

Prologue

The nexus between financial development and economic growth has been the subject of considerable debate. There are two important competing views on the relationship between finance and growth. According to the first view, prevalent in the early 19th century, enterprise leads and finance follows, implying that the financial system does not have a leading role in growth. In contrast, the other view stresses on the complementarities between development and capital formation, particularly the role of banks in financing investment in physical capital and growth. An early study by Schumpeter (1911) highlighted the importance of financial intermediaries in mobilizing savings, evaluating projects, diversifying risks, monitoring the management of firms in debt, and facilitating transactions which are essential for innovation and economic growth. Since Schumpeter put forward his view, a considerable amount of theoretical and empirical literature has emerged. The notable early works on finance and development along the Schumpeterian lines include Gurley and Shaw (1955), Goldsmith (1969), and Hicks (1969). These studies argue that the development of a financial system is crucially important in stimulating economic growth and underdeveloped financial systems retard economic growth.

In contrast to Schumpeter's view, the prevalent view held by many economists in the 19th century endorsed Robinson's (1952) famous proposition that 'where enterprise leads, finance follows', suggesting a passive view that as opportunities arise in an economy that needs financing, the economy develops the necessary markets and institutions to finance these opportunities. In a different approach, Tobin (1965), based on the theoretical works of Keynes (1936), argued for financial repression by keeping the interest rate artificially low through government

interventions. However, McKinnon (1974) and Shaw (1974) eventually challenged the paradigm of financial repression, emphasizing the complementarities between financial development and capital accumulation, and highlighted the distorting effects of financial repression in developing economies. They further argued that financial repression due to widespread government intervention in credit markets is often growth-reducing. Their approach, however, found only mixed empirical support and failed to explain the sustained increases in the growth rate of many economies.

Further, in the early 1980s, neo-structuralists (Taylor, 1983; Van Wijnbergen, 1982, 1983a, 1983b) criticized the McKinnon-Shaw school and predicted that financial liberalization slows down growth. Stiglitz (1989) criticized financial liberalization on the ground of market failures in financial markets.

However, the literature of the 1980s witnessed a return to Schumpeter's view and emphasized the role of financial development in generating sustained economic growth through an external effect on aggregate investment efficiency. Following Schumpeter's line of reasoning, King and Levine (1993) proposed an endogenous growth model that emphasized the role of innovation. They argued that financial markets direct savings to their most productive uses and diversify the risks associated with these activities, enhancing the probability of successful innovation and the speed of technological progress. Levine (1997) argues that by facilitating the allocation of resources, monitoring managers, exerting corporate control, and mobilizing savings, the financial system fosters capital accumulation. Further, it enhances productivity growth through trading, hedging, diversifying, and pooling of risk.

Finally, the empirical evidence, by and large, finds positive associations between financial development and economic growth and has become a stylized fact. However, the evidence suggests enormous heterogeneity across countries, regions, financial factors, and directions of causality.¹ The Indian experience with financial reforms primarily indicates increased financial fragility as the stock market saw an unprecedented boom and credit squeeze for commodity-producing sectors and the small-scale industry. Despite the financial deepening that resulted from liberalization, these effects have adversely affected the economic growth of the country (Chandrasekhar and Pal, 2006). Studies revealed that an initial spurt in industrial growth immediately after liberalization led to a significant reduction in capacity expansion as a proportion of usage of funds (Bhaduri and Bhattacharya, 2018). In a more recent study, Bhaduri and Bhattacharya (2018) argued that liberalization increased the disassociation between capital formation and value-added by industry. These observations raise concerns about the efficient allocation of capital by the industry in the liberalized regime.

Role of Banks in Financial Intermediation

The banking sector, particularly in emerging economies, plays an essential role in financial intermediation by efficiently allocating funds from savers to borrowers, reducing the cost of obtaining information about both savings and borrowing opportunities, thus leading to economic growth and improvement in the overall efficiency. Despite the waves of capital market reforms witnessed by many economies in the last few decades, the banks provided a significantly large proportion of external financing. Especially in most emerging markets, the share of bank assets in the aggregate financial sector comprises well over 80 per cent of total financial sector assets, which is much lower (around 40 per cent) in the developed economies. Deposits as a share of total bank liabilities have declined since 1990 in many developed countries, while in developing countries public deposits continue to be dominant in banks. In India, the share of banking assets in total financial sector assets is around 75 per cent. Another critical aspect of the Indian banking sector has been the significant participation of the government through public sector banks (PSBs). The total asset share of India's banking market was INR 150 trillion in 2020 out of which PSBs had the largest share – that is, INR 107 trillion (around 70 per cent). However, this sector constitutes the smallest share in terms of number – 12 as of 2021. According to the latest data released by the Reserve Bank of India (RBI), only in recent years, the market share of PSBs in loans has dipped to 59.8 per cent in 2020 from 74.28 per cent in 2015, while private banks' share has surged to 36.04 per cent from 21.26 per cent during this period.

