Economic Survey 2019-20

Volume 1

Government of India
Ministry of Finance
Department of Economic Affairs
Economic Division
North Block
New Delhi-110001
E-mail: cordecdn-dea@nic.in
January, 2020

CONTENTS

Chapter No.	Page No.	Name of the Chapter
1		**Wealth Creation: The Invisible Hand Supported By The Hand Of Trust**
	2	Importance Of Wealth Creation
	6	Wealth Creation Through The Invisible Hand Of Markets
	9	The Instruments For Wealth Creation
	14	The Breakdown Of Trust In The Early Years Of This Millennium
2.		**Entrepreneurship And Wealth Creation At The Grassroots**
	28	Entrepreneurship And GDP
	35	Determinants Of Entrepreneurial Activity
	38	Policy Implications For Fast-Tracking Entrepreneurship And Wealth Creation
3.		**Pro-Business versus Pro-Crony**
	43	Pro-Business, Creative Destruction And Wealth Creation
	52	Pro-Crony And Wealth Destruction
	55	Discretionary Allocation Of Natural Resources Vis-À-Vis Allocation Via Auctions
	60	Riskless Returns: The Case Of Wilful Default
	63	Conclusion
4.		**Undermining Markets: When Government Intervention Hurts More Than It Helps**
	72	Essential Commodities Act (ECA), 1955
	78	Drug Price Controls Under ECA
	82	Government Intervention In Grain Markets
	88	Debt Waivers
	93	Legislative Changes Required To Reduce Government Interventions
5.		**Creating Jobs and Growth by Specializing to Exports in Network Products**
	102	India's Export Under-Performance Vis-À-Vis China
	108	Reaping Gains From Participation In Global Value Chains
	110	Which Industries Should India Specialize In For Job Creation?
	116	Pattern Of Entry
	119	Potential Gains In Employment And GDP
	121	Are Free Trade Agreements Beneficial?
	124	Way Forward
6.		**Targeting Ease Of Doing Business In India**
	128	Introduction
	130	Global Comparisons
	132	Density Of Legislation And Statutory Compliance Requirements In Manufacturing
	134	Starting A Business: Regulatory Hurdles In Opening A Restaurant
	136	Construction Permits

137 Achieving Scale Across Business
137 Trading Across Borders
139 Case Studies Of India's Performance In Logistics In Specific Segments
147 Conclusion

7. Golden Jubilee Of Bank Nationalisation: Taking Stock
156 Banking Structure: Nationalization To Today
157 Benefits Of Nationalization
163 Enhancing Efficiency Of PSBs: The Way Forward
176 Conclusion

8. Financial Fragility In The NBFC Sector
183 Conceptual Framework Of Rollover Risk
186 Differences Between HFCs And Retail-NBFCs
193 Diagnostic To Assess Financial Fragility
199 Policy Implications

9. Privatization And Wealth Creation
206 Impact Of Privatisation: A Firm Level Analysis
224 Way Forward

10. Is India's GDP Growth Rate Overstated? No!
231 Introduction
233 Is GDP Misestimated?
251 A Diagnostic Analysis
257 Conclusion

11. Thalinomics: The Economics Of A Plate Of Food In India
260 Introduction
263 Thali Prices
267 Affordability Of Thalis
272 Price Trends Of Thali Components
274 Thali Inflation
276 Variability Of Thali Prices
285 Conclusion

Acknowledgements

The Economic Survey 2019-20 is a result of teamwork and collaboration. The Survey has benefited from the comments and insights of the Hon'ble Finance Minister Smt. Nirmala Sitharaman and Hon'ble Minister of State for Finance Shri. Anurag Singh Thakur. The Survey has also benefited from the comments and inputs of various officials, specifically, Rajiv Kumar, Atanu Chakraborty, Ajay Bhushan Pandey, Dr. T V Somanathan, Tuhin Pandey, Arvind Srivastava and Vishal Sharma.

Contributions to the Survey from the Economic Division include: Sanjeev Sanyal, Sushmita Dasgupta, Arun Kumar, Rajiv Mishra, Rajasree Ray, A Srija, Surbhi Jain, Ashwini Lal, Athira S Babu, Abhishek Acharya, Jitender Singh, Rajani Ranjan, Abinash Dash, Sindhumannickal Thankappan, Prerna Joshi, Dharmendra Kumar, Aakanksha Arora, Divya Sharma, M. Rahul, Rabi Ranjan, Gurvinder Kaur, Shamim Ara, Tulsipriya Rajkumari, J.D. Vaishampayan, Arya Balan Kumari, Sanjana Kadyan, Amit Sheoran, Shreya Bajaj, Subhash Chand, Riyaz Ahmad Khan, Md. Aftab Alam, Pradyut Kumar Pyne, Narendra Jena, Sribatsa Kumar Parida, Mritunjay Kumar, Rajesh Sharma, Amit Kumar Kesarwani, Arpitha Bykere, Mahima, Ankur Gupta, Arjun Varma, Lavisha Arora, Sonali Chowdhry, Kavisha Gupta, Tirthankar Mandal, Harsha Meenawat, Raghuvir Raghav, S. Ramakrishnan and Satyendra Kishore.

The Survey benefited from the comments and inputs from officials, specifically Adil Zainulbhai, Chairman Quality Council of India (QCI); Chetak Seethapathi, Project Manager QCI; Rudraneel Chattopadhyay, Project Manager QCI; Hetvee Marviya, Intern QCI, Sh. Nagaraj H, Velankani Electronics and Arun Kumar Jha, Director General, National Productivity Council.

The Economic Survey team is thankful to Prof. K Vaidyanathan for intensive inputs and discussions on various aspects of the Survey. We are also grateful for comments and inputs from numerous academics and practitioners, including Ajit Pai, Amiyatosh Purnanandam, Anand Nandkumar, Annapurna Singh, C Veeramani, Deep Mukherjee, Deepa Mani, Ejaz Ghani, Gautam Chhaochharia, Harshini Shanker, Jefferson Abraham, Mahesh Nandurkar, N Prabhala, Neelkanth Mishra, Nitin Bhasin, Piyush Chaurasia, Pranjal Sharma, Prasanna Tantri, Rajdeep Sharma, Ramya Krishna, Ravi Anshuman, Sameer Singh Jaini, Shashwat Alok, Shiv Dixit, Sunil Sanghai and Yakshup Chopra.

Apart from the above, various ministries, departments and organisations of the Government of India made contributions in their respective sectors. Several ministries directly interacted with me via presentations to provide their inputs. The Economic Survey is gratified for their valuable time, engagement and contributions. Able administrative support was given by K. Rajaraman, Meera Swarup, Surinder Pal Singh, Rajkumar Tiwari, Ravinder Kumar, Jasbir Singh, Amit Kumar, Sunil Dutt, Rohit, Sadhna Sharma, Arun Gulati, Sanjay Kumar Pandita, Sushil Sharma, Manish Panwar, Muna Sah, Suresh Kumar, Jodh Singh and other staff of the Economic Division. The cover page for the Survey was designed by India Brand Equity Foundation. Chandra Prabhu Offset Printing Works (P) Ltd. undertook the printing of the English and Hindi version of the Survey.

Finally, the Economic Survey owes deep gratitude to the families of all those involved in its preparation for being ever so patient, understanding and encouraging and for extending their unflinching emotional and physical support and encouragement throughout the preparation. The families, indeed, are the unconditional pillars of support for the dedicated contributors to the Economic Survey.

Krishnamurthy V. Subramanian
Chief Economic Adviser
Ministry of Finance
Government of India

Preface

The epic treatise of modern economics, written by Adam Smith in 1776, was interestingly titled "An Inquiry into the Nature and Causes of the Wealth of Nations". With India having become the fifth largest economy in the world in 2019 and aspiring to be the third largest by 2025, it is only befitting to go back to one of the foundational questions posed by Smith, "What causes wealth and prosperity of nations?" The Economic Survey 2019-20 makes a humble attempt to craft a framework of policies that can foster wealth creation in India. This inquiry is particularly critical at this stage as India aspires to become a $5 trillion economy by 2025 – an ambitious vision that should create, as Smith observed, "universal opulence which extends itself to the lowest ranks of the people."

Hon'ble Prime Minister highlighted in India's 73rd Independence Day Speech on 15th August 2019 that only when wealth is created will wealth be distributed. Therefore, a feeling of suspicion and disrespect towards India's wealth-creators is ill advised. Given India's "tryst" with Socialism, skepticism about the benefits of wealth creation is not an accident. In this context, *Team@EcoSurvey* 2019-20 attempts to put to rest any skepticism about the benefits accruing from a market economy, both in economic thinking and policy-making.

The Survey documents that ideas of wealth creation are rooted in India's old and rich tradition ranging from Kautilya's *Arthashastra* to Thiruvalluvar's *Thirukural*, which emphasizes ethical wealth creation as a noble human pursuit. The Survey uses the ancient literature and contemporary evidence and to show that India's dalliance with Socialism – a few decades is after all ephemeral in a history of millennia – is an exception with belief in the invisible hand of markets being the norm. Maddison (2007) provides the historical evidence that India has been the dominant economic power globally for more than three-fourths of known economic history. Such dominance manifests by design; not happenstance. The Survey draws on literature describing the ancient system to show that the invisible hand of the market supported by the hand of trust led to such dominance. The growth performance of the Indian economy and various sectors after India returned back to its roots post economic liberalisation in 1991 provides the contemporary evidence. Events from the Global Financial Crisis and the problems with the Indian financial sector provide evidence of the need for the hand of trust to support the invisible hand. Introducing the idea of "trust as a public good that gets enhanced with greater use", the Survey also makes some suggestions for enhancing this public good. The Survey's conceptualisation of wealth creation, thus, presents a synthesis of the old and the new, be it in the combination of ancient Indian tradition with contemporary evidence or in suggesting the use of FinTech for our Public Sector Banks. The survey cover conveys synthesis as well, with the lavender of the new "₹ 100 note" coming together with the one of older currency notes – that of Rs. 100.

The Survey identifies several levers for furthering wealth creation: entrepreneurship at the grassroots as reflected in new firm creation in India's districts; promote "pro-business" policies that unleash the power of competitive markets to generate wealth as against "pro-crony" policies that may favour incumbent private interests. The Survey makes the case that the churn created by a healthy pro-business system generates greater wealth than a static pro-crony system. Note that the Survey contrasts two systems; the arguments are not directed at any individual or entity. Instead, it argues for eliminating policies that undermine markets through government intervention even where it is not necessary; integrate "Assemble in India" into "Make In India" to focus on labour-intensive exports and thereby create jobs at large scale; efficiently scale up the banking sector to be proportionate to the size of the Indian economy and track the health of the shadow banking sector; use privatisation to foster efficiency. Consistent with the hand of trust supporting the invisible hand, the Survey provides careful evidence that India's GDP growth estimates can be trusted.

Continuing the modest endeavour of Economic Survey 2018-19 to use principles of behavioural economics as instruments of economic policy and as an easy prism to have insights about human behaviour, the Economic Survey 2019-20 presents "Thalinomics"- an attempt to relate economics to the common person using something that he or she encounters every day – a plate of food i.e. a Thali.

We chose to continue with the popular tradition of presenting the Survey in two volumes. Volume I, which attempts to capture ideas that encapsulate "economic freedom and wealth creation", provides evidence based economic analyses of recent economic developments to enable informed policymaking. Volume II reviews recent developments in the major sectors of the economy and is supported by relevant statistical tables and data. This would serve as the ready reckoner for the existing status and policies in a sector.

The Economic Survey attributes its existence and popularity to the collaborative effort of all Ministries and Departments of Government of India, the prodigious resource base of the Indian Economic Service officers, valuable inputs of researchers, consultants and think tanks both within and outside the government and the consistent support of all officials of the Economic Division, Department of Economic Affairs. The Survey has made a sincere effort to live up to the expectation of being an indispensable guide for following, understanding and thinking about the Indian economy. Needless to say, the personal gratification *Team@EcoSurvey* gets in thinking deeply about what is best for the Indian economy represents our ultimate reward. We hope readers share the sense of optimism with which we present this year's Survey.

Krishnamurthy V. Subramanian
Chief Economic Adviser
Ministry of Finance
Government of India

ABBREVIATIONS

3SLS	3 Stage Least Squares
AAI	Airports Authority of India
ACNAS	Advisory Committee on National Accounts Statistics
AD	After Death
AEO	Authorised Economic Operator
AEP	Assembled End Products
AERA	Airports Economic Regulatory Authority
ALM	Asset Liability Management problems
ASEAN	Association of Southeast Asian Nations
AUM	Assets Under Management
BACL	Bharat Aluminium Company Ltd.
BEC	Broad Economic Categories
BHEL	Bharat Heavy Electricals Limited
BIFR	Board of Industrial and Financial Reconstruction
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BPCL	Bharat Petroleum Corporation Limited
BSE	Bombay Stock Exchange
BSES	Bombay Suburban Electric Supply
BT	British Telecom
CAG	Comptroller and Auditor General
CAGR	Compound annual growth rate
CAR	Capital Adequacy Ratio
CBI	Central Bureau of Investigation
CBIC	Central Board of Indirect taxes and Customs
CBU	Completely Built Unit
CCEA	Cabinet Committee on Economic Affairs
CCIL	Container Corporation of India Ltd
CCT	Conditional Cash Transfers
CD	Convertible Debenture
CGD	Core Group of Disinvestment
CIBIL	Credit Information Bureau Ltd
CIP	Central Issue Prices
CKD	Completely- Knocked Down
CMCL	Computer Management Corporation Ltd
CPI-IW	Consumer Price Index-Industrial Workers
CPs	Commercial papers
CPSE	Central Public Sector Enterprises
CRILC	Central Repository of Information on large Corporates
CSO	Central Statistics Office
CVC	Central Vigilance Commission
DBT	Direct Benefit Transfers
DCA	Department of Consumer Affairs
DGCI&S	Directorate General of Commerce Intelligence & Statistics
DHFL	Dewan Housing Finance Limited
DICGC	Deposit Insurance and Credit Guarantee Corporation
DID	Difference-in-differences
DII	Domestic Institutional Investors
DIPAM	Department of Investment and Public Asset Management
DPCO	Drugs Prices Control Order
DRT	Debt Recovery Tribunals
DVA	Domestic Value Added
ECA	Essential Commodities Act
EIL	Engineers India Limited
e-NAM	e-National Agricultural Market
EoDB	Ease of Doing Business
ESOP	Employee Stock Option Plan
ETF	Exchange Traded Funds
EU	European Union
FCI	Food Corporation of India
FDI	Foreign Direct Investment
FE	Fixed Effect
FEMA	Foreign Exchange Management Act
FII	Foreign Institutional Investors

FTA	Free Trade Agreement
FTC	Federal Trade Commission
FY	Financial Year
GDDP	Gross Domestic District Product
GDP	Gross Domestic Product
G-secs	Government Securities
GSFC	Gujarat State Fertilizers and Chemicals
GST	Goods and Services Tax
GVC	Global Value Chains
HCI	Hotel Corporation of India
HELP	Hydrocarbon Exploration and Licensing Policy
HFC	Housing Finance Company
HLAG	High Level Advisory Group
HPCL	Hindustan Petroleum Corporation Limited
HT	Hindustan Teleprinters
IBBI	Insolvency and Bankruptcy Board of India
IBC	Insolvency and Bankruptcy Code
IBP	Indo Bright Petroleum
ICD	Inland Container Depot
ICICI	Industrial Credit and Investment Corporation of India
IDBI	Industrial Development Bank of India
IEF	Index of Economic Freedom
IIP	Index of Industrial Production
ILFS	Infrastructure Leasing and Financial Services
IMF	International Monetary Fund
I-O	Input-Output
IOC	Indian Oil Corporation
IPCL	Indian Petrochemicals Corporation Limited
IPO	Initial Public Offer
IRDAI	Insurance Regulatory Development Authority of India
ISI	Indian Statistical Institute
ISWGNA	Inter-Secretariat Working Group on National Accounts
IT	Information Technology
ITC	International Trade Centre
ITDC	Indian Tourism Development Corporation
JAM	Jan Dhan-Aadhaar Mobile
JNPT	Jawaharlal Nehru Port Trust
LDMFs	Liquid Debt Mutual Funds
MAPE	Maximum Allowable Post-manufacturing Expenses
MBA	Master of Business Administration
MCA	Ministry of Corporate Affairs
MFI	MicroFinance Institutions
MFIL	Modern Food Industries Limited
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MMTCL	Minerals & Metals Trading Corporation Limited
MNE	Multi-National Enterprises
MPC	Marginal Propensity to Consume
MPCE	Monthly Per Capita Expenditure
MRTP	Monopolies and Restrictive Trade Practices
MSME	Micro, Small & Medium Enterprises
MSP	Minimum Support Price
MTNL	Mahanagar Telephone Nigam Limited
MUL	Maruti Udyog Limited
NBFC	Non-Banking Financial Corporation
NCD	Non-Convertible Debenture
NELP	New Exploration Licensing Policy
NFSA	National Food Security Act
NITI	National Institution for Transforming India
NLEM	National List of Essential Medicines
NMDC	National Mineral Development Corporation
NMSA	National Mission for Sustainable Agriculture
NP	Network Products
NPA	Non-Performing Asset
NPB	New Private Bank

NPPA	National Pharmaceutical Pricing Authority
NRAI	National Restaurants Association of India
NSO	National Statistics Office
NTC	National Textile Corporation
OECD	Organisation for Economic Co-operation and Development
ONGC	Oil and Natural Gas Commission
OPB	Old Private Bank
Opex Ratio	Operating Expense Ratio
P&C	Parts & Components
PAT	Profit after tax
PDPS	Price Deficiency Payment Scheme
PDS	Public Distribution System
PKVY	Paramparagat Krishi Vikas Yojana
PLFS	Periodic Labour Force Survey
PM-AASHA	Pradhan Mantri Annadata Aay SanraksHan Abhiyan
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMGSY	Pradhan Mantri Gram Sadak Yojana
PMJDY	Pradhan Mantri Jan Dhan Yojna
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
PPSS	Private Procurement & Stockist Scheme
PSB	Public Sector Banks
PSF	Price Stabilization Fund
PSS	Price Support Scheme
PSU	Public Sector Undertakings
RBI	Reserve Bank of India
RCEP	Regional Comprehensive Economic Partnership
REC	Rural Electrification Corporation
ROA	Return on Asset
ROE	Return on Equity
RPTs	Related Party Transactions
SAFTA	South Asian Free Trade Area
SAIL	Steel Authority of India Limited
SBI	State Bank of India
SCI	Shipping Corporation of India
SDG	Sustainable Development Goal
SEBI	Securities and Exchange Board of India
SEC	Securities and Exchange Commission
SHRUG	Socioeconomic High-resolution Rural-Urban Geographic Dataset on India
SICA	Sick Industrial Companies Act
SIDBI	Small Industries Development Bank of India
SITC	Standard International Trade Classification
SKD	Semi- Knocked Down
SMEs	Small and Mid-Size Enterprises
SNA	System of National Accounts
T-bills	Treasury Bills
TFP	Total Factor Productivity
TPDS	Targeted Public Distribution System
UN	United Nations
UNIDO	United Nations Industrial Development Organisation
UNSC	United Nations Statistical Commission
USA	United States of America
USD	United States Dollar
WCO	World Customs Organization
WDI	World Development Indicators
WIPO	World Intellectual Property Organization
YoY	Year - over - Year

Wealth Creation: The Invisible Hand Supported by the Hand of Trust

01
CHAPTER

பொருளென்னும் பொய்யா விளக்கம் இருளறுக்கும்
எண்ணிய தேயத்துச் சென்று

"Wealth, the lamp unfailing, speeds to every land,
Dispersing darkness at its lord's command."
– Thirukural, Chapter 76, verse 753.

செய்க பொருளைச் செறுநர் செருக்கறுக்கும்
எஃகதிற் கூரிய தில்

"Make money – there is no weapon sharper than it
to sever the pride of your foes."
– Thirukural, Chapter 76, verse 759.

For more than three-fourths of known economic history, India has been the dominant economic power globally. Such dominance manifested by design. During much of India's economic dominance, the economy relied on the invisible hand of the market for wealth creation with the support of the hand of trust. Specifically, the invisible hand of markets, as reflected in openness in economic transactions, was combined with the hand of trust by appealing to ethical and philosophical dimensions.

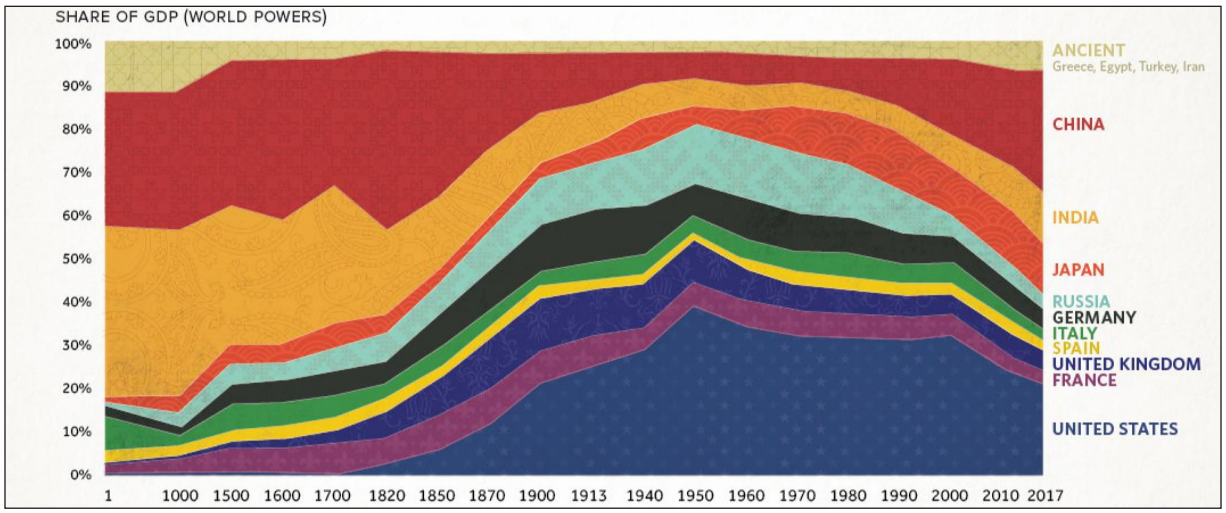
The Survey shows that contemporary evidence following the liberalization of the Indian economy support the economic model advocated in our traditional thinking. The exponential rise in India's GDP and GDP per capita post liberalisation coincides with wealth generation in the stock market. Similarly, the evidence across various sectors of the economy illustrates the enormous benefits that accrue from enabling the invisible hand of the market. Indeed, the Survey shows clearly that sectors that were liberalized grew significantly faster than those that remain closed. The events in the financial sector during 2011-13 and the consequences that followed from the same illustrate the second pillar - the need for the hand of trust to support the invisible hand.

The Survey posits that India's aspiration to become a $5 trillion economy depends critically on strengthening the invisible hand of markets together with the hand of trust that can support markets. The invisible hand needs to be strengthened by promoting pro-business policies to (i) provide equal opportunities for new entrants, enable fair competition and ease doing business, (ii) eliminate policies that undermine markets through government intervention even where it is not necessary, (iii) enable trade for job creation, and (iv) efficiently scale up the banking sector to be proportionate to the size of the Indian economy. Introducing the idea of "trust as a public good that gets enhanced with greater use", the Survey suggests that policies must empower transparency and effective enforcement using data and technology to enhance this public good.

IMPORTANCE OF WEALTH CREATION

1.1 For more than three-fourths of known economic history, India has been the dominant economic power globally (Maddison, 2007). The country has historically been a major wealth creator and a significant contributor to world's GDP as shown in Figure 1.

Figure 1: Global contribution to world's GDP by major economies from 1 AD to 2003 AD



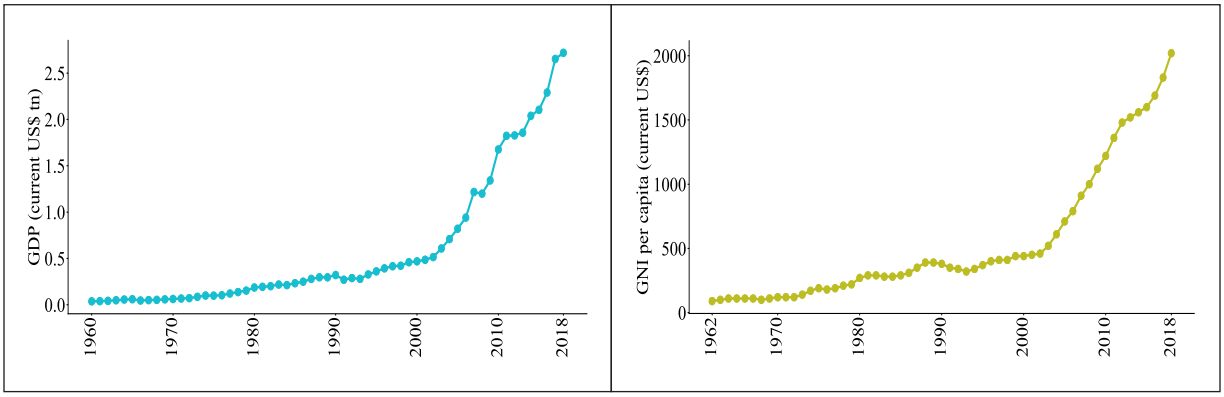
Source: Maddison A (2007). Note: X-axis of graph has non-linear scale, especially for 1-1500 AD, which underestimates the dominance of India.

1.2 Economic dominance over such long periods manifests by design, and not by mere chance. In this context, the Survey notes that our age-old traditions have always commended wealth creation. While *Kautilya's Arthashastra* is given as a canonical example, wealth creation as a worthy human pursuit is recognised by other traditional literature as well. The *Thirukural*, a treatise on enriching human life written in the form of couplets by Tamil saint and philosopher Thiruvalluvar, asserts in verses 753 of Chapter 76: "Wealth, the lamp unfailing, speeds to every land; Dispersing darkness at its lord's command." In verse 759 of the same chapter, which forms the second part of the *Thirukural* called Porul Paal or the essence of material wealth, Thiruvalluvar, declares: "Make money – there is no weapon sharper than it to sever the pride of your foes." Needless to say, *Thirukural* advocates wealth creation through ethical means – an aspect that is discussed later in this chapter. Verse 754 in the same chapter avows: "(Wealth) yields righteousness and joy, the wealth acquired capably without causing any harm."

1.3 Despite such a "rich" tradition of emphasizing wealth creation, India deviated from this model for several decades after independence. However, India returned back to these roots post economic liberalisation in 1991. The exponential rise in India's GDP and GDP (Figure 2a) per capita (Figure 2b) post liberalisation coincides with wealth generation in the stock market (Figure 3). Sensex has not only grown after 1991, but has grown at an accelerating pace. Whereas crossing the first incremental 5000 points took over 13 years from its inception in 1986, the time taken to achieve each incremental milestone has substantially reduced over the years. Note that the acceleration in the Sensex was not due to the base effect. In fact, the higher acceleration stemmed from higher cumulative annual growth rate (CAGR).

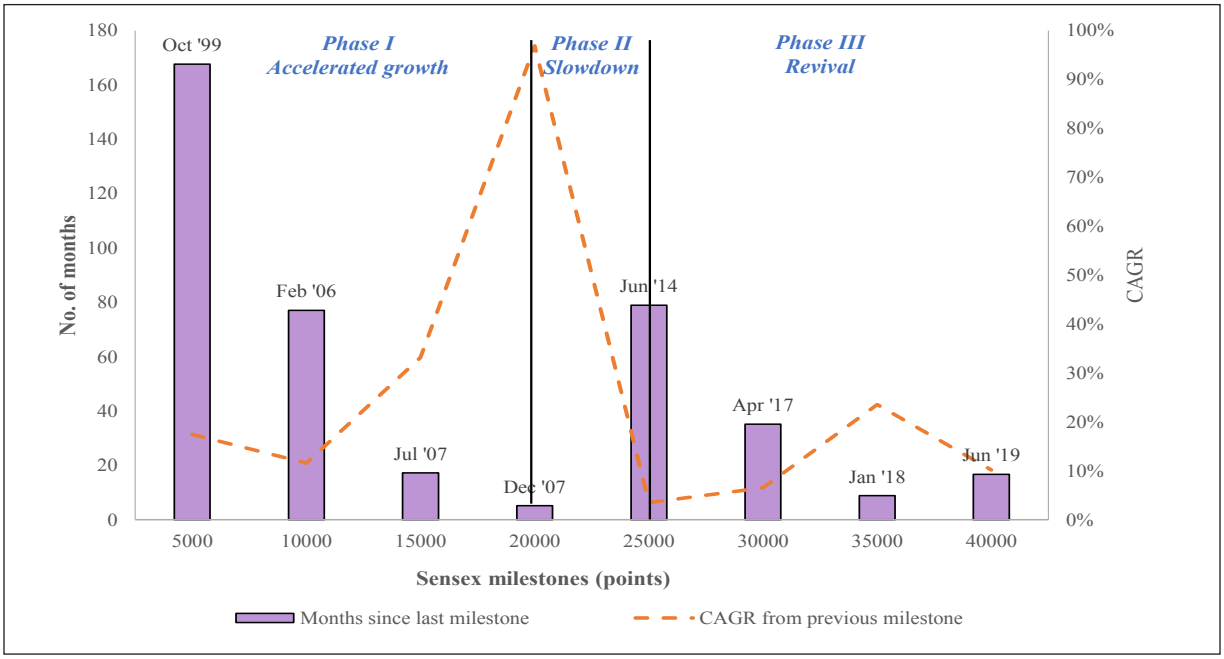
Figure 2a: India's GDP (current US$ tn) (1960-2018)

Figure 2b: India's GDP per capita (current US$) (1960-2018)



Source: World Bank

Figure 3: Incremental months taken for Sensex to cross each 5000-point milestone

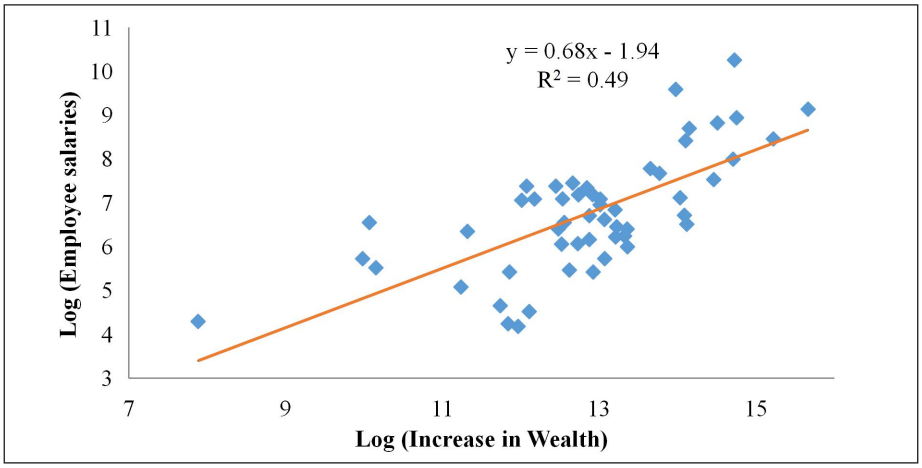


Source: BSE.

Note: Time to cross each milestone is defined as the time elapsed between the first time the Sensex closed at the previous milestone and the first time it closed at the present milestone. Note that milestones are based on closing prices. Time elapsed is recorded as number of calendar days and converted to months assuming 30 days a month.

1.4 Yet, given India's "tryst" with socialism, it is essential to emphasise its benefits in today's milieu. To understand the benefits from wealth creation, we collate the companies created by top 100 wealthy entrepreneurs in the country as estimated by Forbes in March 2019. After excluding those with tainted wealth by applying several filters, we correlate the increase in the entrepreneur's wealth over a decade (31-Mar-2009 to 31-Mar-2019) with the benefits that accrued to several other stakeholders including employees, suppliers, government, etc. Figure 4 shows that the wealth created by an entrepreneur correlates strongly with benefits that accrue to the employees working with the entrepreneur's firms.

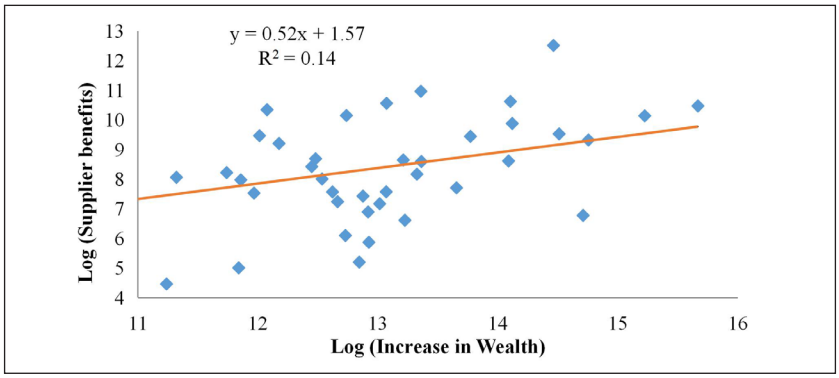
Figure 4: Wealth Creation and Salaries paid to Employees



Source: Forbes, CMIE, Capitaline, Bloomberg and Survey calculations.

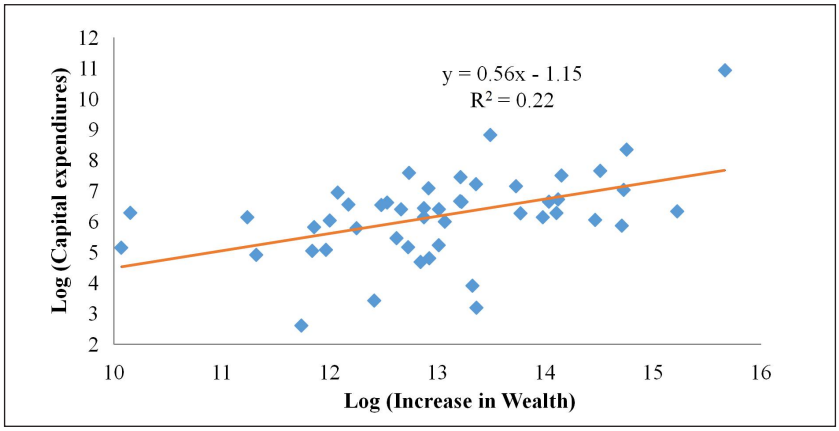
1.5 Figure 5 shows that the wealth created by an entrepreneur correlates strongly with raw materials procured by the entrepreneur's firms, which proxies the benefits that suppliers reap by supplying raw materials to the entrepreneur's firms. Similarly, Figure 6 shows that the wealth created by an entrepreneur correlates strongly with the capital expenditures made by the entrepreneur's firms, which proxies the benefits that manufacturers of capital equipment reap by supplying such equipment to the entrepreneur's firms.

Figure 5: Wealth Creation and Benefits reaped by Suppliers



Source: Forbes, CMIE, Capitaline, Bloomberg and Survey calculations.

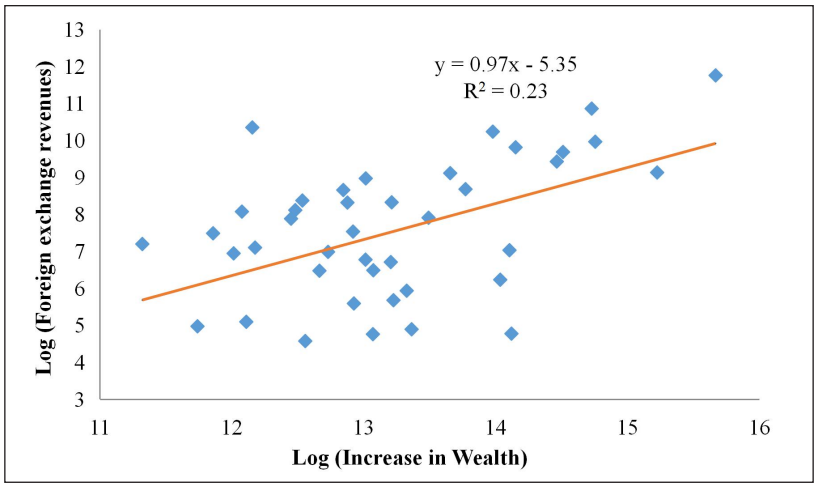
Figure 6: Wealth Creation and Capital Expenditures



Source: Forbes, CMIE, Capitaline, Bloomberg and Survey calculations.

1.6 Revenues earned in foreign exchange enable macroeconomic stability by enabling the country to pay for its imports and keeping the current account deficit at manageable levels. Figure 7 shows that the wealth creation by entrepreneurs correlates strongly with the foreign exchange revenues earned by the entrepreneurs' firms.

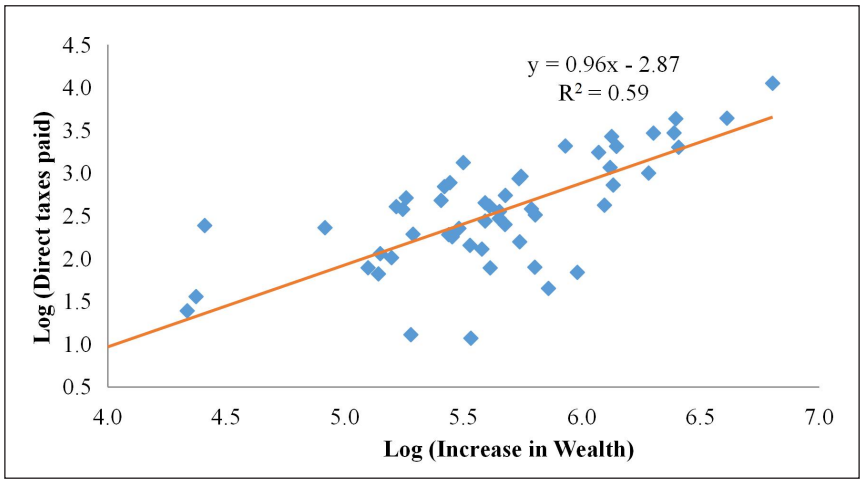
Figure 7: Wealth Creation and Foreign Exchange Revenues



Source: Forbes, CMIE, Capitaline, Bloomberg and Survey calculations.

1.7 Finally, Figure 8 shows that the wealth created by an entrepreneur helps the country's common citizens. Tax revenues enable Government spending on creating public goods and providing welfare benefits to the citizens. We correlate the wealth created by the entrepreneur with the direct taxes paid. Clearly, direct taxes underestimate the benefits accruing to the Government because it does not include the indirect taxes paid by the entrepreneur's firms, the direct taxes paid by the employees or the suppliers. Yet, as a proxy for the benefits accruing to the citizens through spending of tax revenues by the Government, this figure captures the benefits accruing to the country's common citizens. Therefore, the strong correlation of wealth creation by entrepreneurs to the taxes paid represents another important benefit to society from wealth creation.

Figure 8: Wealth Creation and Direct Tax Inflows



Source: Forbes, CMIE, Capitaline, Bloomberg and Survey calculations.

WEALTH CREATION THROUGH THE INVISIBLE HAND OF MARKETS

1.8 Wealth creation happens in an economy when the right policy choices are pursued. For instance, wealth creation and economic development in several advanced economies has been guided by Adam Smith's philosophy of the invisible hand. Despite the dalliance with socialism – four decades is but an ephemeral period in a history of millennia – India has embraced the market model that represents our traditional legacy. However, scepticism about the benefits accruing from a market economy still persists. This is not an accident as our tryst with socialism for several decades' makes most Indians believe that Indian economic thought conflicts with an economic model relying on the invisible hand of the market economy. However, this belief is far from the truth.

1.9 In fact, our traditional economic thinking has always emphasized enabling markets and eliminating obstacles to economic activity. As far as half-a-century back, Spengler (1971) wrote that Kautilya postulated the role of prices in an economy. Kautilya (p. 149) averred, "The root of wealth is economic activity and lack of it brings material distress. In the absence of fruitful economic activity, both current prosperity and future growth are in danger of destruction. A king can achieve the desired objectives and abundance of riches by undertaking productive economic activity (1.19)". Kautilya advocates economic freedom by asking the King to "remove all obstructions to economic activity" (Sihag, 2016).

1.10 A key contributor to ancient India's prosperity was internal and external trade. Two major highways Uttarapatha (the Northern Road) and Dakshinapatha (the Southern Road) and its subsidiary roads connected the sub-continent. Meanwhile, ports along India's long coastline traded with Egypt, Rome, Greece, Persia and the Arabs to the west, and with China, Japan and South East Asia to the east (Sanyal, 2016). Much of this trade was carried out by large corporatized guilds akin to today's multinationals and were funded by temple-banks. Thus, commerce and the pursuit of prosperity is an intrinsic part of Indian civilizational ethos.

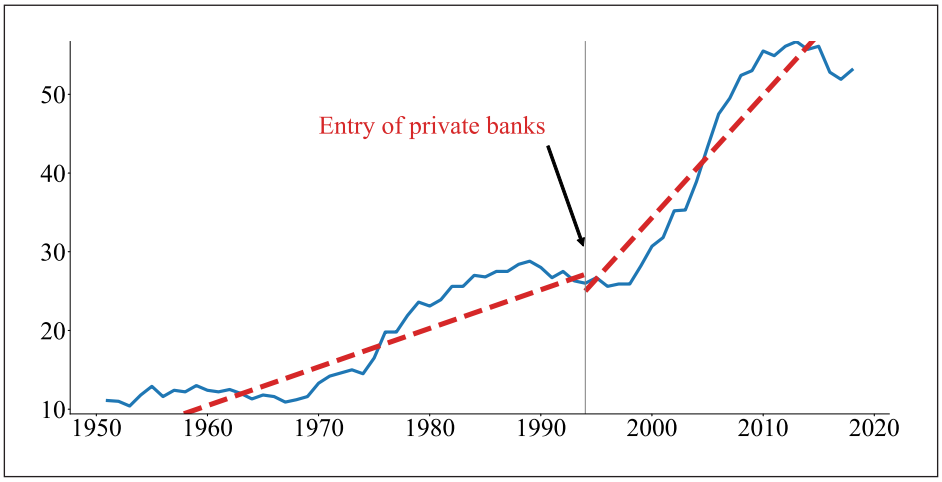
1.11 Much before the time period that Maddison (2007) analyses, a stakeholders-model existed in India as is discernible in *Arthashastra* in which entrepreneurs, workers and consumers share prosperity (Deodhar, 2018). *Arthashastra* as a treatise on economic policy was deeply influential in the functioning of the economy until the 12th century (Olivelle, 2013). During much of India's economic dominance, the economy relied on the invisible hand of the market.

1.12 As wealth creation happens by design, the overarching theme of Economic survey 2019-20 is wealth creation and the policy choices that enable the same. At its core, policies seek to maximize social welfare under a set of resource constraints. Resource constraints force policymakers to focus on efficiency, which more output to be produced from given resources such as land, human resources and capital, or, the same output for less resource use.

1.13 The evidence since 1991 shows that enabling the invisible hand of markets, i.e., increasing economic openness, has a huge impact in enhancing wealth both in the aggregate and within sectors. Indeed, the evidence presented below shows clearly that sectors that were liberalized grew significantly faster than those that remain closed. This is not surprising as the market economy is based on the principle that optimal allocation of resources occurs when citizens are able to exercise free choice in the products or services they want. Figure

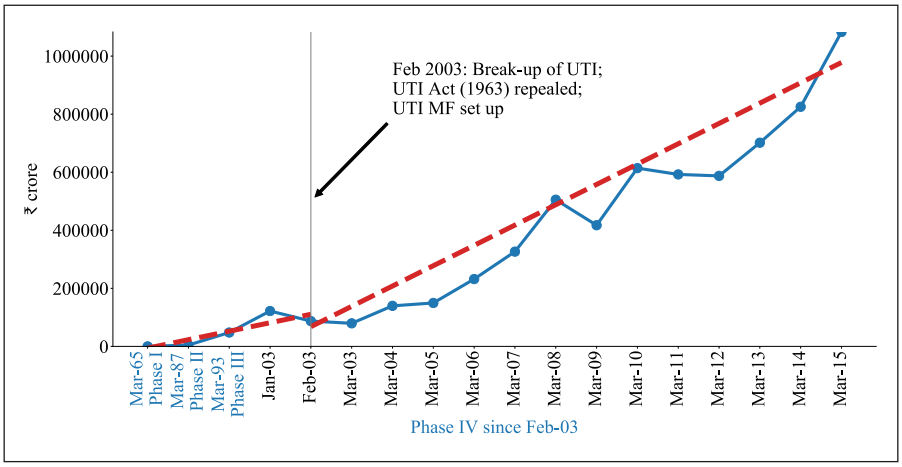
9 shows how credit in the banking sector expanded at much higher rates after the sector was opened for competition through licenses granted to private sector banks. As competition expanded the banking choices available to citizens, the sector experienced strong growth. Figure 10 shows a similar effect in the mutual funds sector following its opening up to competition in 2003. In Figures 11-14, we examine growth in an open sector, which is defined as one where citizens can choose among many different producers, vis-à-vis a closed sector, where the citizen cannot exercise this choice. Figure 11 shows the growth in the cargo volumes in an open sector (small ports) versus a closed sector (large ports). Figure 12 shows the same for open sectors such as cement and steel versus a closed sector such as coal. Figures 13 and 14 show the growth in freight and passenger traffic in an open sector (roads) when compared to a closed sector (railways). Across Figures 11-14, we see that growth has been significantly greater in the open sector than in the closed sector. Figures 9-14 thus highlight the positive impact of enabling economic choice for citizens in the economy.

Figure 9: Increase in domestic credit to GDP after entry of private sector banks



Source: World Bank WDI and Survey calculations.

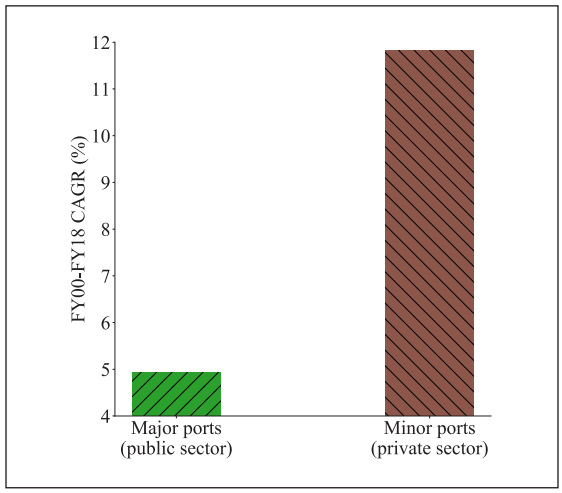
Figure 10: Growth in mutual funds sector after opening up in 2003



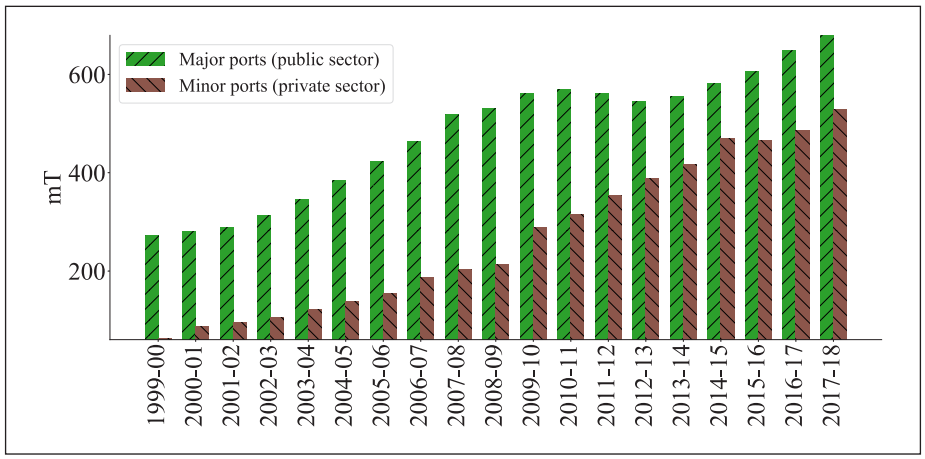
Source: AMFI data and Survey calculations.

Figure 11: Growth in the ports sector: open (minor ports) versus closed (major ports)

Cumulative Annual Growth rates

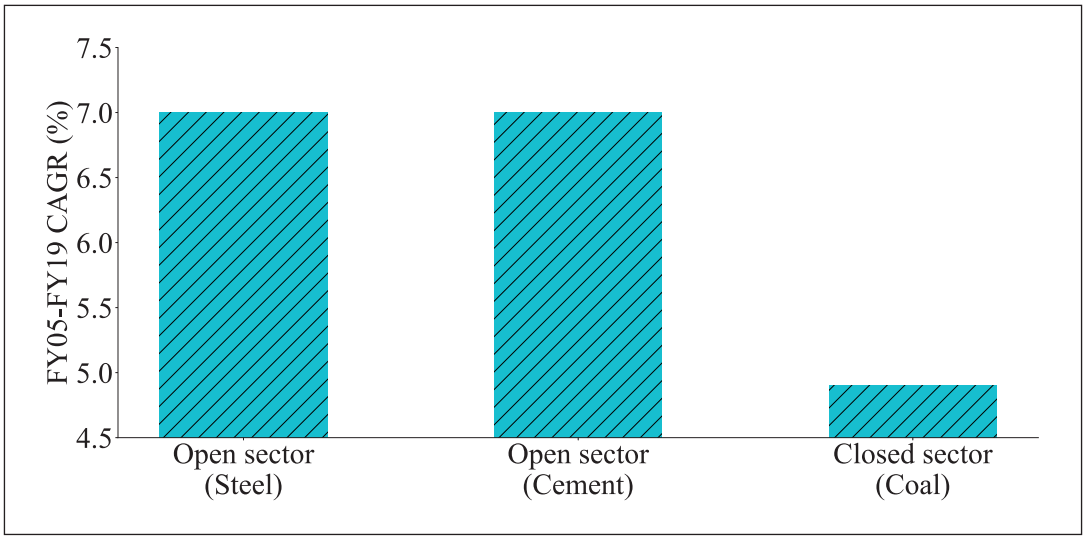


Cargo volumes in the Ports



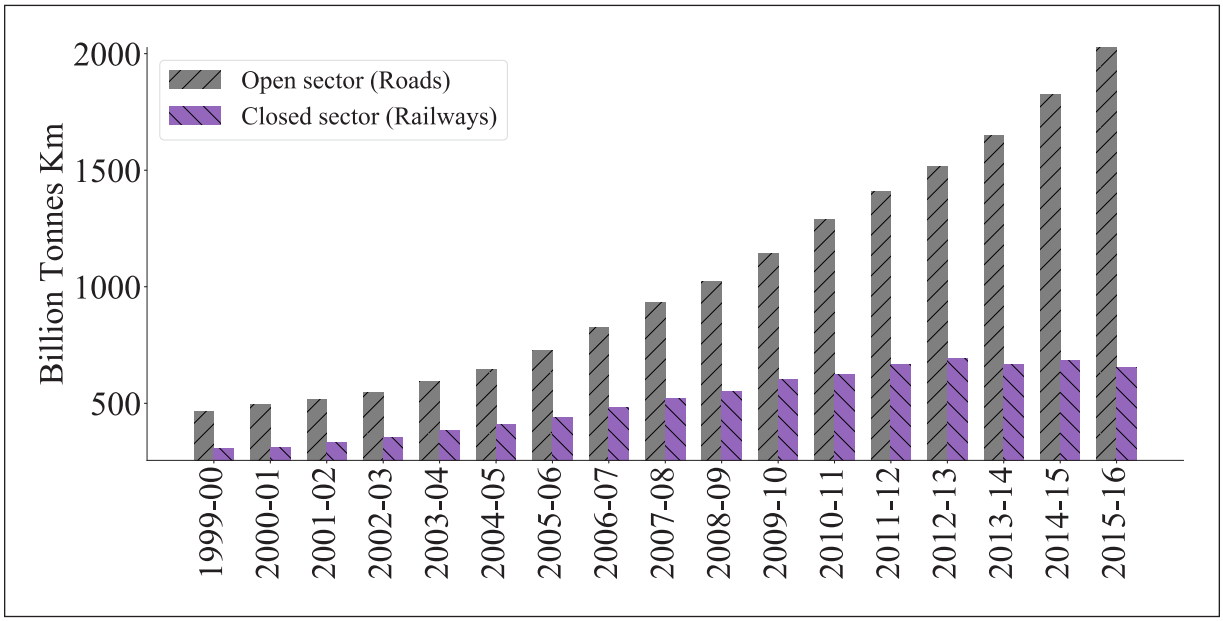
Source: CMIE, Company Annual reports and Survey calculations.

Figure 12: Annual growth rates in open sectors (steel and cement) versus closed sector (coal)



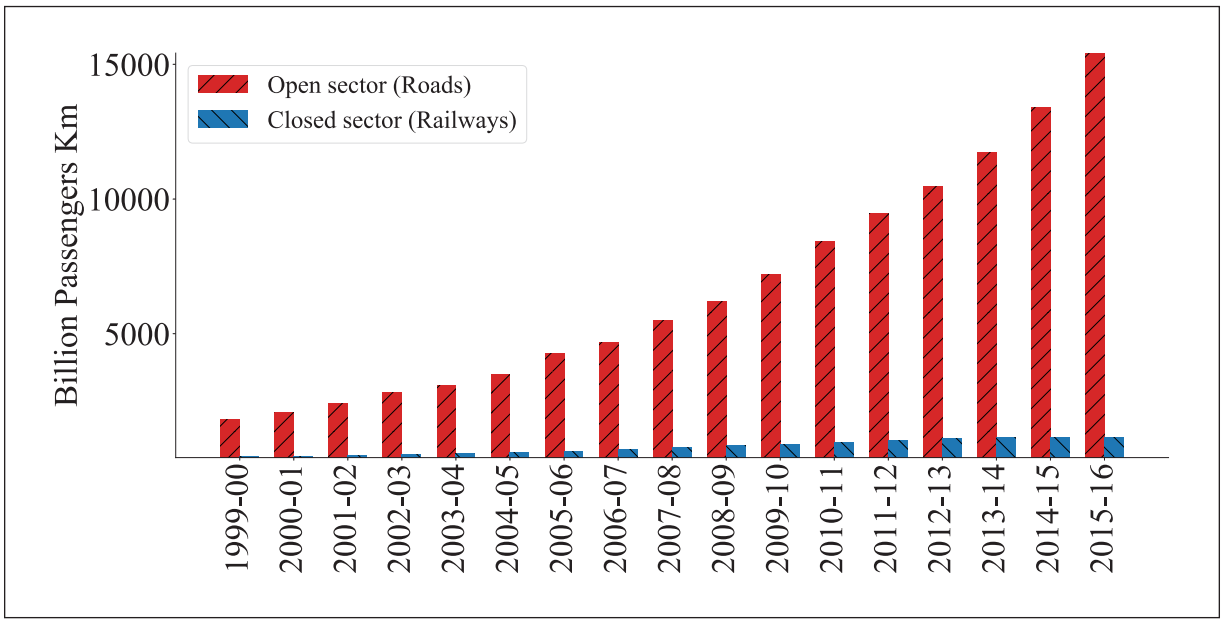
Source: CMIE, Company Annual reports and Survey calculations.

Figure 13: Growth in freight traffic across open sector (roads) and closed sector (railways)



Source: CMIE, Company Annual reports and Survey calculations.

Figure 14: Growth in passenger traffic across open sector (roads) and closed sector (railways)



Source: CMIE, Company Annual reports and Survey calculations.

