risk assessment based on soft information reduces loan default likelihood (Iyer et al., 2016).

### **3.2. Transaction Cost Economics**

P2P lending platforms operate entirely in online mode, have fewer regulatory compliance requirements, and have lower overheads. As a result, they can provide services at a cheaper rate than comparable brick and mortar financial institutions. Furthermore, they directly connect lenders with borrowers (without a need for another intermediary). It also removes the intermediaries' margin (Economic Times, 2019), which results in a lower interest rate for the borrowers, while the lenders can expect to lend at higher interest rates than the traditional financial institutions like banks owing to the additional risks. Thus, P2P platforms lower transactional costs.

Personal loans form the bulk of transactions executed through the P2P lending platforms and are mostly unsecured. Recently, due to their fast and convenient loan disbursement processes, P2P platforms are also attracting budding entrepreneurs (interested in loans for their startups) and small businesses. The post-ILFS crisis credit crunch and the repo rate increase have resulted in P2P lending gathering momentum in India (Gandhi, 2019).

### **3.3. Information Asymmetry**

Information asymmetry occurs if one entity during any transaction possesses more or better quality information than the other entity. The existence of information asymmetry between the borrower and the lender creates a significant challenge in P2P lending. As a result, both lenders and platforms have lower trust in borrowers (Lin et al., 2017). Further, given this information asymmetry, P2P lending platforms attracted more borrowers with poor credit ratings. This problem was also seen in second-hand cars as studied in the classic "Market for Lemons" by Akerlof (1978). A study made by LenDen Club, a P2P platform, found that 80% of the borrowers are under 35 years of age and 71% of the borrowers have a monthly income of less than ₹30,000 (Thanawala, 2020b). This finding indicates that an average borrower on the P2P platform has a weak credit profile, meager income, and limited discipline of saving for emergencies. Leading P2P lending firms, such as Prosper, work with credit rating agencies to mitigate the information asymmetry (Lee and Lee, 2012).

### 3.4. Risk and Return

As the P2P lending platform offers a higher return, it attracts those investors who are ready to take higher risks. We can define financial risk as the deviation of actual financial outcomes from the expected financial returns. Risk can both be upside or downside. It is apparent from the idea of the security market line that if two investments offer the same returns, investors prefer investing in the one with lower risk. From the above three theories, it is evident that the risk of default of the assets created through P2P platforms is higher. Therefore, only lenders with high risk tolerance should lend on this platform.

### 3.5. Network Effect

P2P platforms act like a two-sided market where their success depends upon the network effects. According to Rochet and Tirole (2006), a two-sided market is defined as "a platform enabling interactions between end-users and charging a fee from either side." Thus, in the presence of the network effect, the value of any product or service increases with the number of others using it. It is also worthwhile to note that the network effects become significant only when a critical mass – a minimum number of individuals – subscribe to the product or the service. At that critical point, customers derive higher value from the product or the service than the cost incurred by them to subscribe for the service or purchase of the good. Since the user base determines the overall value of the good or the service, additional users will subscribe to the service or purchase the good only when the critical mass of users has crossed. It is also to be noted that in the absence of perfect information, individuals show a tendency to herd (Bikhchandani and Sharma, 2000).

## 4. P2P Lending for the MSME Sector

The MSME sector contributes immensely to generating employment, promoting innovation, adding to exports, and thereby enhancing the Indian economy's inclusive growth in a significant way. Given its immense potential, MSME can even contribute further in the presence of proper support systems. For instance, in the last decade, its growth is quite impressive in terms of production volume, employment generation, and exports. Its contribution to overall employment generation is approximately 120 million, and 30% to India's GDP recently (Mehta, 2019). Further, it has been contributing towards entrepreneurial development through business innovations. For instance, in the manufacturing sector alone, MSMEs account for a wide range of products encompassing both traditional as well as high-tech products (Annual Report of the Ministry of MSME, 2018).