On the supply side, the banking sector also dominates in terms of mobilizing resources from the household sector and channelizing them to various sectors in the economy. As shown by recent estimates, 52.7 per cent of household savings are parked with commercial banks. On the demand side, 75.2 per cent of household sector liabilities are held in commercial banks (Reserve Bank of India, 2020). In addition, the banking sector contributes heavily to the corporate sector as about 90 per cent of commercial credit is channelized by scheduled commercial banks. As shown in Figure 1.1, post-financial liberalization bank borrowings as a proportion of total assets for non-financial and non-utility firms increased sharply. Despite the capital market development since liberalization, the capital structure of Indian firms remains dominated by bank borrowing, and, therefore, it becomes imperative to understand the role of bank borrowing in a larger context.

A similar trend also emerges for the proportion of bank borrowing to these companies' total borrowings (Figure 1.2).

The theoretical literature widely recognizes the role of bank credit in influencing corporate strategy and firm performance through several facets that include

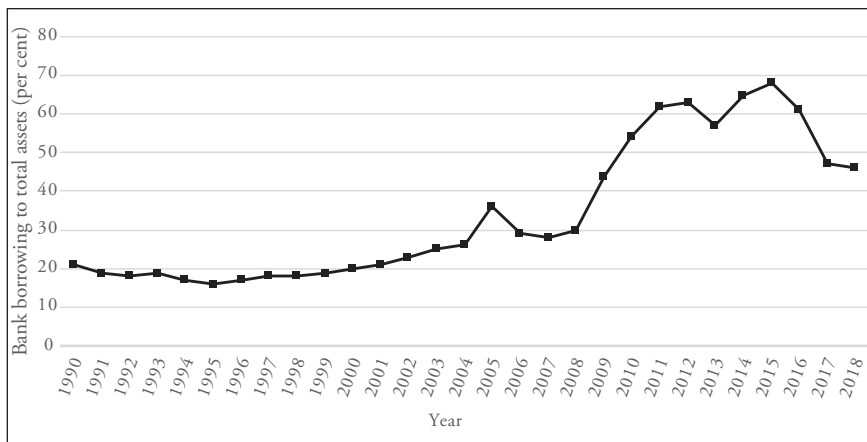


Figure 1.1 Trends in bank borrowing as a proportion of total assets of non-financial companies

Source: Authors’ calculations using Centre for Monitoring Indian Economy (CMIE) Prowess.

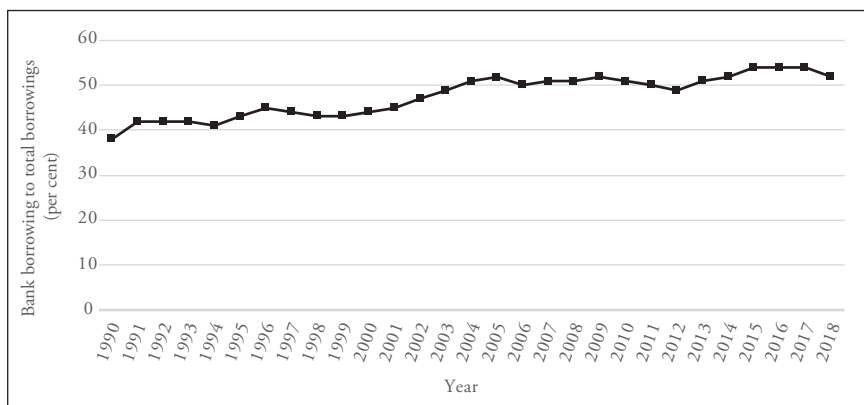


Figure 1.2 Trends in bank borrowing as a proportion of total borrowings of non-financial companies

Source: Authors’ calculations using Centre for Monitoring Indian Economy (CMIE) Prowess.

monitoring, screening of creditworthy firms, and reducing information costs incurred by firms. Proposing the theory of delegated monitoring, Diamond (1984) argued that delegated monitoring is cheaper and yields better results than

individuals independently monitoring a borrower by minimizing the various costs involved in the process of monitoring. Specifically, bank monitoring reduces the risk by mitigating moral hazards and adverse selection problems due to informational asymmetries between the firm and lenders. Banks screen the loan applications of prospective clients to assess the creditworthiness of the firms (Diamond, 1989), which also facilitates reputation-building for the firms that acquire bank loans. This reputation of creditworthiness further helps the firms raise funds from public markets in the future (Diamond, 1991).