THE INSTRUMENTS FOR WEALTH CREATION

1.14 As argued above, enhancing efficiency is crucial for wealth creation. A key dimension of efficiency pertains to opportunity. Equal opportunity for new entrants is important because, as the survey shows in *Chapter 2 (Entrepreneurship and Wealth Creation at the grassroots)*, a 10 per cent increase in new firms in a district yields a 1.8 per cent increase in Gross Domestic District Product (GDDP). This effect manifests consistently both across districts as shown in Figure 15a and across

regions as shown in Figure 16. This impact of new firm creation on district-level GDP demonstrates that grassroots entrepreneurship is not just driven by necessity. Figure 15b, in fact, clearly demonstrates that, though the peninsular states dominate entry of new firms, enterpreneurship is dispersed across India and is not restricted just to a few metropolitan cities. The chapter shows using data from World Bank's enterpreneurship data that new firm creation has gone up dramatically since 2014. While the number of new firms grew at a cumulative annual growth rate of 3.8 per cent from 2006-2014, the growth rate from 2014 to 2018 has been 12.2 per cent. As a result, from about 70,000 new firms created in 2014, the number has grown by about 80 per cent to about 1,24,000 new firms in 2018. Equal opportunity for new entrants in entrepreneurship enables efficient resource

Figure 15a: Estimation of the Impact of Entrepreneurial Activity on GDDP

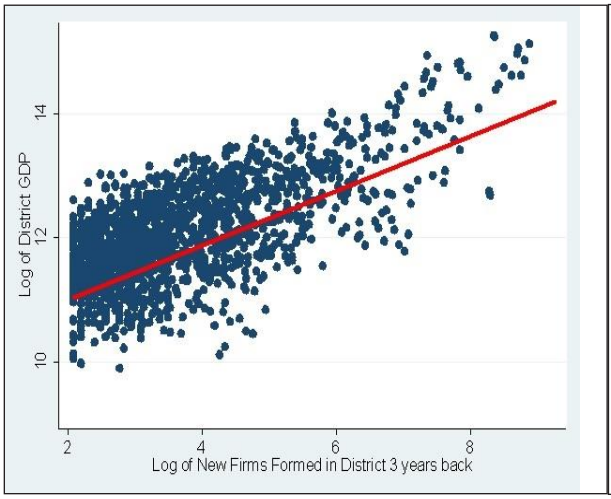
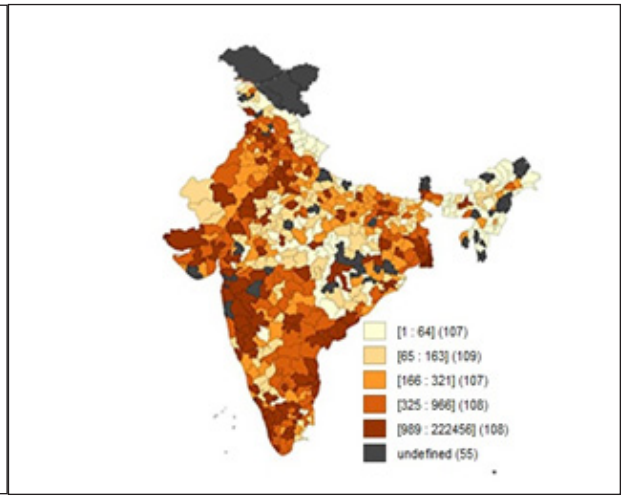
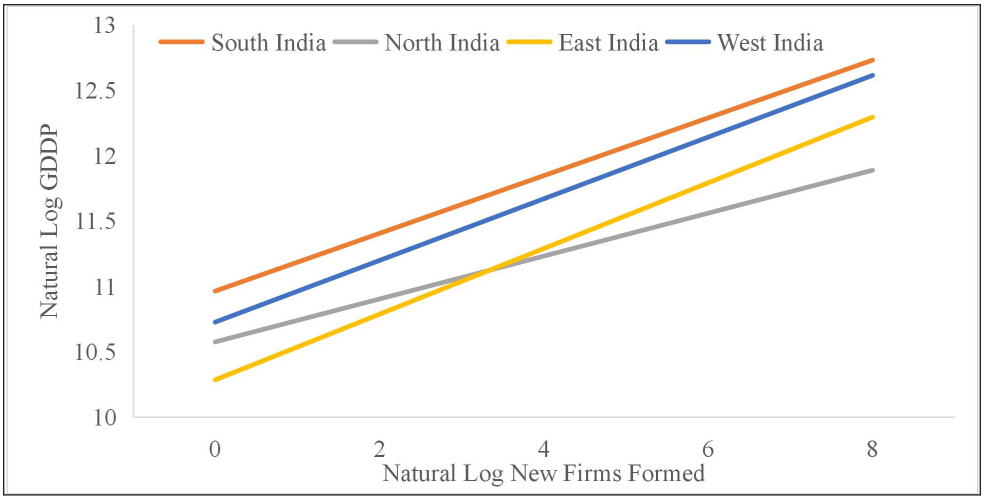


Figure 15b: Distribution of New Firms across Districts



Source: Ministry of Corporate Affairs (MCA) - 21 database, CEIC India Premium database

Figure 16: Impact across regions of new firm creation on District level GDP after 3 years



Source: Ministry of Corporate Affairs (MCA) - 21 database, CEIC India Premium database

allocation and utilization, facilitates job growth, promotes trade growth and consumer surplus through greater product variety, and increases the overall boundaries of economic activity.

1.15 A key dimension of opportunity pertains to that between new entrants and incumbents. While incumbents are likely to be powerful, influential, and have a voice that is heard in the corridors of power, new entrants are unlikely to possess these advantages. Yet, new entrants bring path-breaking ideas and innovation that not only help the economy directly but also indirectly by keeping the incumbents on their toes. Therefore, the vibrancy of economic opportunities is defined by the extent to which the economy enables fair competition, which corresponds to a "pro-business" economy. This is in contrast to the influence of incumbents in extracting rents from their incumbency and proximity to the corridors of power, which corresponds to "pro-crony" economy. It is crucial in this taxonomy to relate the term "pro-business" to correspond to an economy that enables fair competition for every economic participant. Given this backdrop, do new entrants have equal opportunity of wealth creation as the incumbents? *Chapter 3 (Pro-business versus pro-crony)* presents evidence on how efficient the Indian economy has been in terms of opportunity for new entrants against established players for wealth creation. Economic events since 1991 provide powerful evidence that supports providing equal opportunity for new entrants to unleash the power of competitive markets to generate wealth. India's aspiration to become a $5 trillion economy depends critically on promoting pro-business policies that provide equal opportunities for new entrants. The Survey makes the case that the churn create by a healthy pro-business system generates greater wealth than a static pro-crony system. Note that the Survey contrasts two systems; the arguments are not directed at any individual or entity.

1.16 Greater wealth creation in a market economy enhances welfare for all citizens. Chapter 3 of the Survey presents evidence of wealth creation in the economy post-liberalisation. For instance, the Sensex reached the 5,000 mark for the first time in 1999 from its base of 100 points in 1978. It was less than 1,000 points in early 1991 when India moved to a market economy from a command economy. Since then, the market capitalization based index has seen unprecedented growth as shown in Figure 3. This unprecedented growth after 1999 can be divided into three phases. Phase I from 1999 to 2007 saw acceleration in the growth of the Sensex, with each successive 5000-point mark taking lesser and lesser time to achieve. Phase II from 2007 to 2014 saw a slowdown in the index's growth. Phase III began in 2014 and saw a revival in response to structural reforms. Strikingly, in this phase, the Sensex jumped from the 30,000 mark to the 40,000 mark in just two years. As the CAGR shown in Figure 3 depict clearly, the acceleration in the Sensex was not due to the base effect. In fact, the higher acceleration stemmed from higher CAGR. Thus, there has been unprecedented wealth creation in the economy since 1991.

1.17 The freedom to choose is best expressed in an economy through the market where buyers and sellers come together and strike a bargain via a price mechanism. Where scarcity prevails and choice between one use of scarce resources and another must be made, the market offers the best mechanism to resolve the choice among competing opportunities. This principle is fundamental to a market economy. The command and control approach contends that the price of a good should be regulated. Our economy still has some of the regulatory relics of the pre-liberalisation era. The survey provides evidence in *Chapter 4 (Undermining*

Markets: When Government Intervention Hurts More Than It Helps) that government intervention hurts more than it helps in the efficient functioning of markets. For instance, in the pharmaceutical industry, government regulated formulation prices increase more than unregulated formulations. Moreover, the supply of unregulated formulations is more than that of regulated formulations. Government interventions often times lead to unintended consequences such as price increases, when compared to markets that are unregulated. Unlike in command economies where prices are determined by the government, in a market economy, price of a good is determined by the interaction of the forces of supply and demand. The survey finds that unshackling the economic freedom for markets augments wealth creation.

1.18 Yet another dimension of efficiency concerns allocation of resources to ensure their optimal use. Since resources are limited, a nation has to make choices. For example, given its demographic dividend, should India focus on labour-intensive industries or on capital intensive industries? *Chapter 5 (Creating Jobs and Growth by Specializing to Exports in Network Products)* answers this question to lay out a clear-headed strategy for creating crores of jobs through our export policies. The survey finds that by integrating "Assemble in India for the world" into Make in India, India can create 4 crore well-paid jobs by 2025 and 8 crore by 2030. Our trade policy must be an enabler because growth in exports provides a much-needed pathway for job creation in India.

1.19 As discussed in *Chapter 6 (Improving Ease of Doing Business in India)*, the ease of doing business has increased substantially in the last five years from reforms that provided greater economic freedom. India made a substantial leap forward in The World Bank's Doing Business rankings from 142 in 2014 to 63 in 2019. The Doing Business 2020 report has recognized India as one of the ten economies that have improved the most.

1.20 Yet, the pace of reforms in enabling ease of doing business need to be enhanced so that India can be ranked within the top 50 economies on this metric. India continues to trail in parameters such as Ease of Starting Business, Registering Property, Paying Taxes, and Enforcing Contracts. Chapter 6 identifies the most crucial issues plaguing India's performance beyond the approach taken by the World Bank's surveys. It also demonstrates the specific points in the supply-chain of exports and imports that experience inordinate delays and blockages. Although, the Authorized Economic Operators Scheme has smoothed the process for registered electronics exporters/importers, much more needs to be done. A holistic assessment and a sustained effort to ease business regulations and provide an environment for businesses to flourish would be a key structural reform that would enable India to grow at a sustained rate of 8-10 per cent per annum. This requires a nuts-and-bolts approach of feedback loops, monitoring and continuous adjustment.

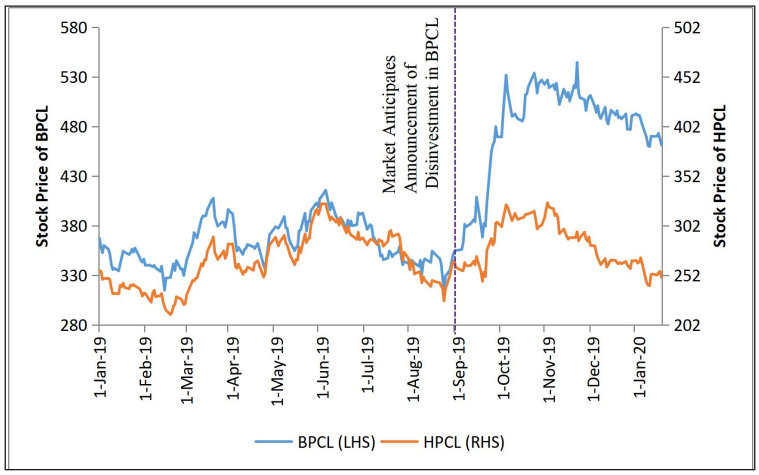
1.21 An efficient financial sector is extremely crucial for enhancing efficiency in the economy. Historically, in the last 50 years, the top-five economies have always been ably supported by their banks. The support of the U.S. Banking system in making the U.S. an economic superpower is well documented. Similarly, in the eighties during the heydays of the Japanese economy, Japan had 15 of the top 25 largest banks then. In recent times, as China has emerged as an economic superpower, it has been ably supported by its banks—the top four largest banks globally are all Chinese banks. The largest bank in the world—Industrial and Commercial Bank of China—is nearly two times as big as the 5th or 6th largest bank, which are Japanese and American banks respectively.

1.22 *Chapter 7 (Golden Jubilee of Bank Nationalisation: Taking Stock)* shows that India's banking sector is disproportionately under-developed given the size of its economy. For instance, India has only one bank in the global top 100 – same as countries that are a fraction of its size: Finland (about 1/11th), Denmark (1/8th), Norway (1/7th), Austria (about 1/7th), and Belgium (about 1/6th). Countries like Sweden (1/6th) and Singapore (1/8th) have thrice the number of global banks as India. A large economy needs an efficient banking sector to support its growth. As PSBs account for 70 per cent of the market share in Indian banking, the onus of supporting the Indian economy and fostering its economic development falls on them. Yet, on every performance parameter, PSBs are inefficient compared to their peer groups. The chapter suggests some solutions that can make PSBs more efficient so that they are able to adeptly support the nation in creating wealth commensurate with a $5 trillion economy.

1.23 The shadow banking sector, which has grown significantly in India, accounts for a significant proportion of financial intermediation especially in those segments where the traditional banking sector is unable to penetrate. *Chapter 8 (Financial Fragility in the NBFC Sector)* constructs a diagnostic to track the health of the shadow banking sector and thereby monitor systemic risk in the financial sector.

1.24 *Chapter 9 (Privatization and Wealth Creation)* uses the change in performance of Central Public Sector Enterprises (CPSEs) after privatization to show the significant efficiency gains that are obtained when the private sector runs businesses instead of the government. Figure 17 provides a compelling illustration using the announcement of the privatisation of Bharat Petroleum Corporation Limited (BPCL) by comparing to its peer Hindustan Petroleum Corporation Limited (HPCL). We focus on the difference in BPCL and HPCL prices from September 2019 onwards when the first news of BPCL's privatization appeared.[1] The comparison of BPCL with HPCL ensures that the effect of any broad movements in the stock market or in the oil industry is netted out. We note in Figure 17 that the stock prices of HPCL and BPCL moved synchronously till September. However, the divergence in their stock prices started post the announcement of BPCL's disinvestment. The increase in the stock price of BPCL when compared to the change in the price of HPCL over the same period translates into an increase in the value of shareholders'

Figure 17: Comparison of Stock Prices of BPCL and HPCL



Source: BSE, Survey Calculations

[1] https://www.livemint.com/market/mark-to-market/why-privatization-of-bpcl-will-be-a-good-thing-for-all-stakeholders-1568309050726.html

equity of BPCL of around ₹ 33,000 crore. As there was no reported change in the values of other stakeholders, including employees and lenders, during this time, the ₹ 33,000 crore increase translates into an unambiguous increase in the BPCL's overall firm value, and thereby an increase in national wealth by the same amount.

1.25 The analysis in this chapter reveals that key financial indicators such as net worth, net profit and return on assets of the privatized CPSEs, on an average, have increased significantly in the post-privatization period compared to the peer firms. This improved performance holds true for each CPSE taken individually as well.

1.26 The ultimate measure of wealth in a country is the GDP of the country. As investors deciding to invest in an economy care for the country's GDP growth, uncertainty about its magnitude can affect investment. Therefore, the recent debate about India's GDP growth rates following the revision in India's GDP estimation methodology in 2011 assumes significance, especially given the recent slowdown in the growth rate. Using careful statistical and econometric analysis that does justice to the importance of this issue, *Chapter 10 (Is India's GDP Growth Rate Overstated? No!)* finds no evidence of mis-estimation of India's GDP growth. Consistent with the hand of trust supporting the invisible hand, the Survey provides careful evidence that India's GDP growth estimates can be trusted.

1.27 Wealth creation in the economy must ultimately enhance the livelihood of the common person by providing him/her greater purchasing power to buy goods and services. A plate of nutritious food for the common man – a Thali – is a basic item that every person encounters every day. Therefore, there cannot be a better way to communicate whether or not economic policies make the common man better off than quantifying what he/she pays for a Thali every day. *Chapter 11 (Thalinomics: The Economics of a Plate of Food in India)* constructs an index of Thali prices across around 80 centres in 25 States/UTs in India from April 2006 to March 2019. The survey presents evidence in using an elementary indicator of price stability—a Thali— that a nourishing plate of food has become more affordable for a common man now.

1.28 This chapter aims to relate economics to the common person. Through the chapter on the "Behavioural Economics of Nudge", the Economic Survey 2018-19 made a humble attempt to understand humans as humans, not self-interested automatons, so that the common person can relate to his/her idiosyncrasies and use that easy prism to understand behavioural change as an instrument of economic policy. The Economic Survey 2019-20 continue this modest endeavour of relating economics to the common person using something that he or she encounters every day – a plate of food.

THE BREAKDOWN OF TRUST IN THE EARLY YEARS OF THIS MILLENNIUM

1.29 In a market economy too, there is need for state to ensure a moral hand to support the invisible hand. As Sandel (2012) argues, markets are liable to debase ethics in the pursuit of profits at all cost. Trust contributes positively to access of both formal and informal financing (Guiso et al., 2004). Ancient philosophers consider trust as an important element in a society and postulated[2] that trust can be furthered by appealing to ethical and philosophical dimensions. Along these lines, the Survey introduces "trust as a public good that gets enhanced with greater use" (see Box 1). As

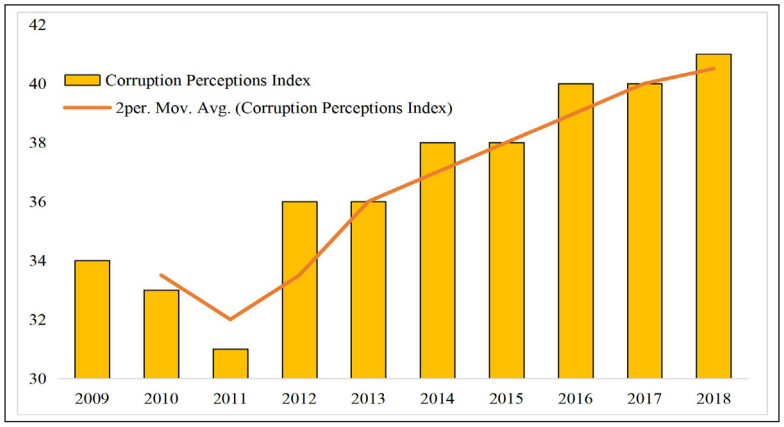
[2] See Gneezy Rustichini (2000a, 2000b), Gneezy, Meier, and Rey-Biel (2011), Meier (2000a, 2000b) for economic research on intrinsic motivation.

Box 1 explains, philosophers such as Aristotle and Confucius (implicitly) viewed trust as a public good by explaining that "good laws make good citizens."

1.30 In the contemporary context, Zingales (2011) and Sapienza and Zingales (2012) highlight that the Global Financial Crisis represented a glaring instance of the failure of trust in a market economy. Closer home, the events around 2011 paint a similar picture.

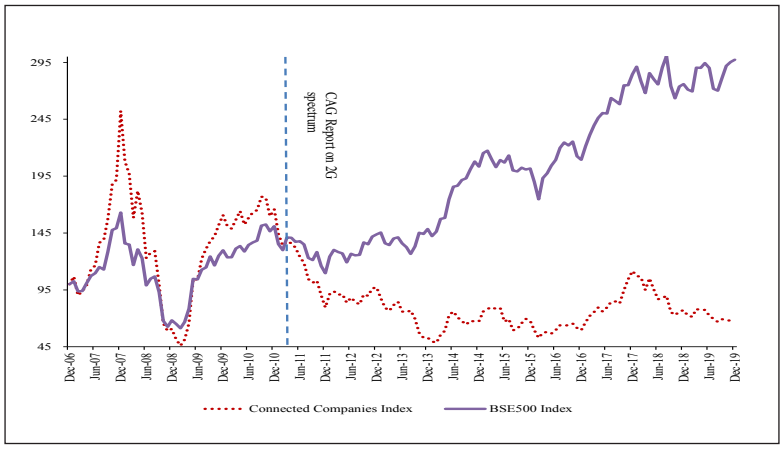
1.31 The corruption perception index, which Transparency International tracks across countries, shows India at its lowest point in recent years in 2011. Since 2013, India has improved significantly on this index (Figure 18). The phenomenon of trust deficit that developed in India during this period is also reflected in many other measures. As the survey shows in Chapter 4, prior to 2011, cronyism paid a firm and its shareholders. The index of "connected" firms - as defined and constructed by Ambit Capital consistently outperformed the BSE 500 index as shown in Figure 19. "Connected" firms however have consistantly underperformed the BSE 500 index post 2011. Chapter 4 also demonstrates how the discretionary allocation of natural resources before 2014 led to rent seeking by beneficiaries. In contrast, the competitive auction of natural resources after 2014 eliminated opportunities for such rent seeking.

Figure 18: Corruption Perceptions Index for India (low score = higher perceived corruption)



Source: Transparency International

Figure 19: Investor wealth generated by "connected" firms before and after 2011



Source: Ambit Capital research, Capitaline, BSE

Note: 1) The connected companies index is an aggregate market cap index which has been rebased and is adjusted for demergers, 2) 70 companies with political dependence and connectivity as on Dec'06 as per Ambit analysts.

Box 1: Trust as a public good: Aristotle and Kautilya vs. Machiavelli

The Survey introduces the idea of "trust as a public good that gets enhanced with greater use". Trust can be conceptualized as a public good with the characteristics of non-excludability i.e., the citizens can enjoy its benefits at no explicit financial cost. Trust also has the characteristics of non-rival consumption i.e., the marginal cost of supplying this public good to an extra citizen is zero. It is also non-rejectable i.e., collective supply for all citizens means that it cannot be rejected. Unlike other public goods, trust grows with repeated use and therefore takes time to build (Gambetta, 1998). Lack of trust represents an externality where decision makers are not responsible for some of the consequences of their actions.

Given the importance of trust in an economy, one might reasonably expect economic theory to address it, especially in the literature on transaction cost economics or incomplete contracts. However, this is not the case. Nobel laureate Oliver Williamson who specializes in transaction cost economics plainly states that there is no such thing as trust within economic activity: 'It is redundant at best and can be misleading to use the term "trust" to describe commercial exchange for which cost-effective safeguards have been devised in support of more efficient exchange. Calculative trust is a contradiction in terms' (Williamson, 1993, p. 463). Williamson does concede that there is a role of calculative co-operation based on incentives and governance structures: 'Machiavellian grabbing is not implied if economic agents have a more far-sighted understanding of the economic relations of which they are a part than myopic Machiavellianism ascribes to them' (Williamson, 1993, p. 474). He argues that calculative co-operation is more likely when agents have longer time horizons, which is also true for trust.

Equally, one would expect trust to be addressed in the incomplete contracts literature. The incomplete contracting paradigm was pioneered by Nobel laureate Oliver Hart with his co-authors Sanford Grossman, and John Moore. They argue that contracts cannot specify what is to be done in every possible contingency. So, it is reasonable to expect trust as a concept to be addressed in such a paradigm because economic agents will only risk entering into incomplete contracts if they trust their counterparts to adapt to unexpected outcomes in a manner that respects a fair division of economic returns. However, while the incomplete contracting literature analyses self-enforcing implicit contracts where myopic behaviour, i.e. opportunism, is restricted by concern for calculative, yet long-term, interest of either party (Baker et al. 1998).

In contrast to the transaction cost or incomplete contracting paradigm, individuals not only have material needs but also needs of self-esteem and self-actualization (Maslow, 1943). This view of humans relates directly to Benabou and Tirole (2006)'s schema, where people take actions to signal to themselves who they are. People's self-esteem needs could inter alia stem from their intrinsic motivation to be "trustworthy."

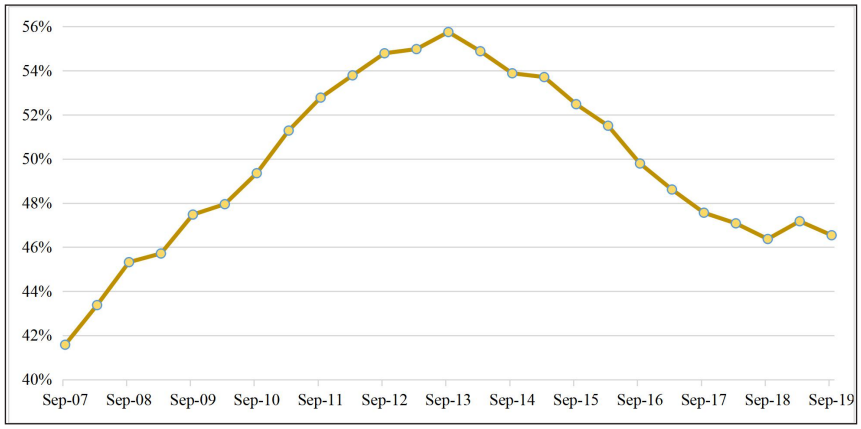
This contrast between modern economic theory's view of people as "knaves" derives from the view of humans that Machiavelli and Hume present. Hume (1964) for instance posits: "Every man ought to be supposed to be a knave and to have no other end, in all his actions, then in his private interest. By this interest we must govern him, and, by means of it, make him, notwithstanding his insatiable avarice and ambition, cooperate to public good." Economic policy today largely proceeds according to Hume's maxim.

Yet, Aristotle's view is in stark contrast to that of Hume or Machiavelli. Aristotle holds that "good laws make good citizens," by inculcating habits and social virtue. Confucius advices government that "Guide them with government orders, regulate them with penalties, and the people will seek to evade the law and be without shame. Guide them with virtue, regulate them with ritual, and they will have a sense of shame and become upright." People become "upright" when guided by "virtue" and regulated by "ritual" rather than by orders and penalties.

Kautilya is often presented as the Machiavelli of India. This is derived from a partial reading of the Arthashastra based on selectively quoting sections on spies and internal/external security. The Arthashastra literally means "The Treatise on Wealth" and it extensively discusses issues ranging from urban governance to tax administration and commerce. The book explicitly presents its intellectual framework right in the beginning by stating that good governance is based on the following branches of knowledge: Varta (economic policy), Dandaneeti (law and enforcement), Anvikshiki (philosophical and ethical framework) and Trayi (cultural context). The importance of Anvikshiki in Kautilya's writings is often ignored but is critical to understanding his worldview. Interestingly this mirrors Adam Smith who did not just advocate the "invisible hand" but equally the importance of "mutual sympathy" (i.e. trust). The same idea is reflected in the writings of Friedrich Hayek, who advocated not only economic freedom but also a set of general rules and social norms that applies evenly to everyone.

Aristotle's, Confucius' and Kautilya's notions may seem quaint in a 21st century worshipping self-interested greed. Yet, the events leading to and following the Global Financial Crisis clearly demonstrate that the intrinsic motivation to be "trustworthy" can generate trust as a public good while the intrinsic motivation of uninhibited greed can debase the same public good of trust. For instance, see Zingales (2011) and Sapienza and Zingales (2012) for the view that the Global Financial Crisis represented a glaring instance of the failure of trust in a market economy.

Figure 20: Proportion of Corporate Loan in Indian Non-Food Credit



Source: RBI.

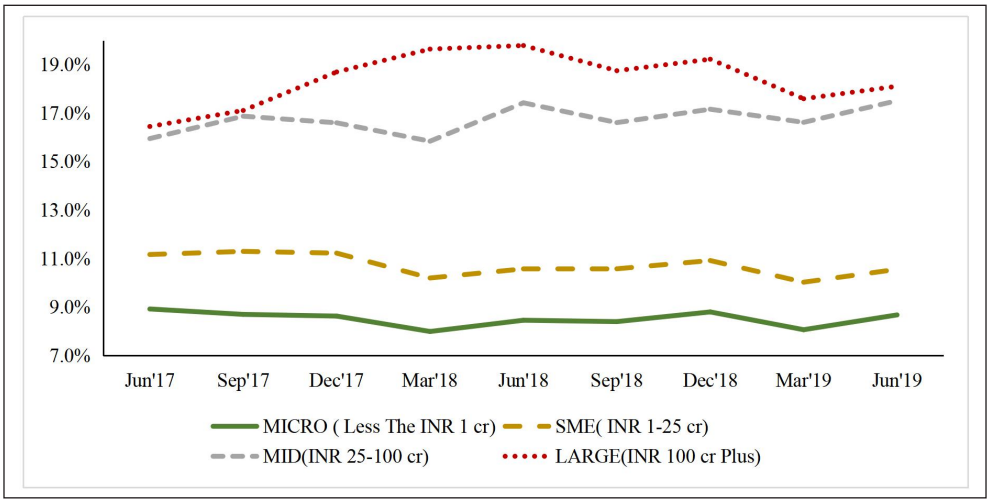
Loan defaults

1.32 The Survey presents evidence in Chapter 4 of large corporations wilfully defaulting on their loans; further, such wilful defaults correlated with the use of related party transactions and the lack of disclosure on the same. This phenomenon of credit boom and bust manifested during the unprecedented and disproportionate growth in corporate credit between September 2007 and September 2013 as shown in Figure 20 and the subsequent decline following 2013. Figure 21 shows that the rates of default were the highest with larger loans (above ₹100 crores).

Audit failures

1.33 Just as farmers burning the stubble create negative externalities for all citizens through the contaminated air, when a corporate intentionally misreports financial information, it harms investors by creating

Figure 21: Non-Performing Asset (NPA) Rate by Size of the Loan

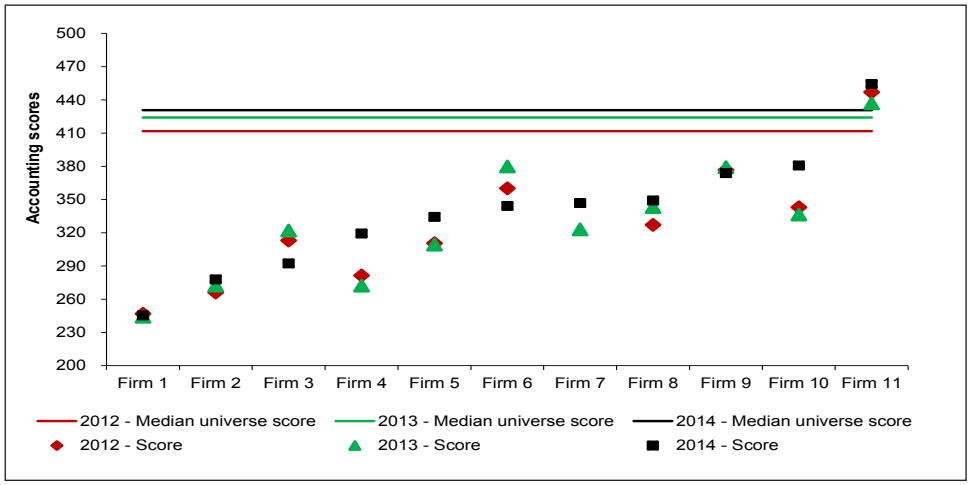


Source: TransUnion Cibil-Sidbi

a negative externality of low trust for all domestic and international investors in the financials of firms in the economy. Lenders including other financial system intermediaries and economy at large suffer the negative externality created by the malpractices of a few.

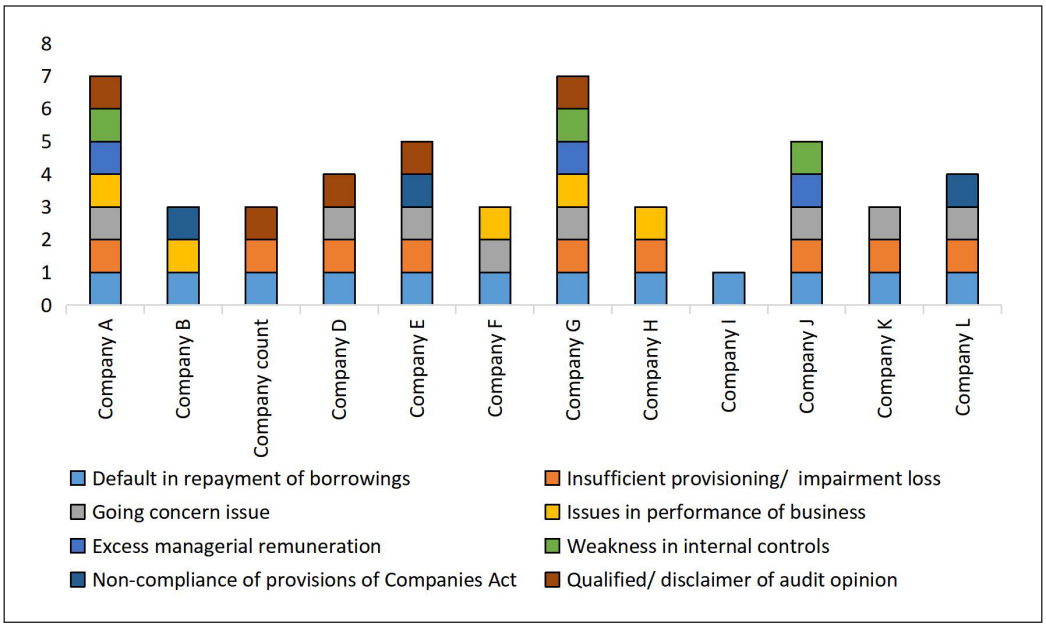
1.34 Relatedly, when a corporate wilfully defaults on its loans, it harms its bank and creates negative externality to all other corporates as they get lesser supply of credit because of lack of trust. As can be seen from Figure 20, the proportion of corporate loans in non-food credit has fallen since September 2013 after showing a disproportionate increase for six years from September 2007. As discussed in the section on wilful defaulters in Chapter 4 of the Survey, due to the opportunistic behaviour of a few unscrupulous promoters, all other firms bear the cost through a higher credit spread stemming from the greater risk. The free-rider problem resulting in higher credit spread incentivises even more corporates to wilfully default on their loan obligations.

Figure 22: Accounting quality scores of large defaulters



Source: Company Financials, Insolvency and Bankruptcy Board of India, RBI

Figure 23: Leading and Lagging Indicators disclosed in financial statements by large defaulters



Source: Company Financial Statements and Survey calculations.

1.35 The common thread of opportunistic behaviour of a few unscrupulous promoters runs across both financial misreporting and wilful defaults. In June 2017, the Reserve Bank of India (RBI) identified twelve companies constituting 25 per cent of India's total Non-Performing Assets (NPAs). As shown in Figure 22, the accounting quality of the large listed NPAs and a few wilful defaulters is much below the median accounting quality of other similar listed corporates in 2012, 2013 and 2014. Chapter 6 provides evidence that Public Sector Banks have a much greater proportion of NPAs as compared to New Private Sector Banks. In effect, wilful defaulters have siphoned off tax-payers money.

1.36 Similarly, there has been a market failure in the trust that auditors examine the accounting numbers of their clients reliably. The survey analysed the annual reports of the large listed NPAs and wilful defaulters to check if the auditors had purposely obfuscated material disclosures that are leading or lagging indicators of stress or impending default. These indicators should have been ideally flagged by the auditors. The leading indicators are shown in Table 1 and the lagging indicators in Table 2.

1.37 As can be seen from Figure 23, out of the twelve large defaulters, one of them had just one indicator disclosed with most others having three to four indicators disclosed of the eight leading and lagging indicators. Thus, a market failure of trust happened around 2011-13 due to a few large unscrupulous promoters. This created large Non-Performing Assets (NPAs) in the banking system, especially for Public Sector Banks (PSBs). The market failure of trust percolated to a couple of major Non-Banking Financial Companies (NBFCs). As investors in Liquid Debt Mutual Funds ran collectively to redeem their investments, it triggered panic across the entire gamut of NBFC-financiers, thereby causing a crisis in the NBFC sector. As mentioned above, Chapter 7 describes this phenomenon.

Table 1: Leading indicators of stress or impending default

Leading Indicator	Description
Issues in performance of business	• Severe pressure on company's operational cash flow. • Decline in turnover and operating margin. • Non adherence to contractual obligation. • Non-reconciled/mismatch in bank accounts.
Weakness in internal controls	• Material weakness in internal controls. • No internal audit department. • Manual intervention in operations.
Non-compliance of provisions of Companies Act	• Issues raised under secretarial audit relating to non-compliance of provision of Companies Act (2013), Rules, Regulations and Guidelines.
Qualified/Disclaimer of audit opinion	• Qualified opinion in the audit report. • Disclaimer of opinion due to inability to obtain sufficient appropriate audit evidence to provide a basis for an audit opinion.
Excess managerial remuneration	• Default in repayment of loans (principal and interest) to banks, financial institutions and debenture holders. • Loans classified as NPA by the lenders.

Table 2: Lagging indicators of stress or impending default

Lagging Indicator	Description
Default in repayment of borrowings	• Default in repayment of loans (principal and interest) to banks, financial institutions and debenture holders. • Loans classified as NPA by the lenders.
Insufficient provisioning/ impairment loss	No/insufficient provisioning for: • Recoverability of loans/ corporate guarantee extended to related parties. • Recoverability of investments made in related parties. • Lack of balance confirmation from debtors. • Long outstanding loans and advances.
Going concern issue	• Accumulated losses resulting in erosion of net worth. • Current liabilities in excess of current assets. • Recurring losses/Cash losses. • Negative net worth. • Suspension of primary business activity.

Enabling Trust: Avoiding policies that crowd out intrinsic motivation

1.38 As in the case of the Global Financial Crisis, the events of 2011-13 and the consequences that have followed have created a trust deficit in the economy. This needs to be set right, even while acknowledging that trust takes time to rebuild. Our tradition celebrates wealth creators as auspicious elements of the economy. But, as *Thiruvalluvar* mentions clearly, it can happen only if wealth is made ethically.

செப்பம் உடையவன் ஆக்கஞ் சிதைவின்றி
எச்சத்திற் கேமாப்பு உடைத்து.

"The just man's wealth unwasting
shall endure,
And to his race a lasting joy ensure."
– Thirukural, Chapter 12, verse 112.

1.39 Trust is the glue that has traditionally bound our economy and is an important ingredient in our recipe of economic well-being. Trust is a vital ingredient in the functioning of banking and financial markets as well. If there is high trust, economic activity can flourish despite the increased potential for opportunism. However, just because trust is functionally useful to an economy does not mean that it will necessarily arise. We need to identify the factors that underlie opportunistic behaviour and consider processes that facilitate trust creation since there has been a market failure of this public good around 2011-13 and the consequences that followed these events.

1.40 As Sandel (2012) postulates, good behaviour that stems purely from intrinsic motivation represents a crucial complement to the effective functioning of the market economy. In other words, the invisible hand of the market needs the supporting hand of trust. In this context, policy makers need to recognise that under-provisioning of public goods such as trust is often the result of lack of reward and recognition for good behaviour stemming purely from intrinsic motivation. When banks recognise corporates who pay their interest and principal in time in non-monetary ways, this enables the intrinsic motivation to get strengthened. Such gestures should not be accompanied by economic incentives such as greater credit limits or reduction in interest for award winners, otherwise the award-winning behaviour in the short-term may be perceived as ingratiation for better future credit availability i.e., future economic gains.

Reducing Information Asymmetry

1.41 An important factor that increases the potential for opportunism in any economic exchange is information asymmetry. Such opportunism can be remedied increasingly through standardising enforcement systems and public databases. For instance, in the case of wilful defaults pre-2014, inability to access relevant borrower data was a key driver of information asymmetry. This aspect of access of credit information for corporate borrowers has improved considerably in the last five years. It can be argued that if the Indian economy had the data infrastructure such as CRILC (Central Repository of Information on large Corporates) during the in pre-2014 credit boom, the extent of systemic NPAs may have been lower. This information would have alerted lenders to limit exposures to corporates who have been tagged as NPA by another bank or NBFC. This information availability would have reduced NPAs in the entire banking system considerably because when a borrower defaults with one lender, other lenders can contractually tag their loan too as a default and therefore recall the loan. This is possible because all corporate loan documents have cross-default clauses. This would have limited

incremental exposure of other banks who were not aware that at least one other financial institution had tagged a loan as an NPA. Such public databases remove information asymmetry considerably.

1.42 Figure 24 shows that the information sharing among lenders on NPAs was minimal as of 2014. While this information sharing was better among PSBs than NPBs, about a quarter of accounts that were declared as NPAs by other banks were classified as NPA in the bank's account. This proportion has increased dramatically to reach 95 per cent in just a few years. This has decreased the potential for opportunism and should enable greater trust in lending activities of financial institutions.

1.43 A related issue is the tagging of default as wilful or genuine. In the banking sector, informational availability issues has been solved by shared databases and attribution problems between distressed defaulters and wilful defaulters have been solved by making the list of wilful defaulters public. Such naming and shaming of wilful defaulters has made such offenders subject to economic sanction in the form of downright unavailability of credit from the banking sector.

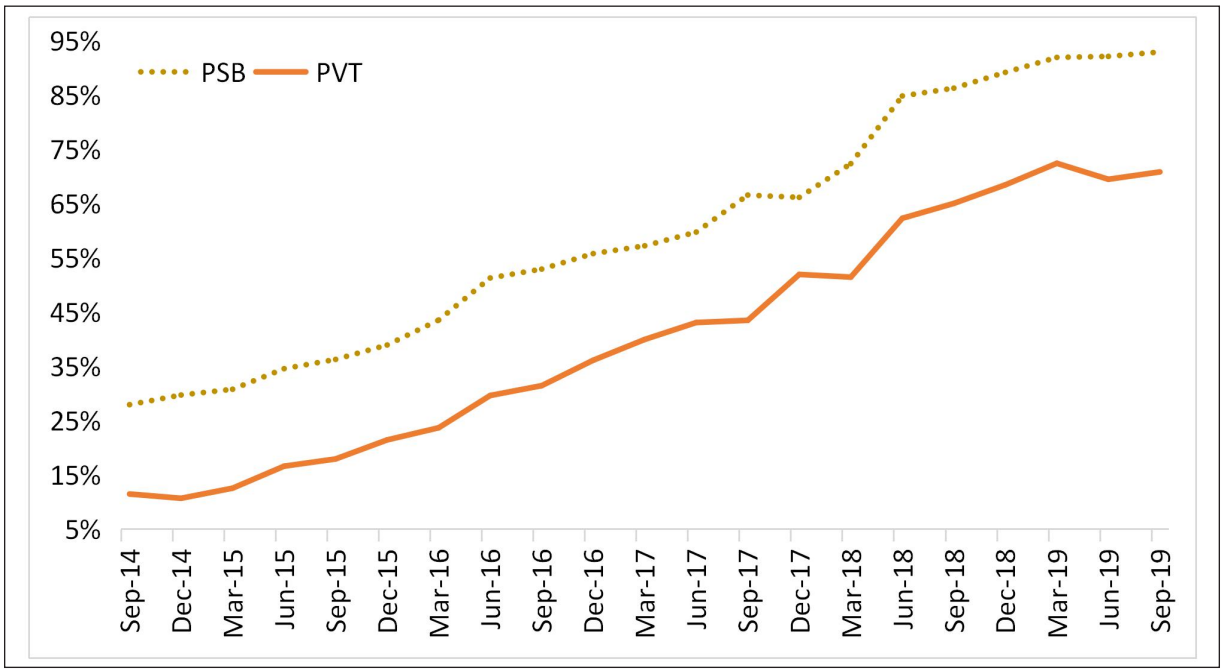
Enhancing quality of supervision

1.44 The government needs to support the hand of trust by being a good referee of the economy. The referee's job is to not just report but also detect opportunistic behaviour if people are not playing by the rules. Like wilful defaults, malpractices such as financial mis-reporting and market manipulation needs to be detected early because these are termites that eat away investor's faith in financial markets, diminishes portfolio investments and crowd-out important national investments. It scares away scrupulous and law-abiding market participants. It is a scourge that drives away investments and therefore jobs in the economy. To fittingly celebrate wealth creators who make wealth ethically, it is of utmost importance that our financial markets are fair and transparent. In this, the state's role as a competent referee cannot be overemphasized.

1.45 The U.S. Federal Trade Commission has one employee for every two listed firms, while the Competition Commission of India has one employee for every 38 listed firms. Securities and Exchange Commission (SEC) has almost one employee for each listed company. In contrast, SEBI has one employee for six listed companies. In fact, in key divisions such as Corporate Finance, SEC has more than fifteen times as many employees as SEBI. This resource deficit needs to be reduced to strengthen government's role as a referee to ensure fair-play for all wealth creators.

1.46 SEC and FTC extensively use Artificial Intelligence and Machine Learning to track and flag market malpractices while none of our regulators do so. As a result of the limited resources at the regulators' disposal, supervision of the market economy suffers badly thereby encouraging market malpractices. The economy cannot achieve the ambitious $5 trillion mark as long as it is plagued by market malpractices and suboptimal supervision. Therefore, significant enhancement in the quantity and quality of manpower in our regulators (CCI, RBI, SEBI, IBBI) together with significant investments in technology and analytics needs to be made. This would enhance the effectiveness of the hand of trust in supporting the invisible hand for greater wealth creation.

Figure 24: Proportion of Lenders Tagging an already tagged NPA (by Another Bank) as NPA in their books



Source: TransUnion CIBIL.

CHAPTER AT A GLANCE

- For more than three-fourths of known economic history, India has been the dominant economic power globally. Such dominance manifests by design; not happenstance. During much of India's economic dominance, the economy relied on the invisible hand of the market for wealth creation with the support of the hand of trust. Specifically, the invisible hand of markets, as reflected in openness in economic transactions, was combined with the hand of trust that fostered intrinsic motivation by appealing to ethical and philosophical dimensions. As far as half-a-century back, Spengler (1971) reflected this fact by asserting that Kautilya's Arthashastra postulates the role of prices in an economy.
- The Survey shows that contemporary evidence following the liberalization of the Indian economy supports both pillars of the economic model advocated in our traditional thinking. The exponential rise in India's GDP and GDP per capita post liberalisation coincides with wealth generation in the stock market. Similarly, the evidence across various sectors of the economy illustrates the enormous benefits that accrue from enabling the invisible hand of the market. Indeed, the Survey shows clearly that sectors that were liberalized grew significantly faster than those that remain closed. The events in the financial sector during 2011-13 and the consequences that followed from the same illustrate the second pillar - the need for the hand of trust to support the invisible hand. In fact, following the Global Financial Crisis, an emerging branch of the economics literature now recognises the need for the hand of trust to complement the invisible hand.

- The survey posits that India's aspiration to become a $5 trillion economy depends critically on strengthening the invisible hand of markets and supporting it with the hand of trust. The invisible hand needs to be strengthened by promoting pro-business policies to (i) provide equal opportunities for new entrants, enable fair competition and ease doing business, (ii) eliminate policies that unnecessarily undermine markets through government intervention, (iii) enable trade for job creation, and (iv) efficiently scale up the banking sector to be proportionate to the size of the Indian economy. Introducing the idea of "trust as a public good that gets enhanced with greater use", the Survey suggests that policies must empower transparency and effective enforcement using data and technology to enhance this public good.

REFERENCES

Aristotle. 1962. Nicomachean Ethics. Translated by Martin Ostwald. Indianopolis: Bobbs-Merrill.

Baker, George, Robert Gibbons, and Kevin J. Murphy. "Relational Contracts and the Theory of the Firm." *The Quarterly Journal of Economics* 117.1 (2002): 39-84.

Bénabou, Roland, and Jean Tirole. "Incentives and prosocial behavior." *American Economic Review* 96.5 (2006): 1652-1678.

Coase, Ronald (1960), "The Problem of Social Cost", *Journal of Law and Economics*, The University of Chicago Press, Vol. 3 (Oct., 1960): 1–44.

Confucius. 2007. The Analects of Confucius. Translated by Burton Watson. New York: Columbia University Press.

Deodhar, Satish (2018), "Indian Antecedents to Modern Economic Thought", Working Paper, Indian Institute of Management Ahmedabad, No WP 2018-01-02.

Gambetta, D. (1988). "Can we trust trust?". In Gambetta, D. (Ed.), Trust. Oxford: Blackwell, 213–38.

Gneezy, Uri and Aldo Rustichini. (2000a). "Pay Enough or Don't Pay At All." *Quarterly Journal of Economics*, 115(3): 791–810.

Gneezy, Uri and Aldo Rustichini. (2000b). "A Fine Is a Price." *Journal of Legal Studies*, 29(1): 1–18.

Gneezy, Uri, Stephan Meier, and Pedro Rey-Biel (2011). "When and Why Incentives (Don't) Work to Modify Behavior." *Journal of Economic Perspectives*, Vol. 25, No. 4, 191–210.

Guiso, L., P. Sapienza, L. Zingales (2004), "The role of social capital in financial development", *American Economic Review,* 94, pp. 526-556.

Hume, David. 1964. "David Hume: The Philosophical Works. Edited by Thomas Hill Green and Thomas Hodge Grose. 4 vols. Darmstadt: Scientia Verlag Aelen. Reprint of the 1882 London ed.

Maddison A (2007), Contours of the World Economy I-2030AD, Oxford University Press, ISBN 978-0199227204.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370-96.

Meier, Stephan (2007a), "Do Subsidies Increase Charitable Giving in the Long Run? Matching Donations in a Field Experiment." *Journal of the European Economic Association*, 5(6): 1203–22.

Meier, Stephan (2007b), "A Survey of Economic Theories and Field Evidence on Pro-Social Behavior." In Economics and Psychology: A Promising New Cross-Disciplinary Field, ed. Bruno S. Frey and Alois Stutzer, 51–88. Cambridge: MIT Press.

Olivelle, Patrick (2013), King, Governance, and Law in Ancient India: Kauṭilya's Arthaśāstra, Oxford UK: Oxford University Press, ISBN 978-0199891825.

Sandel, Michael J. (2012). What Money Can't Buy: The Moral Limits of Markets. New York: Farrar, Straus and Giroux.

Sanyal, S. (2016). The Ocean of Churn. Penguin.

Sapienza, Paola, and Luigi Zingales. "A trust crisis." International Review of Finance 12.2 (2012): 123-131.Shamasastry, R. "Kautilya's Arthashastra (translated in English)." Sri Raghuvir Printing Press, Mysore (1956).

Shamasastry, R. "Kautilya's Arthashastra (translated in english)." Sri Raghuvir Printng Press, Mysore (1956).

Sihag, Balbir S. "Kautilya's Arthashastra: A Recognizable Source of the Wealth of Nations." *Theoretical Economics Letters* 6.1 (2016): 59-67.

Spengler, J.J. 1971. "Indian Economic Thought," Duke University Press. Durham.

The Road to Serfdom, Friedrich Hayek, University of Chicago 1944

Williamson, Oliver E. "Calculativeness, trust, and economic organization." *The Journal of Law and Economics* 36.1, Part 2 (1993): 453-486.

Zingales, Luigi. "The role of trust in the 2008 financial crisis." *The Review of Austrian Economics* 24.3 (2011): 235-249.

Entrepreneurship and Wealth Creation at the Grassroots

02
CHAPTER

அருவினை யென்ப உளவோ கருவியான்
காலம் அறிந்து செயின்.

– Thirukural, Chapter 76, verse 753.

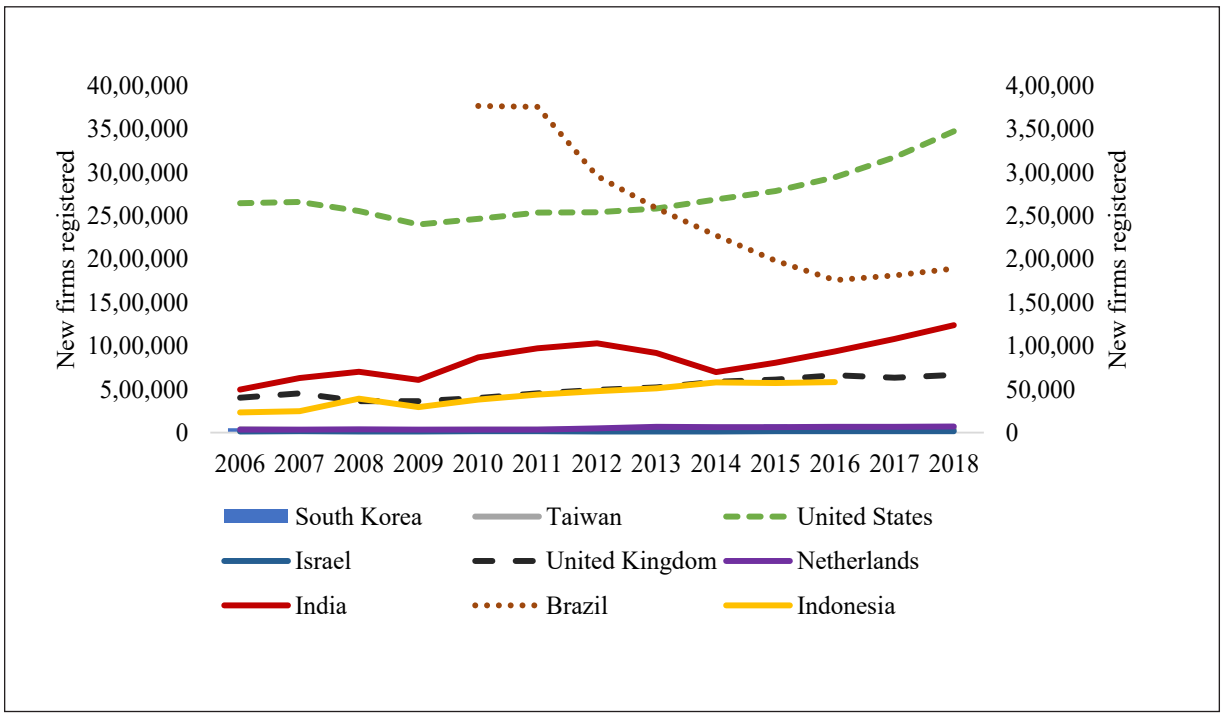
Contextual translation: "The one who utilizes all resources and opportunities at hand is an efficient (entrepreneur) and nothing is impossible for him to achieve."

The "Startup India" campaign of the Government of India recognizes entrepreneurship as an increasingly important strategy to fuel productivity growth and wealth creation in India. Given this initative, this chapter examines the content and drivers of entrepreneurial activity at the bottom of the administrative pyramid – over 500 districts in India. The analysis employs comprehensive data on new firm creation in the formal sector across all these districts from the Ministry of Corporate Affairs (MCA)-21 database. First, using the World Bank's Data on Entrepreneurship, this chapter confirms that India ranks third in number of new firms created. The same data shows that new firm creation has gone up dramatically in India since 2014. While the number of new firms in the formal sector grew at a compounded annual growth rate of 3.8 per cent from 2006-2014, the growth rate from 2014 to 2018 has been 12.2 per cent. As a result, from about 70,000 new firms created in 2014, the number has grown by about 80 per cent to about 1,24,000 new firms in 2018. Second, reflecting India's new economic structure, i.e. comparative advantage in the Services sector, new firm creation in services is significantly higher than that in manufacturing, infrastructure or agriculture. Third, grassroots entrepreneurship is not just driven by necessity as a 10 percent increase in registration of new firms in a district yields a 1.8 percent increase in GDDP. Thus, entrepreneurship at the bottom of the administrative pyramid – a district – has a significant impact on wealth creation at the grassroot level. This impact of entrepreneurial activity on GDDP is maximal for the manufacturing and services sectors. Fourth, birth of new firms is very heterogeneous across Indian districts and across sectors. Moreover, it is dispersed across India and is not restricted to just a few cities. Fifth, literacy and education in the district foster local entrepreneurship significantly. For instance, the eastern part of India has the lowest literacy rate of about 59.6 per cent according to the census of 2011. This is also the region in which new firm formation is the lowest. In fact, the impact of literacy on entrepreneurship is most pronounced when it is above 70 per cent. Sixth, the level of local education and the quality of physical infrastructure in the district

influence new firm creation significantly. Finally, policies that enable ease of doing business and flexible labour regulation enable new firm creation, especially in the manufacturing sector. As the manufacturing sector has the greatest potential to create jobs for our youth, enhancing ease of doing business and implementing flexible labour laws can create the maximum jobs in districts and thereby in the states. Literacy, education and physical infrastructure are the other policy levers that district and state administrations must focus on foster entrepreneurship and thereby job creation and wealth creation.

2.1 Entrepreneurship represents a key focus area for many policy makers given its role in economic development and subsequent employment growth. Entrepreneurs are seen as agents of change that accelerate innovation in the economy. Figure 1 uses the World Bank's EODB Entrepreneurship data together with that from the U.S. Census Bureau to compare total number of new firms in India with that in a diverse cross-section of countries in Asia, Europe and North America. The chart clearly establishes that India has the 3rd largest entrepreneurship ecosystem in the world. Also, while the number of new firms in the formal sector grew at a cumulative annual growth rate of 3.8 per cent from 2006-2014, the growth rate from 2014 to 2018 has been 12.2 per cent. As a result, from about 70,000 new firms created in 2014, the number has grown by about 80 per cent to about 1,24,000 new firms in 2018.

Figure 1: Comparison of entrepreneurial activity (new firms) across countries



Source: World Bank's EODB Entrepreneurship Data, Business Formation Statistics of the U.S. Census Bureau and Survey Calculations
Note: Secondary axis for India, Brazil and, Indonesia

Box 1: Data and Methodolody

The sample is constructed at the intersection of three data sources. First, data is obtained on district-level GDP at current prices from the CEIC India Premium database. This data spans financial years ending 2000 through 2018. Therefore, there are 5,591 district-year observations comprising district-level GDP of 504 districts across 22 states in India.

Entrepreneurship is measured as the count of new firms in the Ministry of Corporate Affairs (MCA) - 21 database, a public dataset that provides a one-time snapshot of all active firms registered with the Ministry of Corporate Affairs (MCA) between 1990 and 2018. Each firm is then matched to a district using the registered office address of the firm in MCA-21.The implications of using these data are twofold. First, the measure of entrepreneurship is restricted to the private corporate sector in the formal economy and does not include establishments that are expansions by existing companies. Second, since this data is only a one-time snapshot of active firms registered with the MCA, at least one limitation imposed is that the firms that did not survive until 2018 cannot be tracked. This survivor bias in our data also implies that the estimates of the impact of entrepreneurship might be biased upward.

Third, data relating to the physical and social infrastructure of a district is accumulated from the Socioeconomic High-resolution Rural-Urban Geographic Dataset on India (SHRUG, available at http://www.devdatalab.org/shrug_download/) which comprises of a set of variables that describe the extent of socio-economic development in India. Among other things, SHRUG contains variables that describe the demographic, socioeconomic, firm and political infrastructure of every district between 1990–2018 that it cumulates from a variety of data sources. These sources comprise data from the Census of India relating to the years 1991, 2001 and 2011, Socio-Economic Caste Census of 2012, and Pradhan Mantri Gram Sadak Yojana (PMGSY) public data to construct a variety of indices that describe the social and physical infrastructure of every district in India.

For cross-country comparison, we use the Entrepreneurship World Bank's EODB Entrepreneurship Data for all countries except the U.S. and the Business Formation Statistics of the U.S. Census Bureau for the U.S.

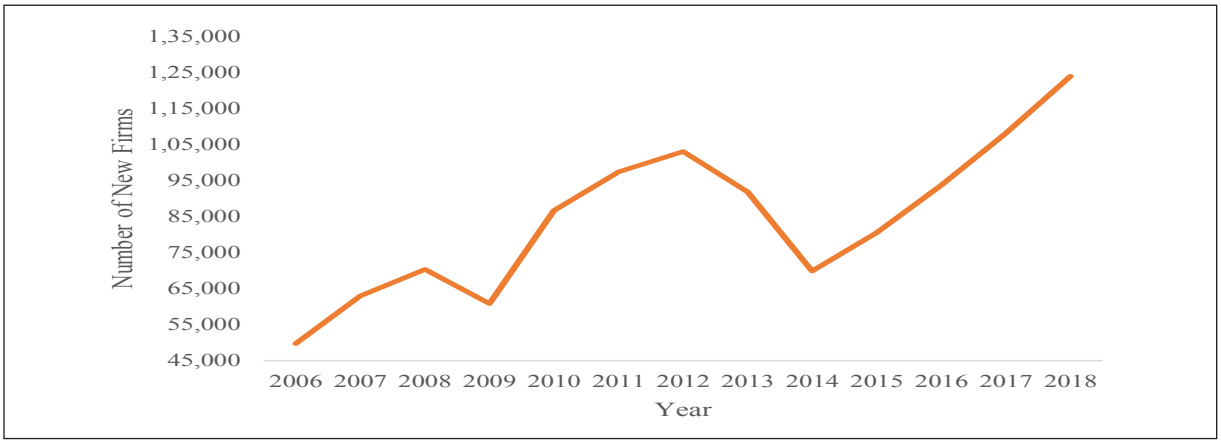
2.2 On a per-capita basis, India has low rates of entrepreneurship in the formal economy. Between 2006 and 2016, the mean (median) number of new firms registered per year per 1000 workers was 0.10 (0.11). In contrast, the mean (median) entrepreneurial intensity for the United Kingdom and the United States was 12.22 (11.84) and 12.12 (11.81) respectively. In general, the entrepreneurial intensity is significantly higher for the developed economies. It is also growing across all countries except Brazil, which has seen a significant decline from 2010 to 2018. It is important to note that in contrast to the other countries, a large number of India's enterprises operate in the informal economy which is not captured in these data. Notwithstanding the relatively lower rates of entrepreneurial intensity, Figure 2a emphasizes significant growth in the birth of new firms over time. New firm creation has gone up dramatically since 2014 as discussed above. Figure 2b shows that this growth is particularly pronounced for the services sector. This fact reflects India's new economic structure, i.e. comparative advantage in the Services sector.