MSMEs require reassurance and funding to support India's inclusive economic growth. However, the informal nature of MSMEs and a lack of audited financial statements for such enterprises make the assessment of their creditworthiness is extremely difficult for banks and other financial institutions. As a result, an MSME finds it

difficult to fulfil a bank's standards for extending credit. It aggravates the information asymmetry with respect to the financial parameters of the business, and hence the access to credit becomes limited. This is evident from the fact that the estimated credit demand by the MSMEs is ₹69.3 trillion, whereas the formal banking sector can cater to only 16% of the overall credit requirements, and the remaining happens through informal sources, including moneylenders, who charge exorbitant interest rates (International Finance Corporation, 2018). Furthermore, the access to equity and venture capital financing is limited to a few MSMEs (Singh and Wasdani, 2016).

Given that 84% of the MSME credit requirement is still untapped through formal financing and the addressable credit gap has soared to ₹25 trillion (International Finance Corporation, 2018), there lies the immense potential of P2P lending platforms to create an alternative supply of credit for the MSMEs. It will immensely benefit the borrowers who can also be separated from the informal institutional creditors like moneylenders and chit funds and become a part of the formal economy, thereby accessing cheaper and faster credit. With internet penetration in India stands at 504 million active users, covering 40% of the individuals with age greater than five years, the P2P acceleration is also becoming more plausible (Mishra and Chanchani, 2020).

A major issue with the P2P platforms is the lack of repeat business with the borrowers. For instance, at the P2P platform LenDen Club, new borrowers constitute 63% of the total number of borrowers (Lenden Club, 2020). The potential reasons could be borrowers being attracted to borrowing from the P2P platform primarily for emergency and aspirational needs, and the recurrence of such events might be intermittent. Another underlying reason could be that owing to the absence of any physical collateral, and it is increasingly attracting some borrowers having the ill intention of defaulting.

## 5. Conclusion

P2P lending has witnessed rapid growth in the recent past globally. However, the penetration is limited beyond the USA, the UK, and China. Though P2P lending in India is in the preliminary stage, its potential benefits to various stakeholders (like borrowers, lenders, agencies, etc.) despite its associated risks are promising

## References

Akerlof, G. A. (1978). The market for "lemons": Quality uncertainty and the market mechanism. In *Uncertainty in economics* (pp. 235-251). Academic Press.

Annual Report of the Ministry of MSME 2017-18 (2018). Accessed from <https://msme.gov.in/sites/default/files/MSME-AR-2017-18-Eng.pdf>