Further, the problem of moral hazard is minimized as banks direct investment decisions using forceful tools of intervention such as the threat not to renew credit (Stiglitz and Weiss, 1983). Such a threat can lead to a reduction of opportunistic incentives, which compels managers to be productive and ensures that they align their incentives with those of the shareholders and positively impact the firm's market value (Grossman and Hart, 1982). Highlighting the cost of information, Fama (1985) argued that public debt financing involves incurring information costs, and these costs can be avoided by bank loan financing as firms would not have to disclose information to the public, thereby reducing the risk of private information being revealed to rival firms (Yosha, 1995). The reduction in such disclosure costs is likely to enhance firm performance. Finally, as Sharpe (1990) suggests, a bank's (own) reputation reduces inefficient resource allocation. When banks efficiently mobilize and allocate funds, this lowers the cost of capital to firms, boosts capital formation, and stimulates productivity growth (Levine, 2005).²

However, it is also important to note that empirical evidence of the role of bank credit in firm performance remains mixed, suggesting a significant heterogeneity in findings across the institutional and regulatory environment (Laeven and Levine, 2009). Therefore, the impact of bank credit on firm performance remains an empirical question and could be resolved only through country-specific studies.

In this research, we provide a comprehensive analysis of bank credit allocation to non-financial listed companies in the Indian corporate sector over a long period of 28 years. India serves as a natural choice to conduct our research as it is among the world's largest emerging economies with a bank-dominated financial intermediation system. Financial liberalization in the early 1990s and the subsequent reforms have created an extensive banking system in India. Despite a vibrant equity market and various debt instruments to raise capital, banks remain the preferred avenue for sourcing funds. The banking sector accounts for 63 per cent of household savings and contributes close to 50 per cent of the total flow of resources to the Indian corporate sector as of March 2018. In addition, 80 per cent of the money supply is handled by the banking sector.

The Indian economy witnessed rapid progress during the post-reform period, with the average growth rate of real gross domestic product (GDP) remaining high at 6.4 per cent and 8.8 per cent during the 1990s and 2003–08, reflecting the success of financial sector reforms.³ Table 1.1 presents the performance of the banking sector until the effects of the global financial crisis (GFC) started appearing in the Indian economy in 2009. As shown in the table, average credit–deposit ratio of banks increased from slightly less than 50 per cent in the second half of the 1990s to 71 per cent by March 2009, reflecting the impact of financial sector reforms and the changes in monetary policy, such as the reduction of statutory liquidity requirement and cash reserve ratio (CRR) and softening of interest rates. However, the growth of credit did not show the deterioration in asset quality as the management of non-performing assets (NPAs) showed significant improvement. The gross NPAs as a percentage of advances declined from about 18 per cent in 1995–96 to 1.7 per cent in 2008–09. As shown in Table 1.1, financial indicators of the banking sector witnessed a significant improvement as the net interest

Table 1.1 Performance indicators of the Indian banking sector in 1996–2009

Year	GNPA ratio	ROA	NIM	Credit deposit rate	CRAR
1996	18.12	-0.43	4.76	50.72	8.76
1997	18.53	0.47	5.79	47.54	9.21
1998	17.04	0.71	4.28	47.25	11.13
1999	16.35	0.43	3.87	46.35	11.24
2000	14.2	0.54	3.33	47.3	11.42
2001	12.72	0.38	3.37	48.45	11.38
2002	11.39	0.73	2.72	50.57	11.45
2003	9.87	1.01	2.97	51.41	12.47
2004	7.58	1.22	2.92	51.87	13.13
2005	5.38	0.85	2.78	56.83	12.54
2006	3.87	0.77	2.57	64.88	12.11
2007	2.55	0.84	2.79	69.15	12.21
2008	1.93	0.86	2.66	71.04	11.93
2009	1.74	0.89	3.04	71.29	13.34

Source: Reserve Bank of India, *Handbook of Statistics on Indian Economy*, various editions.

margins (NIM) hovered around 3 per cent with capital to risk (weighted) assets ratio (CRAR) above 12 per cent in 2003–04.

Therefore, until 2010, particularly immediately before the unprecedented credit bubble of 2003–04, the optimism about Indian economic growth portends well for the Indian banking sector. A spectacular growth rate, coupled with an increase in profitability, had led to an impressive performance of the Indian banking sector. On the supply side, the banks also witnessed a significant increase in deposits during the same period. Due to multiple scams⁴ in the capital market and the collapse of the Unit Trust of India’s (UTI’s) US-64 scheme, a significant part of the household savings moved towards the banking sector as the share of bank deposits in the household savings increased from 31.9 per cent in 1990–91 to 44 per cent during 2003–04 to 2006–07. This is consistent with many studies focusing on country-level financial reforms, which show that the financial liberalization process is positively associated with increased bank credit (McKinnon, 1974; Shaw, 1974; Beck, Levine, and Loayza, 2000; Ueda, 2006).