ENTREPRENEURSHIP AND GDP

2.3 The entrepreneurial activity is related to economic growth. See Box 2 for details on estimation of this relationship.

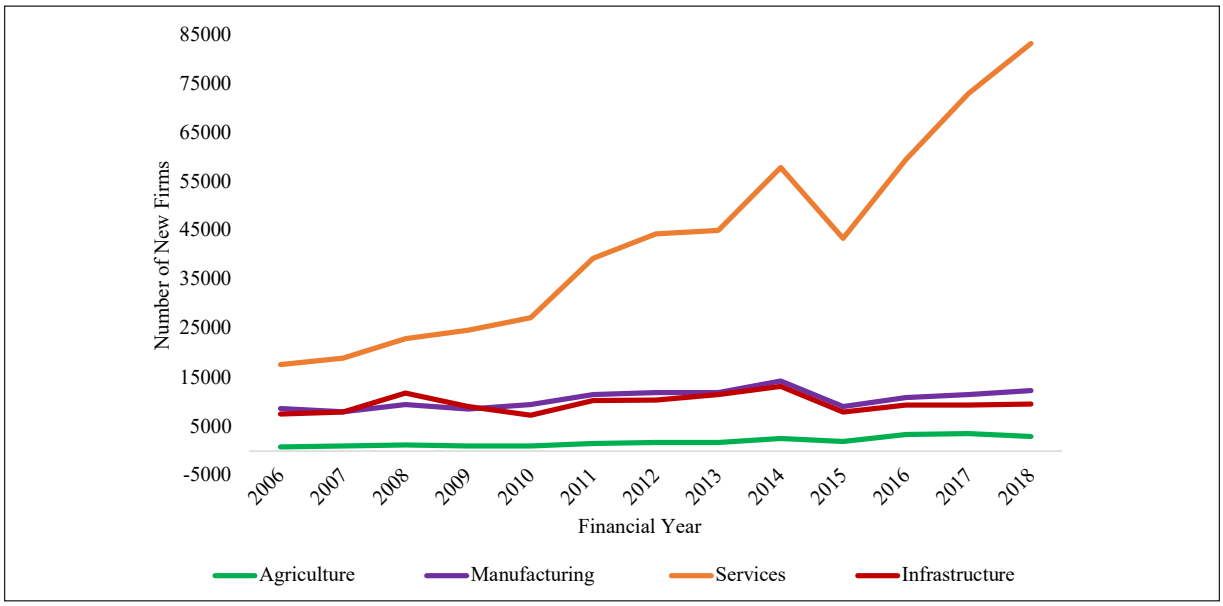
2.4 Figure 3a presents the scatter plot and trend line for the regression of the natural log of Gross Domestic District Product (GDDP)

Figure 2a: Growth in new firms over time in India



Source: World Bank's EODB Entrepreneurship Data

Figure 2b: Growth in new firms over time in India



Source: MCA-21 and Survey Calculations

Box 2: Estimating the relationship between Entreprneeureship and GDP

To explore how district-level GDP varies by the number of new firms in the district, we implemented an OLS specification that regresses the district GDP (at current prices in natural log) on the number of new firms (once again in natural log) as the primary independent variable. Given our premise that infrastructural and environmental differences mainly vary by state, we also use 21 state fixed effects are used in addition to including 17 time dummies. To minimize the possibility that the number of new firms might be endogenous to district-level GDP, the number of new firms in a district is lagged by three years. In sum, we the following is estimated

$$In\left(District\ GDP_{it}\right) = \alpha + \beta\left(new\ firms_{i,t-3}\right) + X_i + \tau_t + \varepsilon_{it} \qquad (1)$$

In (1) above, subscripts *i* and *t*, indexes a district and year respectively, X_i denotes state fixed effects and τ_t denotes year fixed effects. To ensure that the standard errors are not inflated we cluster our the errors at the district-level

on the natural log of new firms established in the focal district 3 years back. It is clear that entrepreneurial activity has a significant positive impact on GDDP. Specifically, a 10 per cent increase in registration of new firms per district-year yields a 1.8 per cent increase in GDDP. The results emphasize the importance of entrepreneurship as an engine of economic growth and change in India. They further mute the view that entrepreneurial activity in emerging economies like India is largely necessity driven and typically borne from a lack of alternative employment options. Rather, the findings highlight the incidence of productive and growth-focused entrepreneurial activity in the formal sector in India. Figure 3b represents spatial dispersion in entrepreneurial activity as defined by establishment of new firms. We find that, though the peninsular states dominate entry of new firms, entrepreneurship is dispersed across India and is not restricted just to a few metropolitan cities.

Figure 3a: Estimation of the Impact of Entrepreneurial Activity on GDDP

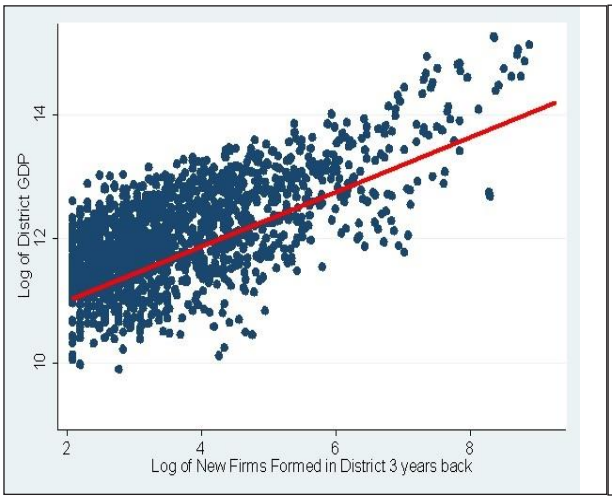
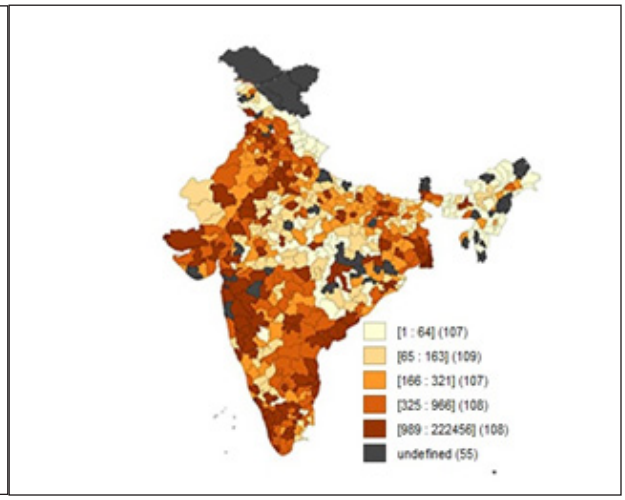


Figure 3b: Distribution of New Firms across Districts



Source: MCA-21 and Survey Calculations

Spatial Heterogeneity in Entrepreneurial Activity

2.5 Figure 4a, which shows the coefficient plot for the estimation of impact of entrepreneurial activity by sector, highlights that the impact of new firm entry is greatest in the Manufacturing and Services sectors. The findings emphasize the fundamental role that entrepreneurship can play in India's economic growth in the decades ahead. Movement of labour from other unproductive sectors and subsistence entrepreneurship into entrepreneurship in formal manufacturing and services can help close India's productivity gaps. To the extent that the manufacturing and services sectors are underdeveloped relative to economies of similar size, greater entrepreneurial activity will help close such gaps.

2.6 Figure 4b below presents the growth in entrepreneurial activity over time for each of the four regions in India. All regions demonstrate strong growth in entrepreneurial activity over time with the exception of the eastern states. Irrespective of the level of entrepreneurial activity, all regions demonstrate a strong relationship between

Figure 4a: Differences in the Impact of Entrepreneurial Activity by Region

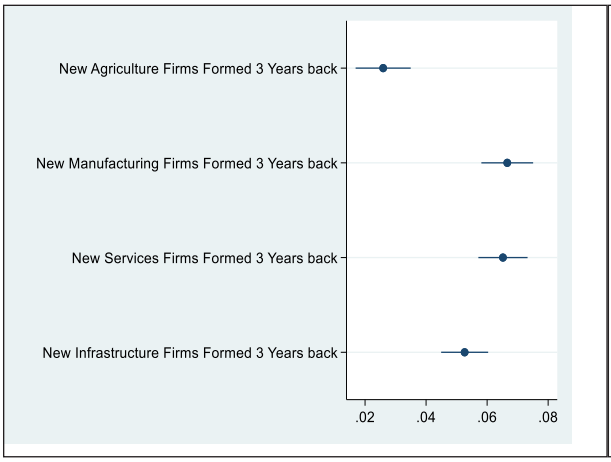
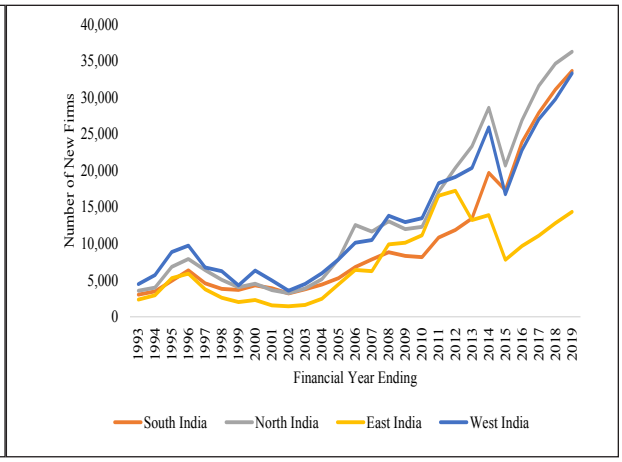


Figure 4b: Growth in new firms across regions over time



Source: MCA-21 and Survey Calculations

Figure 5a: Relative entrepreneurial capability of districts in Agriculture

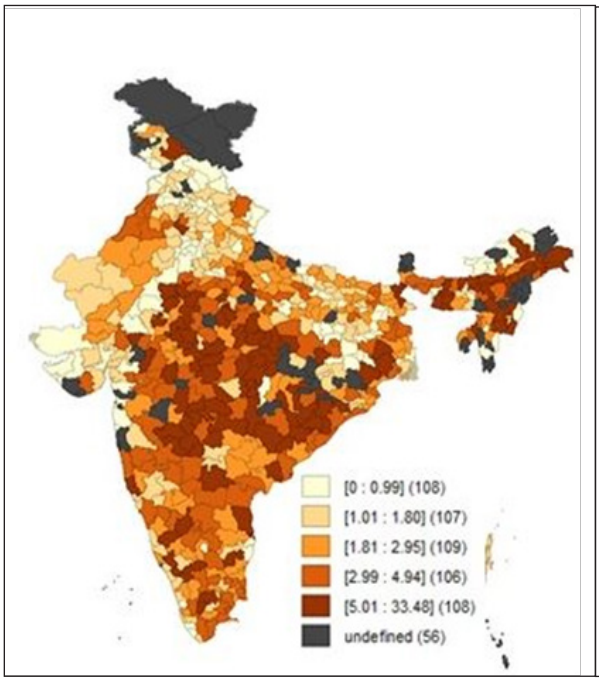
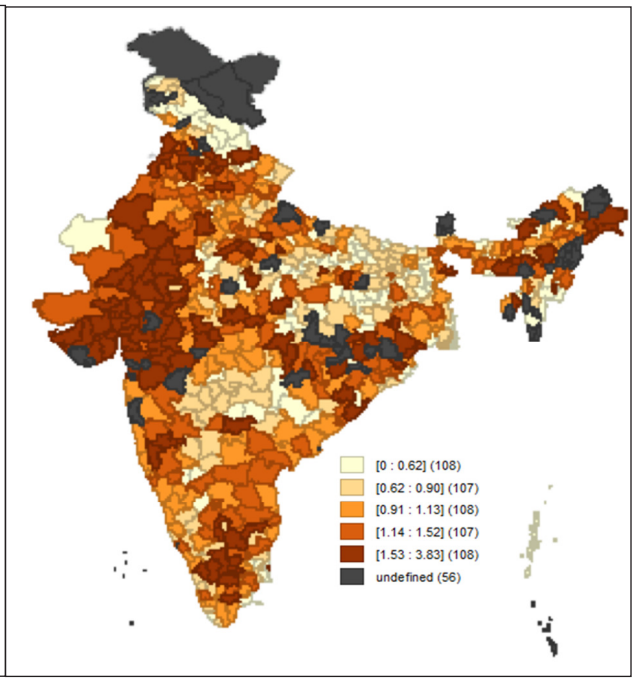


Figure 5b: Relative entrepreneurial capability of districts in Manufacturing



Source: MCA-21 and Survey Calculations

entreprenurship and GDDP signifying the pervasive benefits of entrepreneurship.

2.7 Next, an index of entrepreneurial activity for each district-sector is constructed to throws light on how the entrepreneurial capabilities for that sector are distributed across districts. For any specific sector, this index is estimated as a district's share of new firms in that sector, divided by that district's share of all new firms across all sectors. For example, a district responsible for 20 per cent of new firms in the agricultural sector, but only 10 per cent of all new firms, scores 2 on

Figure 5c: Relative entrepreneurial capability of districts in Services

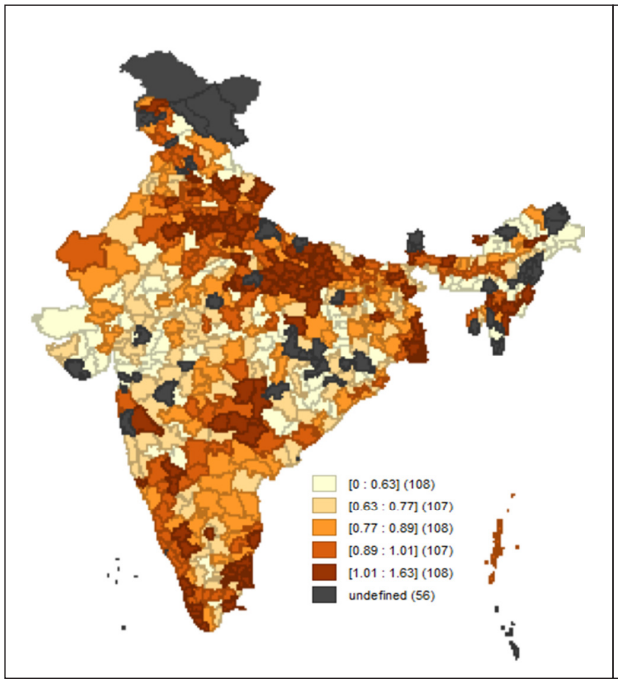
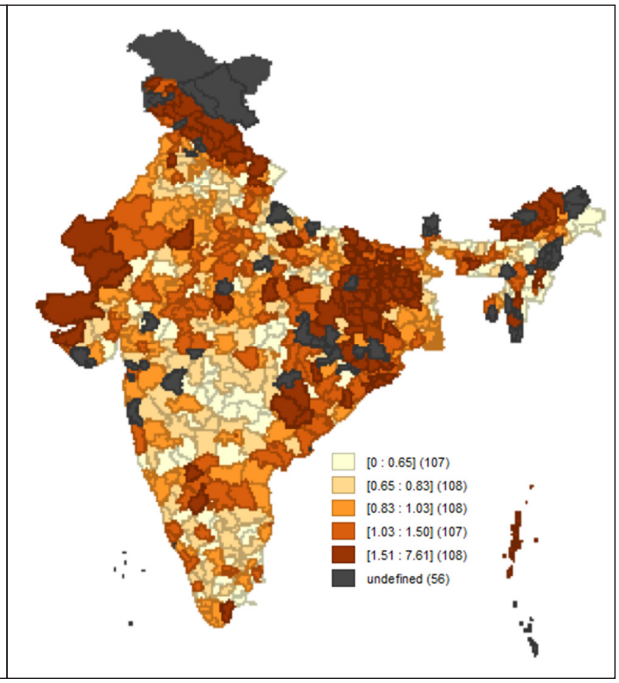


Figure 5d: Relative entrepreneurial capability of districts in Infrastructure



Source: MCA-21 and Survey Calculations

an index of relative entrepreneurial activity in agriculture, suggesting relative strength in that sector. Figures 5a to 5d show the relative distribution of the index across districts for agriculture, manufacturing, services and infrastructure respectively.

2.8 Figure 5a suggests that relative to entrepreneurial capabilities in Manufacturing, Services and Infrastructure, entrepreneurial capabilities in the Agriculture sector are not geographically localized and seem to be distributed evenly across most districts in India. States in the highest quintile of relative entrepreneurial activity in the Agriculture sector are Manipur, Meghalaya, Madhya Pradesh, Assam, Tripura and Orissa. Establishments in the North East are more likely to be private enterprises in the food business such as organic produce farms and tea plantations while a majority of the establishments in Madhya Pradesh and Orissa are farmer producer companies, designed as hybrids between cooperative societies and private limited companies that organize farmers into a collective to improve their bargaining strength in markets.

2.9 Figure 5b suggests that entrepreneurial activity in the Manufacturing sector is highest in the regions of Gujarat, Meghalaya, Puducherry, Punjab and Rajasthan. Within Gujarat, the most entrepreneurially active districts in the Manufacturing sector are Surendranagar, Rajkot, Bhavnagar and Surat. Establishments in these regions are focused on textiles, chemicals, metals, plastics, and pharmaceuticals manufacturing. The nature of establishments in each of these regions attests to agglomeration economies documented by prior research in the Indian manufacturing sector (Ghani et al. 2011). That is, incumbent industrial structures for input and output markets and specialized labour in a region are strongly linked to higher entrepreneurial activity in that industry-region.

2.10 Spatial heterogeneity in the Manufacturing sector emphasizes the need for policy reforms that improve the ease

of doing business, which is discussed in chapter 6 of the survey. It is noteworthy that three of the regions in the highest quintile of entrepreneurial activity in this sector – Gujarat, Punjab and Rajasthan – were classified in a prior economic survey as states with flexible labour laws. Further, states classified in the Economic survey 2018-19 as states with inflexible labour laws such as West Bengal, Assam, Jharkhand, Kerala and Bihar were classified in the lowest quintiles of entrepreneurial activity. While Gujarat's labour reforms are viewed as pro-worker, the state has also passed other regulations that improve ease of doing business, including reduction in compliance burden, transparent and timely processing of approval and renewal of applications, and reduction in stipulated timelines for granting and renewal of manufacturing sale licences, amongst others. Rajasthan too has introduced several reforms that are viewed as pro-employer. For example, to reduce the influence of trade unions, the state has increased the costs of union formation by increasing the minimum membership requirement to form a union to 30 per cent of the total workforce at an establishment, up from 15 per cent earlier. Similarly, the state has said that no prior approval is required for retrenchment or shutting down units in companies employing up to 300 people, up from the earlier limit of 100 workers. A worker can also object to wrongful termination only within a period of three years. Differences in the mean number of new firms per year and the mean number of new manufacturing firms per year between the states with flexible labour laws and those with inflexible laws are presented in Figures 6a and 6b respectively.

Figure 6a: Effect of Labour Laws on New Firm Formation

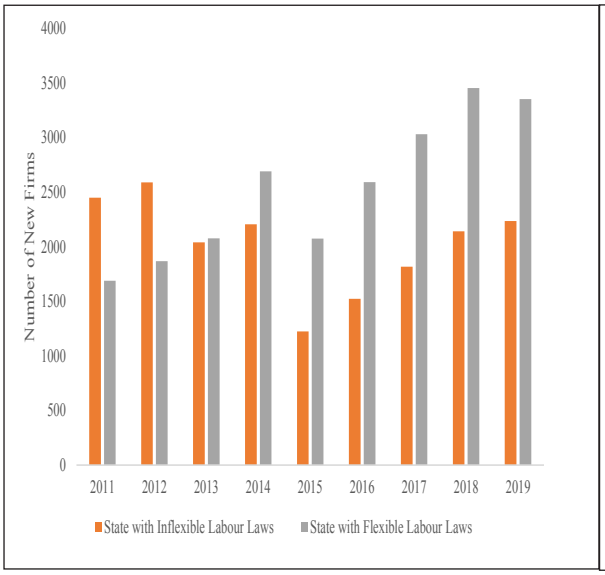
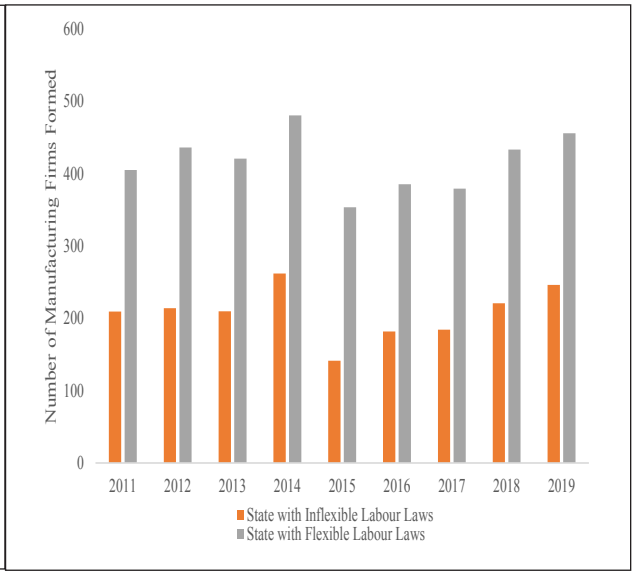


Figure 6b: Effect of Labour Loss on New Manufacturing Firms



Source: MCA-21 and Survey Calculations, Economic Survey 2018-19

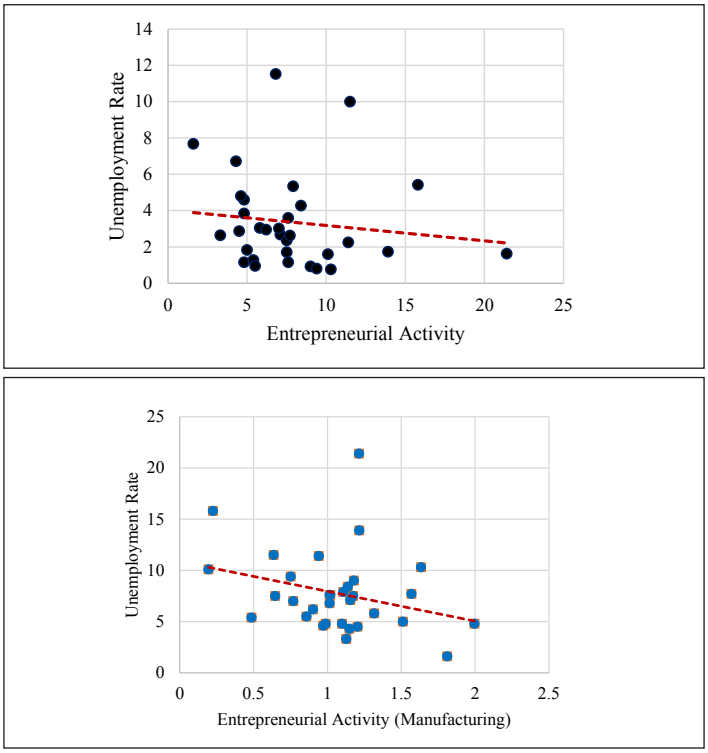
2.11 Given the relatively higher economic contribution of entrepreneurial activity in the Manufacturing sector, it is important for states to consider these policy levers that enable transition of labour and resources from less productive sectors and subsistence activity in the informal sector to these relatively more productive establishments.

2.12 Figure 5c suggests that entrepreneurial activity in the Services sector is highest in the regions of Delhi, Mizoram, Uttar Pradesh, Kerala, Andaman and Nicobar, and Haryana. Consistent with observations of prior research (Ghani et al. 2011), the nature of establishments in these regions is not reflective of agglomeration economies and spans diverse industries such as trading, financial services, tourism and hospitality services, retailing, and even religious leagues and missions.

2.13 Figure 5d suggests that entrepreneurial activity in the Infrastructure sector is highest in the states of Jharkand, Arunachal Pradesh, Himachal Pradesh, Mizoram, Jammu and Kashmir and Bihar, some of which are characterized by poor levels of extant infrastructure. Not surprisingly, new firms in these states are largely engaged in construction, logistics and transport, utilities generation, transmission and distribution, alternative energy distribution, and Infratech.

2.14 The nature of entrepreneurial activity in a district is significantly correlated with unemployment in the district, as measured by the Periodic Labour Force Survey (PLFS) data. Entrepreneurial activity in the agriculture and manufacturing sectors shares a negative spatial correlation of (-0.26) and (-0.29) respectively with the unemployment rate across states. In contrast, entrepreneurial activity in the services and infrastructure sectors shares a positive spatial correlation of 0.36 and 0.09 respectively with unemployment rate across states. These estimates are especially salient as the number of active one-person new firms in the services sector (14,475) is over five times that in all the other three sectors combined (2,785). The contribution of this class of entrepreneurial activity to GDP is also insignificant. The correlations between overall entrepreneurial activity and entrepreneurship in manufacturing with unemployment rates are presented in Figure 7 below.

Figure 7: Correlation of entrepreneurial activity in overall and manufacturing with unemployment



Source: MCA-21, PLFS and Survey Calculations

DETERMINANTS OF ENTREPRENEURIAL ACTIVITY

2.15 A natural question that follows from the documentation of significant spatial heterogeneity in entrepreneurial activity is what are the factors that drive such heterogeneity. The conclusions of research are summarized thus far (see Box 3) in this context, and subsequently, drivers of new firm entry in India are examined. While prior research implicates local population characteristics, district-level conditions, and agglomeration economies in the birth of new firms, these analyses are limited to district level conditions that represent important policy levers for the government.

2.16 The focus is on two key sets of district-level attributes that drive the level of entrepreneurial activity in the district – social and physical infrastructure. While these attributes do not constitute an exhaustive list of district-level conditions, they are widely featured in prior research on entrepreneurship and economic development in India. These measures of social infrastructure in a district largely relate to the general education levels in the district. Higher education levels in a district enable the development of better human capital that relates to increased supply of ideas and entrepreneurs. Higher education also increases the supply of talent available to entrepreneurs for managing and growing their companies. Therefore, it is expected that districts with better education levels will have higher entrepreneurial activity. The number of colleges in the district and the proportion of the population that is literate in a district are used to measure the education infrastructure in the district.

2.17 The measures of physical infrastructure include access to basic physical infrastructure in the district as well as physical connectivity that captures across-district infrastructure in most cases. The access to physical infrastructure in a district is measured using the proportion of villages in a district that is connected by tar roads. This measure is expected to correlate with access to other public goods like electricity, water/sanitation facilities, and telecom services that is fundamental to all businesses. Physical connectivity is measured as the mean distance from a population centre that has at least 500,000 people. Proximity to large population centers likely allows the startup to expand markets and scale operations. Therefore, it is expected that both these measures would correlate positively with entrepreneurial activity. Box 4 summarizes the methodology for estimation of the impact of physical and social infrastructure in a district on entrepreneurial activity in that district.

Box 3: Summary of Research on the Drivers of Entrepreneurial Activity

This study focuses on district-level conditions, notably, social and physical infrastructure that promote entrepreneurial activity. However, a rich body of prior work also emphasizes the role of other spatial and industrial factors in driving heterogeneity in entrepreneurial activity. These include *population attributes, other district-level conditions, regulatory framework, and agglomeration economies. These factors influence opportunities, skills and resources* available to entrepreneurs, driving firm creation and growth (Mittelstädt and Cerri 2008).

The role of local population characteristics such as population size and density is especially salient to new firms, where local markets are assumed the firm's primary product market and where most entrepreneurs are assumed to start their business in their area of residence (Dahl and Sorenson 2007). In such case, the size of the region reflects local market size and to some degree, the potential supply of entrepreneurs and managers. Population density also impacts other operating parameters such

as competition for local resources and higher resource costs (for example wages and land rents) (Ghani et al. 2011). Some studies (Carlino et al. 2007; Arzaghi and Henderson 2008) also link density to stronger knowledge flows, rendering its impact on entrepreneurial activity an empirical question. Researchers (Evans and Leighton 1989; Bönte et al. 2009; Glaeser and Kerr 2009) have also demonstrated an inverted-U relationship between regional age structure and entreprenurship rates that underlies India's "demographic dividend", establishing this variable as an important driver of entrepreneurship.

While the district-level investments in physical infrastructure and education are considered, other attributes such as digital literacy and ease of access of entrepreneurs to technology and finance are also salient to fostering entrepreneurship and increasing productivity and competitiveness of new ventures (see Mittelstädt and Cerri 2008 and Ghani et al. 2011 for a review of this literature and case studies). Barriers to finance, especially difficulty in accessing risk capital (versus growth capital), often disproportionately impact small and micro firms (Meki 2019).

Entrepreneurial activity can also be impeded by the regulatory framework in the region that hinder entry and exit, limit competition and increase costs of compliance and administration (see the study, *Fostering Entrepreneurship* by the OECD (1998) for a review). Key parameters that have been implicated by prior research in this context include regulatory barriers to entry, competition policy, bankruptcy legislation, tax burdens, administrative and compliance costs, and protection of intellectual property rights.

In addition to district-level conditions that homogenously impact all industries, there exist interactions between these conditions and specific industries as explicated in agglomeration theories (Marshall 1920; Glaeser and Kerr 2009). In the Indian context, Ghani et al. (2011) find strong evidence of agglomeration economies in manufacturing that emphasizes the input-output relationships amongst firms.

All of these factors represent key ways in which policy makers can influence spatial distribution of entrepreneurial activity.

Box 4: Estimation of Drivers of Entrepreneurship

To explore the drivers of entrepreneurship in a district, once again using an OLS specification, the number of new firms in district i in year t are regressed on the proportion of villages in that district connected by tar roads (proportion connected), the proportion of population in the district that is literate (proportion literate), the mean distance of the district from the nearest population centre that has at least 500,000 people (mean distance in natural log) and the total number of colleges in the district (colleges in natural log).

All our regressors are based on the most recent census and control for population density in the district, again as per the most recent census (population density in natural log). The specification in Equation (2) below is used to estimate the effect of different aspects of social and physical infrastructure on the number of new firms:

$$\begin{aligned}\ln\left(newfirms_{it}\right) = \alpha &+ \beta_1 \ln\left(roads_{it}\right) \\ &+ \beta_2 \ln\left(colleges_{it}\right) + \beta_3 proportion\,literate_{it} \\ &+ \beta_4 proportion\,connected_{it} + X_i + {}^2{}_5 \ln\left(population\,density_{it}\right) \\ &+ \lambda_t + \epsilon_{it}\end{aligned} \tag{2}$$

In equation (2), subscript i denotes a district and t denotes a census year. λ_t denotes census year dummies and standard errors are clustered at the level of a district.

2.18 As expected, an increase in the proportion of literate population in a district increases entrepreneurial activity as measured by the number of new firms in the district. Figure 8a shows that the number of new firms formed increases with an increase in the literacy in the distric. The largest increases appear when literacy rises above 72 per cent. This suggests that small increases in literacy levels matter less. Instead, the largest payoffs to increasing literacy occur when literacy levels are already high, specifically above 72 per cent.

2.19 Similar patterns are visible with the number of colleges as well, albeit with a few differences. In contrast with the proportion of the literate population, the largest increases appear when the number of colleges in a district increase above 26. In sum, the results of figures 8a and 8b suggest that higher literacy levels and better education infrastructure are associated with greater entrepreneurship.

Figure 8a: Literacy and entrepreneurship

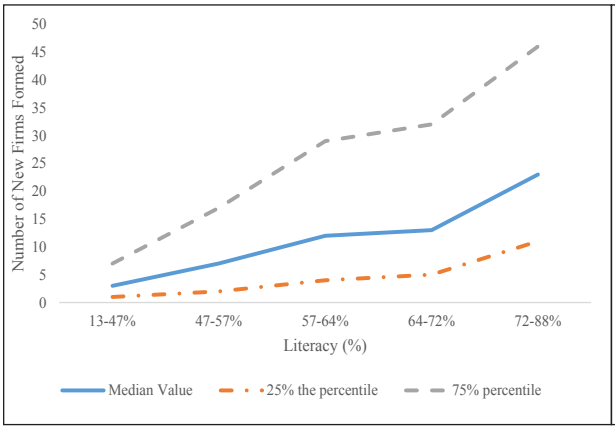
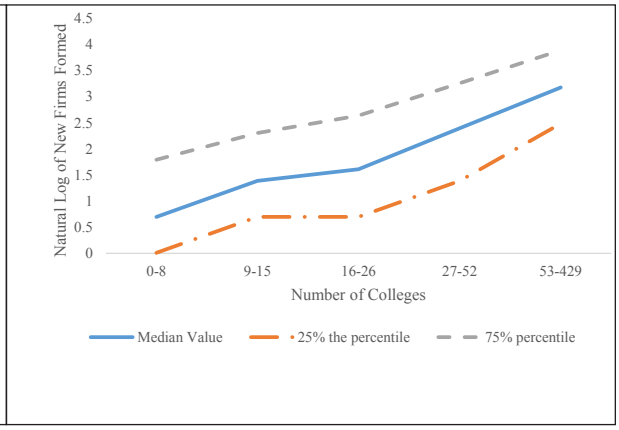


Figure 8b: Number of Colleges and entrepreneurship



Source: MCA-21, SHRUG and Survey Calculations

Box 5 – Box plot explained

The boxplot divides independent variable of interest into five categories based on how it is distributed – the lowest quintile, 20th – 40th percentile, 40th – 60th percentile, 60th – 80th percentile, and the highest quintile. Within each category it then explores the value of the dependent variable, in this case, the number of new firms foreach of the following values : (a) the minimum denoted by the lowest horizontal line, (b) first quartile denoted by the bottom line of the rectangle (c) median denoted by the blue line inside the rectangle of a category, (d) third quartile denoted by the top line of the recantagle of a category, and (e) the maximum denoted by the top most horizintal line. The box plots show how moving from one category to another changes the number of new firms for different values of the independent variable within a given category.

2.20 Figures 9a and 9b suggest that superior access to markets is also associated with higher entrepreneurial activity. Figure 9a shows the effect of the proportion of villages that are connected by tar roads in a district, hereafter labelled "connectivity." The Figure shows that till connectivity increases to 91 per cent, i.e., 91 per cent of

the villages in the district are connected by tar roads, the number of new firms increases monotonically. However, after this threshold, the number of new firms decreases. These results are symptomatic of diminishing returns from physical connectivity – when the access to local markets increases beyond a point, competition levels might increase and possibly discourage entrepreneurial activity. On similar lines, beyond a point, increased levels of infrastructure development might also open up potential entrepreneurs to other opportunities and consequently, decrease the incentives to become entrepreneurs.

Figure 9a: Market Access and Entrepreneurship

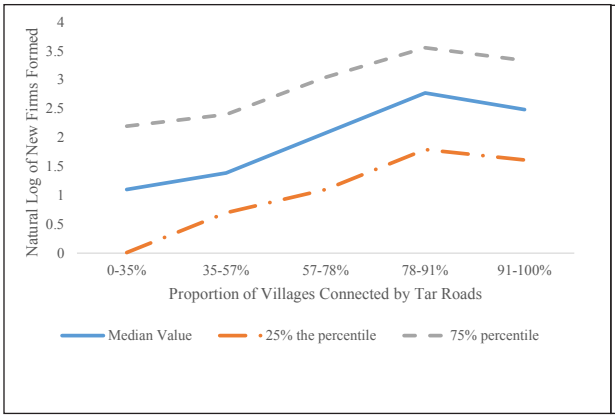
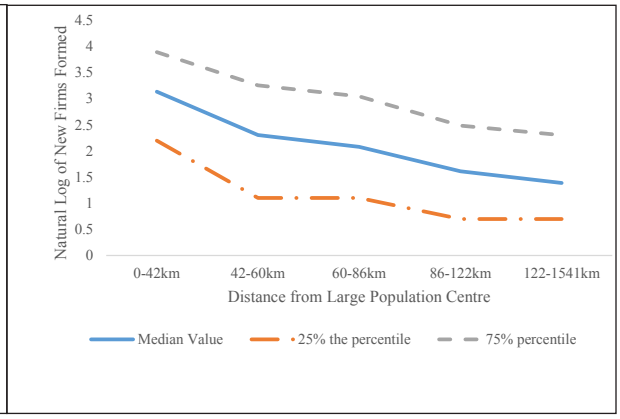


Figure 9b: Distance from large centres and Entrepreneurship



Source: MCA-21, SHRUG and Survey Calculations

2.21 Similar patterns are visible in Figure 9b as well. Figure 9b shows the effect of proximity to markets as captured by districts that are the closest to a centre that has a population of least 5 lakhs. As the proximity to markets increases, the number of new firms increases monotonically. The greatest improvement is seen when the distance to a market centre decreases below 42 kms. In sum, Figures 9a and 9b suggest superior physical infrastructure will likely promote entrepreneurial activity. However, there may be limits to how much its improvement may aid entrepreneurship. Beyond a point, increased access to local markets may create hyper-competition and discourage entrepreneurship. On the contrary, no such diminishing returns are apparent with increases in literacy or improving education infrastructure. Increasing literacy levels or the formation of new colleges appear to increase the number of new firms monotonically.

POLICY IMPLICATIONS FOR FAST-TRACKING ENTREPRENEURSHIP AND WEALTH CREATION

2.22 Clear patterns emerge from the analysis. Despite being the 3rd largest ecosystem for entrepreneurship in the world, India appears to have lower rates of formal entrepreneurship on a per-capita basis when compared to other countries. Consistent with the prevailing wisdom, a significant association between the count of new firms born in a district and the GDDP of that district is found – a 10 per cent increase in registration of new firms is associated with a 1.8 per cent increase in GDDP. This contribution of entrepreneurial activity to GDDP is strongest for the Manufacturing and Services sectors. Further, significant heterogeneity in entrepreneurial activity across districts demonstrates the critical role played by social

and physical infrastructure in determining such heterogeneity. For instance, the eastern part of India has the lowest literacy rate of about 59.6 per cent according to the census of 2011. This is also the region in which formal entrepreneurial activity is the lowest. The analysis in this chapter, therefore, suggests the following policy implications.

2.23 First, measures to increase the literacy levels rapidly through the institution of more schools and colleges will spur entrepreneurship and consequently local wealth creation. Following the successful contribution of privatization of engineering colleges to India's software exports (Arora et.al., 2011), governments could also explore the privatization of education to augment education capacity at all levels of education.

2.24 Second, better connectivity of villages through tar roads will likely improve access to local markets and improve entrepreneurial activity. However, in terms of prioritization, this may not be as crucial as investments in education. Moreover, increasing the access to local markets might create other types of opportunities which might discourage entrepreneurship. Hence investments in infrastructure especially those undertaken to increase entrepreneurial activity should be weighed against how improved infrastructure creates other kinds of opportunities that might be consequential to a district's GDDP.

2.25 Third, policies that foster ease of doing business and flexible labour regulation foster entrepreneurial activity, especially in the manufacturing sector. As the manufacturing sector has the potential to create the maximum jobs, states must focus on enabling ease of doing business and flexible labour regulation to foster job creation.

CHAPTER AT A GLANCE

- This chapter examines the content and drivers of entrepreneurial activity at the bottom of the administrative pyramid – over 500 districts in India. The analysis employs comprehensive data on new firm creation in the formal sector across all these districts from the Ministry of Corporate Affairs (MCA)-21 database.
- First, using the World Bank's Data on Entrepreneurship, this chapter confirms that India ranks third in number of new firms created. The same data shows that new firm creation has gone up dramatically in India since 2014. While the number of new firms in the formal sector grew at a cumulative annual growth rate of 3.8 per cent from 2006-2014, the growth rate from 2014 to 2018 has been 12.2 per cent. As a result, from about 70,000 new firms created in 2014, the number has grown by about 80 per cent to about 1,24,000 new firms in 2018.
- Second, reflecting India's new economic structure, i.e. comparative advantage in the Services sector, new firm creation in services is significantly higher than that in manufacturing, infrastructure or agriculture.
- Third, grassroots entrepreneurship is not just driven by necessity as a 10 percent increase in registration of new firms in a district yields a 1.8 percent increase in GDDP. Thus, entrepreneurship at the bottom of the administrative pyramid – a district – has a significant impact on wealth creation at the grassroot level. This impact of entrepreneurial activity on GDDP is maximal for the manufacturing and services sectors.

- Fourth, birth of new firms is very heterogeneous across Indian districts and across sectors. Moreover, it is dispersed across India and is not restricted to just a few cities.
- Fifth, literacy and education in the district foster local entrepreneurship significantly. For instance, the eastern part of India has the lowest literacy rate of about 59.6 per cent according to the census of 2011. This is also the region in which new firm formation is the lowest. In fact, the impact of literacy on entrepreneurship is most pronounced when it is above 70 per cent.
- Sixth, the level of local education and the quality of physical infrastructure in the district influence new firm creation significantly.
- Finally, policies that enable ease of doing business and flexible labour regulation enable new firm creation, especially in the manufacturing sector. As the manufacturing sector has the greatest potential to create jobs for our youth, enhancing ease of doing business and implementing flexible labour laws can create the maximum jobs in districts and thereby in the states.
- Literacy, education and physical infrastructure are the other policy levers that district and state administrations must focus on foster entrepreneurship

REFERENCES

Arora, A. and Bagde, S., Advantage, R. R. C., & Based, K. 2011. "Private investment in human caoital and industrial development: the case of the Indian software industry. Dimensions of Economic THEORY and Policy: Essays for Anjan Mukherji.

Arzaghi, M. and Henderson, J.V., 2008. "Networking off madison avenue.". The Review of Economic Studies, 75(4), pp.1011-1038.

Bönte, W., Falck, O. and Heblich, S., 2009. "The impact of regional age structure on entrepreneurship.". Economic Geography, 85(3), pp.269-287.

Carlino, G.A., Chatterjee, S. and Hunt, R.M., 2007. "Urban density and the rate of invention". Journal of Urban Economics, 61(3), pp.389-419.

Dahl, M. and Sorenson, O., 2007. "Home sweet home: Social capital and location choice.". Social Science, pp.1-22.

Evans, D.S. and Leighton, L.S., 1989. "The determinants of changes in US self-employment, 1968–1987.". Small Business Economics, 1(2), pp.111-119.

Ghani, E., Kerr, W. and O'Connell, S., 2011. "Promoting entrepreneurship, growth, and job creation.". Reshaping Tomorrow, pp.168-201.

Glaeser, E.L. and Kerr, W.R., 2009. "Local industrial conditions and entrepreneurship: how much of the spatial distribution can we explain?". Journal of Economics & Management Strategy, 18(3), pp.623-663.

Meki, M., 2019, September. "Microequity For Microenterprises: Evidence From An Artefactual Field Experiment And Survey.". In Economic Research Forum Working Papers (No. 1348).

Mittelstädt, A. and Cerri, F., 2008. "Fostering entrepreneurship for innovation.

OECD, 1998. Fostering entrepreneurship.". Industries Services and Trade, 16(1), p.277.

APPENDIX

Table A1: OLS regressions of natural log of GDDP on natural log of new firms.

VARIABLES	(1) Log of GDDP	(2) Log of GDDP	(4) Log of GDDP
Log of New Firms Formed 3 years back	0.18*** (0.01)		
Log of New Firms Formed in Agriculture 3 years back		0.03*** (0.00)	
Log of New Firms Formed in Manufacturing 3 years back		0.07*** (0.00)	
Log of New Firms Formed in Services 3 years back		0.07*** (0.00)	
Log of New Firms Formed in Infrastructure 3 years back		0.05*** (0.00)	
Log of New Firms Formed in Other Sectors 3 years back		0.04*** (0.01)	
South India			10.96*** (0.05)
North India			-0.39*** (0.06)
East India			-0.68*** (0.07)
West India			-0.24*** (0.06)
South India x Log of New Firms Formed 3 years back			0.22*** (0.02)
North India x Log of New Firms Formed 3 years back			-0.06*** (0.02)
East India x Log of New Firms Formed 3 years back			0.03 (0.02)
West India x Log of New Firms Formed 3 years back			0.02 (0.03)
Constant	10.66*** (0.02)	11.21*** (0.04)	
Observations	5,591	5,591	5,591
R-squared	0.85	0.87	0.77
State Fixed Effects	Yes	Yes	No
Year Fixed Effects	Yes	Yes	Yes
Errors Clustered at District Level	Yes	Yes	Yes

*p<0.10, **p<0.05, ***p<0.01

Table A2: OLS regressions of natural log of new firms on measures of physical and social infrastructure

VARIABLES	(1) Natural Log of New Firms Formed	(2) Natural Log of New Firms Formed - Agriculture	(3) Natural Log of New Firms Formed - Manufacturing	(4) Natural Log of New Firms Formed - Services
Natural Log of Population Density per last Census	0.18*** (0.04)	0.09** (0.03)	0.16*** (0.04)	0.24*** (0.04)
Natural Log of Total Colleges per last Census	0.74*** (0.09)	0.45*** (0.08)	0.69*** (0.10)	0.72*** (0.09)
Percentage of Population Literate per last Census	0.07*** (0.01)	0.03*** (0.01)	0.06*** (0.01)	0.08*** (0.01)
Percentage Villages Connected by Tar Roads per last Census	0.02*** (0.00)	0.01*** (0.00)	0.02*** (0.01)	0.02*** (0.00)
Percentage Villages Having Access to Power per last Census	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)	0.00 (0.00)
Natural Log of Mean Distance from 500K Population Centre	-0.15*** (0.05)	-0.16*** (0.03)	-0.18*** (0.05)	-0.16*** (0.05)
Constant	-6.11*** (0.67)	-5.96*** (0.51)	-7.47*** (0.72)	-7.92*** (0.67)
Observations	5,337	5,337	5,337	5,337
R-squared	0.53	0.44	0.43	0.56
State Fixed Effects	Yes	Yes	Yes	Yes
Census Fixed Effects	Yes	Yes	Yes	Yes
Errors Clustered at District Level	Yes	Yes	Yes	Yes

*p<0.10, **p<0.05, ***p<0.01

03 CHAPTER

Pro-Business versus Pro-Crony

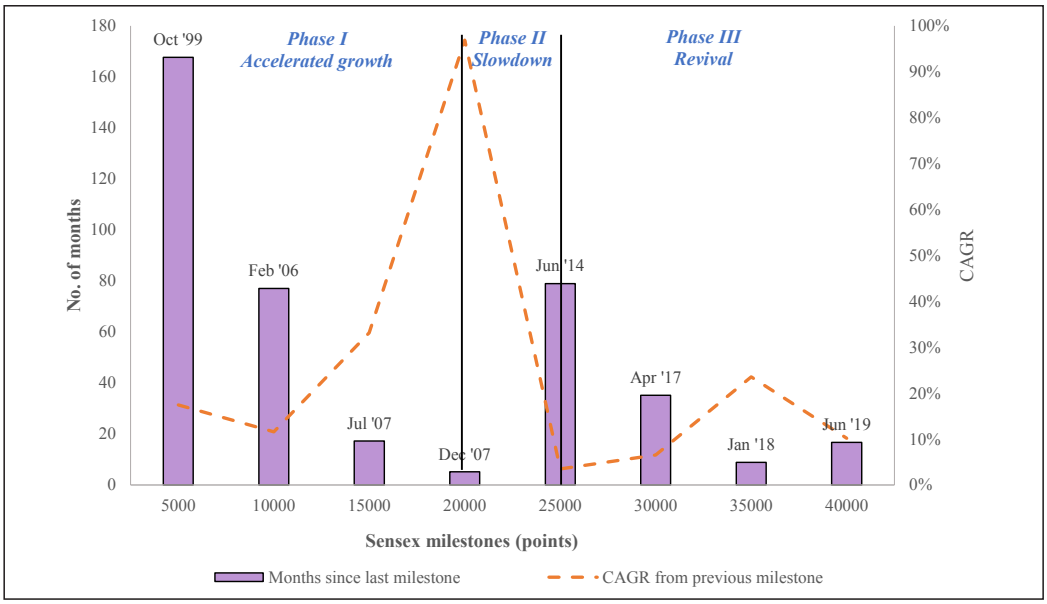
India's aspiration to become a $5 trillion economy depends critically on promoting "pro-business" policy that unleashes the power of competitive markets to generate wealth, on the one hand, and weaning away from "pro-crony" policy that may favour specific private interests, especially powerful incumbents, on the other hand. Economic events since 1991 provide powerful evidence supporting this crucial distinction. Viewed from the lens of the Stock market, which captures the pulse of any economy, creative destruction has increased significantly after reform. Before liberalization, a Sensex firm expected to stay in it for 60 years, which decreased to only 12 years after liberalization. Every five years, one-third of Sensex firms are churned out, reflecting the continuous influx of new firms, products and technologies into the economy. Despite impressive progress in enabling competitive markets, pro-crony has destroyed value in the economy. For example, an equity index of connected firms significantly outperformed the market by 7 per cent a year from 2007 to 2010, reflecting abnormal profits extracted at common citizens' expense. In contrast, the index underperforms the market by 7.5 per cent from 2011, reflecting the inefficiency and value destruction inherent in such firms. Pro-crony policies as reflected in discretionary allocation of natural resources till 2011 led to rent-seeking by beneficiaries while competitive allocation of the same resources post 2014 have put an end to such rent extraction. Similarly crony lending that led to wilful default, wherein promoters have collectively siphoned off wealth from banks, led to losses that dwarf subsidies directed towards rural development.

PRO-BUSINESS, CREATIVE DESTRUCTION AND WEALTH CREATION

3.1 The liberalization of the Indian economy in 1991 unleashed competitive markets. It enabled the forces of creative destruction, generating benefits that we still witness today. Using the lens of Indian equity markets as captured in the S&P BSE Sensex, we can clearly see an increase in market dynamism in the pro-business India of the post-liberalization period. Figure 1 reveals that after the market reforms of 1991, Sensex has not only grown, but has grown at an accelerating pace. Whereas crossing the first incremental 5000 points took over 13 years and was achieved in 1999, the time taken to achieve each incremental milestone has substantially reduced over the years.

3.2 Broadly, the growth of the Sensex as seen in the Figure 1 can be divided into three phases after 1999. Phase I from 1999 to 2007 saw an acceleration in the growth of the Sensex, with each successive 5000-point mark taking lesser and lesser time to achieve. Phase II from 2007 to 2014 saw a slowdown in the index's growth. This phase coincides with the global slowdown in 2008 among other unfavourable events. Phase III began in 2014 and saw a revival in response to structural reforms and improvement in global liquidity. Strikingly, in this phase, the Sensex jumped from the 30,000 mark to the 40,000 mark in just two years. As the Cumulative Abnormal Growth Rates (CAGR) shown in the chart depict clearly, the acceleration in the Sensex was not due to the base effect. In fact, the higher acceleration stemmed from higher CAGR.

Figure 1: Sensex- Incremental months taken to cross each 5000-point milestone



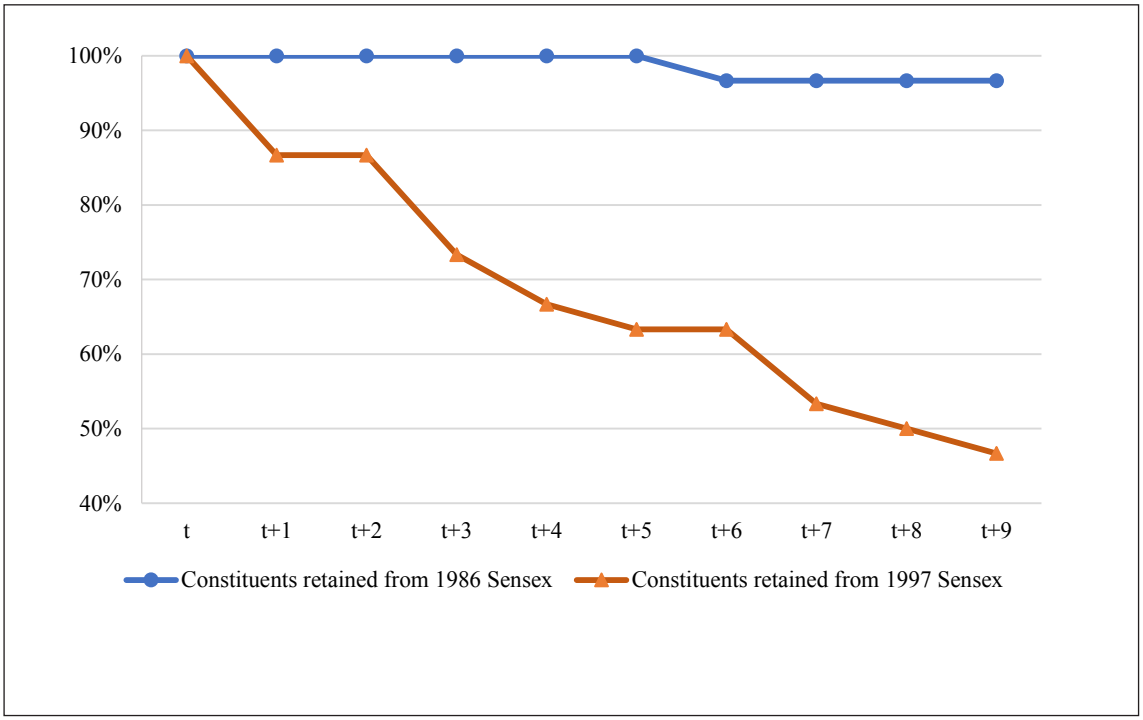
Source: BSE

Note: Time to cross each milestone is defined as the time elapsed between the first time the Sensex closed at the previous milestone and the first time it closed at the present milestone. CAGR is computed over the period from the previous milestone to the current one. Time elapsed is recorded as number of calendar days and converted to months assuming 30 days a month.

3.3 The relationship between pro-business policy and creative destruction is mirrored in the composition of the Sensex over the years.[1] For the first ten years since the Sensex's inception in 1986, the firms that constituted the index barely changed. As Figure 2 shows, of the firms that constituted the index during its inception in 1986, nearly all the firms were retained for the majority of the next decade. On the other hand, the constituents of the Sensex of 1997 were steadily churned out over the next decade, so that the Sensex of 2006 had barely half the firms from the Sensex of 1997.

[1] Data gathered from BSE and Bloomberg. Full market capitalization is used rather than free-float capitalization for comparability over time, as free-float methodology was initiated only in 2003. Sensex constituents and market capitalization data were obtained from BSE for 1985-2000. Data is available from BSE on the following dates of observation: Dec '91, Jun '92, Jun '93, Nov '94, Mar '95, Mar '96, Mar '97, Jun '98, Mar '99, Mar '00. Data for subsequent years obtained from Bloomberg with Sept of each corresponding year as the month of observation, basis the latest available data as of this writing (data for 2019 is as of 3 Sept 2019).

Figure 2: Percentage of Sensex constituents retained over next decade



Source: Bloomberg, BSE

Note: Due to slight discrepancy in the month of observation before and after 2001 (due to distinct data sources), consider individual annual churn rates for 2000-02 as approximate; however the aggregated churn over these years is accurate.

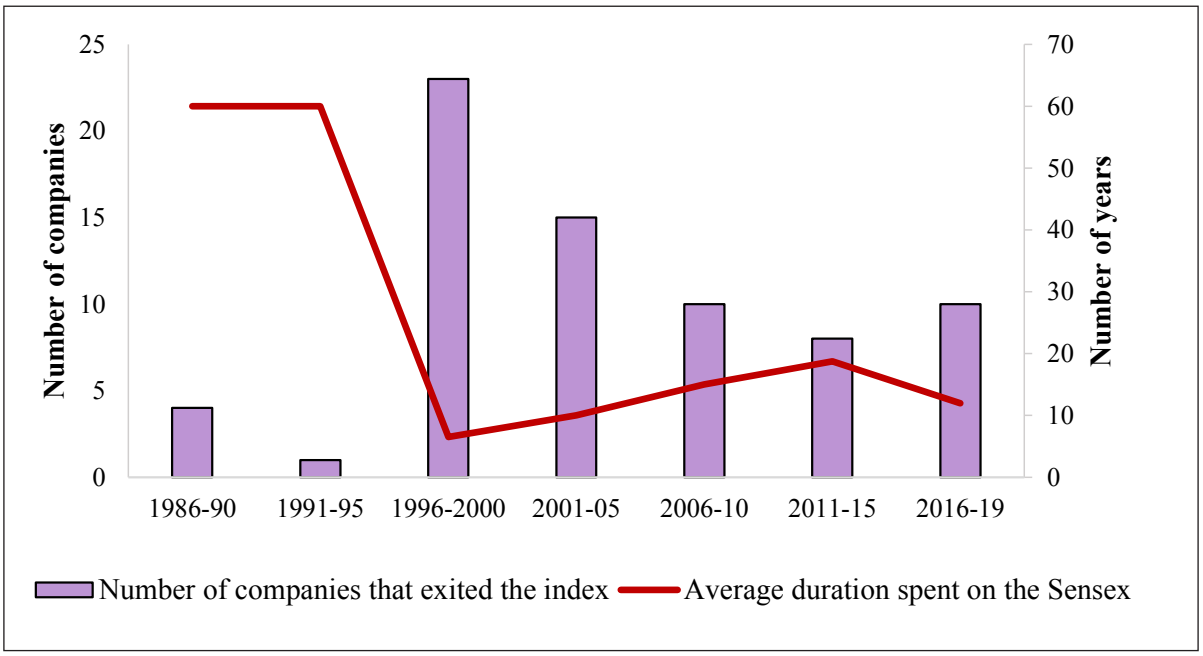
3.4 The lack of dynamism in the constitution of the index in its initial years was largely representative of the lack of dynamism in the Indian economy in general. However, the years following 1991 liberalization saw the rapid emergence of new firms, new ideas, new technologies and new operating processes, causing a steep revision of the Sensex in 1996. In 1996, half of the constituents of the index were replaced. After 1996, the Sensex underwent more frequent revisions, owing to the more dynamic nature of the now substantially more competitive Indian market.