- Ba, S. (2001). Establishing online trust through a community responsibility system. *Decision support systems*, 31(3), 323-336.
- Bikhchandani, S., & Sharma, S. (2000). Herd behavior in financial markets. *IMF Staff papers*, 47(3), 279-310.
- Coleman, J. S. (1994). Social capital, human capital, and investment in youth. *Youth unemployment and society*, 34.
- Dhawan, S. (2018). RBI issues directions for peer-to-peer lending platforms. *Economic Times*, July 24, 2018. Accessed from <https://economictimes.indiatimes.com/wealth/borrow/rbi-issues-directions-for-peer-to-peer-p2p-lending-platform/articleshow/60941846.cms?from=mdr>
- Egli, D., Ongena, S., & Smith, D. C. (2006). On the sequencing of projects, reputation building, and relationship finance. *Finance Research Letters*, 3(1), 23-39.
- Gandhi, R. (2019). What makes NBFC-P2P sector a better choice for raising funds for an MSME these days. *Economic Times*, April 26, 2019. Accessed from [https://economictimes.indiatimes.com/small-biz/money/what-makes-nbfc-p2p-sector-a-better-choice-for-raising-funds-for-an-msme-these-days/articleshow/69054343.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/small-biz/money/what-makes-nbfc-p2p-sector-a-better-choice-for-raising-funds-for-an-msme-these-days/articleshow/69054343.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)
- International Finance Corporation (2018). Financing India's MSMEs - Estimation of Debt Requirement of MSMEs in India. Accessed from <https://www.ifc.org/wps/wcm/connect/dcf9d09d-68ad-4e54-b9b7-614c143735fb/Financing+India%E2%80%99s+MSMEs+-+Estimation+of+Debt+Requirement+of+MSMEs+in+India.pdf?MOD=AJPERES&CVID=my3Cmzl>
- Iyer, R., Khwaja, A. I., Luttmer, E. F., & Shue, K. (2016). Screening peers softly: Inferring the quality of small borrowers. *Management Science*, 62(6), 1554-1577.
- Lee, E., & Lee, B. (2012). Herding behavior in online P2P lending: An empirical investigation. *Electronic Commerce Research and Applications*, 11(5), 495-503.
- Lin, X., Li, X., & Zheng, Z. (2017). Evaluating borrower's default risk in peer-to-peer lending: evidence from a lending platform in China. *Applied Economics*, 49(35), 3538-3545.
- Liu, Z., Shang, J., Wu, S. Y., & Chen, P. Y. (2020). Social collateral, soft information and online peer-to-peer lending: A theoretical model. *European Journal of Operational Research*, 281(2), 428-438.
- Mehta, R. (2019). MSME Sector-A Force to Reckon With As the Biggest Job Creator. *Employment News*, Government of India, Volume 42, 19-25, January 2019. Accessed from <http://employmentnews.gov.in/NewEmp/MoreContentNew.aspx?n=Editorial&k=30199>
- Mishra, D. and Chanchani, M. (2020). Internet users in India: For the first time, India has more rural net users than urban. *Times of India*, May 6, 2020. Accessed from <https://timesofindia.indiatimes.com/business/india-business/for-the-first-time-india-has-more-rural-net-users-than-urban/articleshow/75566025.cms>
- Pretty, J., & Ward, H. (2001). Social capital and the environment. *World development*, 29(2), 209-227.
- RBI (2016). RBI Consultation Paper on P2P Lending. Accessed from [https://www.rbi.org.in/scripts/bs\\_viewcontent.aspx?Id=3164](https://www.rbi.org.in/scripts/bs_viewcontent.aspx?Id=3164)
- RBI (2018). Report of the Working Group on FinTech and Digital Banking. Accessed from <https://m.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=892>
- Rochet, J. C., & Tirole, J. (2006). Two- sided markets: a progress report. *The RAND journal of economics*, 37(3), 645-667.

Roy, A. and Lele, A. (2016). RBI seeks to regulate P2P lending space. Business Standard, April 29, 2016. Accessed from [https://www.business-standard.com/article/finance/rbi-seeks-to-regulate-p2p-lending-space-116042801065\\_1.html](https://www.business-standard.com/article/finance/rbi-seeks-to-regulate-p2p-lending-space-116042801065_1.html)

Singh, C., and Wasdani, P.K. (2016). Finance for Micro, Small, and Medium-Sized Enterprises in India: Sources and Challenges. Asian Development Bank Institute Working Paper Series. No. 581.

Thanawala, H. (2020a). Lending on P2P platforms: A risky proposition; not an investment. Money Control, February 11, 2020. Accessed from <https://www.moneycontrol.com/news/business/personal-finance/lending-on-p2p-platforms-a-risky-proposition-not-an-investment-4929701.html>

Thanawala, H. (2020b). P2P Platforms: Millennials are the ones to come on board to lend or borrow. Money Control, March 16, 2020. Accessed from <https://www.moneycontrol.com/news/business/personal-finance/p2p-platforms-millennials-are-the-ones-to-come-on-board-to-lend-or-borrow-5036541.html>

Walden, S. (2020). What Is Fintech And How Does It Affect How I Bank? Forbes, August 3, 2020. Accessed from <https://www.forbes.com/advisor/banking/what-is-fintech/>

\*\*\*\*\*