However, the situation changed significantly after the GFC of 2008, particularly after 2010. Over the last decade (2010–20), the Indian banking sector faced significant challenges in terms of the mounting burden of the NPAs (Figure 1.2). The severity of this problem is alarming because the ratio of NPAs to total advances increased from 2.5 per cent in 2010 to 11.5 per cent in March 2018, thereby eroding the banks’ capital base and drying up the credit availability in the market.

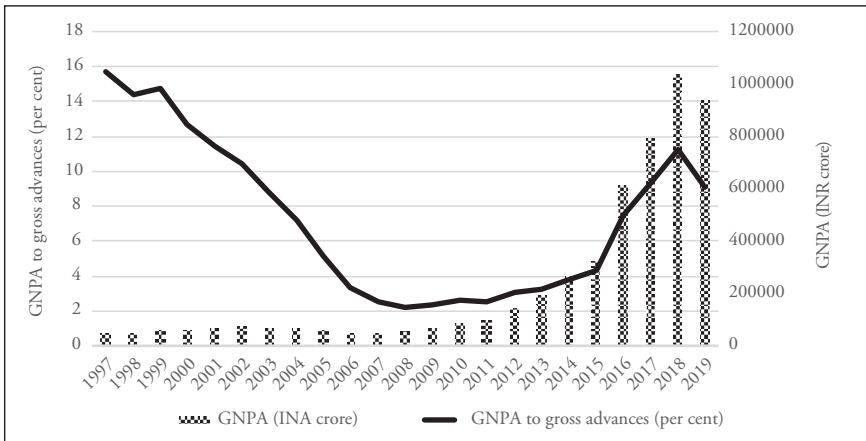


Figure 1.3 Gross non-performing assets (GNPAs) across all banks in India – amount and ratio

Source: Reserve Bank of India, *Handbook of Statistics on the Indian Economy*, 2020.

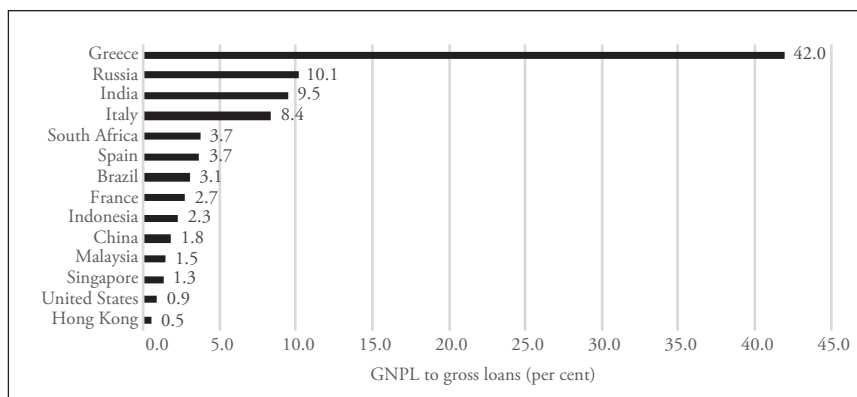


Figure 1.4 Proportion of non-performing loans to gross loans among selected countries in 2018

Source: World Bank, <https://data.worldbank.org>.

As shown in Figure 1.2, the bad loans on the books of Indian banks surged to INR 10 trillion from INR 0.56 trillion in 2007–08.

Figure 1.3 presents a proportion of non-performing loans to gross loans across selected countries to capture the global context of bad loans. It shows that during 2018 non-performing loans in India translated to approximately 9.5 per cent of all loans disbursed. It is evident from Figure 1.3 that India's NPA ratio is one of the highest among the comparable countries, with only Greece and Russia reporting a higher ratio. More recently, concerns over India's high stock of bad loans gained the International Monetary Fund's (IMF) attention, which ranked India 33 among 137 nations with a bad NPA ratio in descending order.

Moreover, while the PSBs account for around 70 per cent of the total banking assets, their contribution to bad loans is about 86 per cent of the total NPAs in India's banking sector. Table 1.2 presents the NPA ratios for major Indian banks as of March 2018. As seen from Table 1.2, most PSBs had a gross NPA ratio of above 10 per cent compared to private sector banks, which reported a ratio below 5 per cent.

The steady rise in NPAs, particularly after 2015–16, was because of the RBI undertaking an asset quality review (AQR) of banks in 2015, which led to the recognition of many bank loans as NPAs, considered by banks as standard assets till then. Further, according to a financial stability report by the RBI, the Covid-19 pandemic's impact has pushed up the ratio of gross NPAs in the Indian banking system to at least 12.5 per cent in March 2021, from 8.5 per cent in March 2020.