3.5 Figure 3 shows the number of firms that exited the Sensex in each five-year period following 1986. Pro-business policy, i.e., liberalization caused a spike in the number of firms churned in the years that immediately followed it, but the churn rate did not decline to pre-liberalization levels in later years. Ten firms were churned out in the five years from 2006 to 2010, eight in 2011-15 and ten in 2016-19. Put differently, every five years, roughly one-third of the firms in the index are replaced.

3.6 The figure also indicates the average duration a Sensex constituent remains on the index. Given that only 5 firms exited the index in the ten-year period 1986-95, had liberalization not occurred, a firm that entered the index in 1986 could have expected to stay on the index for the next sixty years! Following the 1991 reforms, the average duration a firm spent on the index declined drastically. Currently, a firm is expected to remain on the index for only 12 years – one-fifth of the expected duration prior to the reforms.

3.7 A pertinent question that arises at this stage is whether the churn illustrated above was beneficial to the Indian economy.

Figure 3: Increasing churn in the Sensex



Source: Bloomberg, BSE

Note: Average time spent on Sensex is calculated as the reciprocal of the churn rate in that period. Because of the very low churn in the first two periods, the total churn rate during 1986-95 is used to infer the time spent on the Sensex for these two periods.

A monopolist taking the place of another identical monopolist is hardly beneficial. However, in the Indian case, the Sensex does represent a process of creative destruction rather than spurious dynamism. The firms that displaced the incumbents on the Sensex brought with them new ideas, technologies and processes. For an illustration, consider Table 1 that depicts the major Sensex revision of 1996 following market reforms.

Table 1: Revision of the constituents of the Sensex index in 1996

Exit		Replacement	
Firm	**Industry**	**Firm**	**Industry (new in bold)**
Ballarpur Industries	Materials	Arvind Mills	Consumer Durables & Apparel
Bharat Forge	Materials	Bajaj Auto	Automobiles & Components
GSFC	Materials	Ambuja Cements	Materials
Indian Organic	Materials	ICICI	**Diversified Financials**
Mukand Iron	Materials	MTNL	**Telecommunication Services**
Bombay Dyeing	Consumer Durables & Apparel	BHEL	Capital Goods
Century Textiles	Consumer Durables & Apparel	Colgate	**Household & Personal Products**

Indian Rayon	Consumer Durables & Apparel	IDBI	**Diversified Financials**
Phillips	Consumer Durables & Apparel	Ranbaxy Labs	Pharma, Biotech & Life Sciences
Voltas	Consumer Durables & Apparel	Tata Chemicals	Materials
Ceat	Automobiles & Components	BSES	Utilities
Hindustan Motors	Automobiles & Components	HPCL	Energy
Premier Auto	Automobiles & Components	SBI	**Banks**
Kirloskar Cummins	Capital Goods	IPCL	Materials
Siemens	Pharma, Biotech & Life Sciences	SAIL	Materials

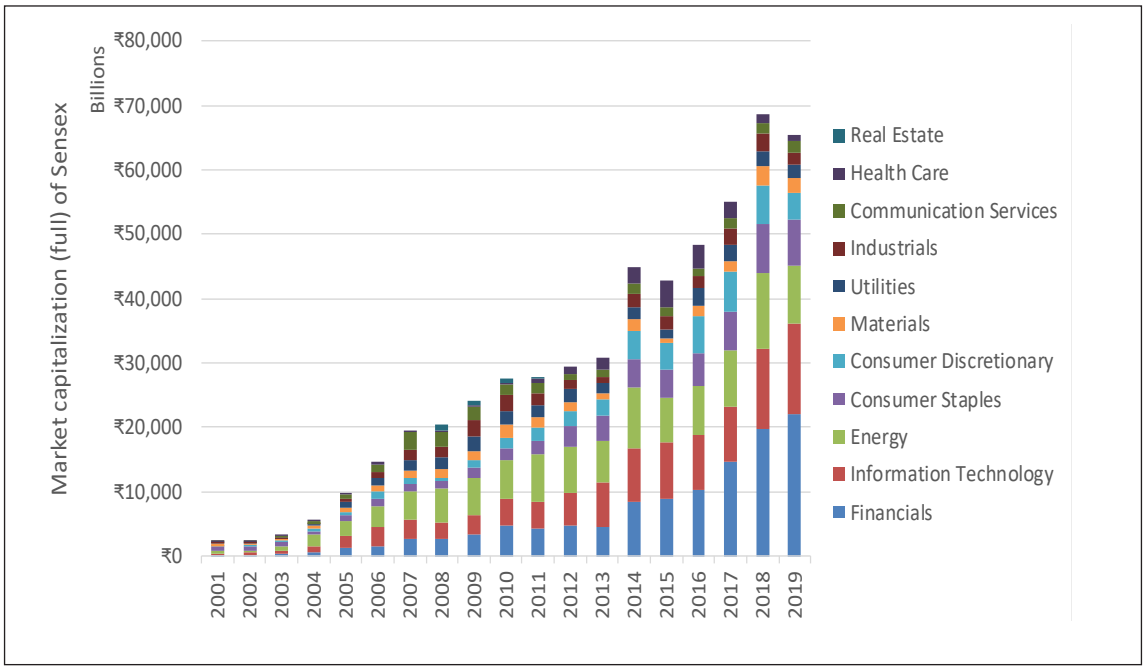
Source: BSE, Bloomberg.

Note: Highlighted cells represent new sectors that entered the index for the first time.

New sectors like banks and financials entered the index for the first time, eroding the predominance of the manufacturing sector on the index, placing the services sector on the map for the first time, and reflecting the far-reaching changes that the Indian economy was witnessing in the wake of liberalization.

3.8 Figure 4 depicts the size of various sectors in the Sensex by market capitalization over time. Financials and information technology, which were virtually non-existent in the Sensex of the early 1990s,

Figure 4: New sectors emerged in the Sensex following liberalization

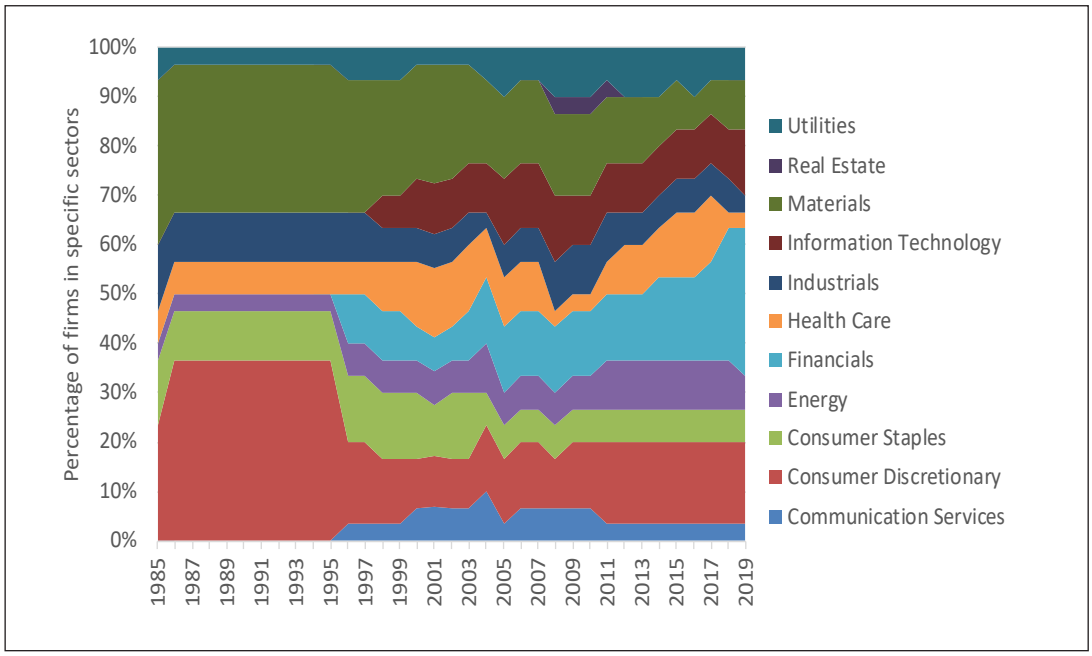


Source: Bloomberg, BSE

are responsible for more than 50 per cent of the market share of the Sensex today. It is therefore incontrovertible that the churn in the Sensex represents a very real process of creative destruction that brought altogether new technologies, products and services to consumers.

3.9 The diversity of sectors in the Sensex steadily increased over time following market reforms, as shown in Figure 5 below. The initial Sensex of 1986 was dominated by the Materials and Consumer Discretionary sectors, accounting for two-thirds of the firms on the Sensex. Sectors like financials, telecommunications and information technology were non-existent in the index then. With the entry of these new sectors, today's Sensex is far less concentrated than the Sensex of the 1980s and 1990s, and mirrors the far lower sectoral concentration of the Indian economy as a whole.

Figure 5: Sectoral concentration of the Sensex decreased post-liberalization as new sectors emerged



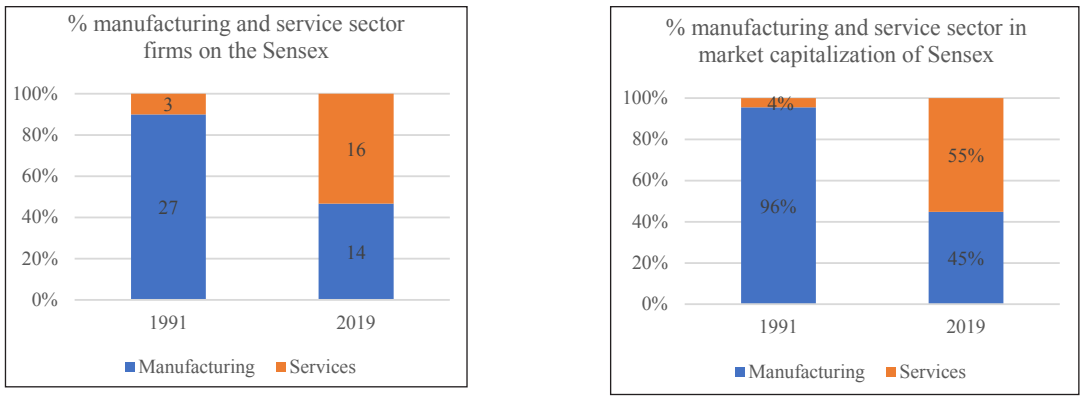
Source: Bloomberg, BSE

3.10 India has followed an idiosyncratic growth pattern, wherein the prime mover of the economy has shifted from agriculture to services. Almost 60 per cent of Indian GDP is attributable to the services sector. As shown by Figure 6, the number of Sensex firms in manufacturing has reduced while those in services has increased between 1988 and 2019. Thus, over the years, the share of services sector in the total number of companies on the Sensex has changed from being negligible in the 1980s to the dominant status today.

3.11 Today's Sensex is not only composed of a larger number of sectors, but is also far more democratic in terms of the size of companies. In 1991, the largest firm on the index was roughly 100 times the smallest in terms of market capitalization. Ten years later, the ratio declined to roughly 75. In 2018, the ratio was only 12. The benefit of liberalizing markets does not end with a one-time drop in the ratio and continues to be felt

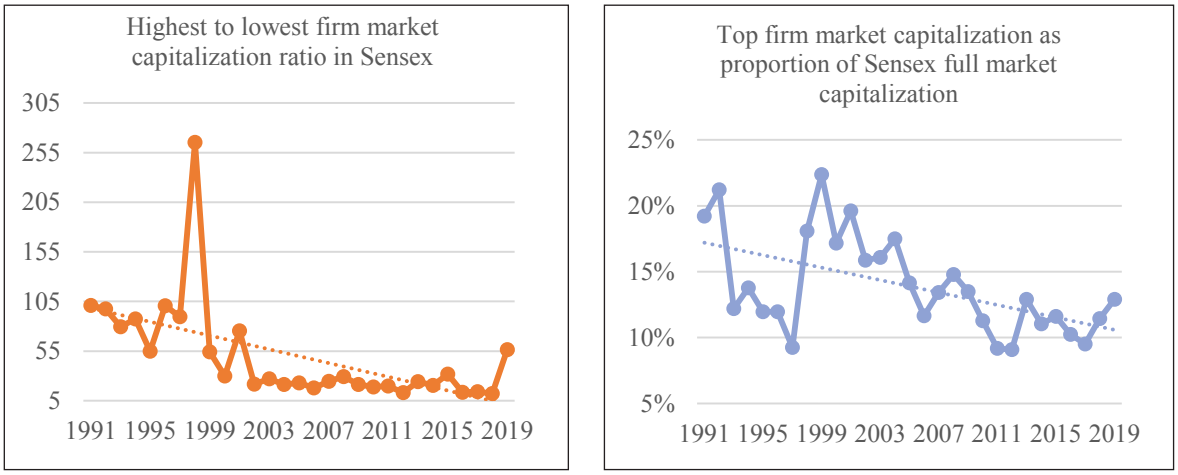
even today, as indicated by the decreasing trend in the ratio in Figure 7. Similarly, while the largest firm of 1991 constituted around 20 per cent of the market capitalization of the Sensex, the largest firm of 2019 contributed only 13 per cent.

Figure 6: The rise of services in the Sensex



Source: Bloomberg, BSE

Figure 7: Decreasing size concentration of firms in the Sensex



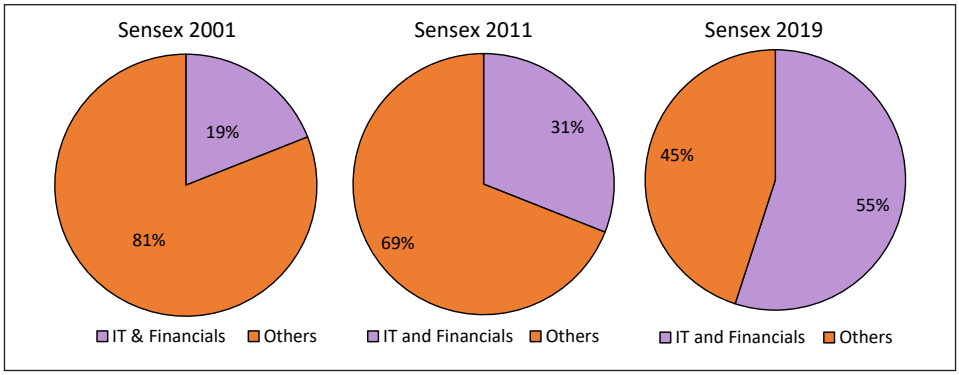
Source: Bloomberg, BSE

Note: See earlier footnote about the dates on which market capitalization for each corresponding year is observed. Data for 2019 is as of 3 Sep 2019

3.12 The forces of creative destruction following liberalization in the Indian economy have led to the rise of new sectors such as financials and information technology. Virtually non-existent in the Sensex of the early 1990s, the share of these sectors in the total market capitalization has increased over the years, so much so that these sectors dominate the Sensex today (Figure 8). At first glance, this trend indicates a cause for concern: a potential case of more concentration or a reversal in creative destruction in the economy. However, a closer look reveals otherwise.

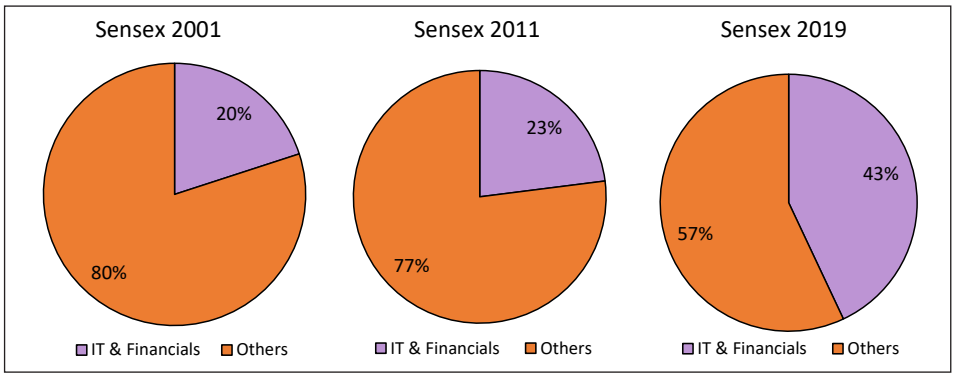
3.13 Firstly, the rising share in market capitalization has been accomplished by a rise in number of companies rather than a rise in size of incumbents, suggesting greater competition within these sectors (Figure 9).

Figure 8: Increasing Share of IT and Financials Sector in Total Market Capitalization of Sensex



Source: Bloomberg, BSE

Figure 9: Increasing Share of IT and Financials Sector (By Count) in the Sensex



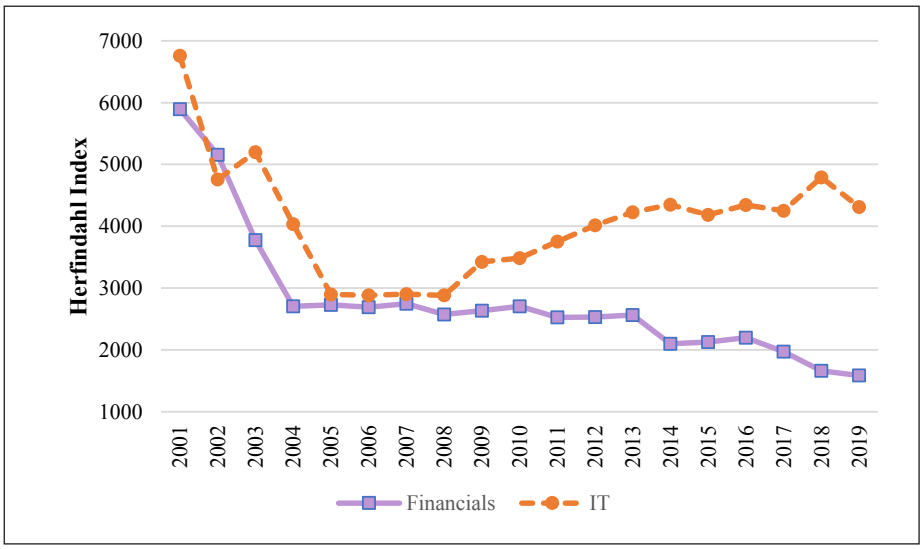
Source: Bloomberg, BSE

3.14 Secondly, using the Herfindahl Index to analyse degree of competition within the two sectors reveals an overall decline in concentration in both sectors. However, the IT sector has recently begun to show a slight increasing trend in the Herfindahl index, indicating that there is room to increase competition in the sector (Figure 10).

3.15 Three key insights emerge from the analysis above. First, we can expect today's dominant firms to remain dominant for only one-fifth of the time that their pre-liberalization counterparts did. Second, sectors once considered mainstays of the Indian economy are being displaced by new sectors bringing with them new technologies and products. The competitive advantage of entrenched firms is being rapidly challenged by new, smaller and more agile firms; every five years, roughly one in three firms in the Indian economy can expect to be challenged in a massive way by the forces of creative destruction. Finally, the difference between the sizes of the largest and smallest firms are rapidly shrinking, and consequently monopoly power in the economy is declining and making way for more competitive markets. Consumers benefit from an increased variety of goods and services, lower prices and incessant improvement in the quality of existing products.

3.16 "There is a common misconception that people who are in favour of a free market are also in favour of everything that big

Figure 10: Herfindahl Index of Financials and IT sectors

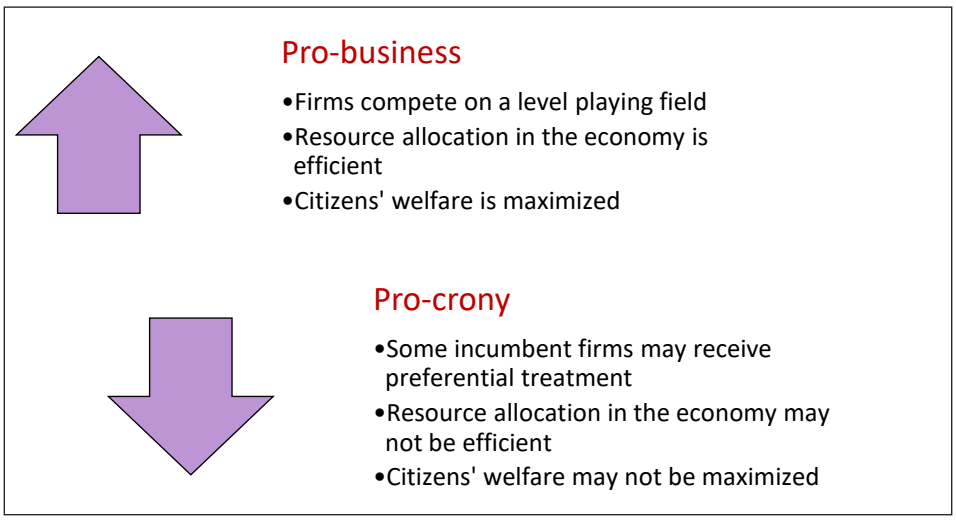


Source: Bloomberg, BSE

business does. Nothing could be further from the truth," wrote Milton Friedman (Friedman 1999). Pro-crony policy supports incumbent firms but does not necessarily foster competitive markets (Figure 11). On the other hand, policy that fosters competitive markets (hereafter pro-business policy) creates a level playing field for businesses to compete. It unleashes the powerful forces of creative destruction, which create wealth. Austrian economist and creator of the term, Joseph Schumpeter, described creative destruction as a "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one."

3.17 Creative destruction brings new innovations into the market that serve people better than the old technologies they displace. It brings new firms into the markets, which compete with existing firms and lower prices for consumers. It brings dynamism to the marketplace that keeps firms on their

Figure 11: Difference between pro-business and pro-crony policy



toes, always on the lookout for the next big way to serve consumers. It has only one pre-requisite – a pro-business policy stance that fosters competitive, unfettered markets.

3.18 When creative destruction is fostered, sectors as a whole will always outperform individual companies within the sector in creating wealth and maximizing welfare. Therein lies the motivation for India to pursue pro-business, rather than pro-crony, growth.

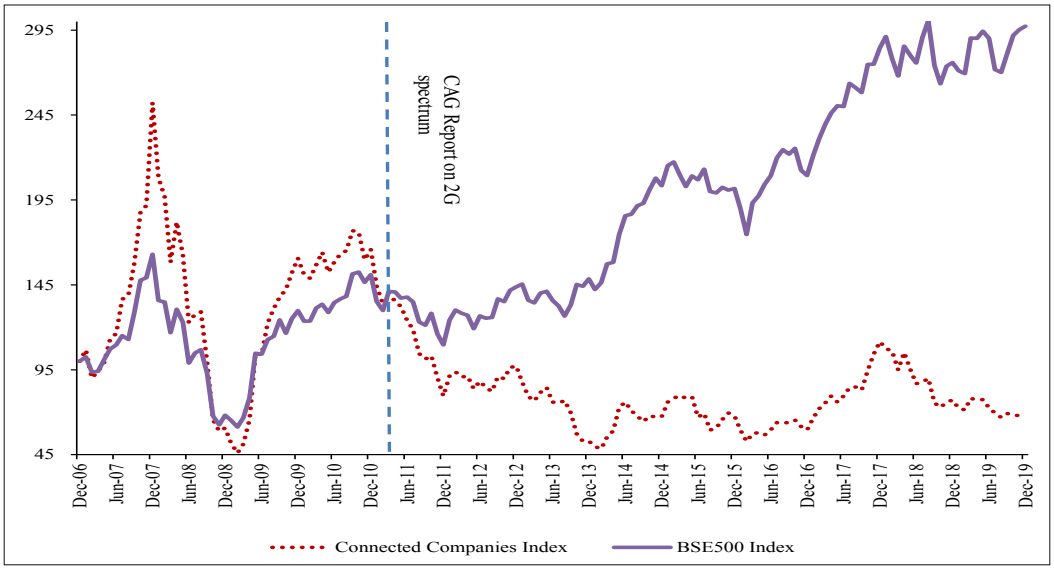
PRO-CRONY AND WEALTH DESTRUCTION

3.19 Pro-crony policies, in contrast to pro-business ones, erode wealth in the economy as cronyism fosters inefficiencies by inhibiting the process of creative destruction. Raghuram Rajan and Luigi Zingales stressed the need for "saving capitalism from the capitalists" in their eponymous book, referring to the dangers of regulatory capture by private interests (Rajan and Zingales 2003).

3.20 Ambit Pvt Ltd, a brokerage, publishes a stock market index of 75 Indian firms that they define as "connected". For our purposes, they proxy firms that may benefit from pro-crony policies. Figure 12 compares the performance of this index to the BSE 500 index over time.

3.21 Prior to 2010, it clearly paid a firm and its shareholders if the firm's promoters had "connections". The index of "connected" firms consistently outperformed the BSE 500 index as these firms systematically made more profits than would have been possible in a more competitive economy. The market priced the current and future abnormal profits of these firms. In late 2010, the Comptroller and Auditor General's audit report on the 2G spectrum allocation named a list of private companies that benefitted from alleged collusions in the allocation of the 2G spectrum. The timing of the report's release is demarcated on the chart with a vertical line.

Figure 12: Investor wealth generated by connected firms before and after CAG report on the 2G scam



Source: Ambit Capital research, Capitaline, BSE

Note: 1) The connected companies index is an aggregate market cap index which has been rebased and is adjusted for demergers, 2) 70 companies with political dependence and connectivity as on Dec'06 as per Ambit analysts.

3.22 The CAG report on the 2G allocations appears to have reversed the fortunes for "connected" firms. The "connected" index started to underperform the market starting 2011. In fact, the gap for the investor wealth destroyed by "connected" firms is widening over time, which reflects the inability of such firms to systematically create value for their investors from extracting rents based on their political connections (Kishore 2016).

3.23 Had an investor invested ₹ 100 in these "connected" firms at the start 2007, her investment would have grown to ₹ 190 by the start of 2010. On the other hand, had she invested ₹ 100 in the BSE500, the investment would have grown to ₹ 150. The "connected" index yielded an average return of 17.5 per cent per annum during this period, whereas the BSE 500 index yielded an average return of 10.5 per cent per annum. "Connected" firms thus outperformed the broad index of the stock market by 7 percentage points a year on average till 2010. Put differently, from 2007 to 2010, "connected" firms realized 7 percentage points higher returns than they would have in a more competitive market.

3.24 This pre-2010 outperformance of "connected" firms indicates the possible extent of rents extracted by these firms at society's expense. In contrast, the significant post-2010 underperformance – following the release of the CAG report – illustrates the fact that such "connected" firms were likely to have been inefficient ones. Between 2007 and 2016, "connected" firms have earned, on average, 7.5 percentage points lower returns than the BSE 500 index per annum. This phenomenon of rent-seeking by inefficient, "connected" firms, though unhealthy to the economy, is not unique to India. In fact, several global studies reinforce the relationship between such connections and rent-seeking activities when institutional checks and balances are weak (Box 1).

Box 1: Global evidence that political connections lead to rent extraction

Several studies from around the globe find that political connections lead to rent extraction.

Faccio (2006) examines politically connected firms in 47 countries and finds that around the time that a firm announces that managers or large shareholders are entering politics, there is a positive impact on stock price. The result is consistent with the theory that markets anticipate additional sources of profit for the now politically connected firm despite no change in firm fundamentals. Faccio *et al.* (2006) study financial distress in politically connected firms in 35 countries and find that distressed politically connected firms are significantly more likely to be bailed out by the government than their non-connected counterparts. Claessens *et al.* (2008) show that Brazilian firms that provided contributions to (elected) federal deputies experienced higher stock returns than firms that did not make such contributions around the 1998 and 2002 elections. Further, contributing firms substantially increased their bank financing relative to a control group after each election, indicating that access to bank finance is an important channel through which political connections operate. They estimate the economic costs of this rent seeking over the two election cycles to be at least 0.2 per cent of gross domestic product per annum.

A recent World Bank study of cronyism in Ukraine finds that the country would grow 1 to 2 per cent faster if all political connections were eliminated (Kahkonen 2018)! Politically connected firms in Ukraine account for over 20 per cent of the total turnover of all Ukrainian companies. The study finds that these politically connected firms (i) are larger than non-connected peers, (ii) pay lower

effective tax rates, (iii) are less productive in terms of total factor productivity (TFP), (iv) are less profitable, and (v) grow slower (World Bank 2018).

Evidence from Asia

China

Firth *et al.* (2009) find that political connections play a role in the allocation of bank loans to Chinese firms. They find that having the state as a minority owner helps firms obtain bank credit. Political connections especially benefit firms located in areas with a less developed banking sector. Deng, Zeng & Zhu (2019) provide evidence that firms in China actively build political connections to alleviate the cost of market frictions. Firms facing severe market frictions are not as financially constrained as they would be expected to be; the key reason is that they possess strong political connections which alleviate these costs. Chan *et al.* (2012) find that politically connected firms in China display much lesser financing constraints compared to firms without such connections. Chen *et al.* (2017) find that politically connected underwriters increase the likelihood of clients' IPO applications being approved by the Chinese Securities Regulatory Commission. Further, consistent with the rent-seeking argument, they document the post-IPO underperformance of such firms, indicating that minority shareholders' interests may be compromised.

Thailand

Bunkanwanicha & Wiwattanakantang (2009) find in Thailand that when business owners come to political power, the market valuation of their firms increases dramatically. Business owners in top offices use their policy-decision powers to implement regulations and public policies favorable to their firms. Civilize *et al.* (2015) undertake a longitudinal study of firms in Thailand and conclude that higher realized stock returns are systematically associated with political connectedness. Consistent with the view that such a relationship provides economic rents, this finding is particularly prominent in more regulated industries. The politically connected premium is higher for higher level political connections and when the political bodies hold an equity stake in the firm.

Indonesia

Fisman (2001) estimates the value of political connections in Indonesia by looking at how stock prices of firms with differing degrees of political exposure moved when former President Suharto's health was reported to change. Adverse health reports led politically connected firms to realize lower returns than less dependent firms.

Malaysia

Johnson & Mitton (2003) find that the imposition of capital controls in Malaysia in 1998 primarily benefitted firms with strong ties to the President, suggesting that capital controls provided a screen behind which firms with political ties leveraged their connections for favours. A study of Malaysian politically connected firms finds that such firms are perceived as being higher risk by the market, audit firms and lenders. Such firms have higher likelihoods of reporting a loss, having negative equity, and being charged higher interest rates by lenders (Bliss and Gul 2012).

Vietnam

Rand (2017) examines over 2000 Vietnamese SMEs over a 10-year period and finds that political connections decrease the likelihood of a firm being credit-constrained by 4 percentage points. Further, politically connected firms accessing credit face lower cost-of-capital than non-connected SMEs not excluded from formal financial markets.

These studies unanimously document a myriad of benefits enjoyed by politically connected firms. These benefits represent direct and indirect forms of rent unduly enjoyed by the connected firm's shareholders at the expense of unconnected firms and society at large.

3.25 Pro-crony, when compared to pro-business, policies can create various indirect costs as well. When opportunities for crony rent-seeking exist, firms shift their focus away from growth through competition and innovation towards building political relationships, thus undermining the economy's capacity for wealth creation (see Box 2). Further, the rents sought by cronies are paid for by genuine businesses and citizens who are not receiving any preferential treatment. Such a transfer of wealth exacerbates income inequality in the economy, as crony firms leverage their connections to extract a larger share of existing wealth instead of expanding the available wealth.

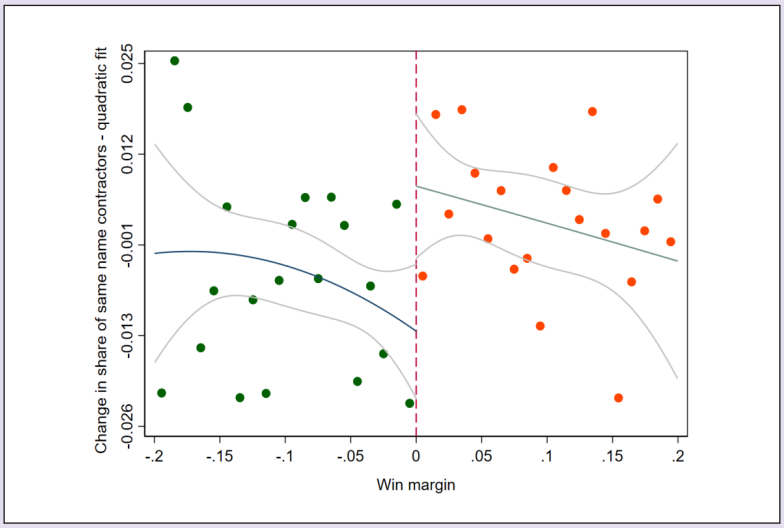
DISCRETIONARY ALLOCATION OF NATURAL RESOURCES VIS-À-VIS ALLOCATION VIA AUCTIONS

3.26 In this section, we consider a case study from the natural resource allocation process in India. India has the fifth largest coal reserves in the world behind USA, Russia, China, and Australia. Coal is the most important indigenous source of energy for India; it meets more than half of India's energy requirements. Therefore, allocation of such an important natural resource provides us a nice case study to contrast pro-business and pro-crony policies.

Box 2: Political clout and preferential allocation of contracts (2001-13): A case study of road construction in India

Many businesses in India use their political clout to obtain preferential allocation of projects and resources from the government. Lehne, Shapiro & Eynde (2016) examine bidding data on more than 88,000 rural roads built under the Pradhan Mantri Gram Sadak Yojana (PMGSY) and juxtapose this data with election results. Using a large sample spanning 8116 candidates in 4058 elections from 2001 to 2013 and employing a regression discontinuity design, the study finds that after close election victories, contractors affiliated to the winning politician are more likely to be awarded road projects. Figure below depicts this result graphically, plotting the change in the share of contractors who have the same name as the winning politician against the politician's margin of victory in the election.

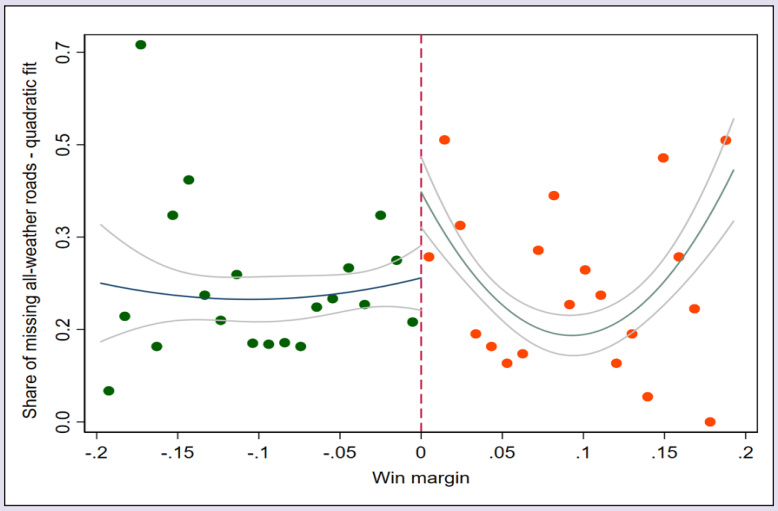
After close election victories, the share of road construction contractors who appear affiliated to the winning politician increases



Source: Lehne, Shapiro & Eynde (2016)

Further, the authors use Census 2011 data at the village level to check whether roads listed as completed in the PMGSY monitoring data are also captured in the Census data. Several roads recorded as complete in PMGSY monitoring data are missing from the Census, suggesting that these roads were never actually built or completed. Around 26 per cent of roads listed as completed prior to the census in PMGSY data are missing from the 2011 Census data. Preferential allocation of roads increases the likelihood of such "missing" roads by as much as 86 per cent. The figure below depicts this dramatic effect.

After close election victories, the share of missing all-weather roads increases when the contractor appears affiliated to the winning politician



Source: Lehne, Shapiro & Eynde (2016)

The authors find that preferential allocation accounts for an additional 497 missing all-weather roads that would have served roughly 860,000 people. Clearly, PMGSY contracts that seem to have been politically influenced lead to suboptimal economic outcomes.

3.27 Prior to 1993, no specific criteria for the allocation of captive mines existed. Amendments introduced to the Coal Mines (Nationalisation) Act 1973 in June 1993 allowed private companies to carry out coal mining for captive use. In July 1992, a screening committee was set up under the chairmanship of the Secretary of Coal to consider applications made by various companies interested in captive mining and to allocate coal blocks for development. In August 2012, the CAG report on coal block allocations examined the effectiveness of the processes adopted in allocation of coal blocks.[2] On 24 September 2014, the Supreme Court of India cancelled 214 of the 218 allocations made by the Government of India over a span of 15 years.[3] The Coal Mines (Special Provisions) Bill, 2014, and its subsequent rules, were passed in December 2014, and the Coal Mines (Special Provisions) Act, 2015, was included in the Indian mining legislative framework. The Act ensured that any future allocation of coal blocks would solely be through competitive auctions.

[2] The report can be found here: https://www.cag.gov.in/sites/default/files/audit_report_files/Union_Performance_Commercial_Allocation_Coal_Blocks_and_Production_Ministry_Coal_7_2012.pdf.

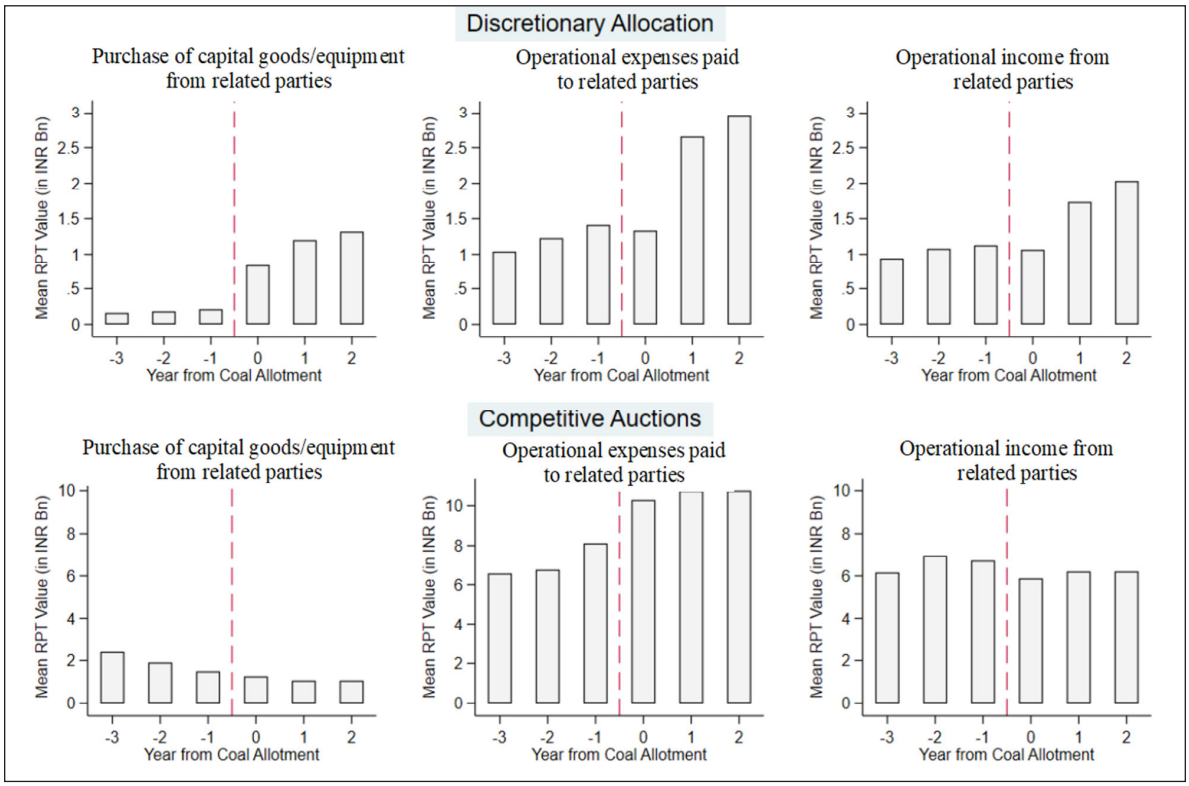
[3] Manohar Lal Sharma vs. The Principal Secretary & Ors., Writ Petition No. 120 of 1012. A copy of the order can be accessed here: http://www.prsindia.org/uploads/media/Coal%20Mines/SC%20order.pdf.

Use of Related Party Transactions in Discretionary Allotment of Natural Resources

3.28 Abraham, Chopra, Subramanian & Tantri (2018) find evidence that the form of coal block allocation has an impact on the value of Related Party Transactions (RPTs) engaged in by firms that are beneficiaries of the coal block allocation. Comparing the RPTs in the 3-year period post the allotment against the 3-year period prior to the allotment, they find significant differences between the rupee value of RPTs undertaken by beneficiaries of the committee-based allotment versus the beneficiaries of the competition-based allotment.

3.29 Figure 13 graphically depicts the comparison for RPTs under three heads. First, RPTs used for purchasing capital goods/ equipment from related parties are classified as "Capital Purchases". Capital purchases offer an ideal mechanism to transfer wealth because they are large one-time non-recurring cash outflows that can serve as an opportune mask to hide transactions from regulators. Second, operational expenses paid to related parties are classified as "Revenue expenses." Third, operational income from related parties are classified as "Revenue income." These three RPTs show a marked increase in the three-year period following the receipt of a coal block through the committee-based allocation as compared to the preceding three years. No such increase is seen in the case of auction-based allotment. The other three main types of RPTs – Capital Sales, Loans and advances given and taken do not show any particular increase in the case of the committee-based allocation.

Figure 13: Impact of coal block allocations on Related Party Transactions



Source: Abraham, Chopra, Subramanian & Tantri (2018)

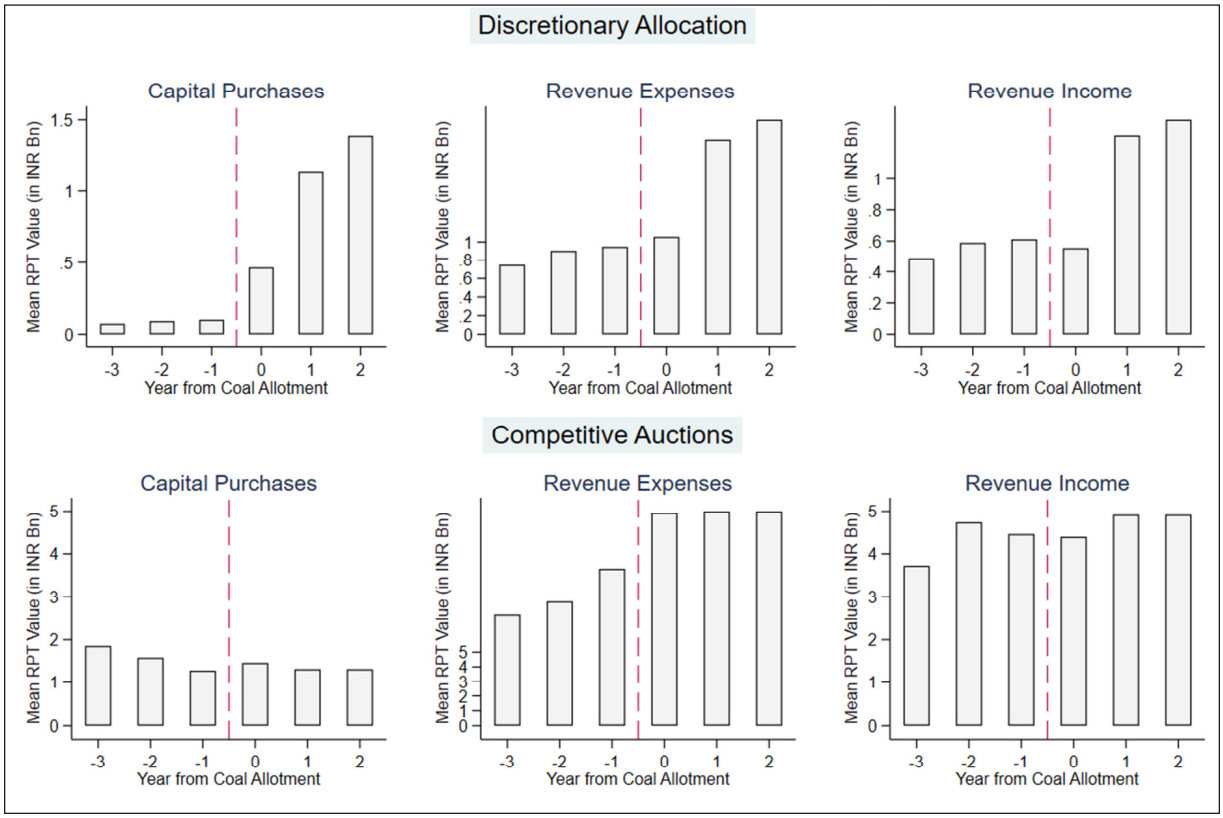
RPTs to unlisted/foreign entities and tax havens

3.30 Figure 14 shows RPTs with unlisted/foreign entities and related parties that are based out of internationally recognised tax havens. Unlisted/foreign entities are either individuals or unlisted domestic enterprises or enterprises incorporated in a foreign jurisdiction. As such entities are harder for the domestic enforcement authorities to track, RPTs with such entities are likely to manifest for purposes of opacity. Similarly, tax havens are charaterised by opaque disclosure regulations and hence serve as an ideal sink to tunnel corporate wealth away from other stakeholders. As the figure shows, firm behaviour is nearly identical to the earlier figures, with capital purchases, revenue expenses and revenue income showing a remarkable increase post the receipt of the coal block in the committee-based allotment process, while no such increase is seen following competitive auctions.

Director compensation and consulting expenses

3.31 The authors also find evidence that one-time payments to directors like commissions, perquisites and consulting expenses increase following the discretionary allocation. Director commissions increase by 12 per cent, director perquisites by 5.7 per cent and other consulting expenses by

Figure 14 : RPTs to Unlisted/Foreign counterparties and tax havens



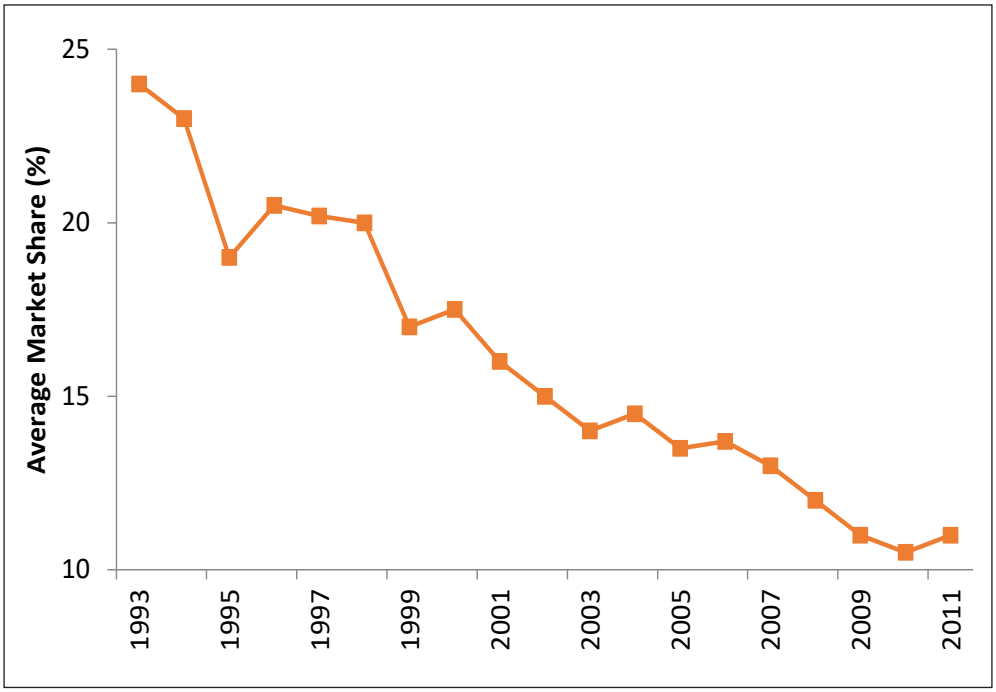
Source: Abraham, Chopra, Subramanian & Tantri (2018)

7.6 per cent. We find no increase in the case of salary expenses for normal employees suggesting that only the directors benefit post the discretionary allocation. In the case of auctions, we see no such increases. In fact, we find that director salaries decrease post the auction-based allotment.

Firm productivity and performance

3.32 Figure 15 shows the evolution of the average market share of firms that received the committee-based allocation from 1993 to 2011. There has been a steady decline in the market share of these firms despite them getting a windfall gain from the discretionary allocation. The gain of an almost free resource should have aided firm productivity and business fundamentals. Instead the market share has fallen over the years - suggesting a case of Dutch disease – firms that got the free resource diverted efforts towards the tunnelling of the windfall gain instead of towards productive business activity.

Figure 15: Market share of allottee firms (committee-based allocation)



Source: Abraham, Chopra, Subramanian & Tantri (2018)

3.33 Indeed, the authors find that total income declines by 54.9 per cent over a 3-year period from the date of allocation as compared to firms that did not receive an allocation, total expenses reduce by 58.7 per cent and PAT by 37.8 per cent. There also seems to be a loss of productive assets - total assets reduce by 76.2 per cent and Land and Building reduces by 48.2 per cent and Plant and Machinery reduces by 51.1 per cent. They find no such decline in the case of competitive auctions.

3.34 Overall, the evidence suggests that discretionary allocation of natural resources by a committee provides avenues for rent-seeking. Subsequently, firm owners divert their focus towards tunnelling away these rents rather than furthering productive

economic activities. A shift to market-based allocation of resources takes these avenues away, encourages productive economic activity and generates more wealth.

Riskless Returns: The Case of Wilful Default

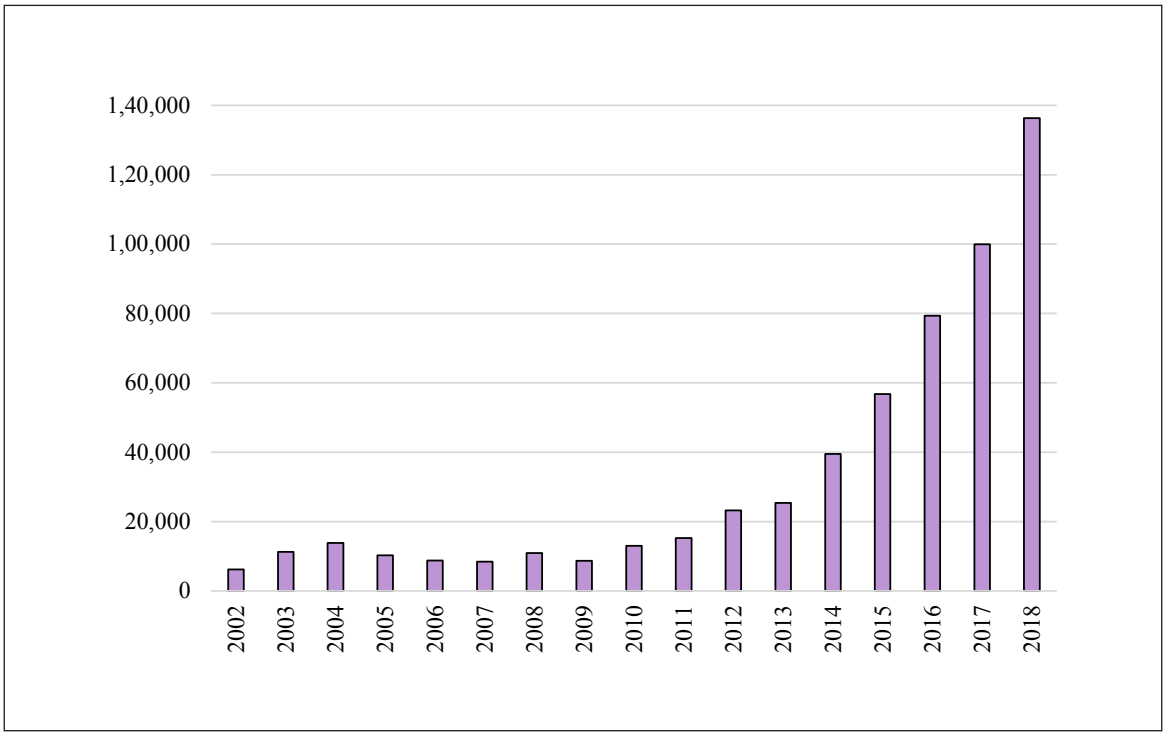
3.35 Although the primary tenet of any investment is that high expected rewards come with high risk, many Indian firms have found a peculiar way to reap rewards without commensurate risk. Many firms enjoy profits in good times but often rely on the state or their financiers to bail them out in bad times. A particularly egregious form of such riskless return is the phenomenon of wilful default – a classic case of a one-way gamble in which "heads, the promoter wins; tails, the lender loses". Wilful default occurs when firms take loans, divert the proceeds out of the firm for the personal benefit of owners, default on loans and declare bankruptcy, thereby expropriating a range of stakeholders – lenders, minority shareholders, employees, regulators and state coffers.

3.36 The RBI defines wilful defaulter as a firm that has defaulted in meeting its repayment obligations even though it has the capacity to honour these obligations. A firm could also be branded a wilful defaulter if it uses the funds for purposes other than what is sanctioned by the lender, siphons the money out to related parties or removes the assets used to secure the loan.

3.37 Every rupee lent to a wilful defaulter constitutes an erosion of wealth. Money lent to a genuine business creates assets, which generate profit and employment. On the other hand, money lent to a firm that has no intention of investing the proceeds in *ex-ante* profitable projects is money wasted. Besides making cronies rich, it contributes nothing to the economy.

3.38 Figure 16 and Figure 17 show the wealth that wilful defaulters have taken out of the Indian economy. As of 2018, wilful

Figure 16: Aggregate outstanding amount owed by wilful defaulters (₹ crores)

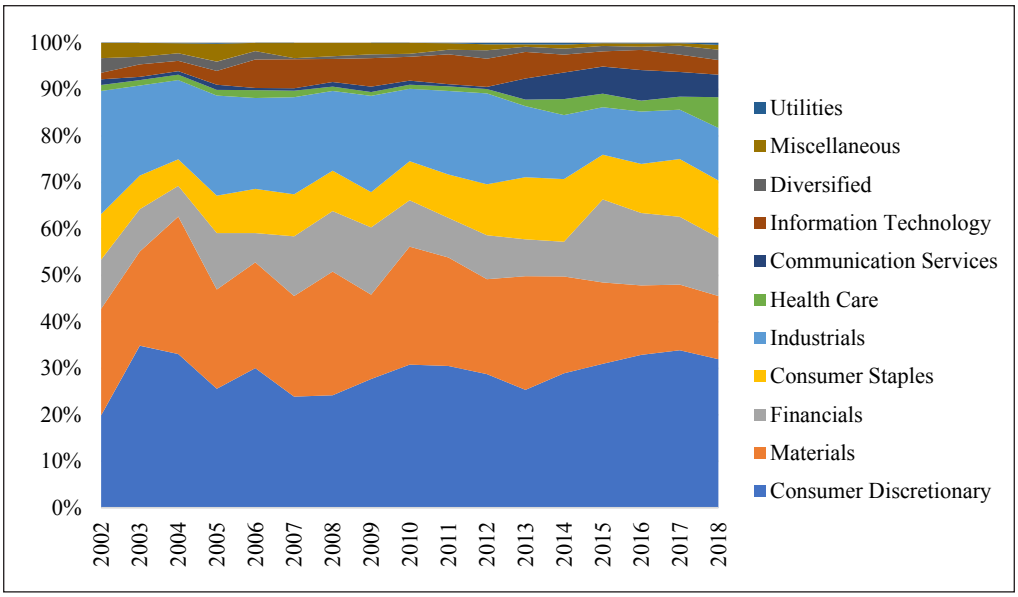


Source: TransUnion CIBIL Suits Filed database

defaulters owed their respective lenders nearly ₹1.4 lakh crores. The number has been steadily rising since the early part of the current decade. The defaulters are spread across several sectors, with manufacturing firms constituting the largest share.