Table 1.2 Gross non-performing assets (NPAs) across all banks in India (INR crore)

S. No.	Name of the bank	NPA ratio	S. No.	Name of the bank	NPA ratio
1	IndusInd Bank Ltd.	1.17	14	State Bank of India	10.91
2	Yes Bank Ltd.	1.28	15	Punjab & Sind Bank	11.19
3	HDFC Bank Ltd.	1.30	16	Syndicate Bank	11.53
4	RBL Bank Ltd.	1.40	17	Canara Bank	11.84
5	DCB Bank Ltd.	1.79	18	Union Bank of India	15.73
6	Kotak	2.22	19	Allahabad Bank	15.96
7	Federal Bank Ltd.	3.00	20	Oriental Bank	17.63
8	IDFC Bank Ltd.	3.31	21	Punjab National Bank	18.38
9	South Indian Bank	3.59	22	Bank Of Maharashtra	19.48
10	Karnataka Bank	4.92	23	Central Bank of India	21.48
11	Vijaya Bank	6.34	24	Dena Bank	22.04
12	Axis Bank Ltd.	6.77	25	UCO Bank	24.64
13	Indian Bank	7.37	26	ICICI Bank Ltd.	8.84

Source: CARE Ratings, 'Report on NPAs of Banks', 15 May 2018, <https://www.careratings.com/uploads/newsfiles/NPA%20Update%20March%202018.pdf>. Accessed on 8 March 2021.

Since most of the NPAs were contributed by the PSBs, the crisis deteriorated even further as the government continued trying to bolster the books of the PSBs through equity capital infusion and other measures. The government has progressively stepped up its capital infusion in state-owned banks, with INR 3.8 lakh crores infused between 2011 and 2020. To put this number in perspective, the bank recapitalization bill from 2018 to 2020 stands around INR 2.56 lakh crores, double the amount invested in the first 45 years (estimated to be around INR 1.5 lakh crores) since the country's banks were nationalized.⁵ In addition, the government sought parliamentary approval to infuse a further INR 200 billion (USD 2.72 billion) in state-run banks in the 2020–21 period to help lenders mitigate the expected surge in bad loans due to the pandemic.

While in any normal business, higher profits are expected to accrue from greater allocation of capital, PSBs continued to report losses as the government was persistent in its capital infusion in state-owned banks, mainly due to rising NPAs requiring banks to set aside a portion of their profits towards provisions and write-offs. As a result, state-owned banks reported a steady decline in profit from a high

of INR 45,849 crores in 2012–13 to a collective loss of over INR 66,000 crores in 2019, nearly double the nation's budgetary allocation for education. Further, total provisions made during 2018 increased to a staggering 141 per cent, from INR 43,611 crores to INR 105,150 crores (CARE Ratings, 2018).

Notably, there are two disquieting aspects of India's recent NPA crisis: first, around three-fourths of the overall default originated in the industry (that is, corporate defaults). Second, the concentration of defaulted loans was in the hands of a few large corporations operating in the energy, steel, and infrastructure sectors. Table 1.3 presents the stressed debt by the top 12 loan defaulters filed with the National Company Law Tribunal (NCLT) for the restructuring in 2017. The cumulative outstanding claim filed by banks was 3.45 lakh crores, which accounts for nearly 44 per cent of gross NPAs. These sectors typically have projects with long timelines and significantly large capital expenditures, and therefore the accumulation of bad loans by these corporations indicates the lack of governance and monitoring of stressed assets.

Table 1.3 Concentration of stressed assets in large defaulters of corporate India

Name of the corporation	Stressed debt admitted for recovery (INR crore)
Electrosteel Steels	13,175
Bhushan Steel	56,022
Monnet Ispat & Energy	11,015
Essar Steel India	49,473
Alok Industries	29,523
Jaypee Infratech	23,176
Jyoti Structures	7,365
Bhushan Power & Steel	47,158
Amtek Auto	12,641
Era Infra Engineering	Under Corporate Insolvency Resolution Process (CIRP)
Lanco Infratech	Under Liquidation
ABG Shipyard	Under Liquidation

Source: CARE Ratings, 'Analysis of Movement in Stressed Advances', 13 February 2021, https://www.careratings.com/uploads/newsfiles/13022021110239_Analysis_of_Movement_in_Stressed_Advances.pdf. Accessed on 8 March 2021.

Finally, the Indian capital market has also recognized this substantial destruction of PSB values over the last six years. Compared to December 2014, the Nifty Public Sector Undertaking (PSU) Bank Index has fallen from 4,312 to 1,340 in June 2021, indicating erosion of nearly three-fourths of its value. As a stark contrast, during the same period, the broader market index, Nifty 50, has risen to 15,690 from the level of 8,200, registering a nearly 91 per cent gain. The Economic Survey, 2019–20, also highlighted:

[T]he foregone return on the taxpayer's investment in PSBs must rank as one of the largest subsidies as the foregone amount of over Rs 1.4 lakh crores compares similarly to the amount provided for the food subsidy.... Over Rs, 4,30,000 crores of taxpayer money are invested as government's equity in PSBs. In 2019, every rupee of taxpayer money invested in PSBs, on average, lost 23 paise. (Government of India, 2020)

The Survey further added:

[U]sing the ratio of stock market-to-book value of PSBs on average vis-à-vis that of new private sector banks (NPBs). As of 20th January 2020, we note that every rupee of this taxpayer money fetches a market value of 71 paise. In stark contrast, every rupee invested in NPBs fetches a market value of Rs 3.70, i.e., more than five times as much value as that of a rupee invested in PSBs. (Government of India, 2020)

This highlights the fact that NPBs are rapidly catching up with PSBs, particularly during the last five years. According to the RBI's *Report on Trends and Progress of Banking in India, 2018–19*, PSBs' share of banking assets has steadily declined from a high of 74 per cent in 2010 to 61 per cent in 2019 (Reserve Bank of India, 2019b).

Therefore, at the beginning of the 2000s, though it becomes more palpable only after 2015, both the Indian banks and the corporates were under significant stress – corporates have over-borrowed, and banks have over-lent. As such, it is imperative to ask a pertinent question: why has the Indian banking sector (mainly PSBs), which was performing reasonably well in the 2000s, particularly before 2003–04, become so overburdened with NPAs by the end of this decade?

There have been many evidence-based conjectures that try to address the question. For example, according to a recent *Financial Stability Report* by the RBI, the core reasons behind the upsurge of NPAs in India are inadequate restructuring and recovery strategies, disproportionate levels of NPA share by PSBs compared to private banks, a large volume of loan disbursement without proper vigilance, and lack of post-loan monitoring over the decade (Reserve Bank of India, 2019a). In addition to the structural reasons, the borrowing exuberance of corporates

during the period of credit growth between 2006 and 2008 further contributed to India's NPA crisis.

Therefore, despite a plethora of anecdotal evidence pointing towards borrowing exuberance and crony capitalism, there has not been much study that analytically addresses the recent maladies of the Indian banking sector. We aim to fill this gap in the extant literature by providing a few insights into the current banking crisis in the Indian economy by decomposing the maladies into three different stages of prognosis: origination of the loan, servicing of loans, and recoveries of bad loans. It is worth noting that our approach shifts the focus from the other contemporary discourse based on an outcome-based measure such as NPA (and its conventional determinants) to a more dynamic approach, by critically examining the process underlying the life cycle of the credit decision and identifying the inefficiencies at different stages of this cycle.

Credit Bubble and Misallocation

It is also interesting to note that the recent crisis in the Indian banking sector precedes a credit bubble period witnessing unprecedented growth, which is the highest in a quarter-century. Therefore, it provides us with a unique natural opportunity to examine whether misallocation of credit during the pro-cyclic credit bubble in the pre-crisis period and the economic slowdown following the GFC led to a rise of NPAs in India. Specifically, we hypothesize that the substantial proportion of NPAs in India is an outcome of a process originating at the point of disbursement of the loan, which gets aggravated during the servicing cycles through practices like evergreening.

While conventional wisdom suggests that a well-developed financial system's fundamental job is to allocate capital efficiently, and the capital would flow from underperforming sectors to high-growth sectors for better returns, there has been limited evidence corroborating it for India. Therefore, the study aims to contribute to the literature by providing a comprehensive analysis of credit misallocation in general and borrowing exuberance, particularly its linkages with economic growth, and with behaviour and performance of the corporate sector. It is worthwhile to note a few pertinent points about our hypotheses.

First, while there is a body of literature that establishes that financial liberalization leads to a positive 'quantity effect' with higher levels of investment (McKinnon, 1974; Shaw, 1974; Beck, Levine, and Loayza, 2000; Ueda, 2006), it remains uncertain whether it also improves the efficacy of the consequent investment decisions based on these allocated funds. Second, a strand of literature

argues that banks often overstretch both the quantum and the quality of their credit over the expansionary phase of the economy, leading to misallocation and non-performing credit (Mendoza and Terrones, 2008, 2012; Arena and Julio, 2015). Corroborating this view, Bhaduri and Kumar (2014) observed that a substantial increase in the quantum of funds during the post-liberalization period did not translate into a more efficient allocation in India. Further, in a recent study, Bhaduri and Bhattacharya (2018) examined whether the credit is allocated to firms with higher marginal returns to capital and did not find the presence of any positive association between liberalization and higher allocation efficiency. Therefore, the study contributes to this sparsely researched aspect of liberalization ('quality effect') by carefully examining if the financial reforms and consequent growth of bank credit in India have improved the allocation of resources.