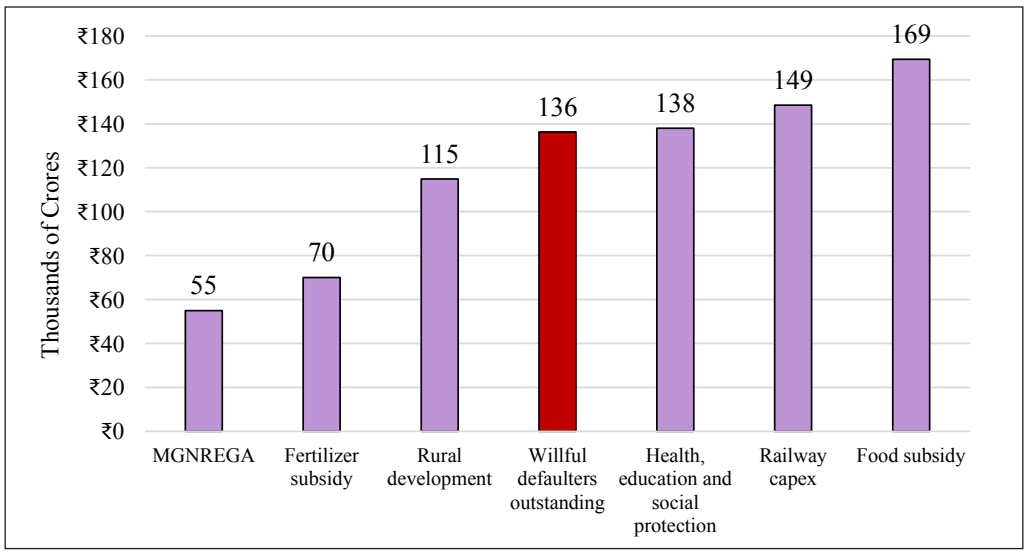
3.39 To put in perspective the quantum of wealth eroded by wilful defaulters, consider Figure 18, which compares the amount owed by wilful defaulters in 2018 with the Union budget allocations towards citizen welfare in the same year. Had the money siphoned away by wilful defaulters stayed in the economy, the resulting wealth would have been equivalent in value to that needed to *double* the allocation towards health, education

Figure 17: Split of aggregate outstanding amounts of wilful defaulters by sector



Source: TransUnion CIBIL Suits Filed database, CMIE Prowess database

Figure 18: Wealth destroyed by wilful defaulters in comparison to Union Budget Allocations



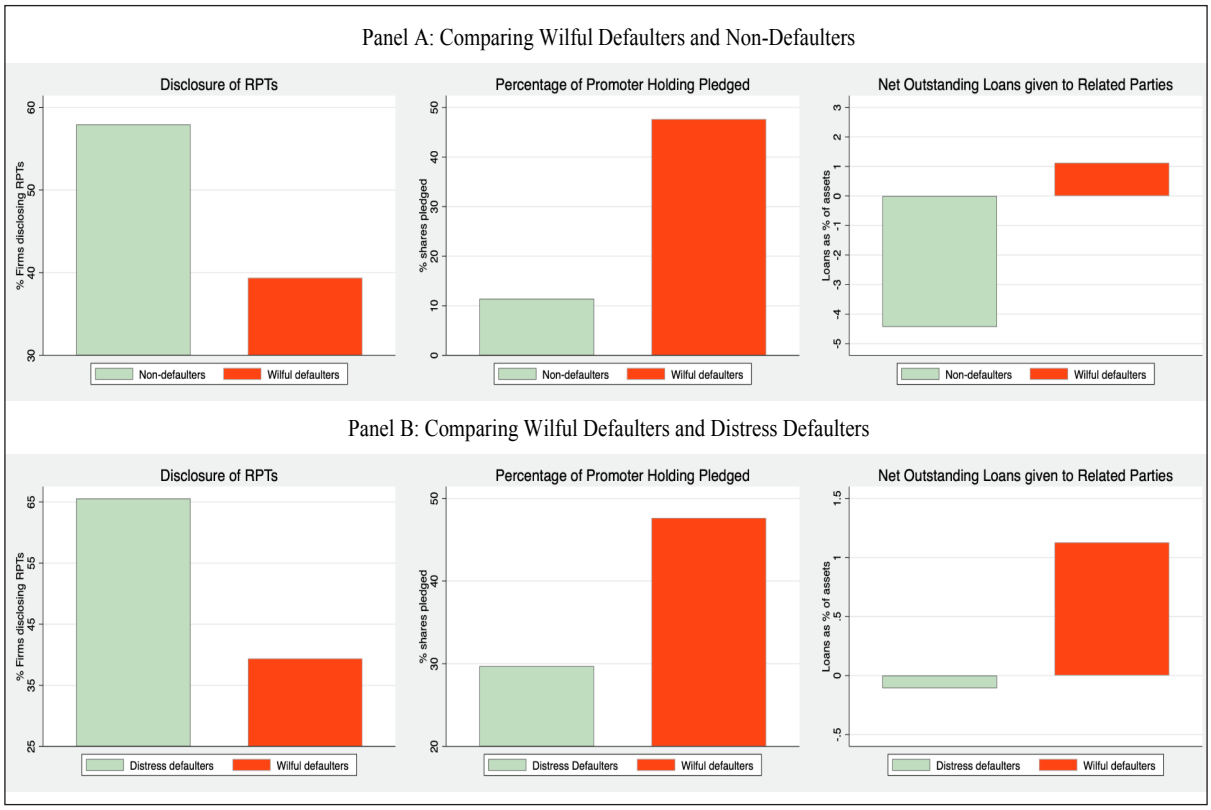
Source: TransUnion CIBIL Suits Filed database, Union budget reports

and social protection, *double* the allocation towards rural development, or *triple* the allocation towards MGNREGA.

3.40 Figure 19 depicts three distinguishing characteristics of wilful defaulters in India. First, wilful defaulters tend to be more opaque than both non-defaulters and firms that default out of genuine distress (hereafter distress defaulters). Whereas roughly 60 per cent of non-defaulters and distress-defaulters provide related party disclosures in their annual report as legally required in India, barely 40 per cent of wilful defaulters do.

3.41 Second, promoters at the helm of wilfully defaulting firms pledge, on average, almost 50 per cent of their shareholding to lenders. In contrast, the corresponding figures for distress defaulters and non-defaulters are 30 per cent and 11 per cent respectively. While the pledging of shares prevails in advanced economies also, it has taken a peculiar form in India. Promoters, especially

Figure 19: Wilful defaulters tend to be opaque about their RPTs, pledge substantial proportions of promoter shares, and advance large loans to related parties



Source: CMIE Prowess, TransUnion CIBIL Suits Filed database.
Note: A firm is said to have made an RPT disclosure if its annual filing contains an RPT section (even if the firm states it had no transactions that year). Net outstanding loans refers to the total balance of loans given by firms to their related parties, net of loans taken from them. It is expressed as a percentage of the firm's total assets. Wilful defaulters are those classified as such in the CIBIL Suits Filed database, while distress defaulters are those with a default credit rating at least once in the sample period but those who have not been classified as 'wilful defaulters'. Non-defaulters are all other firms. Data spans 2002-18

those of wilful defaulter firms, pledge shares to obtain financing not for external ventures or personal endeavours but for the firm's own projects. Such a practice is suboptimal for lenders as the value of collateral used to secure loans should not correlate with the value of the project being funded. When a firm is in distress, the value of pledged shares falls. Precisely when it is required to, the collateral stops serving its purpose. As promoters have no personal liability beyond their pledged shares, they care little when the pledged shares fall in value as any reduction in their wealth is offset by rents they have already extracted. In many cases, promoters are unconcerned about losing control of the company as they may have already siphoned out the extracted rents before the share price collapse.

3.42 Third, wilful defaulters make large loans to related parties. The outstanding balance of loans given to related parties for distress defaulters and non-defaulters is negative, meaning that the average firm in the sample is a net recipient of loans from related parties. Wilful defaulters, on the other hand, are net givers of loans. Peculiarly, they are net recipients of external loans and defaulters on these loans at the same time that they are net givers of loans to their related parties. This is consistent with a theory of issuing debt only to siphon the proceeds out of the firm for the personal benefit of owners and their cronies.

3.43 The cost of such wilful default is borne by the common man. Public sector banks get their equity from taxes paid by the common man. They get their debt from deposits made by the common man. When unscrupulous firms willfully default, it is the common man who loses. While most policy initiatives aim to redistribute wealth from the rich to the poor, wilful default achieves the opposite. Rich businesses that want to get richer use wilful default as an instrument to redistribute wealth *away* from the poor.

3.44 Not only that, wilful default if unchecked would increase the cost of borrowing for everyone else, including genuine businesses with profitable investment opportunities before them. In fact, at high enough credit spreads, adverse selection may force genuine borrowers to exit the market altogether, leaving only cronies in the market and resulting in a market failure that slows economic growth, employment and wealth creation capacity.

CONCLUSION

3.45 While pro-business policies increase competition, correct market failures, or enforce business accountability, pro-crony policies hurt markets. Such policies may promote narrow business interests and may hurt social welfare because what crony businesses may want may be at odds with the same. For example, crony businesses may lobby the government to limit competition in their industry, restrict imports of competing goods or reduce regulatory oversight. These initiatives enhance the lobbying group's income but undermine markets and reduce aggregate welfare. Thus, pro-crony policy can inadvertently end up being hurtful to businesses in general.

3.46 Pro-business policies, for example, those that make it easy to start a business, register property, enforce contracts, obtain credit, bid for natural resources, get permits, and resolve insolvency help firms to function effectively and thereby enable competitive

markets. Making it easy to do business in a jurisdiction furthers the eventual goal of maximizing social welfare. Reforms aimed in this direction must continue. However, catering to the needs of crony businesses alone without regard for other businesses and the remaining stakeholders in the economy may end up benefitting the preferentially treated firms at the expense of other firms, market efficiency and social welfare.

CHAPTER AT A GLANCE

- India's aspiration to become a $5 trillion economy depends critically on promoting "pro-business" policy that unleashes the power of competitive markets to generate wealth, on the one hand, and weaning away from "pro-crony" policy that may favour specific private interests, especially powerful incumbents, on the other hand. Economic events since 1991 provide powerful evidence supporting this crucial distinction.
- Viewed from the lens of the Stock market, which captures the pulse of any economy, creative destruction has increased significantly after reform. Before liberalisation, a Sensex firm expected to stay in it for 60 years, which decreased to only 12 years after liberalisation. Every five years, one-third of Sensex firms are churned out, reflecting the continuous influx of new firms, products and technologies into the economy.
- Despite impressive progress in enabling competitive markets, pro-crony policies has destroyed value in the economy. For example, an equity index of connected firms significantly outperformed the market by 7 per cent a year from 2007 to 2010, reflecting abnormal profits extracted at common citizens' expense. In contrast, the index underperforms the market by 7.5 per cent from 2011, reflecting the inefficiency and value destruction inherent in such firms.
- Pro-crony policies as reflected in discretionary allocation of natural resources till 2011 led to rent-seeking by beneficiaries while competitive allocation of the same resources post 2014 have put an end to such rent extraction. Similarly crony lending that led to wilful default, wherein promoters have collectively siphoned off wealth from banks, led to losses that dwarf subsidies directed towards rural development.

REFERENCES

Abraham, Jefferson Kaduvinal, Yakshup Chopra, Krishnamurthy Subramanian, and Prasanna Tantri. 2019. "Natural resource curse as applied to firms: Evidence from India." *Working Paper.*

B.S., Sunil. 2014. "India's stock market just confirmed: It really pays to have political connections." *Quartz India*, 19 June.

Bae, Kee-Hong, Jun-Koo Kang, and Jin-Mo Kim. 2002. "Tunneling or value added? evidence from mergers by korean business groups." *The journal of finance.*

Bertrand, Marianne, Paras Mehta, and Sendhil Mullainathan. 2002. "Ferreting Out Tunneling: An Application to Indian Business Groups." *The Quarterly Journal of Economics* 117 (1): 121-148.

Bliss, Mark A., and Ferdinand A. Gul. 2012. "Political connection and cost of debt: Some Malaysian evidence." *Journal of Banking & Finance* 1520-1527.

Bunkanwanicha, Pramuan, and Yupana Wiwattanakantang. 2009. "Big Business Owners in Politics." *The Review of Financial Studies* 22 (6): 2133–2168.

Chan, Kenneth S., Vinh Q.T. Dang, and Isabel K.M. Yan. 2012. "Chinese firms' political connection, ownership, and financing constraints." *Economics Letters* 164-167.

Chen, Donghua, Yuyan Guan, Tianyu Zhang, and Gang Zhao. 2017. "Political connection of financial intermediaries: Evidence from China's IPO market." *Journal of Banking and Finance* 15-31.

Cheung, Yan-Leung, P Raghavendra Rau, and Aris Stouraitis. 2006. "Tunneling, propping, and expropriation: evidence from connected party transactions in hong kong." *Journal of Financial Economics.*

Civilize, Sireethorn, Udomsak Wongchoti, and Martin Young. 2015. "Political Connection and Stock Returns: A Longitudinal Study." *The Financial Review* 89-119.

Claessens, Stijn, Erik Feijen, and Luc Laeven. 2008. "Political connections and preferential access to finance: The role of campaign contributions." *Journal of Financial Economics* 554–580.

Deng, Kebin, Haijian Zeng, and Yushu Zhu. 2019. "Political connection, market frictions and financial constraints: evidence from China." *Accounting & Finance* 2377–2414.

Faccio, Mara. 2006. "Politically Connected Firms." *The American Economic Review* 96 (1): 369-386.

Faccio, Mara, Ronald W. Masulis, and John J. McConnell. 2006. "Political Connections and Corporate Bailouts." *The Journal of Finance* 2597-2635.

Firth, Michael, Chen Lin, Ping Liu, and Sonia M.L. Wong. 2009. "Inside the black box: Bank credit allocation in China's private sector." *Journal of Banking & Finance* 1144-1155.

Fisman, Raymond. 2001. "Estimating the Value of Political Connections." *The American Economic Review* 1095-1102.

Friedman, Milton. 1999. "Policy Forum: "Milton Friedman on business suicide"." *CATO Institute.* 1 March. https://www.cato.org/policy-report/marchapril-1999/policy-forum-milton-friedman-business-suicide.

IIFL Wealth. 2019. *IIFL Wealth-Hurun India Rich List: Here are India's richest in 2019; Mukesh Ambani tops charts 8th year in a row.* 25 September. Accessed December 15, 2019. https://www.iiflwealth.com/newsroom/in_the_news/iifl-wealth-hurun-india-rich-list-here-are-indias-richest-2019-mukesh-ambani.

Johnson, Simon, and Todd Mitton. 2003. "Cronyism and capital controls:evidence from Malaysia." *Journal of Financial Economics* 351-382.

Kahkonen, Satu. 2018. *What Is the Cost of Crony Capitalism for Ukraine?* 15 March. https://www.worldbank.org/en/news/opinion/2018/03/15/what-is-the-cost-of-crony-capitalism-for-ukraine.

Kant, Krishna. 2016. *1991 to 2016: How the Sensex has transformed in 25 years.* 27 July. Accessed November 5, 2019. https://www.rediff.com/business/report/how-the-sensex-has-transformed-in-25-years/20160727.htm.

Khanna, Tarun, and Yishay Yafeh. 2007. "Business groups in emerging markets: Paragons or parasites." *Journal of Economic literature.*

Kishore, Roshan. 2016. "Does black money boost economic growth?" *Livemint*, 18 November.

Lehne, Jonathan, Jacob N. Shapiro, and Oliver Vanden Eynde. 2018. "Building connections: Political corruption and road construction in India." *Journal of Development Economics* 62-78.

Onder, Zeynep, and Süheyla Ozyildirim. 2011. "Political Connection, Bank Credits and Growth: Evidence from Turkey." *The World Economy* 1042-1065.

Rajan, Raghuram G., and Luigi Zingales. 2003. *Saving Capitalism from the Capitalists*. New Jersey: Princeton University Press.

Rajan, Raghuram. 2014. *Saving Credit (Talk by Dr. Raghuram G. Rajan, Governor, Reserve Bank of India at the Third Dr. Verghese Kurien Memorial Lecture at IRMA, Anand on November 25, 2014)*. 25 November. https://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=929.

Rand, John. 2017. "Are politically connected firms less constrained in credit markets?" *UNU-WIDER Working Paper 2017/200.*

Romer, Paul M. 2000. "Should the Government Subsidize Supply or Demand in the Market for Scientists and Engineers?" *NBER Working Paper Series.*

World Bank. 2018. *Crony Capitalism in Ukraine: Impact on Economic Outcomes.* Washington, D.C.: World Bank Group.

Undermining Markets: When Government Intervention Hurts More Than It Helps

04
CHAPTER

क्षणशः कणशश्चैव विद्याम् अर्थं च साधयेत्।
क्षणे नष्टे कुतो विद्या कणे नष्टे कुतो धनम्।।

Every moment one should learn, from every bit one should earn. If you waste a second you can't get knowledge and if you waste a bit u can't get money.

Government intervention, sometimes though well intended, often ends up undermining the ability of the markets to support wealth creation and leads to outcomes opposite to those intended. This chapter analyses four examples of anachronistic government interventions, though many more abound.

First, frequent and unpredictable imposition of blanket stock limits on commodities under Essential Commodities Act (ECA) neither brings down prices nor reduces price volatility. However, such intervention does enable opportunities for rent-seeking and harassment. For instance, imposition of stock limits on dal in 2006-Q3, sugar in 2009-Q1 and onions in September 2019 spiked up the volatility of the wholesale and retail prices instead of smoothening them – in contrast to its objective of easing pressure on prices. Around 76000 raids under ECA were conducted during 2019. Assuming a minimum of 5 persons involved in a raid, considerable administrative effort goes into enforcement of ECA. As the conviction rate, however, is abysmally low and raids have no impact on prices, the ECA only seems to enable rent-seeking and harassment. The Act is anachronistic as it was passed in 1955 in an India worried about famines and shortages; it is irrelevant in today's India and must be jettisoned.

Second, the regulation of prices of drugs through the DPCO 2013, has led to increase in the price of a regulated pharmaceutical drug vis-à-vis that of a similar drug whose price is not regulated. Our analysis shows that the increase in prices was witnessed for more expensive formulations than for cheaper ones and those sold in hospitals rather than retail shops, reinforcing that the outcome is opposite to what DPCO aims to do - making drugs affordable. The evidence across different commodities (pulses, sugar, onions and drugs) - not just onions or sugar where cartelisation is often suspected - and episodes spanning different time periods (2006-19) suggests that the ineffectiveness of ECA stems from unnecessary government intervention that undermines markets.

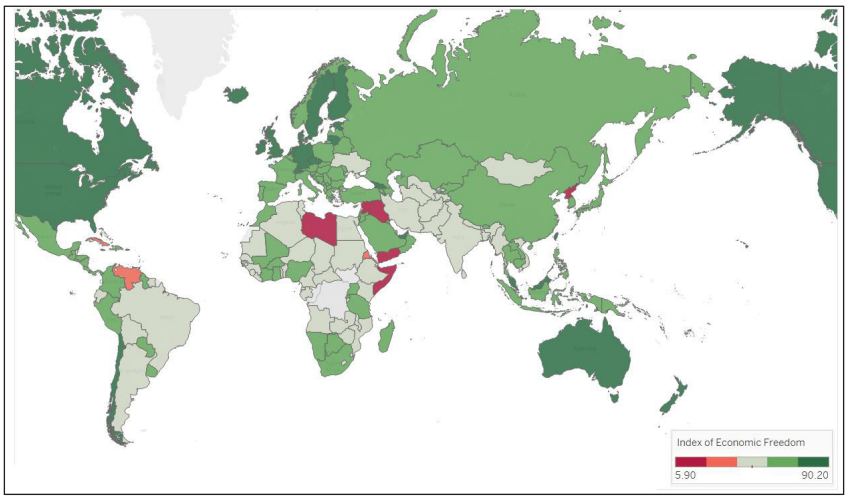
Third, government policies in the foodgrain markets has led to the emergence of Government as the largest procurer and hoarder of foodgrains – adversely affecting competition in these markets. This has led to overflowing of buffer stocks with FCI, burgeoning food subsidy burden, divergence between demand and supply of cereals and acted as a disincentive towards crop diversification.

Fourth, analysis of debt waivers given by States/Centre shows that full waiver beneficiaries consume less, save less, invest less and are less productive after the waiver when compared to the partial beneficiaries. The share of formal credit decreases for full beneficiaries when compared to partial beneficiaries, thereby defeating the very purpose of the debt waiver provided to farmers.

The chapter makes the case that each department and ministry in the Government must systematically examine areas where the Government needlessly intervenes and undermines markets. Note that the chapter does not argue that there should be no Government intervention. Instead, interventions that were apt in a different economic setting may have lost their relevance in a transformed economy. Eliminating such instances of needless Government intervention will enable competitive markets and thereby spur investments and economic growth.

4.1 Though India has made significant progress in enhancing economic freedom for firms and its citizens, it still counts among the shackled economies in the world. In the global indices of economic freedom, India ranks in the bottom half. The Index of Economic Freedom, which is brought out by the Heritage Foundation, and the Global Economic Freedom Index, which is brought out by the Fraser Institute, measure economic freedom as the freedom of choice enjoyed by individuals in acquiring and using economic goods and resources. In the Index of Economic Freedom, India was categorized as 'mostly unfree' with a score of 55.2 in 2019 ranking the Indian economy 129th among 186 countries, i.e., in the bottom 30 per cent of countries (Figure 1). In the component pertaining to "investment freedom", which measures the ease of flow of investment capital both internally and across the country's borders, India scores a low 40.0 on a scale of 0-100 (repressed) against the world average of 58.5. In the Index of Global Economic Freedom too, India ranks 79th among 162 countries with 108th rank in business regulation.

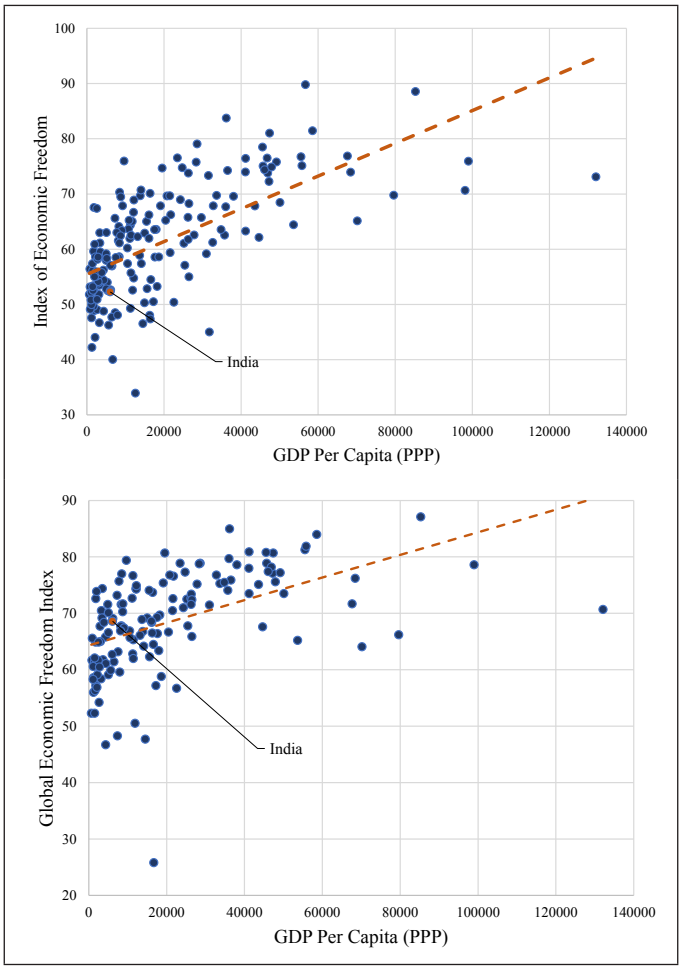
Figure 1: Relative Economic Freedom in India



Source: Index of Economic Freedom, 2019 accessed at https://www.heritage.org/index/

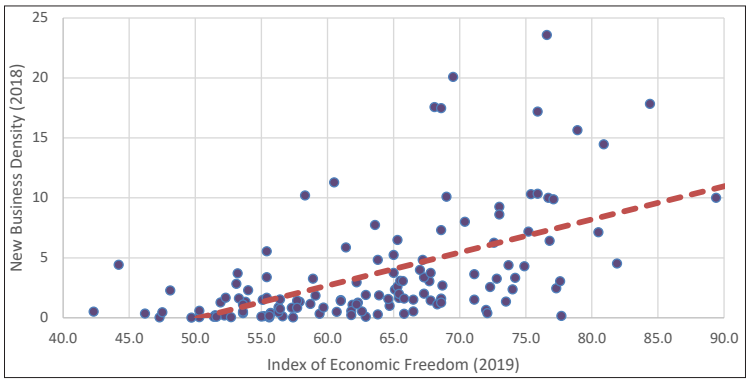
4.2 Economic freedom enhances wealth creation by enabling efficient allocation of entrepreneurial resources and energy to productive activities, thereby promoting economic dynamism. This is manifested in the close correlation of the ranks in the two referred indices of economic freedom with per capita GDP of the countries (Figure 2). The low rank in economic freedom makes it evident that India chains opportunities for wealth creation by shackling economic freedom for its citizens. Figures 3-6 show the cross-country correlation of the index of economic freedom with the density of registration of new business, the ease of doing business indicators, number of patents applied in a country, the number of

Figure 2: Correlation of Indices of Economic Freedom with Per Capita GDP



Source: Index of Economic Freedom accessed at https://www.heritage.org/index/ and Global Economic Freedom Index accessed at https://www.fraserinstitute.org/

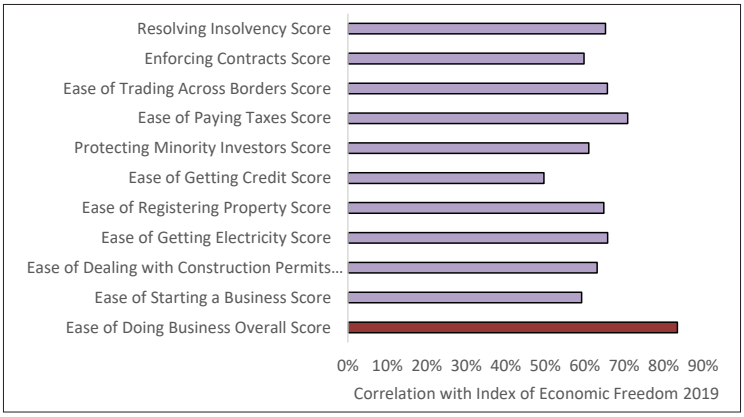
Figure 3: Correlation of IEF with density of new business registration



Source: Ease of Doing Business Database and Index of Economic Freedom accessed at https://www.heritage.org/index/

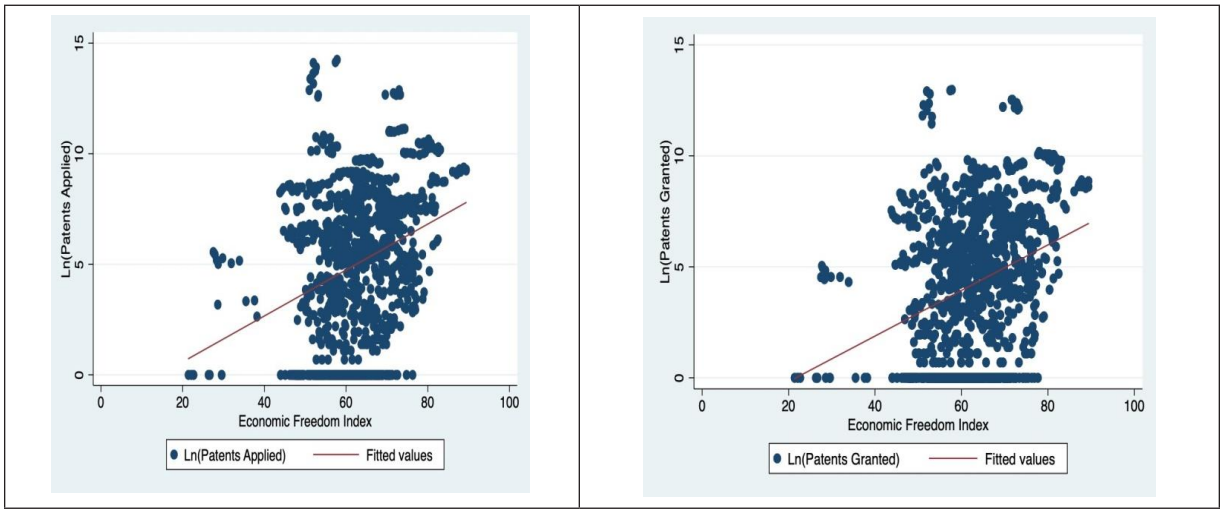
Note: The new business entry density is defined as the number of newly registered corporations per 1,000 working-age people (those ages 15–64). Units of measurement are private, formal sector companies with limited liability.

Figure 4: Correlation of Economic Freedom with Ease of Doing Business



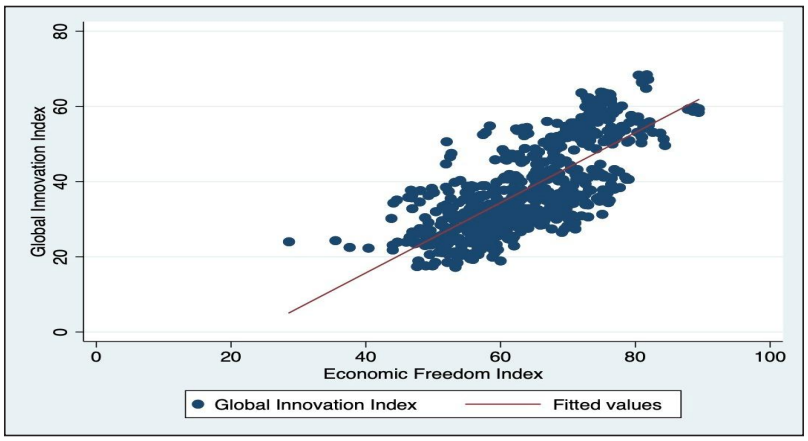
Source: Ease of Doing Business Database and Index of Economic Freedom accessed at https://www.heritage.org/index/

Figure 5: Correlation of Indices of Economic Freedom with Patents Applied and Patents Granted



Source: NBER patent data and Index of Economic Freedom accessed at https://www.heritage.org/index/

Figure 6: Correlation of Indices of Economic Freedom with Index of Innovation



Source: World Intellectual Property Organization (WIPO) database and Index of Economic Freedom accessed at https://www.heritage.org/index/

patents granted in a country and the index of innovation respectively. Thus, it is clear that economic freedom affects several aspects of wealth creation significantly.

4.3 While there is a case for Government intervention when markets do not function properly, excessive intervention, especially when markets can do the job of enhancing citizens' welfare perfectly well, stifles economic freedom. Government can affect markets either through direct participation (as a market maker or as a buyer or supplier of goods and services), or through indirect participation in private markets (for example, through regulation, taxation, subsidy or other influence). Any Government intervention of the first kind, however, affects the dynamic interaction of supply and demand in markets and thereby determination of 'equilibrium' market prices. When the price is too high, there is an excessive amount of the product for sale compared to what people want. When the price is too low, it causes consumers to want more of the product than producers have available. In both cases, serious welfare loss results because not enough of the good is sold. The wasted chance to create both producer and consumer welfare from such sales leads to 'deadweight loss' - income that is lost forever. In addition to creating deadweight loss, an artificially high price transfers profits from consumers to producers and creates opportunities for rent seeking and an artificially low price leads to transfer of profits from producers to consumers and leads to low incentive to invest further and aggravates the scarcity of the product.

4.4 As we illustrate in this chapter, the Indian economy is replete with examples where Government intervenes even if there is no risk of market failure, and in fact, in some instances its intervention has *created* market

Box 1: Essential Commodities Act, 1955

Essential Commodities Act (ECA), 1955 was enacted to control the production, supply and distribution of, and trade and commerce in, certain goods considered as essential commodities. The Act itself does not lay out Rules and Regulations but allows the States to issue Control Orders related to dealer licensing, regulate stock limits, restrict movement of goods and requirements of compulsory purchases under the system of levy. The Act also provides for action to confiscate the stock seized; to suspend/ cancel licences, if any and impose punishments like imprisonment. The Act also gives the power to fix price limits, and selling the particular commodities above the limit will attract penalties. Most of the powers under the Act have been delegated by the Central Government to the State Governments with the direction that they shall exercise these powers. Food and civil supply authorities in States execute the provisions of the Act.

The major commodity groups included in the Act are

(i) Petroleum and its products, including petrol, diesel, kerosene, Naphtha, solvents etc
(ii) Food stuff, including edible oil and seeds, vanaspati, pulses, sugarcane and its products like, khandsari and sugar, rice paddy
(iii) Raw Jute and jute textiles
(iv) Drugs- prices of essential drugs are still controlled by the DPCO
(v) Fertilisers- the Fertiliser Control Order prescribes restrictions on transfer and stock of fertilizers apart from prices
(vi) Onion and Potato
(vii) Seeds of food crops, fruits and vegetables, cattle fodder, Jute seeds and Cotton seeds

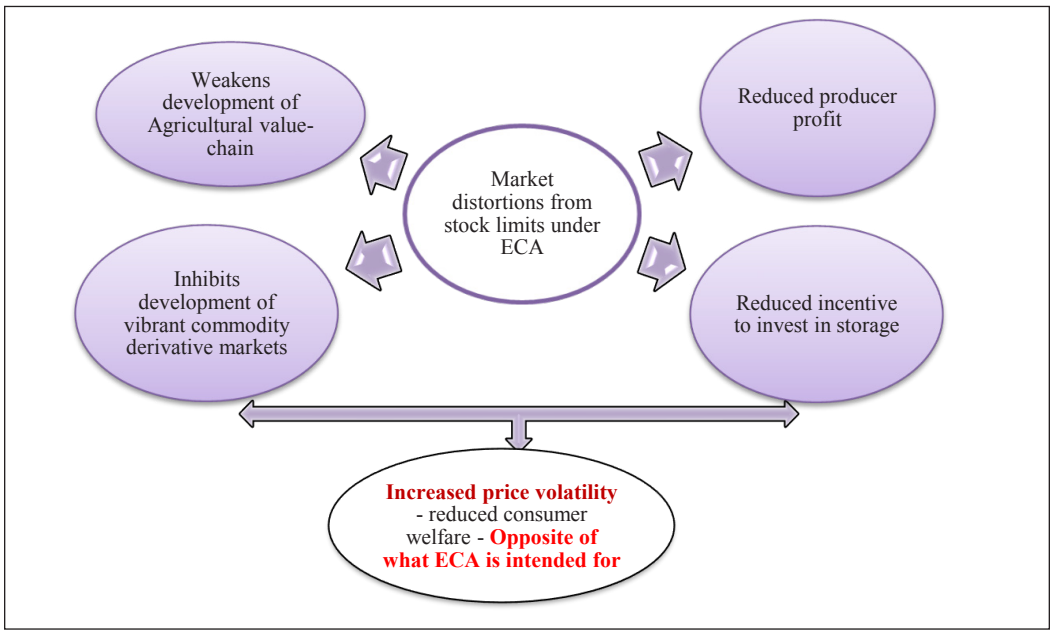
failures. This may be partly due to the legacy of post-independence economic policies which the country followed. However, as the role of markets has been recognized globally, it is only natural that markets are allowed to work to enable quick wealth creation and thereby economic growth.

ESSENTIAL COMMODITIES ACT (ECA), 1955

4.5 The Essential Commodities Act (ECA), 1955 controls the production, supply and distribution of, and trade and commerce in, certain goods such as vegetables, pulses, edible oils, sugar etc., which are treated as essential commodities. Under the Act, the powers to implement the provisions of the Act are delegated to the States. When the price of any of these essential commodities rises, the regulator can impose stockholding limits on the commodity, restrict movement of goods, and mandate compulsory purchases under the system of levy. Consequently, all wholesalers, distributors, and retailers dealing in the product must reduce their inventories to comply with the holding limit. The purported aim of this Act is to ensure affordability of essential commodities for the poor by restricting hoarding. It is an overarching legislation regulating agricultural marketing and production.

4.6 The ECA, however, affects the efficient development of agricultural markets by creating market distortions (Figure 7). As agriculture is a seasonal activity, it is essential to store produce for the off-season to ensure smoothened availaibility of a product at stable prices throughout the year. Therefore, producers face an inherent trade-off between building an inventory in the harvest season and drawing down inventory in the lean season. ECA interferes with this mechanism by disincentivising investments in warehousing and storage facilities due to frequent and unpredictable imposition of stock limits. As stockholding limits apply to the entire agriculture supply chain, including wholesalers, food processing industries and retail food chains, the Act does not distinguish between firms that genuinely need to hold

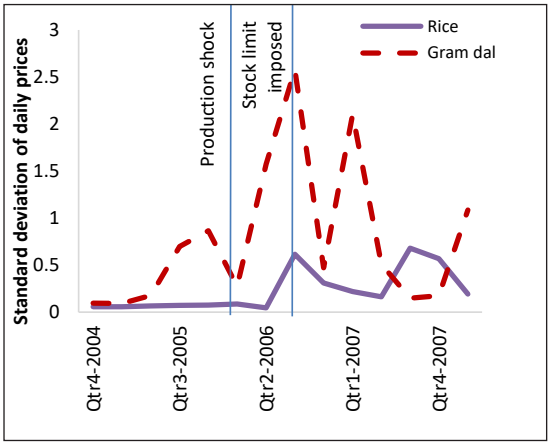
Figure 7: Agricultural Market distortions due to ECA



stocks owing to the nature of their operations, and firms that might speculatively hoard stocks. Further, this reduces the effectiveness of free trade and flow of commodities from surplus areas to markets with higher demand. ECA also affects the commodity derivative markets as traders may not be able to deliver on the exchange platform the promised quantity, owing to stock limits. The Act distorts markets by increasing uncertainty and discouraging the entry of large private sector players into agricultural-marketing. These market distortions further aggravate the price volatility in agricultural commodities- the opposite of what it is intended for.

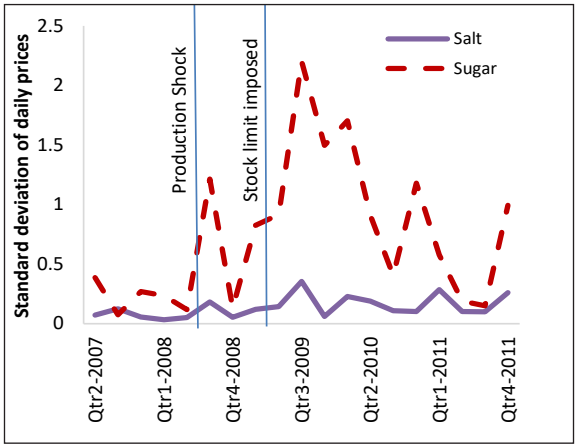
4.7 This market distortionary impact is clearly evident from several experiences. The ineffectiveness of stock limits in controlling price volatility, as described above, is not restricted to a specific commodity or a specific time period. The figure below indicates the standard deviation of prices of pulses and sugar, on which stock limits were notifioed in 2006-Q3 and 2009-Q1 respectively. These limits had limited success in containing the volatility of prices, even two to three years after the imposition (see Figure 8a and 8b).

Figure 8a: Volatility in Retail prices of Dal even after stock limits under ECA were imposed in 2006 - Q3



Source: Computed from data available from Deparment of Consumer Affairs (DCA)

Figure 8b: Volatility in Retail prices of Sugar even after stock limits under ECA were imposed in 2009 - Q1

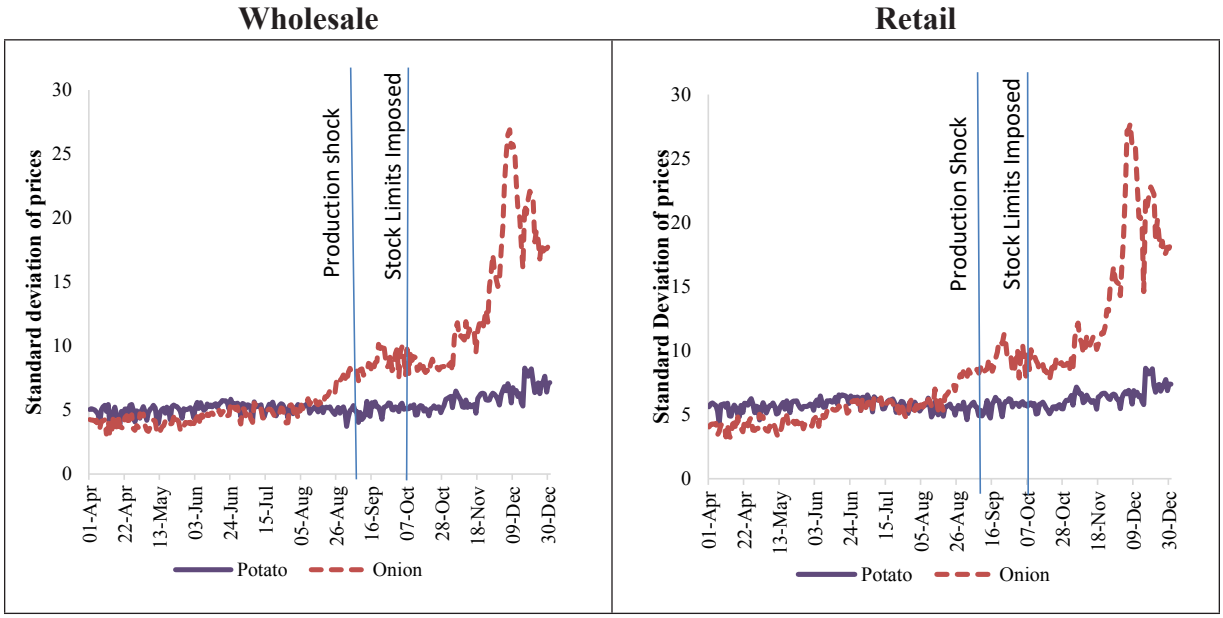


Source: Computed from data available from Deparment of Consumer Affairs (DCA)

4.8 The recent experience with rise in onion prices illustrate the same phenomenon. There are three harvesting seasons in India for the onion crop viz., Kharif (October-December), Late Kharif (January-March) & Rabi (March-May). There is a period from around May to September in the year wherein the demand for onions has to be met by the stocks kept by the traders/wholesalers. Due to heavy rains in August-September, 2019, the kharif crop of onions was adversely affected leading to lower market arrivals and upward pressure on onion prices. This kharif crop usually caters to the demand during the period from October to December till fresh produce from late kharif crop comes in the market. In view of a sustained increase in onion prices, stock limits under the ECA were imposed across the country on September 29, 2019 (the limits equaled 100 quintals on retail traders and 500

quintals on wholesale traders which were subsequently reduced to 20 quintals and 250 quintals respectively). The stock limits were imposed to control the price rise of onions by facilitating the release of stocks in the market and preventing hoarding by traders to enhance supply in the market. However, the imposition of stock limits has had no effect on the volatility of the wholesale and retail prices for onions after September, 2019 (Figure 8c). The lower stock limits must have led the traders and wholesalers to offload most of the kharif crop in October itself which led to a sharp increase in the volatility from November, 2019 onwards. The volatility in retal prices mirrors that in wholesale prices.

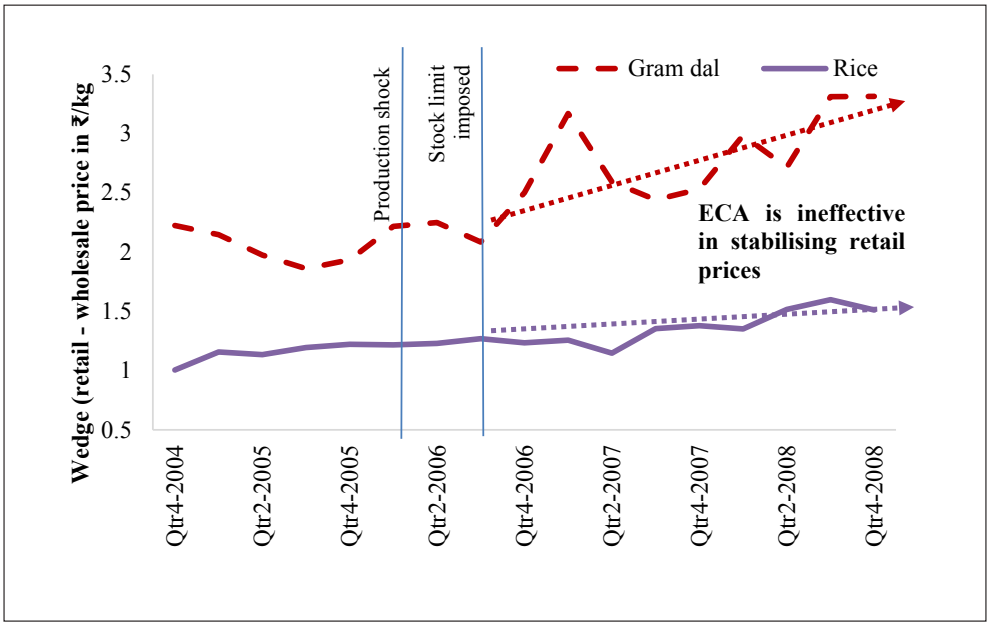
Figure 8c: Volatility in Retail and Wholesale prices of Onion in 2019 even after stock limits were imposed under ECA



Source: Computed from data available from Department of Consumer Affairs (DCA)
Note: Both onion and potato are covered under ECA but Stock Limits were imposed on onion since 29th September, 2019 and not on potato

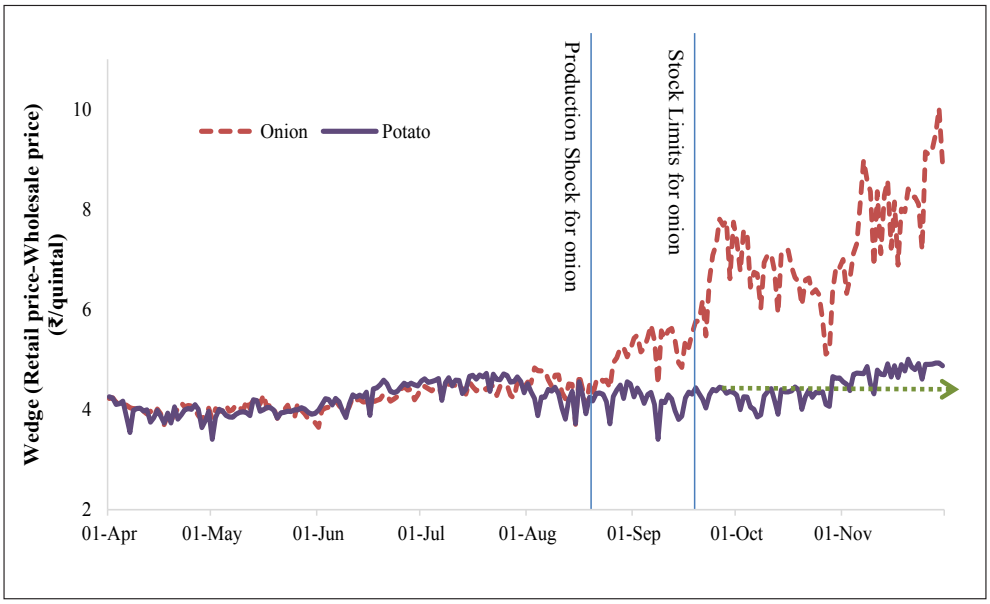
4.9 This effect of the imposition of stock limits is also evident in the trend of the wedge between the wholesale and retail prices of pulses and onion (Figure 9a and 9b). In the case of onions, the wedge has shown a sharp increasing trend from November, 2019 onwards as most of the kharif crop, which itself was lower, would have had to be offloaded in the market in October itself. Absent government intervention through ECA, traders would store a part of their produce to ensure smooth availaibility of a product at stable prices throughout the year. The increasing wedge between wholesale and retail prices reinforces that ECA reduces welfare of consumers. In the long term, the Act disincentivizes development of storage infrastructure thereby leading to increased volatility in prices following production/ consumption shocks – the opposite of what it is intended for. The evidence across different commodities and different time periods - not just onions or sugar where cartelisation is often suspected - suggests that the ineffectiveness of ECA stems from unnecessary government intervention that undermines markets.

Figure 9a: Increasing wedge between Retail and Wholesale prices of gram dal (pulse) even after ECA is imposed



Source: Computed from data available from Department of Consumer Affairs (DCA).
Note: Both rise and pulses are covered under ECA, and stock limits were imposed on pulses on 28th August, 2006. Stock limits were imposed on rice also in 2008, at the end of the period considered in this chart.

Figure 9b: Increasing wedge between Retail and Wholesale prices of Onion in 2019 even after ECA is imposed



Source: Computed from data available from Department of Consumer Affairs (DCA).
Note: Both onion and potato are covered under ECA but Stock Limits were imposed on onion since 29th September, 2019 and not on potato

Figure 10a: Correlation of raids conducted under ECA with wedge between retail and wholesale onion prices

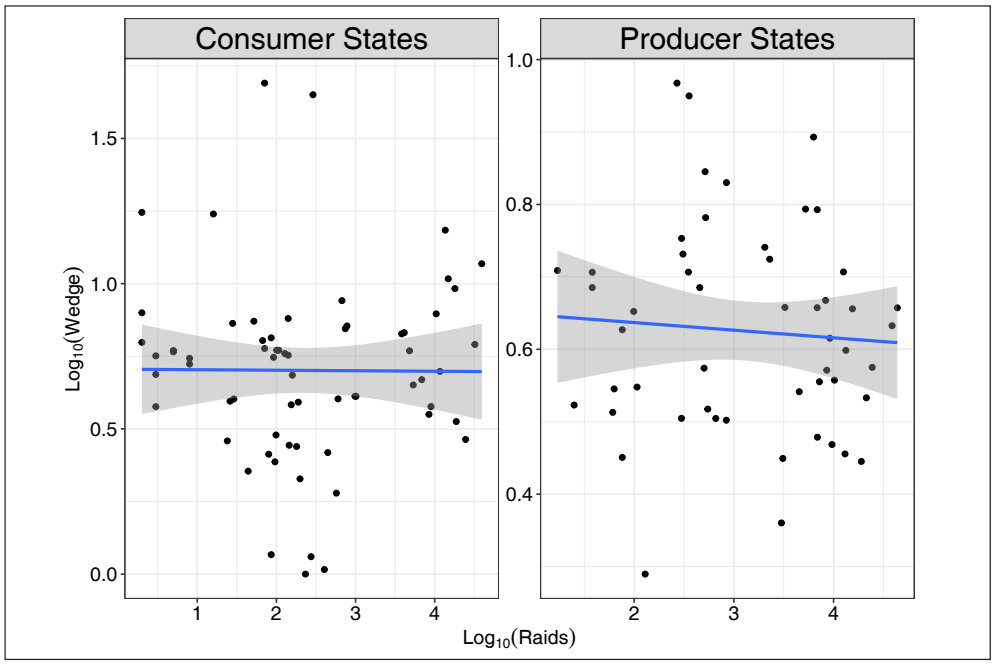
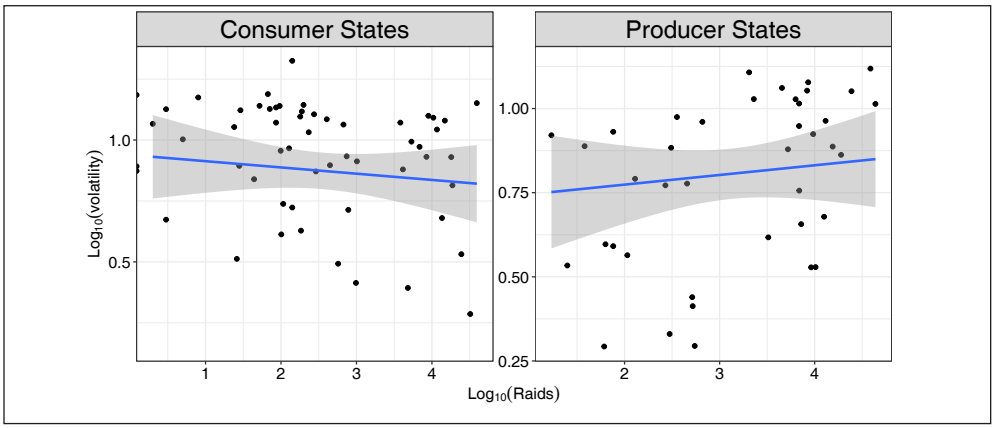


Figure 10b: Correlation of raids conducted under ECA with volatility of retail and wholesale onion prices

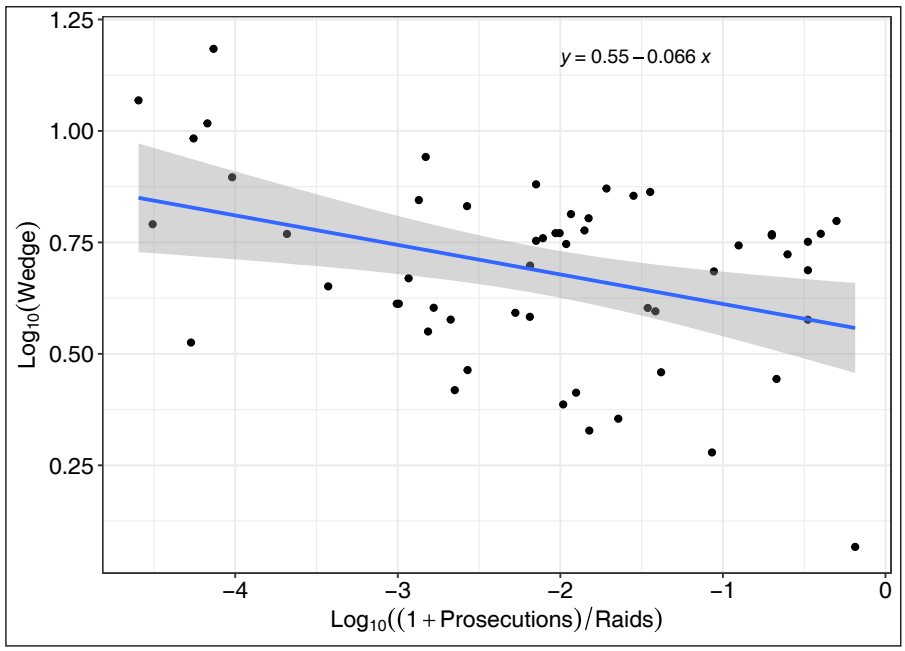


Source: Compiled from data available from Department of Consumer Affairs (DCA)

4.10 Under the ECA, states are required to enforce the adherence to any stock limits specified under the Act. Given that around 76000 raids were conducted during 2019 and assuming that a minimum of 5 persons are involved in a raid, a considerable administrative effort is utilized for the enforcement of the Act. Our analysis shows that such raids conducted by States have had no impact on both the wedge between retail and wholesale onion prices and volatility in these prices in consumer or producer states, thereby raising concerns on their effectiveness (Figure 10).

4.11 Our analysis shows that in states that are primarily consumer of essential commodities, there is a negative relationship between the

Figure 11: Correlation of Prosecution with wedge between retail and wholesale prices of onion



Source: Compiled from data available from Department of Consumer Affairs (DCA)

probability of being caught (reflected by the ratio of prosecution to raids) and wedge between retail and wholesale prices. This shows that ECA is only effective when it is executed properly (Figure 11). As per the reports received from the State Governments/ UT Administrations, the conviction rate under the Act is abysmally low at 2-4 per cent on an average. As on 16.12.2019 which is the latest available from DCA, total raids conducted in 2019 under ECA were 76,033 but number of persons convicted were only 2941, which equals only 3.8 per cent of the total raids conducted. This indicates that the raids under ECA may be only leading to harassment of traders, thereby adversely affecting the role of trade in the marketing of the given commodity.

4.12 A beginning was made by setting up of the Price Stabilization Fund (PSF) in 2014-15 to help regulate the price volatility of important agri-horticultural commodities like onion, potatoes and pulses. It provides for maintaining a strategic buffer of aforementioned commodities for subsequent calibrated release to moderate price volatility and discourage hoarding and unscrupulous speculation. This needs to be strengthened further as it supplements the market forces rather than substitute them which the ECA does.

4.13 The ECA was enacted at a time when speculative hoarding and black marketing was a threat as agricultural markets were fragmented and transport infrastructure was poorly developed. But the Act, while penalising speculative hoarding, also ends up penalising the much desirable consumption-smoothing that storage provides. With the agricultural markets in India increasingly becoming more integrated and competitive, the utility of the Act is dubious and is incompatible with development of an integrated competitive national market for food. The anti-hoarding provisions of ECA discourage open reporting of stock holdings, storage capacities, trading and carry forward

positions. There is no aggregated data of the total private storage capacity available in the country, which would enable policymakers to assess the impact of any production shocks on the prices. Besides discouraging investment in modern methods of storage and in market intelligence, the lack of information on trades makes it harder for market participants to make accurate forecasts for the future. Supporting development of commodity futures markets would help efficient discovery of market expected future prices, which can provide a better basis for private storage decisions and avoid 'peaks' and 'troughs' in prices. Development of effective forecasting mechanisms, stable trade policies, and increasing integration of agricultural markets can serve the purpose of stabilising prices of agricultural markets more efficiently than government fiat imposed through ECA.

DRUG PRICE CONTROLS UNDER ECA

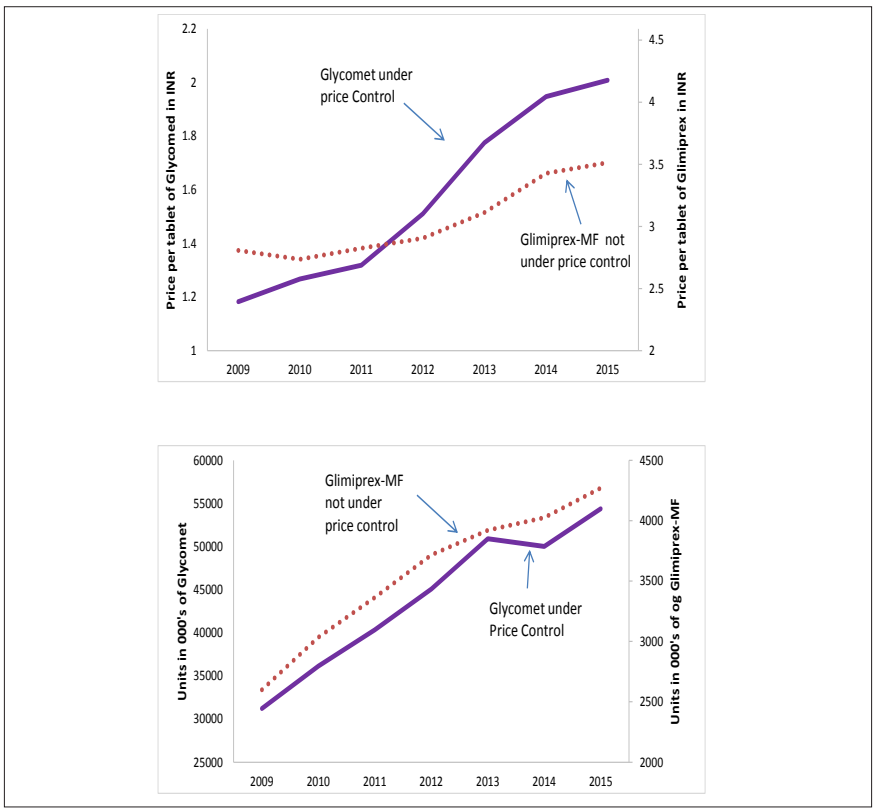
4.14 Given the important task of ensuring access to essential lifesaving drugs and to avoid poor households from falling into poverty, Governments often resort to price controls for drugs. In India, the Government has historically relied on price controls to regulate the prices of pharmaceutical drugs through the National Pharmaceutical Pricing Authority (NPPA) and Drug (Prices Control) Order (DPCO). The National List of Essential Medicines (NLEM), prepared by Ministry of Health and Family Welfare, is a list of medicines considered essential and high priority for India's health needs. It is based on aspects like prevalence of disease in the population, safety and efficacy of the medicine, and current affordability. DPCOs are issued by the Government, in exercise of the powers conferred under section 3 of the ECA to ensure that the medicines listed under NELM are available at a reasonable price to the general public.

4.15 To examine carefully the impact of the DPCO order on the price and quantity of essential drugs, we undertake the following comparison. Consider Glycomet (Metformin) and Glimiprex-MF (Glimepiride+Metformin) both of which are used for controlling high blood sugar. Glycomet came under price control in DPCO, 2013 while Glimiprex-MF did not. Therefore, a comparison of the before-after change in price and quantity consumed for Glycomet vis-à-vis that for Glimiprex-MF controls for the effect of all other confounding factors such as demand and supply of drugs in this category. This comparison, therefore, estimates the pure effect of the DPCO order. Figure 12 shows that the price of Glycomet actually increased more than that for Glimiprex-MF after DPCO, 2013. It, however, had no effect on the quantity consumed, which is consistent with pharmaceutical drugs being an essential commodity for which the demand is inelastic, or insensitive, to the changes in price.

4.16 Our estimates also show that the prices of drugs that came under DPCO, 2013 increased on average by ₹ 71 per mg of the active ingredient. For drugs that were unaffected by DPCO, 2013, the prices increased by ₹ 13 per mg of the active ingredient. The difference-in-difference estimate in prices was 58 per mg of the active ingredient, which was statistically significant at 5 per cent (Figure 13). The difference-in-difference in quantities was statistically indistinguishable from zero.

4.17 To parse out the effect of the DPCO order, we separate formulations by those that are sold primarily through retail outlets and those that are primarily sold through hospitals. The prices of formulations that came under DPCO, 2013 and that were mostly sold at hospitals increased by ₹99 per mg. In the case of formulations mostly sold in hospitals that were unaffected by DPCO, 2013, the prices increased by only 25 per mg (Figure 14). Thus, the difference-

Figure 12: Effect of DPCO, 2013 on Prices of Glycomet (regulated) vs Glimiprex-MF (unregulated)



Source: IMS Health, Survey Calculations

Box 2: Drugs Prices Control Order (DPCO)

The Drugs Prices Control Order (DPCO) is an order issued under Sec. 3 of Essential Commodities Act (ECA), 1955 that seeks to regulate the prices of pharmaceutical drugs. The DPCO, among other things, specifies the list of drugs that come under the price ceiling and the formula for calculating the ceiling price. The National List of Essential Medicines (NLEM) lists the pharmaceutical drugs that fall under price control. The DPCO, 2013 for instance, contains 680 scheduled drug formulations spread across 27 therapeutic groups whose prices are regulated.

National Pharmaceutical Pricing Authority (NPPA) is responsible for fixing and revising the prices of pharmaceutical products as well as the enforcement of the DPCO. The Government of India has amended the DPCO several times and most recently in 2013. Until 2013, DPCO specified the price ceiling using the cost-based pricing method in which the ceiling price was calculated as a multiple of the cost that it took producers to promote and distribute a pharmaceutical drug. This multiple referred to as the Maximum Allowable Post-manufacturing Expenses (MAPE) was set at 50 per cent for formulations imported into India and at 100 per cent for indigenously manufactured formulations.

In 2013, for the first time, India transitioned from cost-based pricing to market-based pricing. Under the market-based pricing method, the Government determines the ceiling prices as the maximum mark-up that a retailer can charge over the reference price, which is the simple average of the prices of the all the brands with market share of greater than or equal to 1 per cent based on market data provided by IMS Health, a market research firm. The order capped the maximum mark-up to 16 per cent for all formulations specified in the NLEM.

Box 3: Methodology of Difference-in-differences - Explained

Difference-in-differences (DiD) is a statistical technique used to estimate the effect of a specific intervention or treatment (such as a passage of law, enactment of policy, or large-scale program implementation). The technique compares the changes in outcomes over time between a population that is affected by the specific intervention (the treatment group) and a population that is not (the control group). DiD is typically used to mitigate the possibility of any extraneous factors affecting the estimated impact of an intervention. This is accomplished by differencing the estimated impact of the treatment on the outcome in the treatment group and the estimated impact of the treatment on the control group.

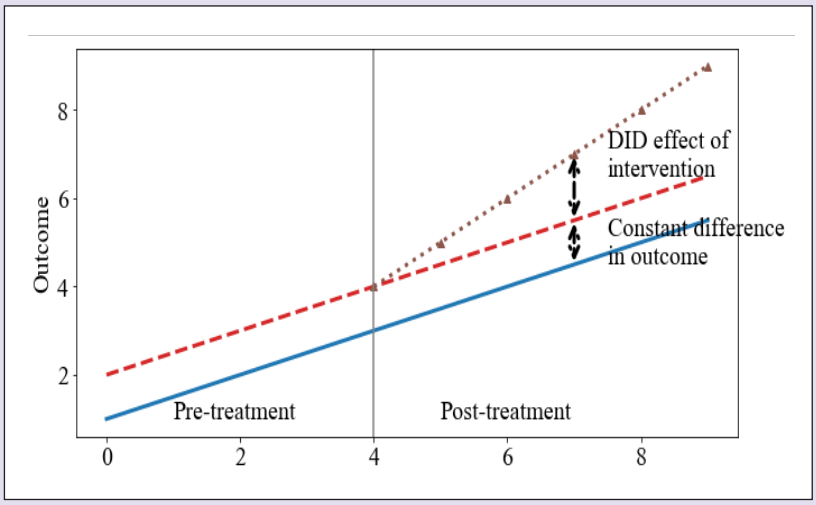
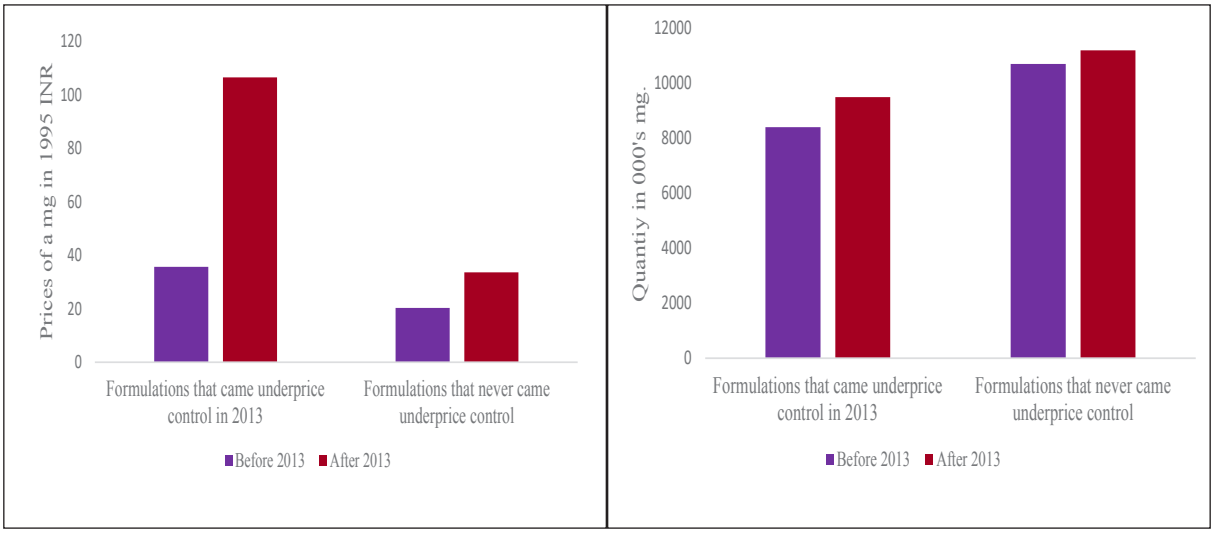


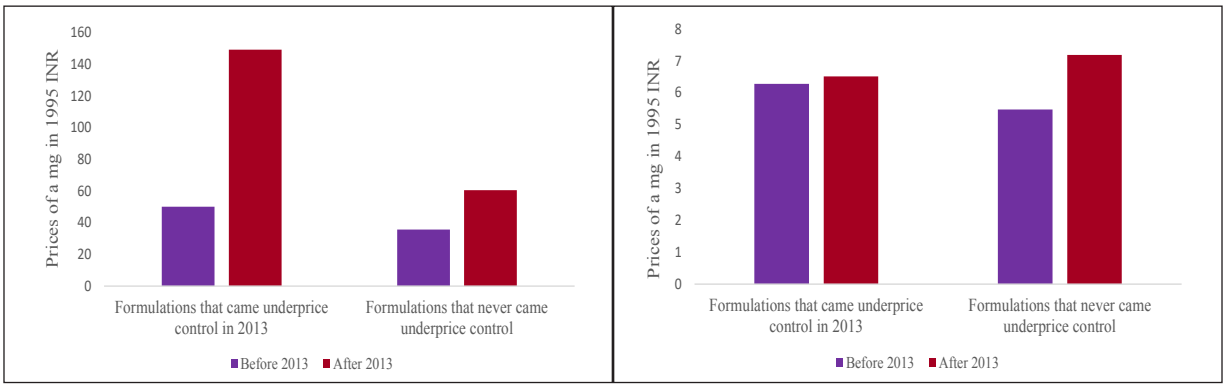
Figure 13: Effect of DPCO, 2013 on Prices and Quantities consumed of regulated drugs



Source: Survey Calculations
Note: Data comprising of 1751 formulations and 49893 brands was used from IMS Health. Averages are computed over all the drugs that were unaffected by DPCO, 2013 separately for the period before 2013 and for the period after 2013

in-difference estimate for formulations sold primarily through hospitals was ₹74 per mg. In contrast, the prices of drugs that came under DPCO, 2013 and primarily sold through retail outlets increased by a meagre ₹0.23 per mg during the same period. However, in the case of formulations unaffected by DPCO, 2013 and mostly sold by retail chemists,

Figure 14: Effect of DPCO, 2013 on Prices and Quantities consumed of formulations sold at hospitals vs retail outlets

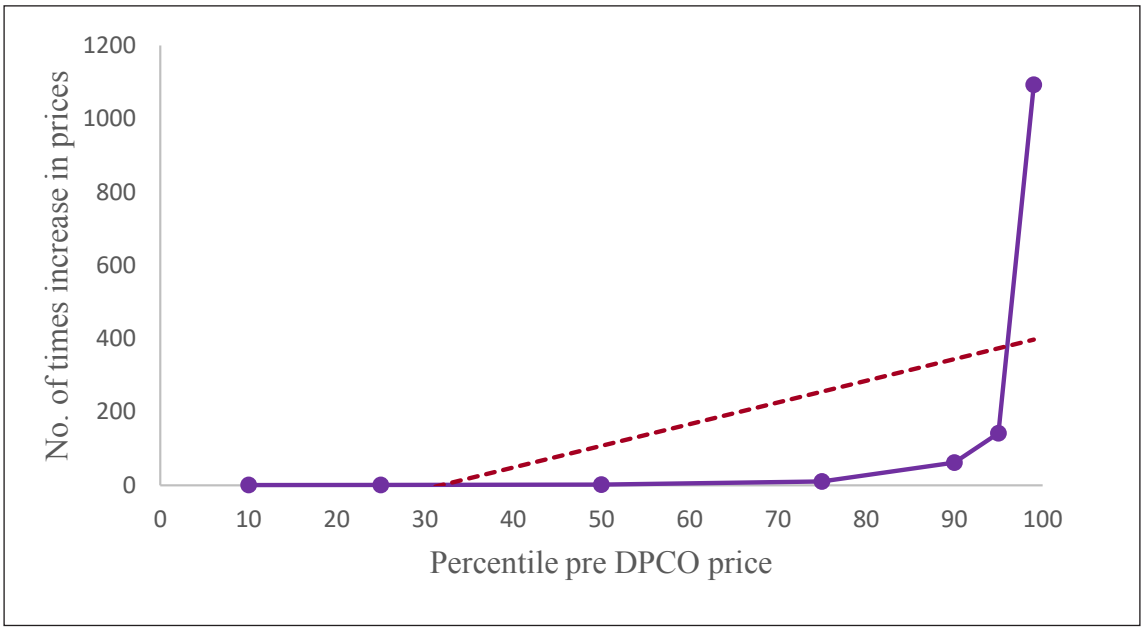


Source: Survey Calculations

the prices increased by about ₹1.72 per mg. Thus, the difference-in difference estimate for formulations primarily sold through retail outlets was ₹(-)1.49 per mg. This shows that the DPCO, 2013 appears to have increased the prices of drugs mostly sold through hospitals but decreased it mildly in the case of drugs sold through the retail chemists. This effect of price controls on drugs is expected because the enforcement of the DPCO orders would be easier in the case of retail outlets when compared to hospitals.

4.18 Our estimates also show that the DPCO, 2013 order increased prices by about 21 per cent for the cheaper formulations (i.e, those that were in the 25th percentile of the price distribution). However, in the case of costly formulations (i.e., those that were in the 99th percentile), the increase was about 2.4 times (Figure 15). The effect of DPCO, 2013 in increasing prices was, therefore, more potent for more expensive formulations than for cheaper ones – reinforcing the effect opposite to what it was instituted for i.e., making drugs affordable.

Figure 15: The effect of DPCO 2013 on prices by percentile (of prices)



Source: Survey Calculations

4.19 Our analysis of the ECA clearly shows that stock limits and price controls under the Act lead to sub-optimal outcomes which are actually opposite to what the Act is mandated to achieve. The Act interferes with the functioning of the markets and provides incentives which are detrimental to wealth creation thereby adversely affecting both social welfare and economic development. ECA needs to be repealed and replaced by market freiendly interventions like price stabilization funds, Direct Benefit Transfers (DBT) of support to consumers, incentives to innovations, increasing market integration and smooth flow of goods and services.

GOVERNMENT INTERVENTION IN GRAIN MARKETS

4.20 In the grain markets in India, Government has sought to achieve food security while ensuring remunerative prices to producers and safeguarding the interest of consumers by making supplies available at affordable prices. In trying to achieve this, the state controls input prices such as those of fertilizer, water, and electricity, sets output prices, undertakes storage and procurement through an administrative machinery, and distributes cereals across the country through the PDS.

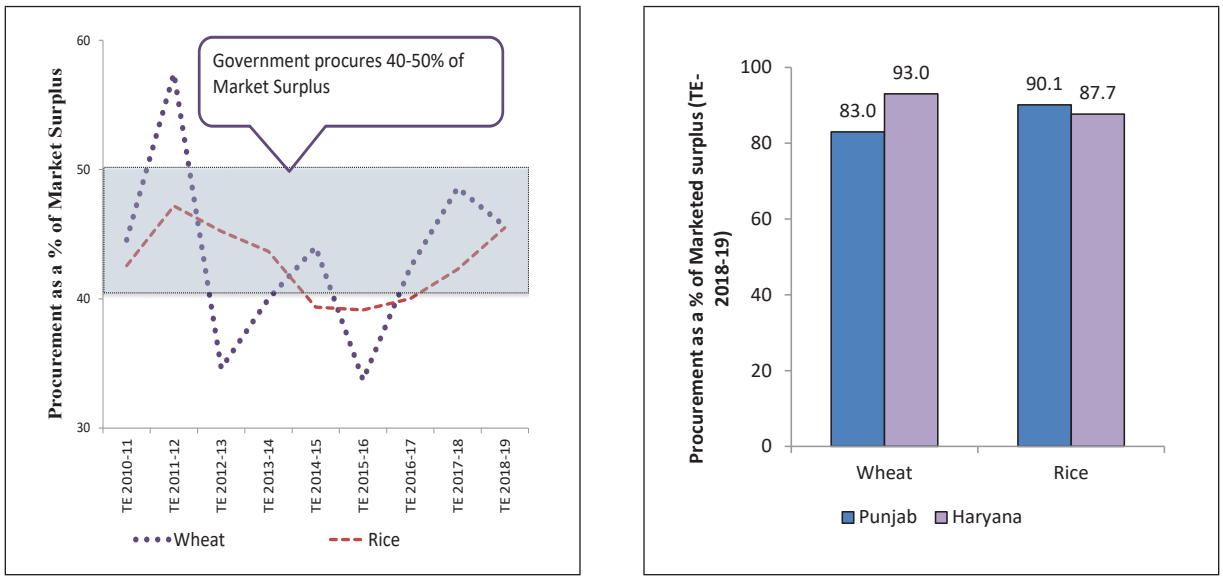
4.21 The Food Corporation of India (FCI) was set up in 1965 under the Food Corporations Act, 1964 with the primary duty to purchase, store, move/transport, distribute and sell foodgrains and other foodstuffs. The main objectives of FCI are (a) procurement of foodgrains from farmers at Minimum Support Prices (MSP) announced by the Government; (b) distribution of foodgrains to consumers through PDS, particularly the vulnerable sections of society at affordable prices; and (c) maintenance of buffer stock of foodgrains for food security and price stability. Thus, it is mandated to serve the interests of producers and consumers alike.

4.22 Subsequent to this mandate, the Government has emerged as the single largest procurer and hoarder of foodgrains. Government procures around 40-50 per cent of the total markets surplus of rice and wheat emerging as the dominant buyer of these grains (Figure 16). In some States like Punjab and Haryana, this share of purchase by Government reaches as high as 80-90 per cent (Figure 12). A record procurement of 44.4 million tonnes of rice and 34 million tonnes of wheat was done in 2018-19. Thus the government, as the single largest buyer of rice and wheat, is virtually a monopsonist in the domestic grain market and is a dominant player crowding out private trade. This disincetivizes the private sector to undertake long-term investments in procurement, storage and processing of these commodities.

4.23 These procurement operations largely support the MSPs that are designed to be indicative prices for producers at the beginning of the sowing season and floor prices as an insurance mechanism for farmers from any fall in prices. However, the secular increasing trend in these prices have served to give a signal to farmers to opt for the crops which have an assured procurement system. Figure 17 clearly shows that an increase in MSP translates into farmers offering their produce for the open-ended procurement by the Government. This also indicates that market prices do not offer remunerative options for the farmers and MSPs have, in effect, become the maximum prices rather than the floor price – the opposite of the aim it is intended for.

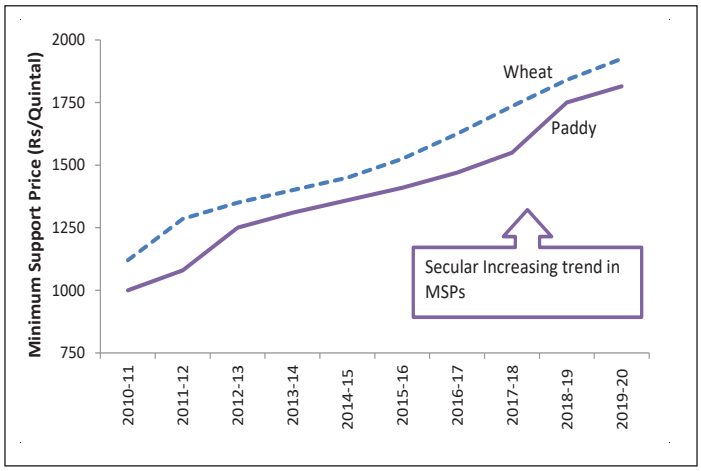
4.24 Given the obligations under the Targeted Public Distribution System (TPDS) earlier and now under the National Food Security Act (NFSA), 2013 that covers upto 75 per cent of the rural population and 50 per cent of the urban population to receive

Figure 16: Government – Single Largest Procurer of Rice and Wheat

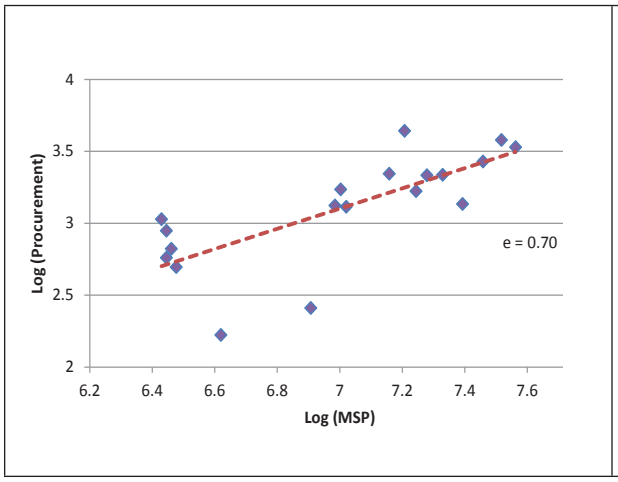


Source: FCI, DACF&W

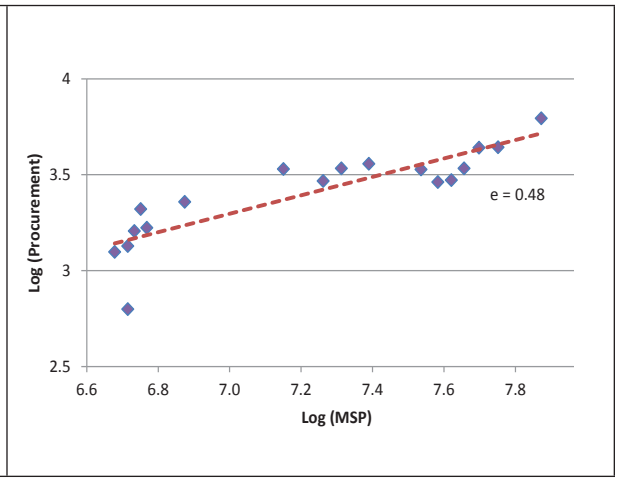
Figure 17: Increasing MSPs leading to Higher Procurements



Wheat



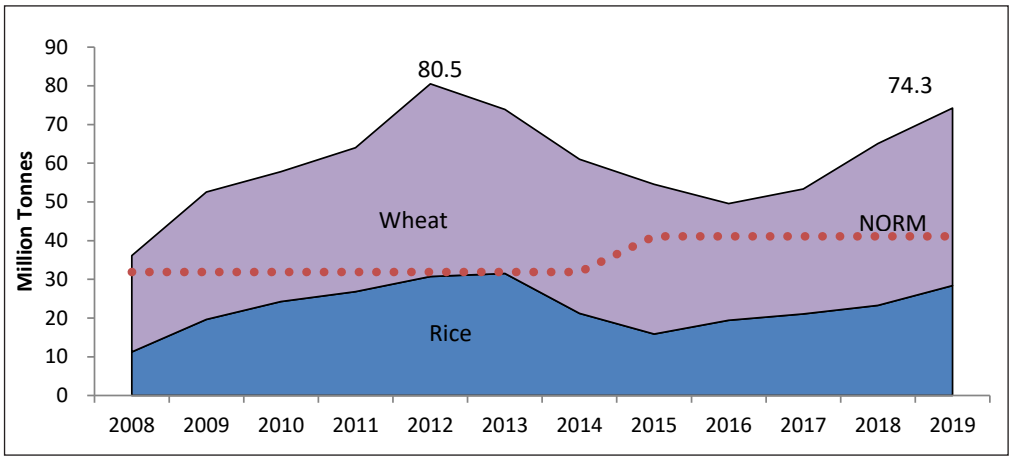
Rice



Source: DACF&W and DFPD

subsidized foodgrains, Government has also emerged as the single largest hoarder of rice and wheat. As against the buffer stock norm of 41.1 million tonnes of rice & wheat (as on 1 July of each year), total Central Pool stocks were at 74.3 million tonnes on 1 July, 2019 (Figure 18). The current peak comprises 45.8 million tonnes of wheat (against a buffer norm of 27.58 million tonnes) and 28.4 million tonnes of rice (against a buffer norm of 13.5 million tonnes).

Figure 18: Trend in Buffer Stocks with FCI

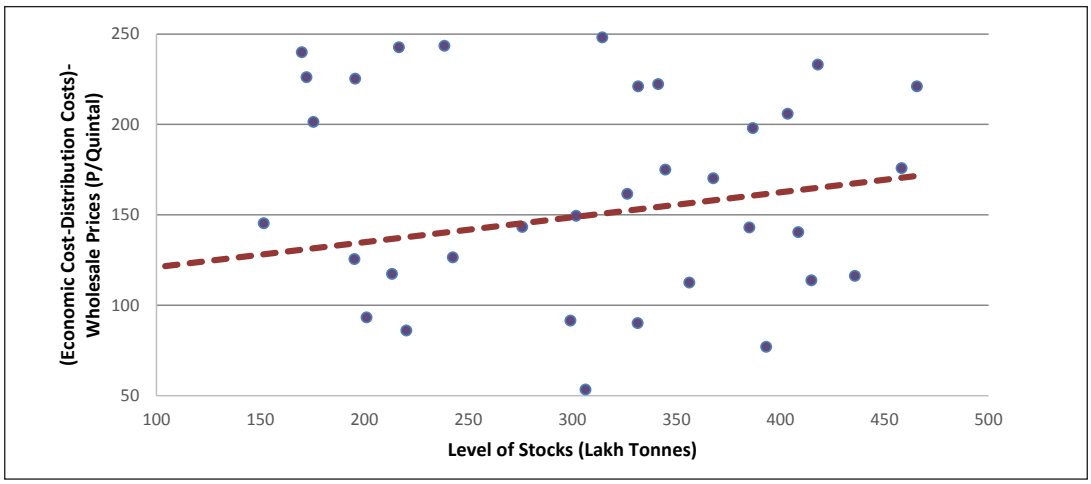


Source: FCI
Note: Stocks and norms are as on 1st July of the year

4.25 Accounting for the fact that the economic cost of FCI for acquiring, storing and distributing foodgrains is about 40 per cent more than the procurement price, the current mix of policies of assured procurement (at MSPs), storage (through a monopolist administrative government organistion) and distribution under TPDS have contributed to building up of a high cost foodgrain economy. Figure 19 shows that the inefficiency of FCI (estimated by the wedge between Economic Cost excl Distribution Cost and average wholesale prices) increases with the increasing level of stocks. It is evident that if foodgrain markets are opened for active participation of private players with Government as an equal player (and not as a monopsonist in procurement and monopolist in storage and distribution), competition would lead to more efficiency in the operations and development of adequate infrastructure in storage and warehousing.

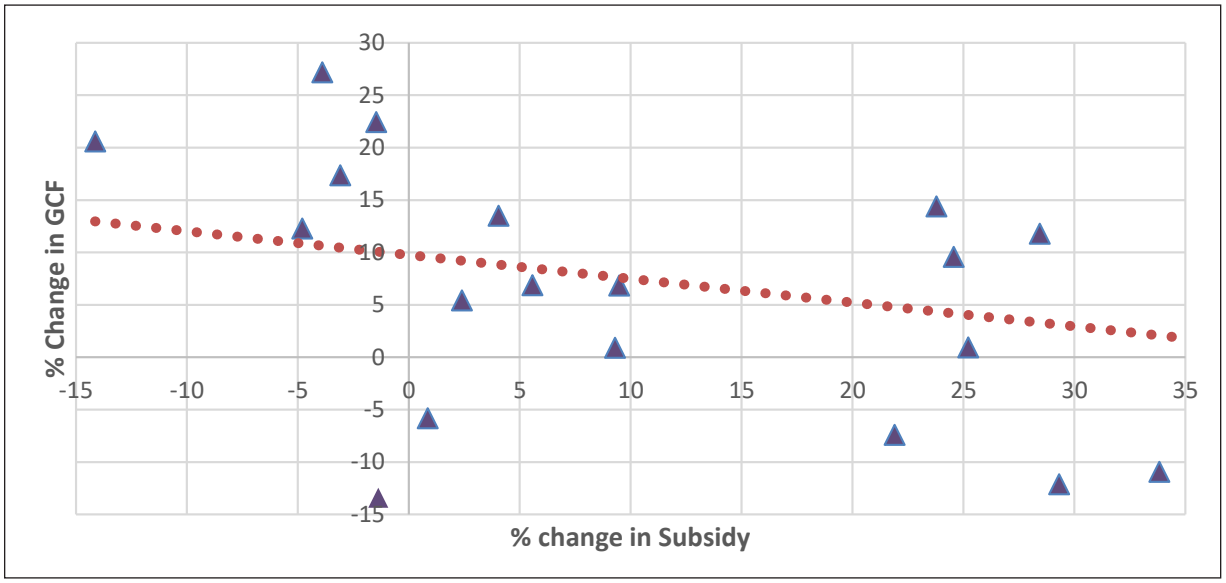
4.26 These policies have led to burgeoning burden of food subsidy which largely covers the procurement cost of FCI (difference between the MSP and the Central issue prices (CIP) of foodgrains under PDS) and distribution and carrying costs of FCI. Given fiscal constraints, there is always a trade-off between allocating money through subsidies and increasing investments. Figure 20 clearly shows that the growth in public investments in agriculture is negatively correlated to increases in food subsidy outlay. As investments are the crucial input to increase in productivity, the increasing focus on subsidies is harming the growth of agricultural sector in the long-run. This imbalance between subsidies and investments needs to be urgently corrected for sustainable

Figure 19: Increasing Inefficiency of FCI with Stocks (for Wheat)



Source: Analysis based on data from FCI, DCA

Figure 20: Inverse correlation between Change in outlays of food subsidy and Public Investments in Agriculture



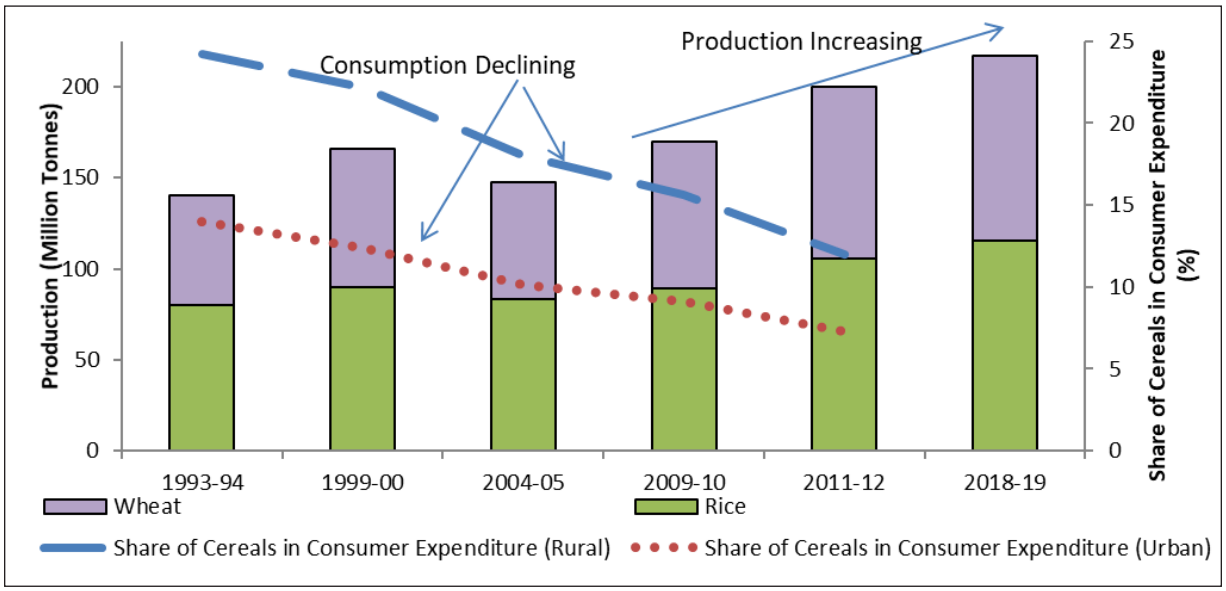
Source: Compiled from Union Budget Documents, data from National Statistics Office (NSO)

growth in Indian agriculture and overall inclusive growth.

4.27 Above trends need to be juxtaposed with the trends in consumer expenditure and thereby demand of cereals. NSS 73rd round on consumer expenditure shows that the share of cereals in Monthly Per Capita Expenditure (MPCE) has fallen by about 33 per cent in rural India and about 28 per cent in urban India from 2004-05 to 2011-12 (latest estimates available). Further, the share of cereals declines steadily as MPCE level increases, from about 19 per cent for the bottom decile class of rural India to about 5-6 per cent for the top decile class, and from 15 per cent for the bottom decile class of urban India to under 3 per cent for the top decile class. This is in line with decreasing consumption of food and increasing expenditure on non-food items as

incomes rise. Figure 21 shows the declining share of cereals in cosumer expenditure while the production of rice and wheat has reached new records. This trend of decreasing demand for cereals and increasing supply of cereals shows that the production pattern is not synchronized with the demand patterns. The farmers are deriving their signals, not from the demand patterns (reflected in the actual market prices) but from the Government policies of procurement and distribution policies for grains. Thus, the intervention of Government has led to a disconnect between demand and supply of grains in foodgrain markets.

Figure 21: Trends in Consumption and Production of Cereals in India



Source: DACF&W and NSS 68th Round

Note: Cereals consist of Rice, Wheat and Coarse cereals wherein Rice and Wheat comprise more than 80 per cent of total production of cereals Data for Consumption is available only till 2011-12

4.28 It is evident from the analysis above that there has been a paradigm shift on food (cereal) front between the time when FCI was created and today. India has moved from being a food scarce country to a food surplus country with a substantial increase in production and has emerged as a net exporter of cereals. The Government policies of assured procurement and distribution gave the right incentives to increase production at that time. The current foodgrain economy is, however, riddled with various economic inefficiencies described above. These policies, therefore, need to move on now to incentivize diversification and environmentally sustainable production.

4.29 The farmers need to be be empowered through direct investment subsidies and cash transfers, which are crop neutral and do not interefere with the cropping decisions of the farmer. The coverage of NFSA needs to be restricted to the bottom 20 per cent and the issue prices for others could be linked to the procurement prices. A better alternative would be giving income transfers to consumers through Direct Benefit Transfers (DBT). It may be noted here that internationally, there is a move towards conditional cash transfers (CCTs), aimed at tackling problems of food insecurity and poverty and for nudging people towards improved health and education levels

(Box 4). Therefore, the foodgrains policy needs to be dynamic and allow switching from physical handling and distribution of foodgrains to cash transfers/food coupons/ smart cards. At the macro level, the agricultural marketing, trade (both domestic and foreign) and distribution policies need to be aligned so that farmers receive the correct signals for diversification into remunerative and sustainable production.

Box 4: Examples of Successful Conditional Cash Transfer Schemes

Country	Year	Modalities	Impact
Brazil: *Bolsa Familia*	2003	• Covers 25 per cent of total population • Eligible beneficiaries below income level of $60 and further identified through household surveys • Size of transfer – R$15-95 • Access payments through banks, lottery offices, retail stores using debit card • Conditions – Minimum 85 per cent attendance and compulsory attending of health checkups for women and children • Cost of scheme – 0.5 per cent of GDP	• 80 per cent of benefits went to identified beneficiaries • Decline in households that are food inadequate • Decrease in number of children malnourished • Increase in food consumption • Over 60 per cent transactions made through non-bank agencies
Mexico: *Oportunidades*	1997	• Focus on geographically poor regions. Households identified in these regions using marginal index • Covers 20 per cent of total Population • Cost of scheme – 0.4 per cent of GDP • Size of transfer – 235 pesos (average) • Payments made bimonthly • Benefits can be withdrawn from bank branches and authorized non-financial agencies • Conditions – Minimum attendance requirement and mandatory health check ups	• 60 per cent of benefits went to poorest 20 per cent of the population • 12 per cent decrease in incidence of illnesses • Increase in enrollment of children into schools and reduction in dropout rates • Increase in likelihood of women deciding on how benefits to be spent
Philippines: Pantawid Pamilyang Pilipino Program	2007	• Covers 20 per cent of total population • Beneficiaries identified through Household surveys • Cost of scheme – 0.5 per cent of GDP • Conditions- Minimum attendance requirement and mandatory health check -ups, participate in monthly community-based Family Development Sessions.	• 20 million Filipinos benefited • Program has led to a poverty reduction of 1.4 percentage points per year • 10.18 million children currently benefit from CCT • Drastic decrease in alcoholism in 4Ps households (spending on vices was lower by 39 per cent)

Source: World Bank FAQ (2017), ICRIER(2017)

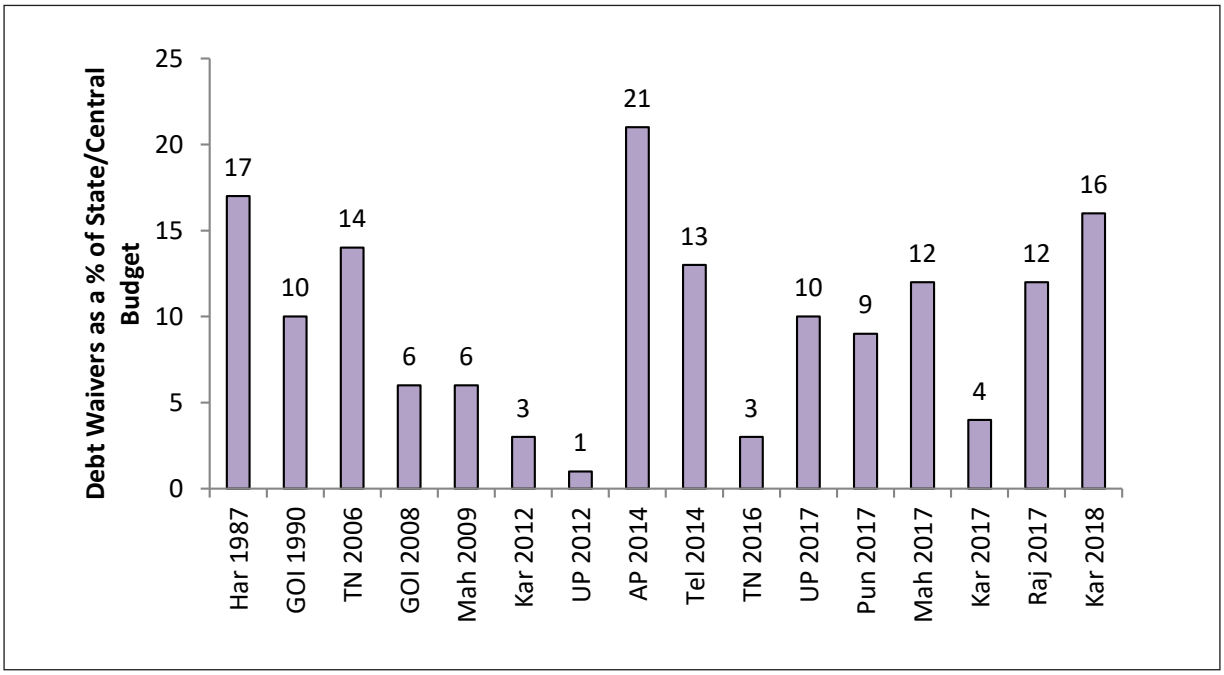
DEBT WAIVERS

4.30 Government intervention in credit markets, in the form of full or partial, conditional or unconditional, debt relief has become increasingly common at the state level in India. The phenomenon of granting debt waivers to farmers just before or after an election, which was to fulfill the promise made in the election manifesto, had died down in the early nineties. However, this phenomenon has become widespread after the large-scale farm debt waiver announced by the union government in 2008. This was followed by announcement of waivers in states such as Andhra Pradesh, Telangana, Uttar Pradesh, Madhya Pradesh, Rajasthan, Punjab, Maharashtra, and others. Figure 22 shows the scale of these waivers as a proportion of state/central budgets. Given the prevalence of government intervention in the form of farm debt relief in India, it is important to understand its consequences on both the beneficiaries and the credit market in general.

4.31 The consequences of government intervention in credit markets in India have been examined by several carefully crafted research studies (Kanz (2016), Giné and Kanz (2017), Mukherjee, Subramanian, and Tantri (2018), Tantri (2018)). Unlike simple pre- and post- event comparisons or opinions largely based on anecdotes, these studies compare the actual outcomes with carefully constructed representation of the counter-factual. In other words, the attempt is to compare what actually transpired after a government intervention with what would have happened had there been no such intervention, which represents the counter-factual. Therefore, causal claims made by these studies are reliable for policy purposes.

4.32 When arguing the benefits of debt waivers on farmers, proponents postulate that borrowers suffer from the problem of "debt overhang". This refers to a situation where all current income gets used up in

Figure 22: Loan Waiver Allocation as a per cent of State/Central Budget



Source: Adapted from Phadnis and Gupta (2018)

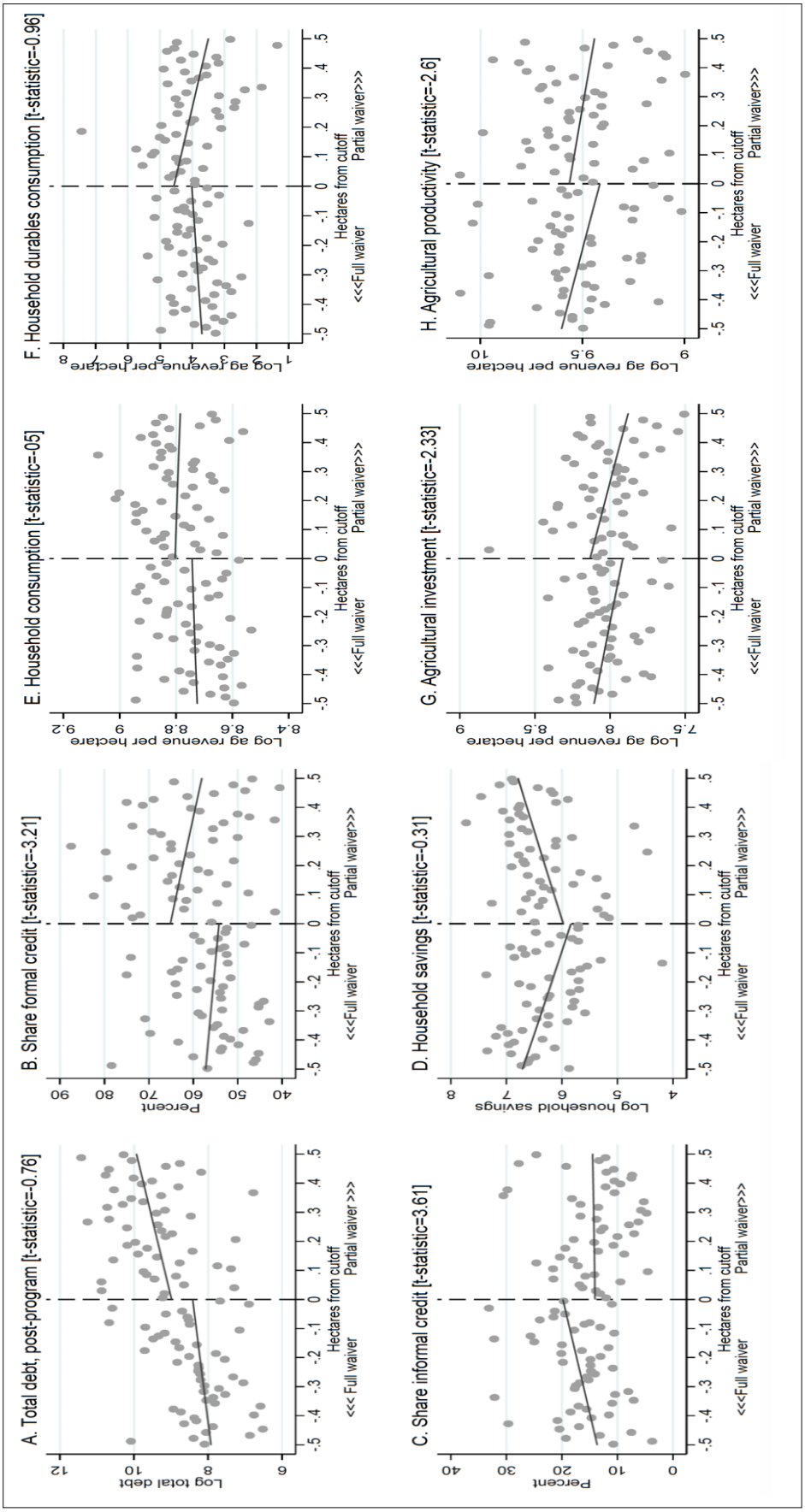
repaying the accumulated debt, leaving little incentives to invest either in physical or human capital. The incentives become muted because any incremental benefit of such investment in physical or human capital is likely to go to the lenders in the form of repayment of existing obligations and not the farmer. Such borrowers are unlikely to receive new funding, either equity or debt, as the ability of the borrower to repay additional loans or grow his/her business/farm is in question. Debt overhang, therefore, leads to abandonment of beneficial investment and hence reduces social welfare. Given this situation, proponents of debt relief argue that a debt waiver helps the borrowers to come out of the debt trap as it cleans their balance sheet and reduces the burden of debt servicing. This clean-up of borrowers' balance sheet is likely to lead to both new investments as well as fresh fund rising as borrowers' repayment capacity increases even if there is no change in income.

4.33 Kanz (2016) examines the 2008 debt waiver offered by Government of India and tests whether any of these effects actually play out. He uses the fact that farmers having less than 2 hectares of land received full relief while those with less than 2 hectares of land received only partial relief. A farmer having 1.98 hectares of land is not different from another farmer having 2.02 hectares of land. However, the farmer having 1.98 hectares of land receives the full relief while the farmer having 2.02 hectares of land receives only partial relief. If debt relief indeed benefits the farmers, then the former set of farmers should be definitely better off than the latter set. The results, however, are quite the opposite of what proponents of debt waivers believe. Neither agricultural investment nor productivity increased after the waiver. Consequently, there was little impact on consumption as well. In other words, a stimulus worth close to 2 per cent of the GDP did not have any meaningful real impact on the lives of the farmers.

4.34 Figure 23 summarizes these results, where each panel shows the impact of the debt waiver on a key outcome on the y-axis. The horizontal axis denotes distance from the two hectare cut-off in terms of landholding. Borrowers having positive distance received a partial waiver as they have landholding more than two hectares. In contrast, borrowers having negative distance have landholdings less than two hectares and therefore received full waiver. It is clear from the figure that the waiver did not benefit the full beneficiaries more than the partial beneficiaries. In fact, full waiver beneficiaries consume less, save less, invest less and are less productive after the waiver when compared to the partial beneficiaries. The effects for agricultural investment and productivity are statistically significant. As well, the disconcerting evidence is that the share of formal credit decreases while the share of formal credit decreases for full beneficiaries when compared to partial beneficiaries, thereby defeating the very purpose of the debt waiver provided to farmers.

4.35 Debt waivers impact credit markets negatively as well. Bolton and Rosenthal (2002) argue that debt relief can help as long as they are awarded under exceptional circumstances and remain unanticipated. In such situations, a debt relief can prevent

Figure 23: Post waiver outcomes for waiver beneficiaries and comparable non beneficiaries



Note: In each panel, the horizontal axis denotes distance from the cut-off in terms of landholding. Borrowers having positive (negative) distance are full (partial) waiver beneficiaries. The vertical axis in each figure measures a different outcome.

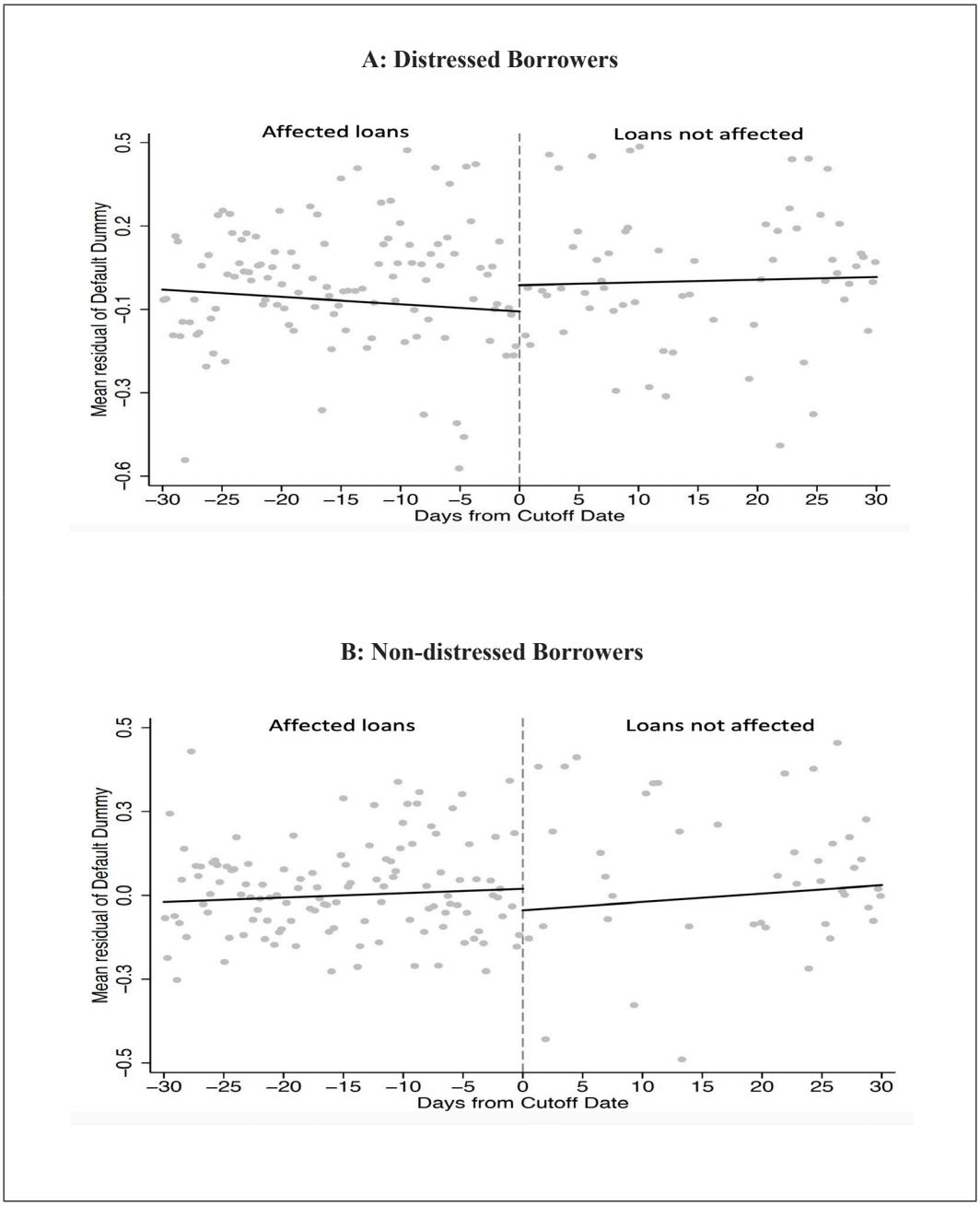
farmers going out of farming and the consequent reduction of output. However, they also note that an anticipated waiver may lead to moral hazard and destroy the credit culture. Given the nature of the 2008 waiver, the later consequences seem to have prevailed. Gine and Kanz (2017) find that the waiver led to increased loan defaults on future loans and no improvement in wages, productivity, or consumption. They compare districts based on their exposure to the 2008 debt waiver provided by Government of India. A one percentage increase in exposure to the debt waiver increased the amount of non-performing assets by about 7 per cent. Most worryingly, they find that the loan performance deteriorated the most in areas that were headed for election, indicating strategic default in anticipation of waiver. Ironically, flow of bank credit to waiver beneficiaries declined after the waiver. A one standard deviation increase in the exposure of a district to the waiver led to a 4-6 per cent decline in the number of new loans and a 14-16 per cent decline in the amount of post-program lending.

4.36 Tantri (2018) finds that the Andhra Pradesh government's 2010 intervention in micro-finance loans had a contagious impact on other segments of credit markets such as bank loans. In October, 2010, the government of Andhra Pradesh issued an ordinance virtually banning almost all loan recovery practices of micro-finance lenders. However, the loan delinquency rates in the micro-finance went up significantly following this intervention. The intervention had a contagious impact on bank loans as well. Rate of defaults and the rate of non-performing assets rose on bank loans increased by 12.4 per cent and 24.5 per cent respectively following this intervention. Finally, as the flow of new credit reduced by half, government intervention that intended to help micro-finance borrowers ended up hurting borrowers by depriving them of credit.

4.37 Mukherjee, Subramanian, and Tantri (2018), who also examine the 2008 waiver provided by the Government of India, make a much more nuanced point. They study the impact of the waiver on distressed and non-distressed borrowers separately by using crop insurance claims and weather conditions to identify economic distress of the borrowers. They find that loan performance of genuinely distressed borrowers improved by about 9 per cent due to the loan waiver. However, the loan performance of non-distressed beneficiaries deteriorated by about 23 per cent after the waiver. They use the waiver eligibility cut-off date of December 31, 2007 to carefully construct a regression discontinuity based identification strategy. It is crucial to note that the cut-off date for deciding beneficiaries was February 29, 2008 and hence borrowers were not aware about the cut-off date as on December 31.

4.38 Consider two distressed farmers, A and B who defaulted on their crop loans on December 30th 2007 and January 1st 2008, respectively. Due to the December 31st cut-off date for being eligible for the waiver, borrower A gets his/her loan waived whereas borrower B does not. Otherwise, both the borrowers are comparable. The study shows that loan performance of distressed borrower A improves after the waiver. Now consider two non-distressed farmers, C and D who defaulted on their crop loans on December 30th 2007 and January 1st 2008, respectively.

Figure 24: Impact of Debt Waiver On Distressed And Non- Distressed Borrowers



Source: Adapted from Mukherjee, Subramanian, and Tantri (2018)

Borrower C gets his/her loan waived whereas borrower D does not. Otherwise, both the borrowers are comparable. The study shows that loan performance of borrower D worsens after the waiver. In other words, a waiver helps only when the beneficiaries are genuinely distressed but fuels even greater default when relief is not made conditional on genuine distress.

4.39 Figure 24 shows the main results of this study. The horizontal axis denotes the distance, in terms of days, from the waiver

eligibility cut-off. The vertical axis denotes the default rate. Panel A (B) present the results for distressed (non-distressed) borrowers. Those who are on the left (right) of the cut-off are waiver beneficiaries (non-beneficiaries). It is clear from the figure that among the distressed (non-distressed) borrowers the waiver beneficiaries default less (more) when compared to comparable non-beneficiaries after the waiver. The horizontal axis denotes the distance, in terms of days, from the waiver eligibility cut-off. The vertical axis denotes the default rate on agricultural crop loans. Figure A indicates that distressed waiver beneficiaries default 9 per cent less than comparable distressed non-beneficiaries. Figure B shows that non-distressed beneficiaries default 23 per cent more than comparable non-distressed non-beneficiaries.

4.40 It is clear from the above studies that an unconditional and blanket debt waiver is a bad idea. It does not achieve any meaningful real outcomes for the intended beneficiaries while the costs to the exchequer are significant. Most importantly, debt waivers disrupt the credit culture and end up reducing the formal credit flow to the very same farmers it intends to help. As noted by Mukherjee, Subramanian, and Tantri (2018) and Bolton and Rosenthal (2002), there is a case for a limited relief only when distress can be identified credibly. In other words, a waiver can at best be an emergency medicine to be given in rare cases after a thorough diagnosis and identification of illness and not a staple diet. In most cases, its side effects, the unintended consequences, far outweigh any plausible short term benefits.

LEGISLATIVE CHANGES REQUIRED TO REDUCE GOVERNMENT INTERVENTIONS

4.41 The analysis above highlights clearly that India is still stuck with several forms of Government intervention that are anchronistice with today's economy. In several spheres of the economy, India has traversed the transition from a command and control economy to a market-driven economy. Table 1 illustrates this across several areas. Specifically industrial deregulation, privatizations of several state-owned enterprises, reduced controls on international trade and investment stand out in this context.

4.42 However, as highlighted in previous sections, several areas of unnecessary and inefficient government intervention still remain. Table 2 summarizes some key Acts, as low-hanging fruits to begin with, which have outlived their use and need to be repealed by one 'stroke-of-the-pen' as was done post-1990s or amended to enable functioning of competitive markets.

Table 1: Traversing the 'Full Circle' – From 'Control' to 'Market'

Act	Market Distortion created	Transformation towards Developing a Market Economy
Capital Issues (Control) Act, 1947	The Government decided which company could raise how much capital - Control over the amount as well as pricing of shares led to ineffective valuation of capital	Repealed and replaced by The Securities and Exchange Board of India (SEBI) Act, 1992 as a regulator of the capital markets. SEBI has steered the capital markets to ensure price discovery, governance of securities, allowing efficient mobilisation and allocation of capital, protecting the interest of investors in mind enabling enormous wealth creation (as detailed in chapter 1)
Oil and Natural Gas Commission (ONGC) Act, 1959	ONGC was created with the mandate to plan, promote, organize and implement programmes for the development of petroleum resources – created a Government monopoly in this sector	On 4 September 1993, the Act was repealed and ONGC was converted into a company. The evolution of hydrocarbons policy has been from state monopoly in 1948, to the beginning of deregulation in 1991 through nomination, to competitive bidding and profit sharing under New Exploration Licensing Policy (NELP), 1997, to gas pricing guidelines in 2014, to discovered small field policy in 2015 and, finally, to a uniform licence for exploration and production of all forms of hydrocarbon and revenue sharing under Hydrocarbon Exploration and Licensing Policy (HELP) in 2016.
Banking Companies (Acquisition and Transfer of Undertakings) Act of 1970 & State Bank of India Act, 1955	To provide for the acquisition and transfer of the undertakings of certain banking companies created – created 27 nationalized banks – Private sector banks were allowed only after 1994	Merger of banks announced which will reduce public sector banks from 27 to 12. Further, attempts to create a level playing field between private sector banks and public sector banks are in place.
Monopolies and Restrictive Trade Practices (MRTP) Act, 1969	MRTPC was constituted to prevent concentration of economic power, control of monopolies, prohibition of monopolistic practices, prohibition of restrictive and unfair trade practices. This restricted companies to grow and achieve a global scale and led to proliferation of small companies.	Repealed to give way to the Competition Act in 2002. The Competition Act aims to "*promote and sustain competition in markets, protect interests of consumers, ensure freedom of trade carried on by other participants in markets and prohibition of abuse of dominant position*". The focus has shifted from 'prevention of dominance' to 'regulating abuse of dominance'
The Coking Coal Mines (Nationalisation) Act, 1972 and Coal Mines (Nationalization) Act, 1973	Government took over the management of coking and non-coking coal mines as energy sector became a crucial sector	Repealed in 2018. Private firms have been permitted to enter the commercial coal mining industry. The mines will be auctioned to the firm offering the highest per tonne price. The move broke the monopoly of Coal India Limited over commercial mining.
Nationalisation of Life Insurance, 1956 and General Insurance Business (Nationalisation) Act, 1972	Acquisition and transfer of shares of Indian insurance companies and undertakings of other existing insurers to create LIC and GIC – led to cheap mobilisation of resources for investment in sectors decided by Government	Amended various times Insurance Regulatory Development Authority of India (IRDAI) Act, 1999 enacted to open the insurance sector. This was a journey from nationalisation to creation of a monopoly to opening up to private competition.