Third, the origin of prodigal loans during the credit boom has gained much media attention in recent years. This further rose to prominence in June 2017 when the RBI published a report that included some leading names among India's energy, steel, and other infrastructure companies. These companies alone had an outstanding debt of over INR 2.66 trillion, or a third of the stressed loans, on banks' books. The banker exuberance during 2006–08 further gained credence as a source of the NPA crisis in India when Dr Raghuram Rajan highlighted the following in his detailed reply to the estimates committee of parliament under the chairmanship of Dr Murli Manohar Joshi:⁶

A larger number of bad loans were originated in the period 2006–2008 when economic growth was strong, and previous infrastructure projects such as power plants had been completed on time and within budget. It is at such times that banks make mistakes. They extrapolate past growth and performance to the future. So they are willing to accept higher leverage in projects and less promoter equity. Indeed, sometimes banks signed up to lend based on project reports by the promoter's investment bank, without doing their due diligence. One promoter told me about how he was pursued then by banks waving chequebooks, asking him to name the amount he wanted. This is the historic phenomenon of irrational exuberance, common across countries at such a phase in the cycle.

Therefore, our hypothesis is consistent with a plethora of anecdotal evidence pointing towards borrowing exuberance. However, there has not been much study that systematically establishes the nexus between the pro-cyclic credit bubble and the downstream consequence of credit misallocation.

Using micro-data of a large number of non-financial corporations from India, we propose a novel measure of misallocation of bank credit at the point of disbursement and explore three main facets of the current banking crisis: first, we trace the

trend and patterns of misallocation over a long period of 28 years across multiple credit cycles. Specifically, we examine pro-cyclicality in the lending behaviour and misallocation of resources, particularly during the unprecedented credit boom in the early 2000s. While decomposing the source of misallocation, we explore the extent to which the pro-cyclic credit bubble in the early 2000s has led to ‘borrowing exuberance’ by channelling bank credit towards firms that are less likely to use it for productive purposes. Using a long time-series data spanning multiple business cycles, we try to trace the ‘borrowing exuberance’ episodes in India. Notably, we ask the question, can the recent spurt in the ‘borrowing exuberance’ (after 2004) be attributed to significant credit booms, or do they mirror a more general business cycle trend? Second, using heterogeneous firm-specific micro-data cutting across many industries, we further explore what types of firms are prone to misallocation in general and ‘borrowing exuberance’ in particular compared to others.

Finally, our approach of decomposing the maladies of the banking sector into three different stages of prognosis – origination of the loan, servicing of loans, and recoveries of bad loans – is consistent with the ‘financial instability hypothesis’ of Hyman Minsky (1992), which was largely ignored by mainstream economics until recently. Minsky (1992) argued that the credit life cycle goes through three distinct steps: hedge, speculative, and Ponzi.

Banks and borrowers exercise caution, and borrowers make enough profit to repay both the initial principal and the interest in the first stage. The speculative phase is usually associated with borrowing exuberance, suggesting that a period of high growth encourages borrowers and lenders to be progressively reckless – banks are willing to issue riskier loans, and corporates are willing to invest aggressively in their business expansion. As pointed out by Minsky, ‘... this occurs because the acceptable and desired liability structures of business firms and the organizations acting as middlemen in finance change in response to the economy’s success’. In the speculative stage, the firm’s expected profit is sufficient to pay the interest but not the principal. During this stage, banks continue to lend or restructure the existing loan under the expectation that the economy will continue to grow and eventually make these loans viable. Then, it reaches the final stage – Ponzi – at which banks issue loans to firms that can afford to pay neither the interest nor the principal.

In our scheme of hypotheses, the line of reasoning evolves closely with Minsky’s financial instability hypothesis. As we argued earlier and will see in later chapters, we can decompose the evolution of the banking crisis into similar stages of progression: 1990–91 to 2003–04, the period of hyper-growth akin to the hedge phase of Minsky. The period 2004–10 is one of unprecedented credit bubble leading to the speculative stage. As pointed out by Minsky (1992), ‘a period of a relative

tranquil growth is transformed into a speculative boom'. The post-2010 period witnessed the Ponzi stage with explosive zombie lending to keep the non-viable loan to remain afloat. Finally, the AQR in 2015 is the 'Minsky moment' for the Indian economy when the banking sector was forced to recognize bad loans and aggressively undertake provisioning for such loans, leading to significant losses.⁷

Organization of Chapters

As a necessary backdrop to our research, Chapter 2 provides a brief history of the Indian banking sector. Specifically, the chapter describes the regulations and reforms implemented by the RBI towards shaping the present banking sector. A review of the effects of the early reforms on the banking sector's health is presented to understand the accumulation of bad assets due to a lack of substantial creditor rights despite instituting the structural measures. Further, by focusing on recent regulations on prudential norms implemented to strengthen the creditors' rights in India, Chapter 2 sets the context of our research by presenting the trends in the accumulation of bad assets in the banking sector and the recent reforms like the Indian Bankruptcy Code and Stressed Asset Resolutions to manage NPAs.