Act	Market Distortion created	Transformation towards Developing a Market Economy
Foreign Exchange Regulation Act, 1973	Imposed restriction on foreign equity in companies to 40 percent and permission was needed from RBI to operate, if their shareholding was higher. This restricted access to foreign capital and technology	Repealed and replaced by Foreign Exchange Management Act (FEMA), 1999 to facilitate external trade and payments. Under FERA, everything was prohibited unless special permissions were received, while under FEMA, everything was permitted unless specifically restricted or regulated to enable development of forex market.
Maruti Limited (Acquisition and Transfer of Undertakings) Act, 1980	The purpose was to modernise the automobile industry and ensure higher production of motor vehicles	On 14 May 2007, the government exited the company through a two-stage process: a rights issue of Rs. 400 crore followed by the sale of its existing shares through a public issue
Air Corporations Act of 1953	Nationalise nine airlines to form Air India and Indian Airlines – intended to provide safe, efficient, adequate, economical and properly coordinated air transport services, whether internal or international or both. A market-driven, services-oriented, consumer-centric business was nationalised.	Replaced by Air Corporations (Transfer of Undertaking and Repeal) Act, 1994 wherein Private operators were allowed to provide air transport services. The Airports Authority of India (Amendment) Act of 2003 introduced the term "private airport" and authorised Airports Authority of India (AAI) to transfer operations and management of its existing airports by way of long-term lease to private players. The Airports Economic Regulatory Authority (AERA) of India Act, 2008 was enacted to regulate tariff and other charges and to monitor performance standards
Urban Land Ceiling and Regulation Act, 1976	Imposition of a ceiling on acquisition of vacant land in urban agglomerations for the acquisition to prevent the concentration of urban land in the hands of the few and bring equity to subserve the common good. This led to distortion of land markets in urban areas, rise in slums, creation of artificial land scarcity and skyrocketing land prices.	Repealed in 1999.
Sick Industrial Companies Act (SICA), 1985	Timely detection of sick and potentially sick companies and speedy determination of preventive, ameliorative, remedial and other measures by Board of Industrial and Financial Reconstruction (BIFR). It put in place a debtor-friendly regime, in which defaulting borrowers could delay resolution for long periods of time and strip assets of value	The Act was repealed on 1 January 2004, and BIFR was dissolved on 1 December 2016 to give way to the Insolvency and Bankruptcy Code (IBC), 2016.

Table 2: Need to complete the Transformation : Acts which need to be Repealed/ Amended

Act	Market Distortion created	Need for repeal/amendment
Factories Act, 1948	Regulates occupational safety and health in factories and docks. Gives prosecutor powers to a 'chief inspector' – Raises cost of such entitlements and may nudge capital away from labour. This may be merged with	It is proposed to be subsumed by the Occupational Safety, Health and Working Conditions Code, 2019 which is in the Parliament.
Essential Commodities Act (ECA), 1955 and Prevention of Black marketing and Maintenance of Supplies of Essential Commodities Act, 1980	Enables the Government to regulate the production, supply and distribution of 'essential' commodities such as drugs, oils, kerosene, coal, iron, steel and pulses. It imposes stock limits which discourages large-scale private investments in agricultural markets	These Acts owe their origin in times of shortage and inefficient linking of markets. With enhanced production and integration of markets, these Acts have become an instrument of coercion and inhibit proper functioning of markets of these essential commodities.
Food Corporation of India (FCI), 1965	FCI was created for purchase, storage, transport, distribution and sale of food grains and other foodstuff to safeguard the interests of farmers, maintain buffer stocks for food security and make grains accessible at reasonable prices to the weaker and vulnerable through the public distribution system (PDS).	With a comfortable production scenario of foodgrains, the role of FCI, with a total storage capacity of more than 80 million tonnes, must be re-examined. Procurement operations of wheat, paddy and rice need to be given to states. FCI should primarily focus on creating competition in every segment of foodgrain supply chain, from procurement to stocking to movement and finally distribution in TPDS. This would reduce costs and plug leakages in the food management system.
Sick Textile Undertakings (Nationalisation) Act, 1974	To acquire sick textile units, reorganize and rehabilitate them. 103 sick textile mills were nationalised and transferred to the National Textile Corporation (NTC). The Act was amended in 1995 to allow NTC to transfer, mortgage or dispose of land, plant, machinery or other assets for the better management, modernization, restructuring or revival of a sick textile undertaking.	Land of textile units has been monetised to create offices and residential buildings in Mumbai's Lower Parel area. However, the nationalisation of these mills failed to achieve the desired objectives of rehabilitating or reorganising them and failed to deliver yarn, cloth, fair prices or jobs. This Act, therefore, needs to be repealed and NTC should be divested.
Recovery of Debts due to Banks and Financial Institutions Act, 1993	Led to establishment of Debt Recovery Tribunals (DRTs) for "expeditious adjudication and recovery of debts due to banks and financial institutions". However, there are huge delays due to insufficient number of presiding officers, recoveries taking two years instead of the recommended statutory six months, lack of sufficient judicial experience by recovery officers, and inconsistency of the decision-making process between tribunals	With the IBC now firmly in place to fix the problem of non-performing assets, the DRTs can be phased out or integrated with the IBC.

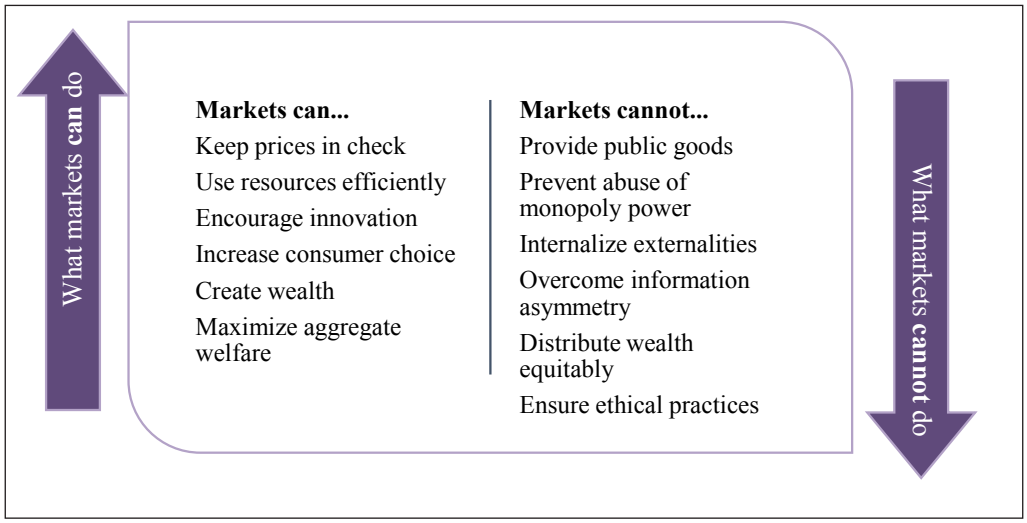
The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	Regulates land acquisition with 80 percent of the land to be acquired through negotiations, with the government stepping in only for the balance 20 percent; for PPP projects, it is 70 percent.	This tilts the balance in favour of land owners who need to be made an equal partner in development of land and share the benefits and costs with the developer/acquirer.

CONCLUSION

4.43 Competitive markets are effective in allocating resources in an economy. However, while the ideal of a completely efficient market is rare, the costs of Government intervention may outweigh the benefits when "market failures" – a term that economists use to denote situations where markets may not work very well in allocating resources – are not severe. Of course, governments play a crucial role by intervening in situations where "market failures" are acute (see Figure 25 for a summary).

4.44 This chapter makes the case that there are several areas in the Indian economy where the Government needlessly intervenes and undermines markets. Note that the chapter does not argue that there should be no Government intervention. Instead, interventions that were apt in a different economic setting, possibly because the "market failures" were severe then, may have lost their relevance in a transformed economy where the "market failures" are not severe. Eliminating such instances of needless Government intervention will enable competitive markets and thereby spur investments and economic growth.

Figure 25: Strengths and Weaknesses of Markets



CHAPTER AT A GLANCE

- Indian economy is replete with examples where Government intervenes and thereby undermines markets unnecessarily, i.e. even in areas where there are no "market failures". Though there are many such instances, the chapter highlights four examples to show that Government intervention leads to outcomes opposite to what it actually intended to achieve.

- Frequent and unpredictable imposition of blanket stock limits on commodities under Essential Commodities Act (ECA) distorts the incentives for the creation of storage infrastructure by the private sector, movement up the agricultural value chain and development of national market for agricultural commodities. Imposition of stock limits on dal in 2006-Q3, sugar in 2009-Q1 and onions in September, 2019 had no effect on the volatility of the retail and wholesale prices of onions.

- The Ministry of Consumer Affairs and its related arms must examine whether the anachronistic ECA, which was passed in 1955 in an India worried about famines and shortages, is relevant in today's India. Around 76000 raids under ECA were conducted during 2019. Assuming a minimum of 5 persons involved in a raid, considerable administrative effort goes into enforcement of ECA. As the conviction rate, however, is abysmally low and raids have no impact on prices, the ECA only seems to enable rent-seeking and harassment. The Survey provides clear evidence that the case for jettisoning this anachronistic legislation is strong.

- The regulation of prices of drugs, through the DPCO 2013, has led to increase in the price of the regulated pharmaceutical drug vis-à-vis that of a similar drug whose price is not regulated. The increase in prices is greater for more expensive formulations than for cheaper ones and for those sold in hospitals rather than retail shops. These findings reinforce that the outcome is opposite to what DPCO aims to do - making drugs affordable.

- As the Government is a huge buyer of drugs through its various arms such as CGHS, Defense, Railways etc., the Government can intervene more effectively to provide affordable drugs by combining all its purchases and thereby exercise its bargaining power. The Ministry of Health and Family Welfare as well as its related arms must imbibe the evidence to evolve non-distortionary mechanisms that utilise Government's bargaining power in a transparent manner.

- Government policies in the foodgrain markets has led to the emergence of Government as the largest procurer and hoarder of rice and wheat crowding out. This has led to burgeoning food subsidy burden and inefficiencies in the markets, which is affecting the long run growth of agricultural sector. The foodgrains policy needs to be dynamic and allow switching from physical handling and distribution of foodgrains to cash transfers/ food coupons/smart cards.

- Analysis of debt waivers given by States/Centre shows that full waiver beneficiaries consume less, save less, invest less and are less productive after the waiver when compared to the partial beneficiaries. Debt waivers disrupt the credit culture and end up reducing the formal credit flow to the very same farmers, thereby defeating the very purpose of the debt waiver provided to farmers.

- This chapter makes the case that each department and ministry in the Government must systematically examine areas where the Government needlessly intervenes and undermines markets. Note that the chapter does not argue that there should be no Government intervention. Instead, interventions that were apt in a different economic setting may have lost their relevance in a transformed economy. Eliminating such instances will enable competitive markets and thereby spur investments and economic growth.

REFERENCES

Banerjee, A, and L. Iyer. 2005. "History, institutions, and economic performance: The legacy of colonial land tenure systems in India." *American economic review* 95 (4): 1190–1213.

Bolton, P, and H. Rosenthal. 2002. "Political intervention in debt contracts." *Journal of Political Economy* 110 (5): 1103–1134.

Cunningham, S. 2011. *Understanding market failures in an economic development context.* Vol. 4. Pretoria: Mesopartner Press.

Gine´, X, and M. Kanz. 2017. "The economic effects of a borrower bailout: evidence from an emerging market." *The Review of Financial Studies* 31 (5): 1752–1783.

Gulati, Ashok, Tirtha Chatterjee, and Siraj Hussain. n.d. "Supporting Indian Farmers: Price Support or Direct Income/Investment Support?" *ICRIER* WP 357.

Hayek, F. A. 1945. "The Use of Knowledge in Society." *The American Economic Review* 35 (4): 519-530.

High Level Committee Report on Reorienting the Role and Restructuring of Food Corporation of India (FCI)

Kanz, M. 2016. "What does debt relief do for development? Evidence from India's bailout for rural households." *American Economic Journal: Applied Economics* 8 (4): 66–99.

Keynes, J M. 1936. *The General Theory of Employment, Interest and Money.* London: McMillan.

Mukherjee , Saptarshi , Krishnamurthy Subramanian, and Prasanna Tantri. 2018. "Borrowers' Distress and Debt Relief: Evidence from a Natural Experiment." *University of Chicago Press* 61 (4): 607-635.

Phadnis, Ajit , and Aishwarya Gupta. 2019. "The Politics of Farm Loan Waivers: A Comparative Study." *Economic and Political Weekly* 54 (23).

Sahay, Arvind, and Saravana Jaikumar. 2016. "Does Pharmaceutical Price Regulation Result in Greater Access to Essential Medicines? Study of the impact of drug price control order on sales volume of drugs in India." *IIMA Working Papers WP2016-02-01, Indian Institute of Management Ahmedabad, Research and Publication Department.*

Saini, Shweta, Sameedh Sharma, Ashok Gulati, Siraj Hussain, and Joachim von Braun. 2017. "Indian food and welfare schemes: Scope for digitization towards cash transfers." *SSRN Electronic Journal.*

Tantri, P L. 2018. "Contagious effects of a political intervention in debt contracts: Evidence using loan-level data." *The Review of Financial Studies* 31 (11): 4556–4592.

Creating Jobs and Growth by Specializing to Exports in Network Products

05
CHAPTER

Every man lives by exchanging.

- Adam Smith

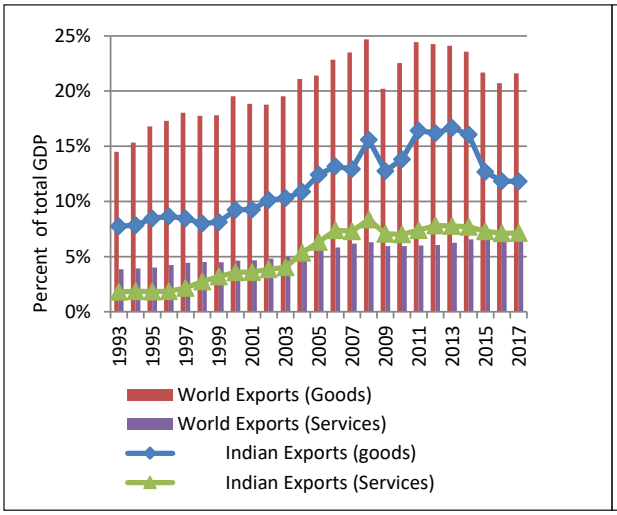
The current environment for international trade presents India an unprecedented opportunity to chart a China-like, labour-intensive, export trajectory and thereby create unparalleled job opportunities for our burgeoning youth. By integrating "Assemble in India for the world" into Make in India, India can create 4 crore well-paid jobs by 2025 and 8 crore by 2030. Exports of network products, which is expected to equal $7 trillion worldwide in 2025, can contribute a quarter of the increase in value-added for the $5 trillion economy by 2025. This chapter, therefore, articulates a clear-headed strategy to grab this opportunity. China's remarkable export performance vis-à-vis India is driven primarily by deliberate specialization at large scale in labour-intensive activities, especially "network products", where production occurs across Global Value Chains (GVCs) operated by multi-national corporations. Laser-like focus must be placed on enabling assembling operations at mammoth scale in network products. As an India that harbours misplaced insecurity on the trade front is unlikely to grab this opportunity, our trade policy must be an enabler. In fact, contrary to recent fears, careful analysis that controls for all confounding factors shows that India has gained from trade agreements: a 0.7 per cent increase per year in trade surplus with partner countries for manufactured products and 2.3 per cent per year for total merchandise.

5.1 Growth in exports provides a much-needed pathway for job creation in India. For instance, in just the five year period 2001-2006, labour-intensive exports enabled China to create 70 million jobs for workers with primary education (Los et al. 2015). In India, increased exports explain the conversion of about 800,000 jobs from informal to formal between 1999 and 2011, representing 0.8 per cent of the labour force (ILO report 2019).

5.2 The US–China trade war is causing major adjustments in Global Value Chains (GVCs) and firms are now looking for alternative locations for their operations. Even before the trade war began, China's image as a low-cost location for final assembly of industrial products was rapidly changing due to labour shortages and increases in wages. These developments present India an unprecedented opportunity to chart a similar export trajectory as that pursued by China and create unparalleled job opportunities for its youth. As no other country can match China in the abundance of its labour, we must grab the space getting vacated in labour-intensive sectors. This chapter focuses on articulating a clear-headed strategy for the same.

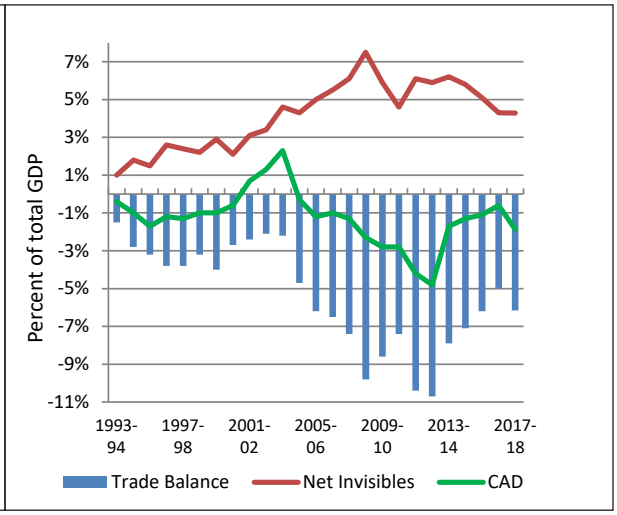
5.3 Post the 1991 reforms, India's share in merchandise (goods) exports has grown at 13.2 per cent per annum and our share in world exports has increased from 0.6 per cent in 1991 to 1.7 per cent in 2018. Yet, even by 2018, India's world market share remains paltry compared to 12.8 per cent for China. Further, merchandise exports as a percentage of GDP remained consistently lower for India compared to the world average by a significant margin (Figure 1(a)). Imports of merchandise have grown faster (at the rate of 14.9 per cent per annum during 1993-2018) than exports, resulting in increasing trade deficits (Figure 1(b)). On the other hand, exports of services generally grew faster than imports, providing some cushion to current account deficit.

Figure 1(a): Share of exports in GDP, India versus World



Source: UNCTAD Statistics and Survey Calculations

Figure 1(b): Share of exports in GDP, India versus World



Source: Reserve Bank of India and Survey Calculations

5.4 Key questions that arise in this context are: (i) what type of policy interventions would help achieve faster export growth? (ii) should policies target export growth through specialization (intensive margin) or diversification (extensive margin)?; (iii) is it in our interest to promote strong local linkages for domestic industries or to participate in GVCs wherein linkages are globally dispersed?; (iv) which are the industries that hold the greatest potential for export growth and employment generation?; and (vi) are free trade agreements beneficial to India?

5.5 By addressing these questions, this chapter lays out the policy map to achieve sustained and faster export growth and thereby well-paid jobs. India must focus on a group of industries, referred to as "network products", where production processes are globally fragmented and controlled by leading Multi-National Enterprises (MNEs) within their "producer driven" global production networks. Examples of network products include computers, electronic and electrical equipment, telecommunication equipment, road vehicles etc. China's remarkable export performance vis-à-vis India is driven primarily by deliberate specialization at large scale in labour-intensive activities, especially "network products", where production occurs across GVCs operated by multi-national corporations. By importing components and assembling them in China for the world, China created jobs at an unprecedented scale. Similarly, by integrating "Assemble in India for the world" into Make in India, India can raise its export market share to about 3.5 per cent by 2025 and 6 per cent by 2030, which

is highly feasible. In the process, India would create about 4 crore well-paid jobs by 2025 and about 8 crore by 2030. The incremental value added in the economy from the target level of exports of network products, which is expected to equal $248 billion in 2025, would make up about one-quarter of the increase required for making India a $5 trillion economy by 2025.

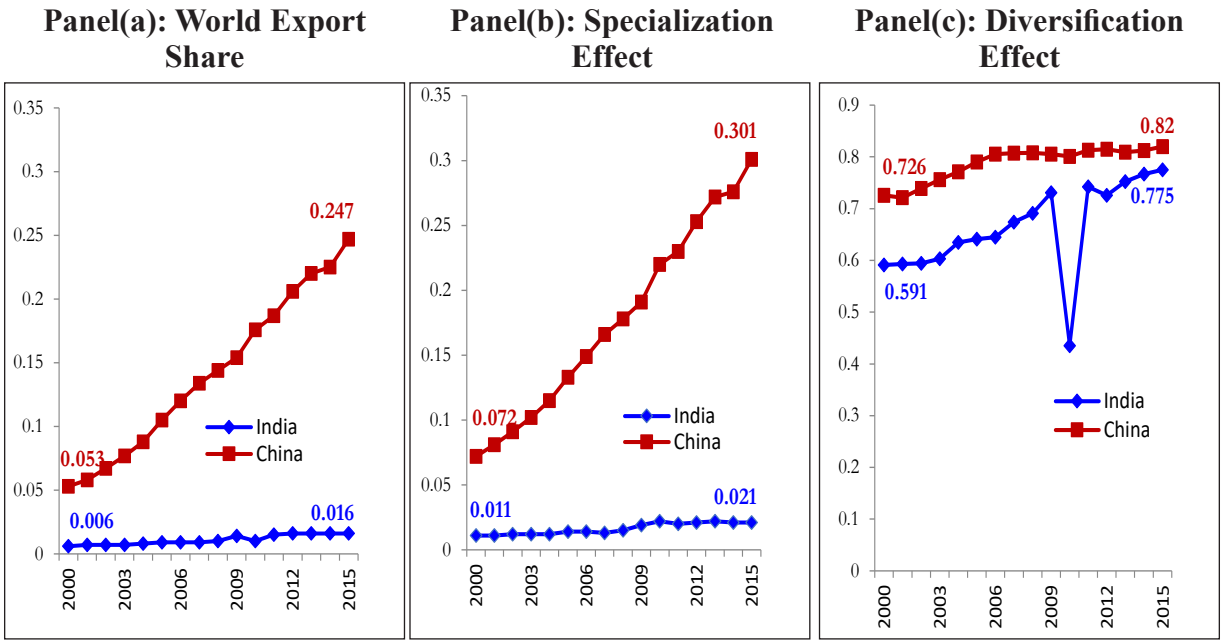
INDIA'S EXPORT UNDER-PERFORMANCE VIS-À-VIS CHINA

5.6 Before outlining the potential strategies for the immediate future, the Survey examines the reasons for India's under-performance in exports vis-à-vis China.

Specialization versus Diversification

5.7 Is India's lacklustre export performance caused by a lack of diversification in its export basket (extensive margin) or is it because of a lack of specialization (intensive margin)? This question is examined by comparing India and China on these two dimensions (see Box 1). Each country's share of world exports of manufactured products is decomposed into the effects of diversification versus concentration (see Figure 2). It can be seen that Panel (a), which depicts the world market shares of the two countries, is a mirror image of Panel (b), which shows the contribution of specialization. Thus, China-India gap in world market share is almost fully driven by the effect of specialization. On the other hand, India is clearly catching up with China in terms of diversification across products and markets (Panel (c)). Overall, high diversification combined with low specialization implies that India is spreading its exports thinly over many products and partners, leading to its lacklustre performance compared to China.

Figure 2: Decomposition of World Export Market Shares of India and China into Specialization and Diversification Effects, Manufactured Products, 2000 to 2015



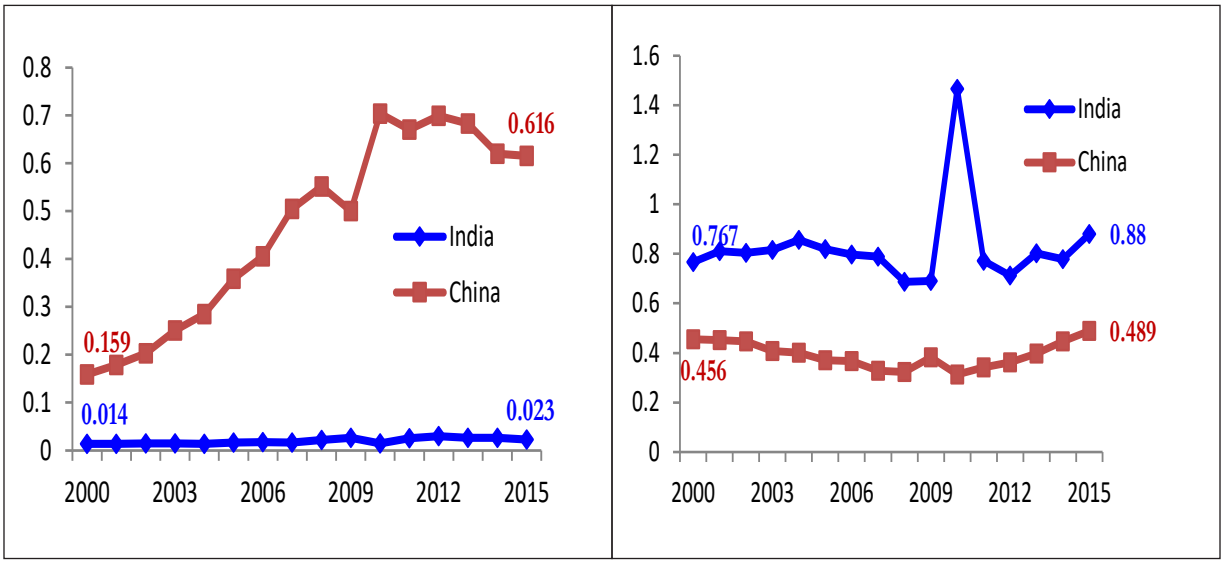
Source: Veeramani, Aerath and Gupta (2018) based on UN-Comtrade (WITS) database

Note: Following Hummels and Klenow (2005), world market shares of India and China in Panel (a) are decomposed into specialization effect in Panel (b) and diversification effect in Panel (c). For a given country and year, the world market share is obtained by multiplying the corresponding values of specialization and diversification effects.

5.8 The specialization effect can change, over the years, due to changes in the quantity and/or the prices of exported commodities. Therefore, it is of interest to further decompose the specialization effect into quantity and price effects. Figure 3 shows that the China-India gap with respect to specialization has been fully driven by the quantity effect. The bottom line is that if India wants to become a major exporter, it should specialize more in the areas of its comparative advantage and achieve significant quantity expansion.

Figure 3: Decomposition of Specialization Effect into Quantity and Price Effects, India and China, 2000-2015

Panel (a): Quantity Effect **Panel (b): Price Effect**



Source: Veeramani, Aerath and Gupta (2018) based on UN-Comtrade (WITS) database

Note: Following Hummels and Klenow (2005), specialization effect shown in Figure 2, Panel (b) is decomposed above into quantity effect in Panel (a) and price effect in Panel (b). For a given country and year, the specialization effect is obtained by multiplying the corresponding values of quantity and price effects.

Box 1: Methodology for Decomposition into Specialization and Diversification Effects

Following Hummels and Klenow (2005), the world export market share of a given country *i* (India and China, in our case) in year *t* to a destination group *D* (which consists of several partner countries *j*) can be decomposed as follows. Let S_{it} stand for the export market penetration of country *i* relative to 'rest of the world' (*r*) in destination market *D*.

$$S_{it} = \frac{X_{it}}{X_{rt}} = \frac{\sum_j \sum_{p \in N^p_{ijt}} x^p_{ijt}}{\sum_{j \neq i} \sum_{p \in N^p_{rjt}} x^p_{rjt}}$$

where, X_{it} = value of aggregate exports from *i* to destination *D*; X_{rt} = value of aggregate exports from *r* to destination group *D*; x^p_{ijt} = value of exports from *i* to *j* in product *p*; x^p_{rjt} = value of exports from *r* to *j* in product *p*; N^p_{ijt} = the set of partner-product pairs where country *i* records 'export relationships' (i.e., the set where $x^p_{ijt} > 0$); N^p_{rjt} = the set of partner-product pairs where *r* records 'export relationships' (i.e., the set where $x^p_{rjt} > 0$).

S_{it} can be expressed as the multiplicative product of diversification (extensive margin) and specialization (intensive margin) effects.

$$S_{it} = \underbrace{\frac{X_{it}}{\sum_{j \neq i} \sum_{p \in N_{ijt}^{p}} x_{rjt}^{p}}}_{(1)\ \text{Specialization}} \times \underbrace{\frac{\sum_{j \neq i} \sum_{p \in N_{ijt}^{p}} x_{rjt}^{p}}{X_{rt}}}_{(2)\ \text{Diversification}}$$

The denominator of the term (1) above measures total exports from *r* in those partner-product pairs in which country *i* records 'export relationships' in year *t*. Therefore, specialization effect is the ratio of country *i's* exports to total exports from *r* within the common set of partner-product pairs. Its value is always positive and can be above or below unity. The denominator of the term (2) represents total exports from *r* while the numerator is the sum of *r's* exports in those partner-product pairs in which country *i* records export relationships. Thus, diversification effect is a measure of the fraction of *r's* exports in those partner-product pairs in which country *i* reports positive export values. It can be seen that the numerator of term (2) is equal to the denominator of term (1). While intensive margin measures the depth of a country's export profile, extensive margin captures the breadth.

Since intensive margin captures changes in the value of exports due to changes in quantity as well as price, it can be further decomposed into price effect (P_{it}) and quantity effect (Q_{it}).

$$Intensive\ Margin_{it} = P_{it} \times Q_{it}$$

The price effect measures the aggregate weighted ratio of *i's* prices to *r's* prices, where the weights are the logarithmic mean of share of product p in exports of *i* and *r* within the common set of partner-product pairs.

$$P_{it} = \prod_{p \in N_{ijt}^{p}} \left(\frac{uv_{ijt}^{p}}{uv_{rjt}^{p}} \right)^{w_{ijt}^{p}}$$

where, uv^{p}_{ijt} and uv^{p}_{rjt} are unit values (proxy for prices) of product *p* exported by *i* and *r* respectively to *j* and w_{ijt}^{p} is the logarithmic mean of s_{ijt}^{p} (share of product *p* in *i's* exports to *j*) and s_{rjt}^{p} (share of product *p* in *r's* exports to *j*).

This methodology draws on an extensive literature in international trade (Evenett and Venables (2002), Hummels and Klenow (2005), Felbermayr and Kohler (2006), Helpman et al. (2008), Amiti and Freund (2010), Eaton et al. (2007), Besedes and Prusa (2011), Veeramani, Aerath and Gupta (2018). The results reported in Figure 2 and 3 are based on Veeramani, Aerath and Gupta (2018) who used data on manufactured exports at the 6-digit level for the period 2000-2015. An 'export relationship' is identified if $xp_{ijt}>0$ – that is, if country i (India or China) reports a positive export value to partner country j in product p (i.e., at HS 6-digit level) in year t.

Low Level of Participation in Global Value Chains

5.9 Despite being abundant in labour, the share of traditional unskilled labour-intensive industries in India's non-oil merchandise exports declined by almost one-half from 30.7 per cent in 2000 to 16.3 per cent in 2018 (Figure 4(a)). The fast growing commodities in India's export basket are capital and skill intensive (see also Kochhar et al., 2006; Panagariya, 2007, Veeramani, 2012a, Veeramani and Aerath, 2020). In fact, India's participation in GVCs has been low compared to the major exporting nations in East and Southeast Asia (Athukorala, 2014; Veeramani and Dhir, 2017; Veeramani, 2019).

Figure 4(a): Composition of India's Non-oil Merchandise Exports

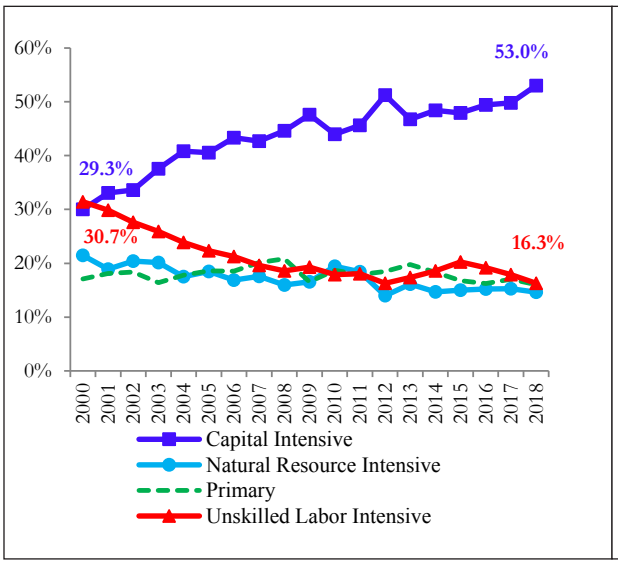
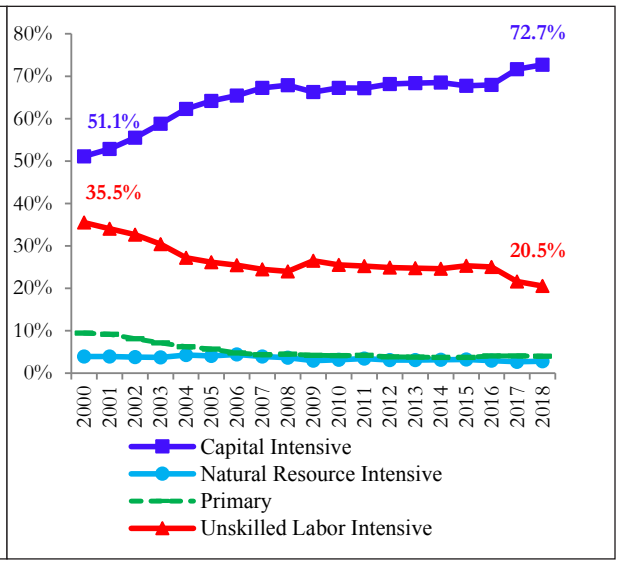


Figure 4(b): Composition of China's Non-oil Merchandise Exports



Source: UN-Comtrade (WITS) database and Survey Calculations

Note: See Box 2 for details regarding the classification of traded products into the four categories

5.10 In contrast, China's export composition shows a strong bias towards traditional labour-intensive industries and labour-intensive stages of production processes within capital-intensive industries (in particular, assembly of electronics and electrical machinery). Notwithstanding its decline over the years, unskilled labour-intensive products account for a higher share in China's export basket compared to India's (Figure 4(b)). During the first decade of its trade liberalization (1980-1990) China's export growth was mainly based on its specialisation in unskilled labour intensive products; its share in China's export basked increased from 27.8 per cent in 1980 to 46.5 per cent in 1990. On the other hand, the share of unskilled labour intensive products in India's export basket remained around 30 per cent during 1980-2000, before experiencing a premature decline since 2000 (Veeramani, 2012b).

5.11 While capital-intensive products account for a higher share in China's export basket than that of India's, it is important to emphasize two contrasting patterns. First, exports of capital-intensive products from China expanded since 2000 after the country recorded a major export expansion, for nearly two decades (1980-2000), of traditional unskilled labour intensive products. By contrast, India had not undergone a similar transition. Second, in contrast to India, export growth of capital-intensive products from China has been driven by its high level of participation in GVCs within these industries. China's export promotion policies since the 1990s have relied heavily on a strategy of integrating its domestic industries within the GVCs. Making use of imported parts and components, China emerged as a major assembly hub for several capital-intensive products.

Box 2: Factor Intensity Classification of Traded Products

The values reported in Figure 4(a) are estimated using the factor intensity classification of the International Trade Centre (ITC), adapted by Hinloopen and van Marrewijk (2008), which distinguishes between five broad factor-intensity categories at the 3-digit level of Standard International Trade

Classification (SITC). A total number of 240 products, at the 3-digit level, have been grouped into five categories: primary (83 products), natural resource-intensive (21 products), unskilled labour-intensive (26 products), human capital-intensive (43 products), technology-intensive (62 products), and unclassified (5 products). The detailed classification is available at: (http://www2.econ.uu.nl/users/marrewijk/eta/intensity.htm). The capital-intensive category consists of human capital-intensive plus technology-intensive products.

Export of "refined petroleum products" (SITC 334) is not included in any of the four factor intensity categories shown in Figure 4a and 4b. Note that, as per the ITC classification, SITC 334 is part of "primary" category. Since the early 2000s, India's exports of refined petroleum products recorded significant growth with its share in total merchandise exports increasing from 3.3 per cent in 2000 to 14.6 per cent in 2018. The export surge has been driven mainly by India's private sector oil refineries. India imports crude oil and specializes in the refining stage of the value chain in this industry. Since petroleum refining is a highly capital-intensive process, it is appropriate to include this product in the capital-intensive, rather than primary, category (Veeramani, 2012a). Thus, if SITC 334 is treated as capital-intensive, the share of capital intensive products in India's total merchandise exports almost doubled from 31.6 per cent in 2000 to 59.9 per cent in 2018. For China, it does not make much difference as SITC 334 accounts for a small share (about 1 per cent) in its export basket.

Low Market Penetration in High Income Countries

5.12 The dominance of capital intensive products in the export basket along with a low level of participation in GVCs have resulted in a disproportionate shift in India's geographical direction of exports from traditional rich country markets to other destinations (Veeramani, 2012a, Veeramani and Aerath, 2020). The high-income OECD markets accounted for 49.7 per cent of China's exports in 2018 (Figure 5b) while the corresponding figure for India was 40.2 per cent (Figure 5a); similarly, high-income OECD and other high-income countries together accounted for 63.9 per cent of China's exports while that of India was 56.7 per cent.

Figure 5(a): Trading partners by income level, India

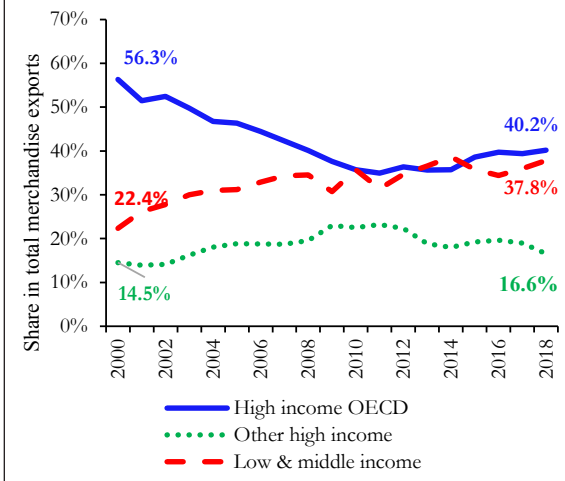
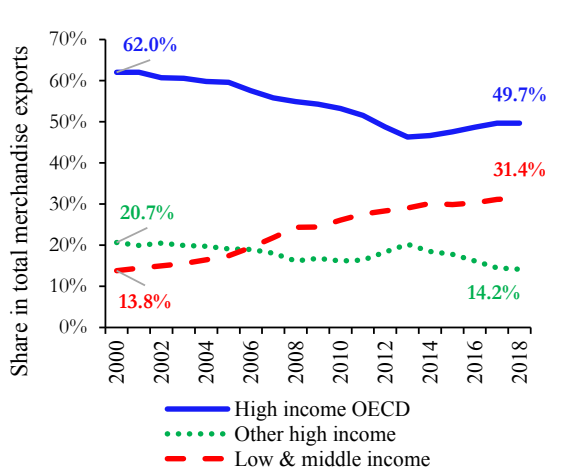


Figure 5(b): Trading partners by income level, China

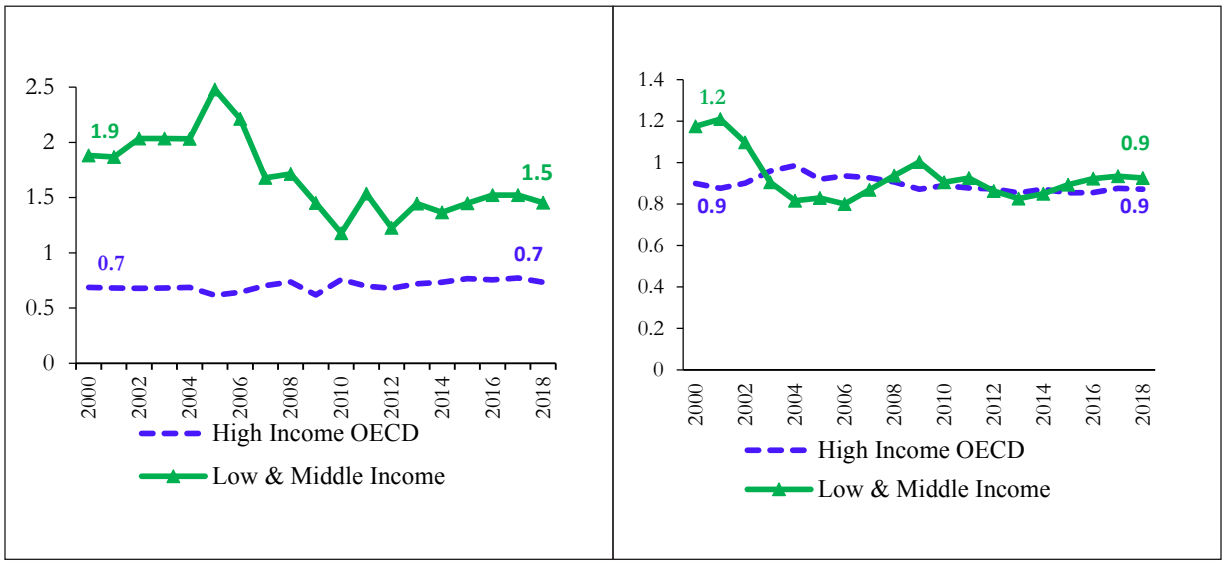


Source: UN-Comtrade (WITS) database and Survey Calculations

5.13 That India's market penetration in high-income countries is perceptibly low, and has declined disproportionately during the recent decades, is not difficult to understand given the distorted pattern of its specialization. Developing countries, especially those with low level of participation in GVCs, find it extremely difficult to export capital intensive products to the quality/brand conscious markets in richer countries. In contrast to capital-intensive products, high-income countries generally provide relatively a larger market for India's unskilled labour-intensive products (Figure 6, panel (a)). On the other hand, Chinese products, irrespective of whether they are capital intensive or unskilled labour-intensive, are able to penetrate equally both in high income and low & middle income countries (Figure 6, panel (b)). For China, this pattern is expected as it is an assembly centre for the world market, irrespective of who the buyer is.

Figure 6: Share of capital intensive exports as a ratio of the share of labour-intensive products across partner country groups

Panel (a): India **Panel (b): China**



Source: UN-Comtrade (WITS) database and Survey Calculations

5.14 The extent of China-India gap in terms of dollar value of total exports, specialization effect, diversification effect, quantity effect and price effect is shown in Figure 7(a). These estimates are obtained from a regression analysis which controls for the effects of various factors that affect bilateral trade flows of each of the two countries. On an average, China's export value in dollar terms exceeds that of India by about 743 per cent per year during the period 2000-2015. The bulk of this gap is accounted by specialization and quantity effects. Interestingly, however, China-India gap almost fully disappears once the effect of China's high trade orientation with richer trading partners is taken into account (Figure 7(b)).

5.15 A general perception is that China's exchange rate policy mainly contributed to its export success. However, as seen in Figure 2 and the subsequent ones, India's export under-performance persists over two decades when India's exchange rate depreciated significantly. In fact, multivariate analysis using regressions, which are omitted for brevity, shows that exchange rate does not significantly explain China-India gap. It can be concluded that China's remarkable export

performance, compared to India, is driven by a set of interrelated factors including a high level of participation in GVCs, a high degree of specialization in labour intensive production activities, large scale in the chosen sectors of specialisation, and a high level of export penetration in traditional rich country markets.

Figure 7(a): Estimates of China-India Gap (Per cent)

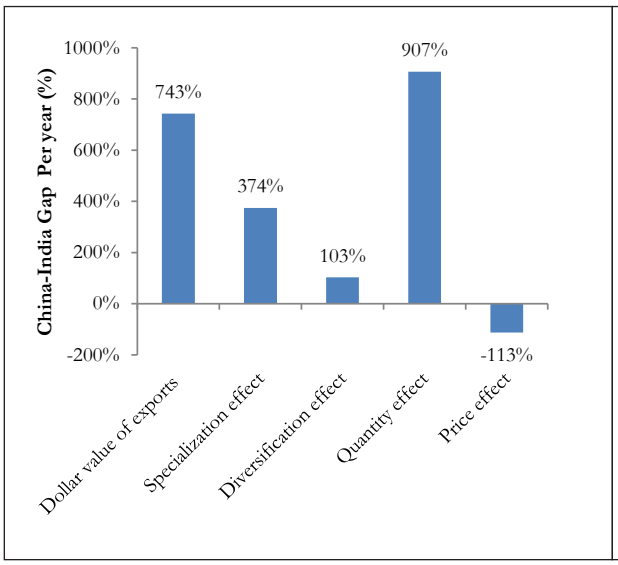
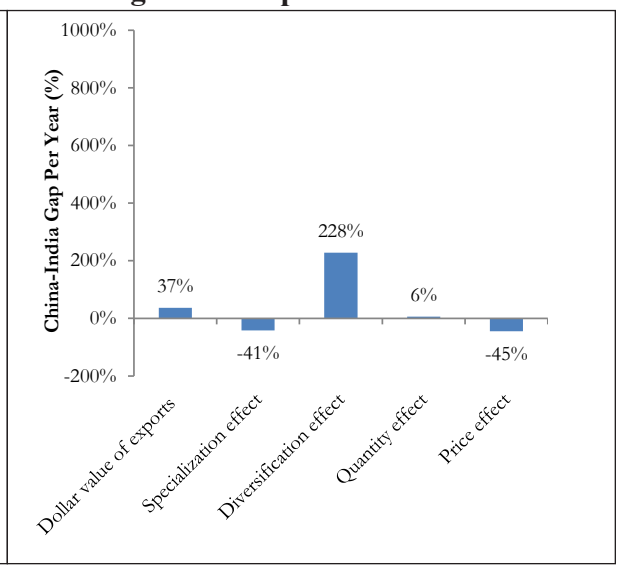


Figure 7(b): China-India Gap after controlling for China's exports to high-income partner countries



Source: Based on regression results in Veeramani, Aerath and Gupta (2018)

Note: The regression is based on pooled bilateral export data for India and China for the period 2000-2015. The variables on the x axis are the dependent variables. Independent variables include real GDP of partner countries, real per capita GDP of trading partners, real bilateral exchange rate, real inward FDI from trading partners, dummy variables for trade agreements, China dummy (taking value 1 if exporter is China and 0 if India), partner fixed effects and year fixed effects. Estimates of China-India gap is based on the coefficient of China dummy.

5.16 In a nutshell, driven by the nature of its specialization, India has gained a competitive advantage in relatively low and middle income country markets but at the cost of losing the much bigger markets in richer countries[1]. Though India can benefit significantly from utilising the potential opportunities from greater trade with high income markets, this requires a reorientation of our trade specialization towards labour-intensive product lines. This can be achieved both via selective focus on (i) traditional labour-intensive sectors such as textiles, especially man-made fibres, (ii) increased participation in GVCs.

REAPING GAINS FROM PARTICIPATION IN GLOBAL VALUE CHAINS

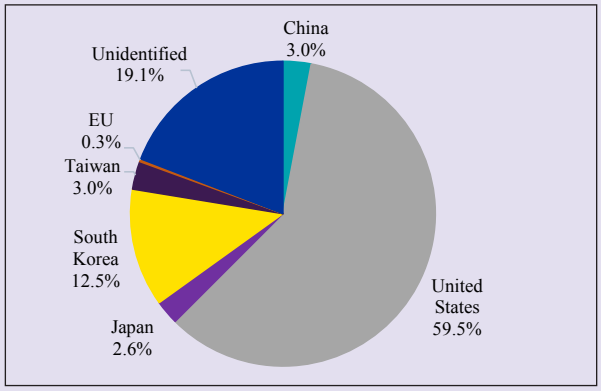
5.17 Is it desirable to promote strong local linkages for domestic industries by sourcing intermediate inputs domestically or to participate in GVCs wherein linkages are globally dispersed? The answer to this question depends on which of these strategies

[1] An illustrative example will make this point clearer. India's exports of passenger motor vehicles (SITC 7810), a capital and skill-intensive product, increased remarkably from $102 million in 2000 to $5392 million in 2015, registering an annual average growth rate of 34 per cent. In 2015, high-income OECD countries accounted for only 22 per cent of Indian exports of passenger motor vehicles while low & middle-income countries accounted for 68 per cent. On the other hand, India's exports of apparel (SITC 84), a traditional labor-intensive category, grew at a much lower rate of 9 per cent per annum during 2000-2015. In 2015, while high-income OECD countries accounted for 64 per cent of India's exports in this category, low & middle-income countries accounted for just 12 per cent (Veeramani and Aerath, 2020).

would result in higher levels of aggregate value added and employment within the country. A higher level of participation in GVCs implies that, for any given country, the share of foreign value added in gross exports is higher than when most inputs are sourced locally. However, owing to scale and productivity effects of selling in the world markets, participation in GVCs can lead to higher absolute levels of domestic value added and domestic job creation (Grossman and Rossi-Hansberg, 2008). See Figure 8 for the conceptual framework explaining this phenomenon. Chinese dominance of assembly in iPod and iPhone illustrates this phenomenon (Box 3). The scale effect creates millions of jobs and is therefore particularly suited for implementation in a labour-intensive economy such as India.

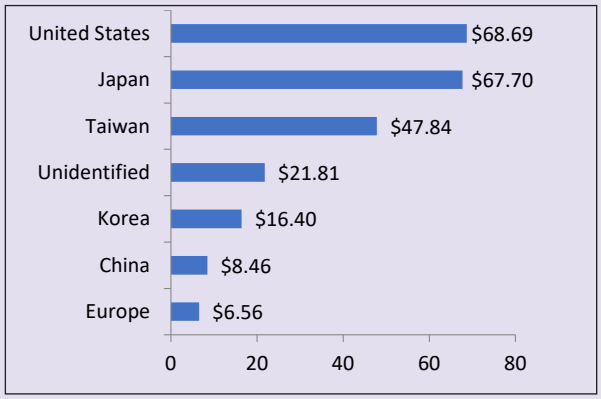
5.18 Multivariate analysis using regressions confirms that participation in GVCs, as measured by the sectoral ratio of foreign value added to gross exports, leads to higher absolute levels of gross exports, domestic value added and employment (Figure 9). It can be seen that a 10 per cent increase in foreign value added share of gross exports leads to 17.9 per cent increase in the dollar value of gross exports [panel (a) in Figure 9], which in turn, causes domestic value added (from exports) to increase by 7.7 per cent [panel (b) in Figure 9]. Finally, 7.7 per cent increase in domestic value added increases employment by 13.2 per cent. These relationships are robust to different model specifications with full set of control variables. The bottom line is that India can reap rich dividends by adopting policies aimed at strengthening its participation in GVCs.

Box 3: Example of Gain from Assembly: Apple iPod and iPhone 7 Assembly in China



Distribution of value added in Apple iPod

Within the iPod value chain, China specializes in assembly while parts & components are imported. The factory-gate price of an assembled iPod was estimated to be $144 in 2008, but only $4 of this constituted Chinese value added (3 per cent of factory gate price). However, China assembled almost all of the 54.83 million iPods that Apple sold, which led to aggregate domestic value added of $219 million.



Distribution of value added in iPhone 7

China makes only US$8.46 from the assembly of an iPhone 7. However, total Chinese value added is very high ($8.46 × number of iPhones sold in the world). iPod and iPhone are just two examples. There are thousands of such products, where China has emerged as an assembly centre.

Source: Dedrick et al (2010) and Dedrick et al (2018)

Figure 8: The Conceptual Framework for Gains from "Assembling in India" as part of "Make in India"

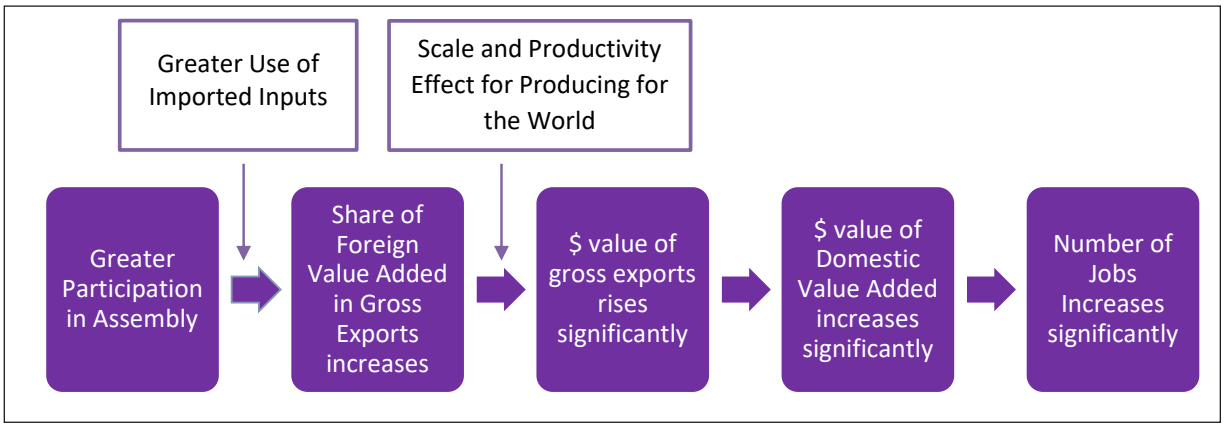
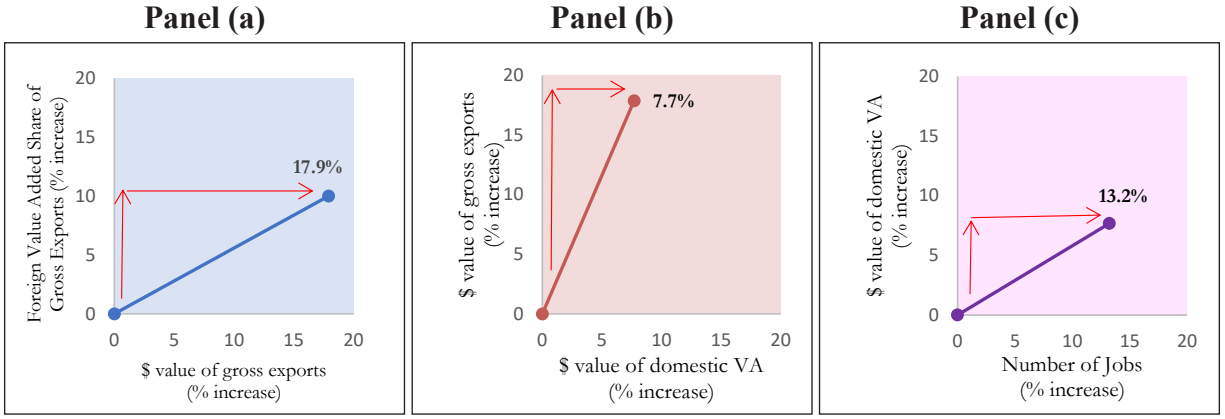


Figure 9: Gains from participation in GVCs, Empirical Evidence for India's Manufacturing Industries



Source: Based on regression results in Veeramani and Dhir (2019a) and Survey Calculations

Note: The arrows in the figure show percentage increase in the y-axis variable leading to a corresponding percentage increase in the x-axis variable. The three graphs are interlinked such that the variable in the x-axis of panel (a) is the same as that on the y-axis of panel (b) and variable in the in the x-axis of panel (b) is the same as that on the y-axis of panel (c). The estimates reported here are based on a simultaneous equation model (3SLS regressions) run on a panel data set of 56 Indian manufacturing industries for the period 1999-00 to 2012-13. The regression specifications include full set of control variables, including industry and year fixed effects.

WHICH INDUSTRIES SHOULD INDIA SPECIALIZE IN FOR JOB CREATION?

5.19 Which industries should India focus on? Given our comparative advantage in labour-intensive activities and the imperative of creating employment for a growing labour force, there are two groups of industries that hold the greatest potential for export growth and job creation.

5.20 First, there exists a significant unexploited export potential in India's traditional unskilled labour-intensive industries such as textiles, clothing, footwear and toys (Veeramani and Dhir, 2016). The GVCs in these industries are controlled by "buyer driven" networks wherein the lead firms that are based in developed countries concentrate in higher value added activities such as design, branding and marketing. Physical production is carried out, through sub-contracting arrangements, by firms in developing countries. Examples include

the production networks of Wal-mart, Nike, Adidas etc.

5.21 Second, India has huge potential to emerge as a major hub for final assembly in a range of products, referred to as "network products" (NP) (Athukorala, 2014; Veeramani and Dhir, 2017). The GVCs in these industries are controlled by leading MNEs such as Apple, Samsung, Sony etc. within "producer driven" networks. In general, these products are not produced from start to finish within a given country; instead, countries specialize in particular tasks or stages of the good's production sequence. Within the production network, each country specializes in a particular fragment of the production process; this specialization is based on the country's comparative advantage. Labour abundant countries, like China, specialize in low skilled labour-intensive stages of production such as assembly while the richer countries specialise in capital and skill-intensive stages such as R&D. Thus, the lead firms retain skill and knowledge-intensive stages of production in high-income headquarters (e.g., the U.S.A, E.U and Japan) but locate assembly related activities in low wage countries (e.g., China and Vietnam). The rest of the discussion in this Chapter focuses on India's growth potential in NP.