Chapter 3 proposes a novel measure of allocative efficiency as the index of credit allocative efficiency (ICAE) to evaluate the misallocation of credit towards firms with lower expected marginal returns compared to firms with higher expected marginal returns. The study makes a significant deviation from existing literature, which analyses the causes and trends of NPAs as an outcome after the allocation of bank credit. Instead, we carefully examine the efficiency of the allocation of bank credit at the point of disbursement. By focusing on the conditions before bank credit allocation, our research augments the existing knowledge on the lending decisions of the banking sector by investigating the maladies beyond NPAs. Our research is the first to provide a novel ex-ante measure of bank credit misallocation to the best of our knowledge. In subsequent chapters, we explore the macro- and micro-level determinants of misallocation and its impact on firm performance and behaviour. The findings contribute to the empirical literature of prodigal borrowing by the corporate sector and its consequences in emerging markets.

Chapter 4 investigates the pro-cyclicality in the banking sector's lending behaviour and misallocation of resources leading to unstable economic growth. Using the ICAE, a measure developed in Chapter 3, we explore the macroeconomic dynamics of the misallocation for a sample of Indian firms over the period 1990–2017 and test the nexus between pro-cyclicality and credit misallocation.

While this set of points draws macro-level inferences using our measure of bank credit misallocation, the data also allows us to conduct micro-level analyses

to understand better the firm-specific characteristics that might influence credit misallocation. In Chapter 5, while exploring the firm-specific determinants of misallocation, we emphasize three main factors: (a) creditworthiness, (b) requirement of external funds, and (c) corporate governance structure. Based on our preliminary findings, we hypothesize that credit misallocation is attributed to firms with low creditworthiness, less requirement of external credit, and poor corporate governance mechanism.

Chapter 6 examines the downstream consequence of credit misallocation on firms' performance. Specifically, we explore whether credit misallocation impacts firms' performance and how persistent this impact is. Using multiple measures of firms' performance such as profitability, return on equity (ROE), return on capital employed (ROC), and return on total assets (ROTA), we empirically test our hypothesis by using a dynamic framework.

In contrast to earlier chapters that deal with credit booms and the efficacy of credit allocation, in Chapter 7 we consider a specific episode to understand how the Indian banking sector responds to a severe credit shock. We consider the GFC of 2008 as a natural opportunity to investigate whether Indian banks have responded optimally by using strategic lending policies in the aftermath of the global crisis. We test whether banks have chosen these attributes optimally in their allocation decision in the post-crisis period using three broad attributes: sector specificity, bank–firm relationship, and risk management.

Chapter 8 focuses on another critical objective of this research about the growing debate on whether the pro-cyclic credit bubble in the pre-crisis period and GFC has contributed to the rise in the 'evergreening of loans' and 'zombie lending' in the post-2010 period. Using a sample of listed firms for the period 1990–2017, we explore the causes, consequences, and persistence of zombie firms in the Indian economy. Further, we also explore the types of firms that have attracted more zombie lending than others in the post-crisis period.

Finally, Chapter 9 concludes the study with specific policy recommendations for Indian banks and the corporate sector.

Notes

- 1 See Ang (2008) for a comprehensive survey of recent developments in finance and growth literature.
- 2 However, the conflicting literature suggests that while bank monitoring improves the firm's corporate governance and ensures it takes efficient business actions, this better governance comes at the cost of an informational advantage that banks have over

other providers of capital. Banks can pursue rent-seeking activities by exploiting the private information it acquires from the firm. This informational monopoly over firms strengthens the bargaining position of the banks, which banks could use to cut off a firm's loan or even charge a high interest rate, direct the choice of projects, levy compensating balances, or refuse to relax covenants when the credit rating improves.

- 3 It is important to note that there had been few episodes of contraction in the economy during the late 1990s and the early 2000s due to various adverse external and domestic developments such as the Asian crisis, world recession, and poor monsoon.
- 4 Harshad Mehta Scam (1992), IPO Scam (1994), and Ketan Parekh Scam (the late 1990s).
- 5 Mayur Shetty, 'PM Modi's PSU Bank Spends Beat 45 Years' Investments', *Times of India*, 17 July 2019, <https://timesofindia.indiatimes.com/business/india-business/modis-psu-bank-spends-beat-45-years-investments/articleshow/70252242.cms> (accessed in January 2021).
- 6 The excerpts are quoted from the note prepared by Raghuram G. Rajan on 6 September 2018 – at the request of Murli Manohar Joshi, Member of Parliament and Chairman of the Parliament Estimates Committee – available at *Hindu Business Line*, <https://www.thehindubusinessline.com/money-and-banking/article24924543.ece/binary/Raghuram%20Rajan%20Parliamentary%20note%20on%20NPAs> (accessed in January 2021).
- 7 A Minsky moment refers to a collapse of asset values which marks the end of the growth phase of a cycle in credit markets.