5.22 Athukorala (2011) identified six groups of NP, based on Standard International Trade Classification (SITC) nomenclature, where global production sharing is most prevalent (Table 1). Together, NPs accounted for nearly 30 per cent of world exports in 2018, with the share of Electrical Machinery (SITC 77) being the highest at 10.4 per cent. Using trade data at a detailed level of disaggregation and the UN-Broad Economic Categories (BEC) system, it is possible to disentangle total trade in these NP into its two main sub-categories - parts & components (P&C) and assembled end products (AEP).

Table 1: World Exports of Network Products, 2018

SITC Code	SITC Description	World Exports, 2018 (trillion US$)	Share in Total World Exports, 2018 (per cent)
75	Office machines and automatic data processing machines	0.83	4.37
76	Telecommunication and sound recording equipment	0.65	3.42
77	Electrical Machinery	1.97	10.44
78	Road Vehicles	1.55	8.23
87	Professional and scientific equipment	0.48	2.53
88	Photographic Apparatus	0.12	0.66
Total Network Products		**5.59**	**29.6**

Source: UN Comtrade (WITS) Database
Note: Based on import data reported by all countries in 2018.

World Exports of Network Products: Trends and Patterns

5.23 The world exports of NP increased steadily from US$ 2.01 Trillion in 2000 to US$ 5.41 Trillion in 2018 (Figure 10(a)). The increase was mainly driven by AEP whose value rose from US$ 1.11 Trillion to US$ 3.93 Trillion. On an average, NP accounts for about 42 per cent of world manufactured exports. The average share of AEP exports in total NP exports increased from about 59 per cent during 2000-2016 to about 72 per

cent during the last two years (2017-2018). Asia's share in world exports of NP increased phenomenally from about 37 per cent in 2000 to 51 per cent in 2018 while the shares of both Europe and America declined (Figure 10(b)). East Asia accounted for the bulk of total Asian exports followed by Southeast Asia (Figure 10(c)). Rest of Asia (including South, Central and Western Asia) accounted for just 3 per cent of the total Asian exports.

Figure 10: Trends and Geographic Distribution of Network Product Exports, 2000 to 2018

Figure 10(a): Trends in world exports

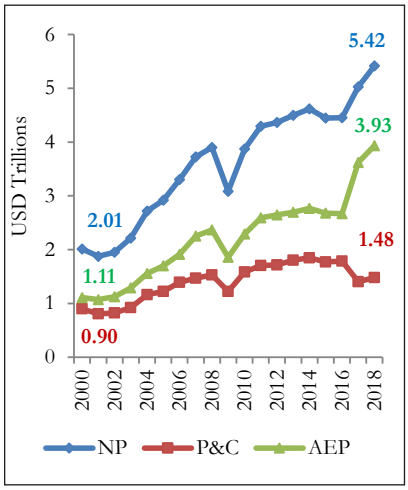


Figure 10(b): Geographical Distribution of NP World Exports

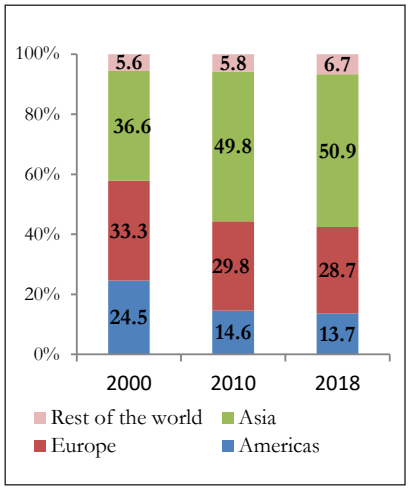
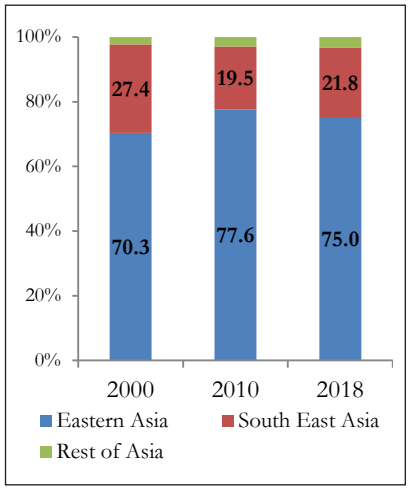


Figure 10(c): Distribution of Asian NP Exports



Source: UN Comtrade (WITS) database and Survey Calculations

Note: NP stands for Network Product, P&C and AEP stand for Parts & Components and Assembled End Products respectively within the group of Network Products. Estimates are based on mirror statistics (imports reported by trading partners) for a fixed set of 118 countries that have reported import data for every year during 2000-2018. In 2018, these 118 countries accounted for 96.8 per cent of total world trade in NP.

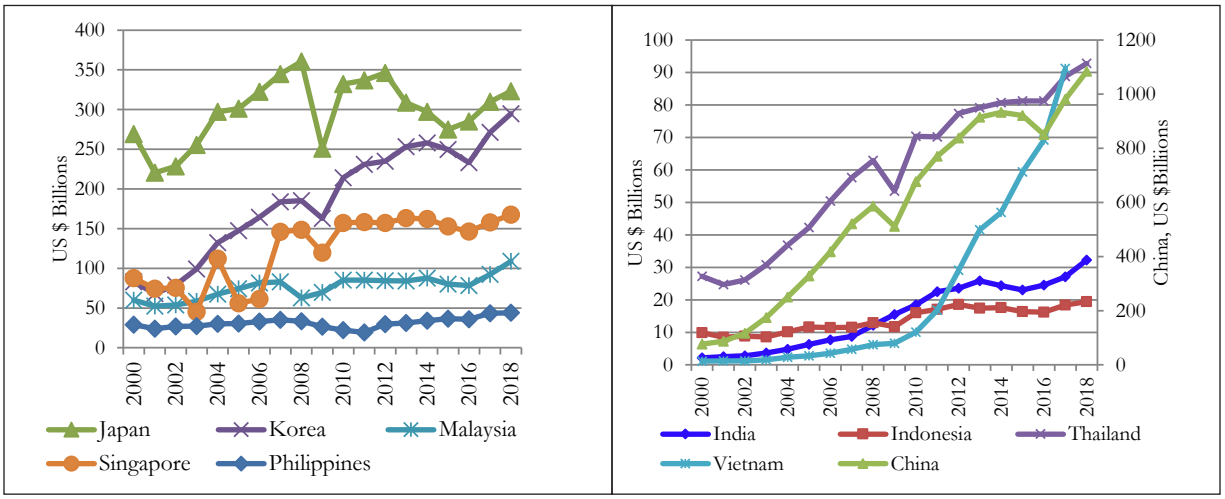
India in Comparison to East and Southeast Asia

5.24 Even as India's export of NP increased from about US$2 billion in 2000 to US$32 billion in 2018, its participation in this market remains miniscule compared to that of other Asian countries (Figure 11). The share of NP exports in total national merchandise exports by each country is shown in Figure 12(a). It is evident that, despite some increase, NP exports accounts for a very small share (10 per cent in 2018) in India's export basket. In contrast, these products account for about one half of the total national exports of China, Japan and Korea. Between 2000 and 2018, the share of NP in the export basket has increased by 41 percentage points for Vietnam and by 18 percentage points for China.

5.25 Among the major Asian countries, India and Indonesia are the only ones with a trade deficit in NP (Figure 12(b). India's import value of $68 billion in 2017 is higher than that of Thailand ($61billion) and Philippines ($39 billion) even as the latter two countries record significantly higher level of exports than India. India's import basket mostly consists of electronics and electrical machinery, primarily meant for domestic final use (Tewari and Veeramani, 2016).

Figure 11: Exports of NP by Asian Countries, USD Billions, 2000 to 2018

Panel (a): Early entrants **Panel (b): Late entrants and laggards**

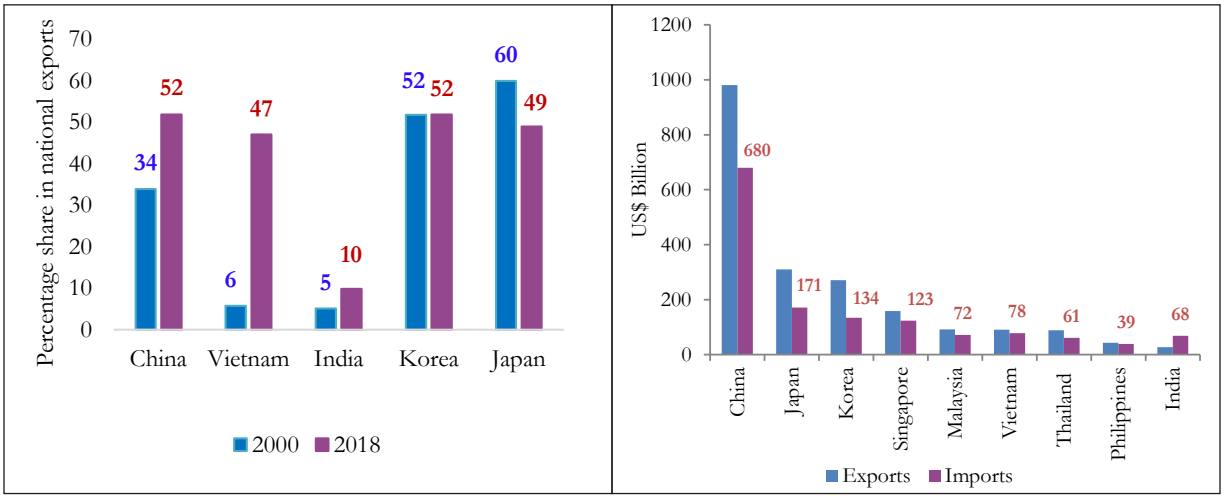


Source: UN Comtrade (WITS) Database and Survey Calculations

Notes: China's export values are in secondary axis in Panel(b). Estimates are based on export data reported by each country. Vietnam has not reported data for the year 2018.

Figure 12(a): Share of NP in India's merchandise export basket is very low

Figure 12(b): Among the major Asian countries, India is the only one with trade deficit in NP

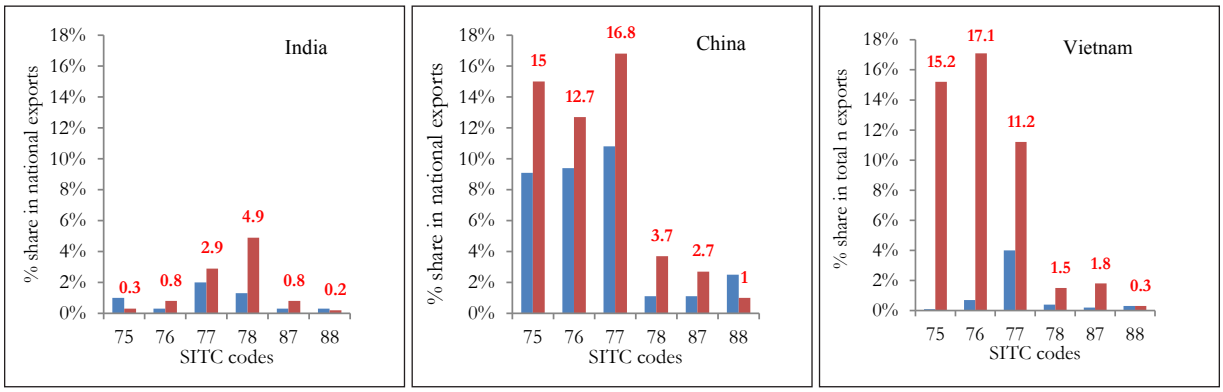


Source: UN Comtrade (WITS) Database and Survey Calculations

5.26 Turning to the product group composition of India's NP exports, the percentage shares of four product groups recorded an increase in 2018 as compared to 2000 (Figure 13). These are: Road vehicles (SITC 78), Electrical machinery (SITC 77), Telecommunication and sound recording equipment (SITC 76), and Professional and scientific equipment (SITC 87). The main category of NP exported by India is Road vehicles with a share of 4.9 per cent in its total exports in 2018 (up from 1.3 per cent in 2000). In contrast, Electrical machinery, which accounts for the largest share in the export baskets of China (16.8 per cent) and Korea (30.5 per cent), accounts for less than 3 per cent of India's total exports. Apart from electrical machinery,

other two sub-categories where India can achieve significant export growth are: (i) Office machines and automatic data processing machines (SITC 75) and (ii) Telecommunication and sound recording equipment (SITC 76).

Figure 13: Shares of NP sub-categories in National Export Basket



Source: UN Comtrade (WITS) database and Survey Calculations

Note: The description of the SITC codes are: Office machines and automatic data processing machines (SITC 75); Telecommunication and Sound Recording Equipment (SITC 76); Electrical Machinery (SITC 77); Road Vehicles (SITC 78), Professional and scientific equipment (SITC 87); Photographic Apparatus (SITC 88).

5.27 Several leading automobile companies have established assembly plants in India and some of them have begun to use India as an export base within their production networks (see the discussion in Box 4). Since the early 2000s, India's exports of assembled cars (completely built units) have increased at a much faster rate than automobile parts (Athukorala and Veeramani, 2019). The case of mobile phone assembly is another recent success story for India (see Box 5). In contrast to auto industry, the MNEs that have set up production bases in India's electronics and electrical goods industries have been mainly involved in production for the domestic market (Athukorala, 2014, Tewari and Veeramani, 2016).

Box 4: Learnings from Integration into GVCs by Indian Automobile Industry

After Government of India established Maruti Udyog Limited (MUL) in 1981, MUL entered into a license and joint venture agreement with Suzuki Motor Co Ltd in 1982. Suzuki acquired 26 per cent stake in MUL in return for providing latest technologies and management practices. The company started its operation with the import of totally assembled cars in Japan, followed first by assembly of semi- knocked down (SKD) packs and then by completely- knocked down (CKD) packs supplied by Suzuki. During the early stage, assembly of cars in India involved fitting low-technology and low-value components and equipment into the imported car (Hamaguchi, 1985). During 1985-89 the import value of auto components shot up rapidly (D'Costa, 1995). India's imports of auto parts from Japan increased from US$4 million in 1980 to US$155 million in 1986, accounting for 77 per cent of India's total auto parts imports. However, with the development of domestic auto ancillary industry, imports of auto parts declined sharply since the late 1980s. In the meanwhile, the success of the joint venture led Suzuki to increase its equity from 26 per cent to 40 per cent in 1987, to 50 per cent in 1992, and further to 56.21 per cent in 2013. Indian government sold the remaining 18 per cent of its shares in 2007.

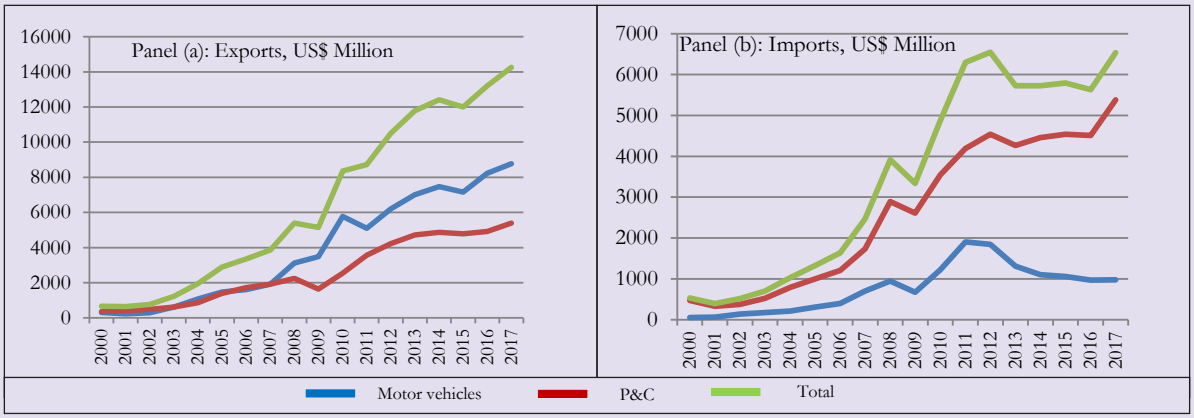
Following the entry of Suzuki, other major Japanese automobile manufacturers (Toyota, Mitsubishi,

Nissan, and Mazda) arrived (Athukorala and Veeramani, 2019). Several Tier 1 automobile parts suppliers (such as Denso, Aisin Seiki, and Toyota Boshoku) and global automobile parts producers arrived (such as Robert Bosch, Delphi, Magna, Eaton, Visteon, and Hyundai Mobil). Hyundai was the first automobile MNE to establish a 100 per cent subsidiary in the country. Volkswagen, Nissan, BMW, and Isuzu Motors followed suit. Companies that first entered as joint ventures, such as Honda, Ford, Fiat, and Renault severed links with their local partners and established 100 per cent subsidiaries.

From about the early 2000s, the Indian automobile industry has undergone a remarkable transformation from production for the domestic market, which remained its modus operandi for over a half century, to global integration. The country has emerged as a major assembly centre for compact cars (Athukorala and Veeramani, 2019). India's exports of completely built units (CBUs) increased from about US$225 million in 2001 to US$8.8 billion in 2017, while exports of parts and accessories increased from US$408 million to US$5.5 billion between these two years (see panel (a) in the figure below). The pattern is quite different on the import side with parts and accessories growing significantly faster than assembled vehicles during the same period (see panel (b) in the figure below). In 2017, the import value of assembled vehicles stood below US$1 billion compared to about US$5.4 billion worth of imports of parts and accessories. While assembled motor vehicles constitute the bulk of India's automobile exports, parts and accessories account for the lion's share of total automobile imports. This pattern is consistent with the emergence of India as an assembly centre for automobiles.

The key learning from the successful case study of the Indian Automobiles sector is that domestic firms graduate up the production value chain by first starting with low-technology operations such as assembly and then moving to manufacturing of components. In the process, imports of components increase in the short run. Following a policy of import substitution right from the outset does not enable the process of graduation up the production value chain.

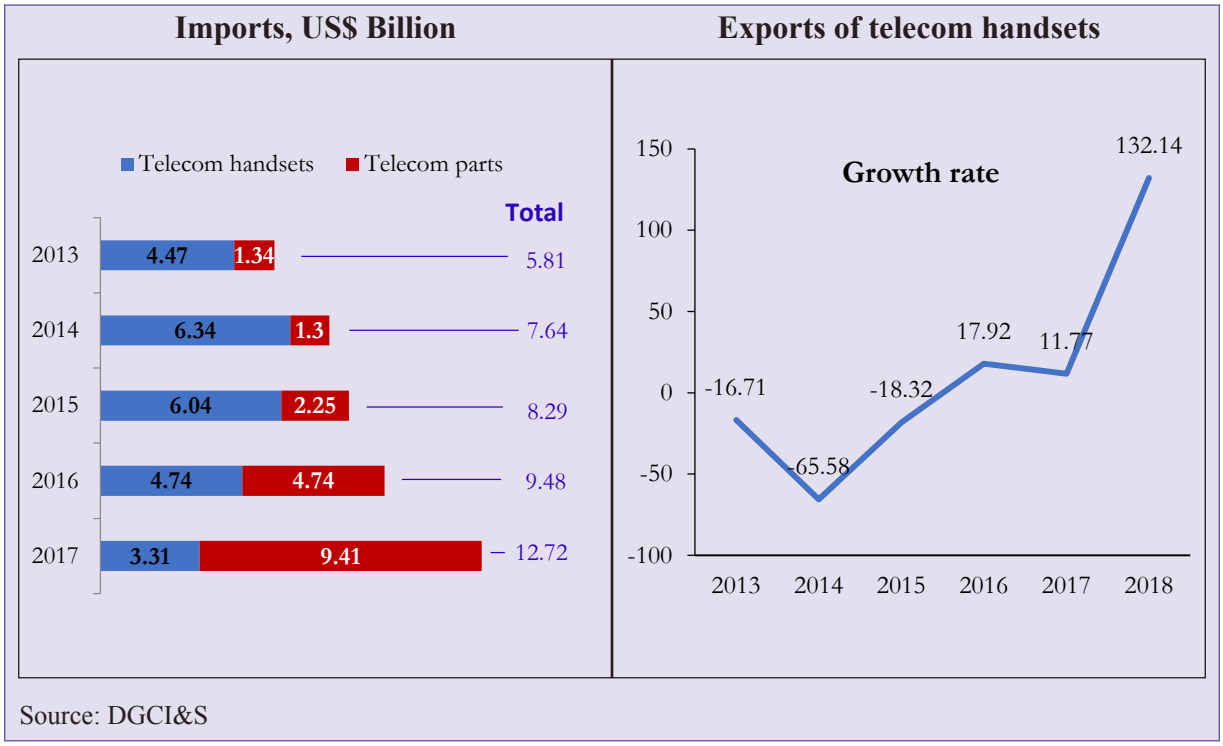
Exports and imports of motor vehicles versus and parts & components (P&C)



Source: UN Comtrade (WITS) database

Box 5: Assembly of mobile phones in India

India toppled Vietnam to become the second largest manufacturer of mobile phones globally following China in 2018 with a world share of 11 per cent. India could manufacture around 1.25 billion handsets across various segments by 2025, firing up an industry worth around $230 billion (ICEA-McKinsey report, 2018). Between 2013 and 2017, while India's import of telecom handsets declined from US$4.47 billion to US$3.31 billion that of telecom parts increased steadily from US$1.34 billion to US$9.41 billion. At the same time exports of telecom handset increased significantly during the last three years. This pattern is consistent with the emergence of India as an assembly centre for telecom handsets.



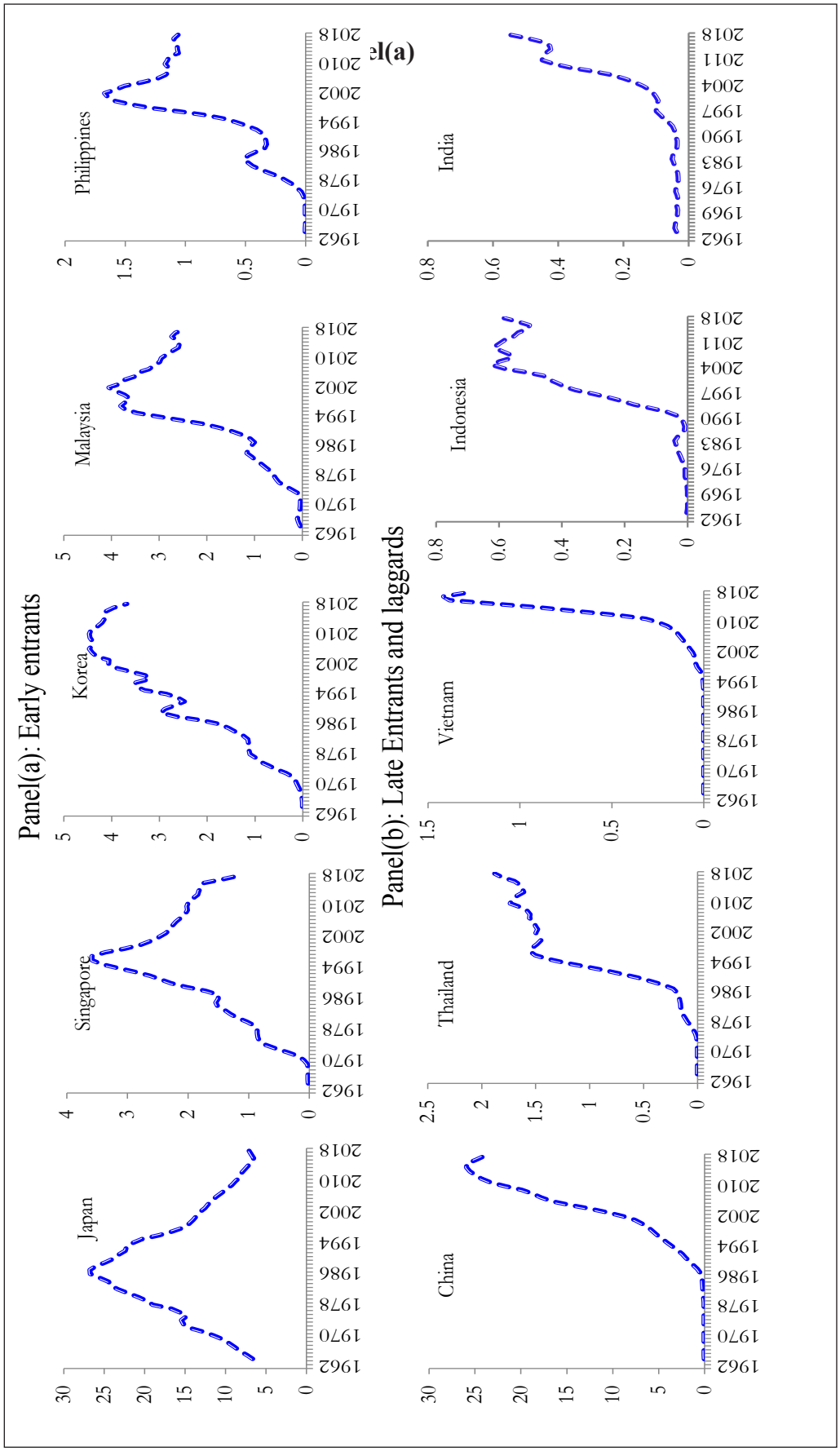
Source: DGCI&S

PATTERN OF ENTRY

5.28 The pattern of entry, rise, survival, and relative decline of countries in the export market for NP is consistent with the "wild-geese flying model" formulated by Japanese economist Kaname Akamatsu during the 1960s. The first Asian country to enter the export market for NP was Japan followed by a number of East and Southeast Asian countries. Japan, the lead goose, provided capital, technology and managerial know-how to "follower geese" countries in East and Southeast Asia. "Wild geese fly in orderly ranks forming an inverse V, just as airplanes fly in a formation" (Akamatsu, 1962, p.11). The export market participation of several of the Asian countries, over the years, indeed depicts an "inverted V" pattern (see Figure 14). Panel (a) in the figure depicts the pattern for the early entrants – Japan, Korea, Singapore, Malaysia and Philippines. Panel (b) shows the pattern for the late entrants (China, Thailand and Vietnam) and laggards (India and Indonesia). Among the late entrants, China seems to have reached the inflection point of "inverted V" while Thailand and Vietnam are on the rising part of the curve. A comparison of the charts shows that the take-off process in NP exports may be beginning in India.

5.29 Larger countries like Japan and China, which have survived in the market for longer periods of time, took off with an expansion of assembled end products (AEP) while parts & components (P&C) followed suit (Figure 15). Japan's descent on the inverted V-path also began with AEP in 1985 followed by P&C circa 1993. China seems to have reached the inflection point of the inverted V-curve for AEP circa 2015 while its world market share in P&C continues to increase. The most recent entrants, Thailand and Vietnam, have taken off with an expansion of AEP exports while P&C is following suit. For India, P&C has recorded some growth in recent years while AEP, with exceptions such as passenger cars and telecom handsets, has declined.

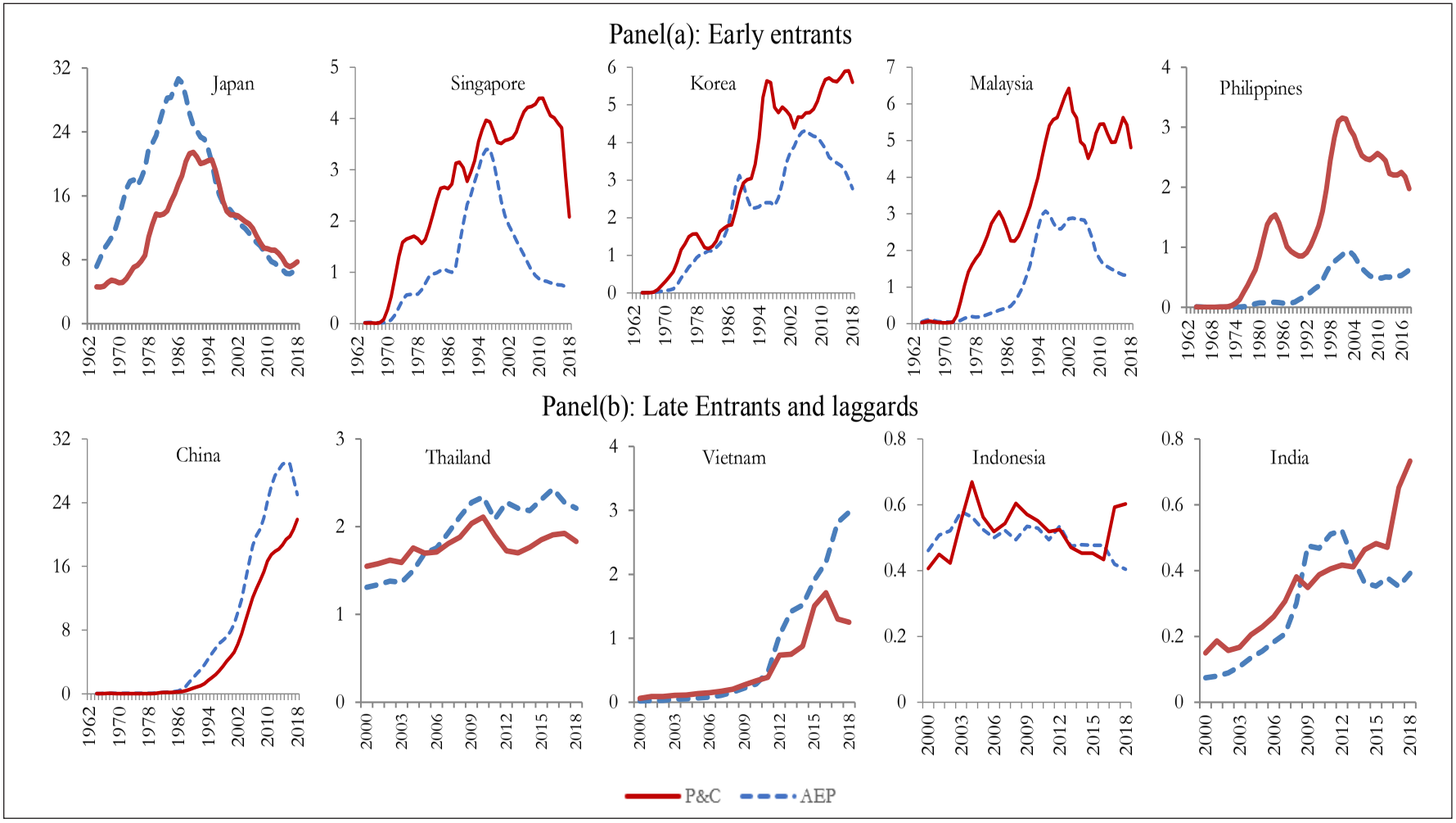
Figure 14: Wild Geese Flying Pattern of Exports in Network Products, 1962-2018



Source: Veeramani and Dhir (2019b)

Note: Values on the vertical axis are the world export market shares (three year moving averages) of the respective country. Estimates are based on mirror statistics (imports from each of the Asian countries reported by trading partners) for a fixed set of 28 countries that have reported import data for every year during 1962-2018. Share of these 28 countries in world exports was about 55 per cent.

Figure 15: Wild Geese Flying Pattern of NP Exports – Assembled End Products (AEP) versus Parts & Components (P&C)



Source: Veeramani and Dhir (2019b)

Note: Values on the vertical axis are the world export market shares of the respective country. Estimates are based on mirror statistics (imports from each of the Asian countries reported by trading partners). For the group of early entrants and China, the estimates are based on import flows reported by a fixed set of 28 countries that have reported data for every year during 1962-2018. For late entrants and laggards (except China), the estimates are based on mirror statistics for a fixed set of 118 countries that have reported import data for every year during 2000-2018.

POTENTIAL GAINS IN EMPLOYMENT AND GDP

5.30 The policy of focusing on NP can create significant gains both in employment creation and GDP growth. Let's consider a scenario in which India follows the trajectory similar to that of China's initial period of export expansion. During the first ten years of its take off, China progressively increased its share in world exports of NP from 0.7 per cent in 1987 to 6.1 in 1998. What would be the impact on India's GDP and employment if the country mimics China's initial export growth performance – that is, assuming that India can increase its world export share for NP from the current level of 0.6 per cent to over 6 per cent by 2030? See Box 6 for a detailed discussion of the method and assumptions used for assessing the potential gains from an accelerated growth of NP exports from India.

5.31 Table 2 shows that, under the "business as usual scenario", the world exports of NP will increase from the current actual value of US$5.6 trillion in 2018 to the projected value of US$6.9 trillion in 2025 and US$ 8.1 trillion in 2030. During this period, India's exports of NP is projected to increase from the current actual value of US$32.3 billion in 2018 (accounting for 0.6 per cent of world exports) to US$ 248.2 billion in 2025 (3.6 per cent of world exports) and US$ 490.7 billion in 2030 (6.1 per cent of world exports).

Table 2: Predicted values of NP exports for World and India, 2020-2030

Year	World exports of NP (US$ Trillion)	India's exports of NP (US$ Billion)	India's Share in World Exports (per cent)
(1)	(2)	(3)	(4)
2020	5.94	69.4	1.2
2025	6.92	248.2	3.6
2030	8.06	490.7	6.1

Source: Survey calculations
Note: See Box 6 for the assumptions used for predicting the values.

5.32 Domestic value added (DVA) from India's predicted exports is estimated at US$ 166.5 billion in 2025 and US$ 304.7 billion in 2030 (Table 3). Total number of jobs attributed to exports (direct employment in NP sector plus employment caused by NP sector's backward linkages with other sectors supplying inputs to the former) will go up from 4.4 million in 2020 to 14.3 million in 2025 and 25.5 million in 2030. Thus, based on the first-order effects of the scenario under consideration, it is possible to create 10 million additional export related jobs during the next five years and over 20 million jobs during the next ten years.

5.33 However, it is important to take into account the second-order effect of increased consumption by workers. The overall impact on jobs (first order plus second order effect) is much higher (see Table 4). Our estimates suggest that, by raising India's share in world exports of NP to 3.6 per cent by 2025, it is possible to create 38.5 million additional jobs in the country during the next five years. Further, by raising this share to 6.1 per cent by 2030, it is possible to generate additional 82.2 million jobs during the next ten years. The total domestic value added (in basic prices) is likely to increase from US$168 billion in 2020 to US$1134.3 billion by 2030. Between 2019 and 2025, the incremental value added is US$485.5 billion, which is one-quarter of the increase in GDP (in basic prices) required for making India a $5 trillion economy by 2025.

Table 3: Impact of Accelerated Growth of NP Exports on Employment and GDP in India, First and Second Order Impacts

Year	First-order impacts			Second-order impacts		
	Domestic value added from exports (US$ Billion)	# of jobs tied to NP exports (Millions)	Wage Income (US $ Billion)	Wage income (US$ Billion)	Domestic value added (US $ Billion)	#of jobs (Millions)
	(1)	(2)	(3)	(4)	(5)	(6)
2020	50.1	4.4	24.8	82.5	117.9	25.7
2025	166.5	14.3	88.4	294.4	420.4	83.0
2030	304.7	25.5	174.5	580.9	829.6	148.0

Source: Survey calculations
Note: See Box 6 for various methods and assumptions used for assessing the impact

Table 4: Overall Impact (First plus Second Order) employment and GDP

	# of Jobs (Millions)	Value added (US$ Billion)
2020	30.1	168
2025	97.3	586.9
2030	173.5	1134.3

Source: Survey calculations
Note: See Box 6 for various methods and assumptions used for assessing the impact

Box 6: Methods and Assumptions used for assessing the potential gains on GDP and employment by increasing India's exports of network products

The forecasted values of world exports in Table 2 is based on the "business as usual" scenario, wherein it is assumed that the trend growth rates of world exports of NP during 2010-2018 (3.1 per cent per year) would continue for the forecast period (2019-2030). India's export values for 2020-2030 are predicted by assuming that India can mimic China's export performance in world market share during the first decade (1988-1998) of China's export market entry in NP.

The domestic value added (DVA) from exports (Column 1, Table 3) is estimated using the ratio of DVA to gross exports for NP. These ratios are estimated using input-output (I-O) tables. The advantage of the I-O framework is that it enables us to disentangle the direct and indirect effects (backward linkages) of exports from any given sector. For the year 2017-18, the DVA (direct plus indirect) share of India's gross exports of NP was 74.1 per cent. We assume that this share will progressively reduce by 1 percentage points every year (driven by increased use of imported intermediate inputs), so that it will become 67.1 per cent by 2025 and 62.1 per cent by 2030.

Similarly, the number of jobs attributed to NP exports (Column 2, Table 3) is obtained by using available estimates that make of use of I-O methodology. It is estimated that 1 million US$ worth of NP exports from India generated 67.6 jobs in 2017-18. We assume that this number will progressively reduce by 2 per cent every year (driven by labour productivity improvements), so that it will become 57.5 by 2025 and 52 by 2030.

The annual wage income for workers (Column 3, Table 3) is obtained by multiplying the annual wages and salaries (in US$) with total number of jobs created by exports every year. Wages and salaries for

workers are obtained from UNIDO's industrial statistics. For the year 2017, the annual wages and salaries in India's NP industries was US$5287. We assume that this will progressively increase by 2 per cent every year (driven by labour productivity improvements), so that it becomes US$6194.5 by 2025 and US$6839.3 by 2030.

The first-order impacts are estimated by using the Type-1 multipliers (direct plus backward linkages) in I-O analysis. The second-order impact arises from additional household spending as a result of increased wage income for workers (Type-2 multipliers). The marginal propensity to consume (MPC) for the Indian household is estimated to be about 0.7. Accordingly, the value of income multiplier (1/1-MPC) is estimated as 3.33. Applying this multiplier to the initial wage income (Column 3, Table 5), we obtain the second order impact on wage income (Column 4, Table 3).

The second-order impact on domestic value added is obtained as follows. First, we obtain the difference in wage income (DWage) by subtracting initial wage income (first-order effect) from the final wage income (second-order effect). Second, by dividing DWage by the ratio of aggregate labour income to aggregate value added for Indian economy, we obtain the second-order estimate of domestic value added. Using India KLEMS database, the ratio of labour income to value added for the year 2016 was estimated to be 0.49.

In order to obtain the second order impact on jobs, we first convert the second-order estimate of domestic value added to gross output as follows:

Gross output = domestic value added (second order estimate) / ratio of gross value added (GVA) to gross output for the Indian economy.

The estimated ratio of GVA to output is 0.5 for the year 2015-16 (Source: Supply Use Table, CSO). Survey estimates shows that 1 million US$ worth of output created 116 jobs (direct plus indirect) in India in 2017-18. We assume that this number will progressively reduce by 2 per cent every year, reflecting the improvements in labour productivity.

ARE FREE TRADE AGREEMENTS BENEFICIAL?

5.34 Given the recent debate about India joining the Regional Comprehensive Economic Partnership (RCEP) agreement, questions have been asked about the general efficacy of free trade agreements (FTAs). An apprehension is that most of the FTAs that India had signed in the past had not worked in "India's favour." The argument that is put forward is that the agreements led to worsening of India's trade deficit with the partner countries with which the agreements have been signed. This is the mercantilist way of evaluating the gains from trade. Basic trade theory teaches us that a country's gains from free trade arise from the fact that it leads to a more efficient allocation of a country's resources. Yet, does the evidence support the naïve mercantilist's perspective?

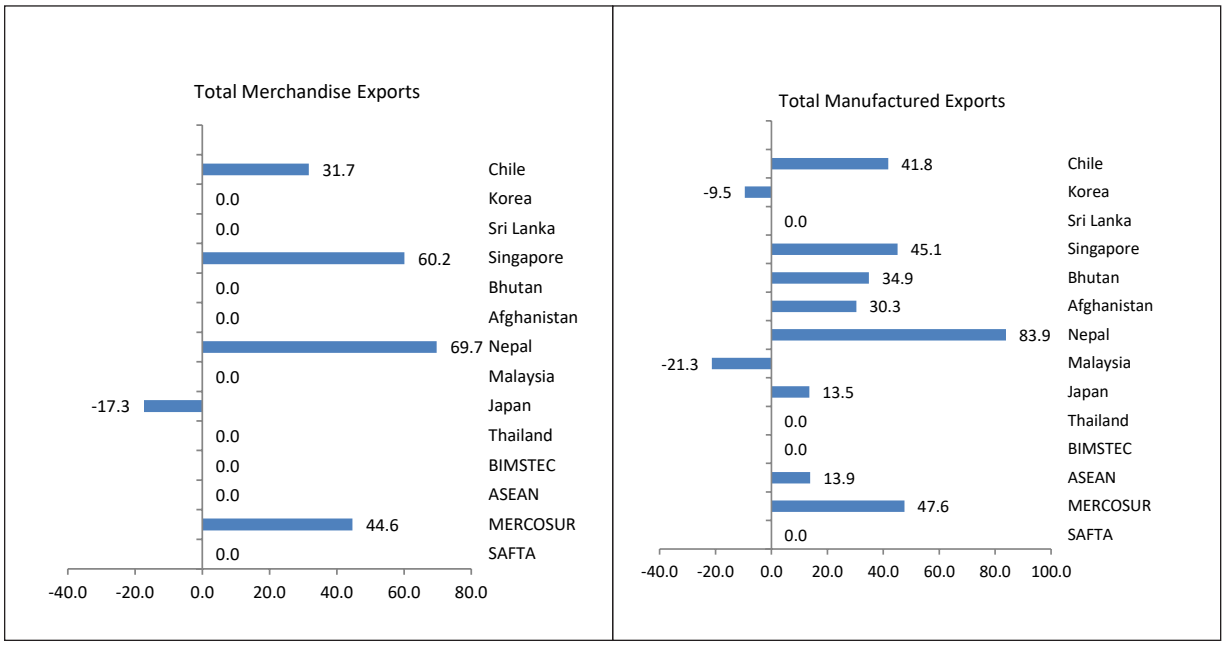
5.35 Table 5 shows India's trade agreements signed between 1993 and 2018. Figure 16 shows the impact of these agreements on the percentage changes of dollar values of India's exports and imports. These results are based on regressions specifications that take into account full set of confounding factors, including GDP and per capita income of trading partners, partner country fixed effects and year fixed effects. A simple before-and-after comparison, without controlling for the confounding factors, could lead to misleading conclusions.

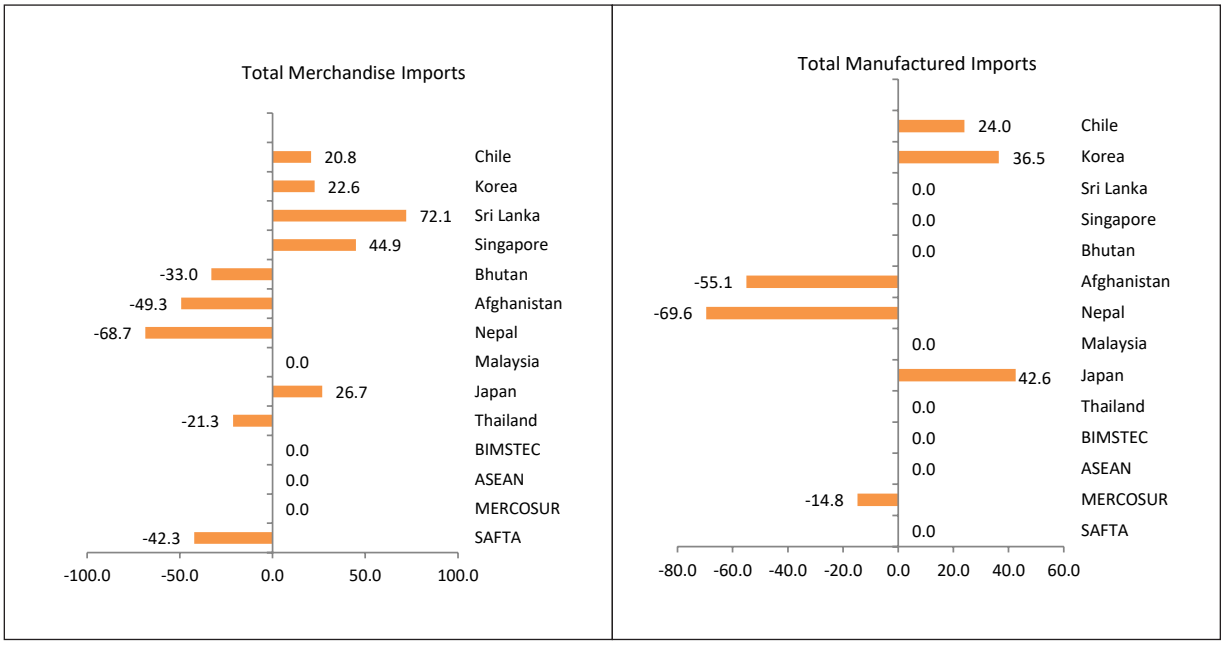
5.36 It can be seen that, manufactured products from India has clearly benefitted

from eight out of the fourteen trade agreements considered here. These are: MERCOSUR, ASEAN, Nepal, Singapore, Chile, Bhutan, Afghanistan and Japan. Four of the agreements (SAFTA, BIMSTEC, Thailand and Sri Lanka) had no effect on exports of manufactured products while the bilateral agreements with Korea and Japan exerted a negative effect. Turning to overall merchandise exports, only four trade agreements (MERCOSUR, Nepal, Singapore, and Chile) show a positive impact. The differential effect on overall merchandise exports as compared to the manufacturing subset is not surprising as several primary products are usually included in the negative/sensitive list of the trade agreements. Therefore, a majority of the trade agreements exerted no effect on overall merchandise exports. Compared to manufactured exports, a fewer number of trade agreements exerted a positive impact on India's manufactured imports. The agreements that exerted a positive effect on India's imports include Japan, Korea and Chile for manufactured products and Japan, Korea, Chile, Singapore and Sri Lanka for overall merchandise imports. Even as some of the agreements led to increase in imports, for most of the cases, the percentage increase in exports is higher than the percentage increase in imports. The exceptions are the bilateral agreements with Korea, Japan and Sri Lanka, where the percentage increase in imports are higher than that of exports.

5.37 The overall impact on India's exports to the partners, with which the agreements have been signed, is 13.4 per cent for manufactured products and 10.9 per cent for total merchandise, as shown in Figure 17. The overall impact on imports is found to be lower at 12.7 per cent for manufactured products and 8.6 per cent for total merchandise. Therefore, from the perspective of trade balance, India has clearly "gained" in terms of 0.7 per cent increase in trade surplus per year for manufactured products and of 2.3 per cent increase in trade surplus per year for total merchandise.

Figure 16: Impact of Trade Agreements on India's Exports and Imports, 1993 to 2018 (per cent Changes of US$ Values per Year)

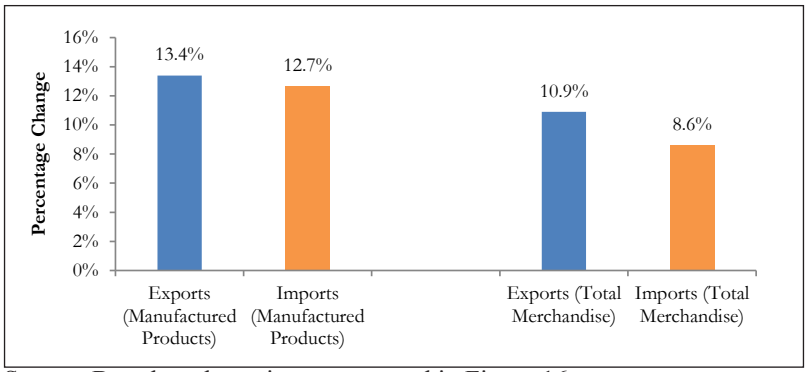




Source: Survey Calculations

Note: The results reported here are based on a gravity model based regression analysis, where the dependent variable is the $ value of India's exports on bilateral basis for the period 1993-2018. Independent variables include GDP of partner countries, per capita GDP of trading partners, various trade agreement dummies, partner fixed effects and year fixed effects. Estimates of percentage changes in exports and imports (after entering into FTA) are based on the coefficient of the corresponding FTA dummies.

Figure 17: Overall Impact of Trade Agreements on Exports and Imports



Source: Based on the estimates reported in Figure 16

Table 5: India's Trade Agreements

Agreements	Year in which India signed the agreement	Countries in the Bloc	Start year	End year
BIMSTEC	1997	Bangladesh, Bhutan (2004), India, Myanmar, Nepal (2004), Sri Lanka, Thailand	1997 (except Bhutan 2004, Nepal 2004)	2018
Sri Lanka	2001	India, Sri Lanka	2001	2005
Afghanistan	2003	India, Afghanistan	2003	2010

Thailand	2004	India, Thailand	2004	2009
Singapore	2005	India, Singapore	2005	2009
Bhutan	2006	India, Bhutan	2006	2018
SAFTA	2006	Afghanistan (2011), Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka	2006 (except Afghanistan 2011)	2018
Chile	2007	India, Chile	2007	2018
MERCOSUR	2009	India (2009), Argentina, Brazil, Paraguay, Uruguay	2009	2018
Nepal	2009	India, Nepal	2009	2018
Korea	2010	India, Korea	2010	2018
ASEAN	2010	India (2010), Brunei Darussalam (1984), Cambodia (1999), Indonesia, Lao People's Democratic Republic (1997), Malaysia, Myanmar (1997), Philippines, Singapore, Thailand, Vietnam (1995)	2010	2018
Malaysia	2011	India, Malaysia	2011	2018
Japan	2011	India, Japan	2011	2018

Source: WTO Regional Trade Agreement Database

WAY FORWARD

5.38 The experience of countries that have achieved rapid and sustained export growth suggests that India can reap rich dividends by adopting policies aimed at strengthening its involvement in the export market for network products (NP). Given our vast manpower with relatively low skill, India's current strength lies primarily in assembly of NP. While the short to medium term objective is the large scale expansion of assembly activities by making use of imported parts & components, giving a boost to domestic production of parts & components (upgrading within GVCs) should be the long term objective. Assembly is highly labour intensive, which can provide jobs for the masses, while domestic production of parts & components can create high skill jobs.

5.39 A highly feasible target of raising India's export market share to about 3.5 per cent by 2025 and 6 per cent by 2030 would create about 38.5 million additional jobs in the country by 2025 and about 82 million additional jobs by 2030. The incremental value added in the economy from the target level of exports of network products would make up about one-quarter of the increase required for making India a $5 trillion economy by 2025.

5.40 An important concern is whether participation in GVCs implies that low wage countries would remain perpetually stuck at the lower end of the production processes. As the case studies of India's automobile sector illustrate, such apprehensions are unwarranted.

5.41 For a country to become an attractive location for assembly activities, it is imperative

that import tariff rates for intermediate inputs are zero or negligible. It is also imperative to create an ecosystem that will result in realignment of India's specialization patterns towards labour-intensive processes and product lines. The ongoing reform measures to provide greater flexibility in the labour market should continue. A pro-active FDI policy is also critical as MNEs are the leading vehicles for the country's entry into global production networks while local firms play a role as subcontractors and suppliers of intermediate inputs to MNEs. Assembly processes require not only trainable low-cost unskilled labour but also a lot of middle-level supervisory manpower. For example, when Apple employed 7,00,000 factory workers in China, it also employed 30,000 engineers on-site to supervise those workers (Isaacson, 2011).

5.42 A low level of service link costs (costs related to transportation, communication, and other tasks involved in coordinating the activity in a given country with what is done in other countries) is a pre-requisite for countries to strengthen their participation in GVCs. Supply disruptions in a given location due to shipping delays, power failure, political disturbances, labour disputes etc could disrupt the entire production chain. Policy measures should focus on reducing input tariffs, implementation of key factor market reforms, providing an enabling environment for the entry of lead firms into the country and reducing the service link costs.

CHAPTER AT A GLANCE

- The current environment for international trade presents India an unprecedented opportunity to chart a China-like, labour-intensive, export trajectory and thereby create unparalleled job opportunities for our burgeoning youth.
- By integrating "Assemble in India for the world" into Make in India, India can raise its export market share to about 3.5 per cent by 2025 and 6 per cent by 2030. This will create 4 crore well-paid jobs by 2025 and 8 crore by 2030.
- One-quarter of the increase in value added required for making India a $5 trillion economy by 2025 can come from exports of network products.
- This chapter, therefore, articulates a clear-headed strategy to grab this opportunity.
- China's remarkable export performance vis-à-vis India is driven primarily by deliberate specialization at large scale in labour-intensive sectors, especially "network products", where production occurs across Global Value Chains (GVCs) operated by multi-national corporations. China used this specialised strategy to export primarily to markets in rich countries. Similarly, India must place laser-like focus on enabling assembling operations at mammoth scale in network products.
- As an India that harbours misplaced insecurity on the trade front is unlikely to grab this opportunity, our trade policy must be an enabler. When the impact of India's trade agreements on overall trade balance is made by accounting for all confounding factors, India's exports have increased by 13.4 per cent for manufactured products and 10.9 per cent for total merchandise while imports increased by 12.7 per cent for manufactured products and 8.6 per cent for total merchandise. Thus, India has clearly gained 0.7 per cent increase in trade surplus per year for manufactured products and 2.3 per cent per year for total merchandise.

REFERENCES

Akamatsu, K. 1962. "Historical Pattern of Economic Growth in Developing Countries". *The Developing Economies*, 1, 3–25.

Amiti, M., Freund, C. 2010. "An Anatomy of China's Export Growth", in Feenstra, R. C. and Wei, S., (eds.), *China's Growing Role in World Trade*, The University of Chicago Press.

Athukorala, Prema-Chandra. 2011. "Production Networks and Trade Patterns in East Asia: Regionalization or Globalization?" *Asian Economic Papers*, 10(1): 65–95.

Athukorala, Prema-Chandra. 2014. "How India Fits into Global Production Sharing: Experience, Prospects and Policy Options," *India Policy Forum 2013/14*, 57-116.

Athukorala, Prema-Chandra and Veeramani, C. 2019. "From Import Substitution to Integration into Global Production Networks: The Case of Indian Automobile Industry", *Asian Development Review*, Vol 36 (2).

Basu, Anwesha and Veeramani, C 2020. "Declining Labour Share in Indian Economy: Role of Structural Transformation?" in S Mahendra Dev (ed), *India Development Report 2020*, Oxford University Press, New Delhi (forthcoming).

Besedes, T., Prusa, J.T. 2011. 'The Role of Extensive and Intensive Margins and Export Growth', *Journal of Development Economics*, 96, 2, 371-379.

D'Costa, Anthony. 1995. "The Restructuring of the Indian Automobile Industry: Indian State and Japanese Capital." *World Development* 23 (3): 485–502.

Dedrick, Jason., Kenneth L. Kraemer, and Greg Linden. 2010. Who Profits from Innovation in Global Value Chains? A study of the iPod and notebook PCs". *Industrial and Corporate Change* 19(1), 81–116.

Dedrick, Jason., Greg Linden and Kenneth L. Kraemer .2018. "We Estimate China only Makes $8.46 from an iPhone – and that's why Trump's Trade War is Futile" *The Conversation*, July (https://theconversation.com/we-estimate-china-only-makes-8-46-from-an-iphone-and-thats-why-trumps-trade-war-is-futile-99258)

Eaton, J., Eslava, M., Kugler, M., Tybout, J., 2007. 'The Margins of Entry into Export Markets: Evidence from Colombia', in *Globalization and the Organization of Firms and Markets,* Munich, Germany*,* Centre for Economic Policy Research.

Felbermayr, G.J., Kohler, W. 2006. "Exploring the Intensive and Extensive Margins of World Trade', *Review of World Economics*, 142, 4, 642-674.

Grossman, G.M. and Rossi-Hansberg. 2008. "Trading Tasks: A Simple Theory of Offshoring" *American Economic Review*, 98 (5), 1978–1997.

Hamaguchi, T. 1985. "Prospects for Self-Reliance and Indigenization in Automobile Industry: Case of Maruti-Suzuki Project." *Economic and Political Weekly* 20 (35): M115–M122.

Helpman, E., Melitz, M., Rubinstein, Y. 2008. 'Estimating Trade Flows: Trading Partners and Trading Volumes', *Quarterly Journal of Economics*, 123, 2, 441-487.

Hinloopen, J., Marrewijk C. 2008. "Empirical Relevance of the Hillman Condition for Revealed Comparative Advantage: 10 Stylized Facts," *Applied Economics*, 40, 18, 2313-2328.

Hummels, D., Klenow, P.J. 2005. "The Variety and Quality of a Nation's Exports", *American Economic Review*, 95, 3, 704-723.

International Labour Organization. 2019. "Exports to Jobs Boosting the Gains from Trade in South Asia"

Isaacson, Walter. 2011. "Steve Jobs", New York: Simon & Schuster

Kochhar, K., Kumar, U., Rajan, R., Subramanian A., Tokatlidis, I. 2006. "India's Pattern of Development: What Happened, What Follows?", *Journal of Monetary Economics*, 53, 5, 981-1019.

Los, Bart, Marcel P. Timmer, and Gaaitzen J.de Vries. 2015. "How important are exports for job growth in China? A demand side analysis," Journal of Comparative Analysis, 43(1), 19-32.

Panagariya, A. 2007. "Why India Lags Behind China and How It Can Bridge the Gap", *World Economy*, 30, 2, 229-248.

Silva, Santos J M C and Tenreyro, Silvana. 2006. "The Log of Gravity", Review of Economics and Statistics, 88(4): 641-658.

Tewari, Meenu and Veeramani, C. 2016. "Network Trade and Development: What do the Patterns of Vertically Specialized Trade in ASEAN Tell Us About India's Place in Asian Production Networks" *Global Economy Journal*, De, Vol 16(2).

Veeramani, C. 2012a. "Anatomy of India's Merchandise Export Growth, 1993-94 to 2010-11", *Economic and Political Weekly*, Vol XLVII (1), pp 94-104.

Veeramani, C 2012b. "The "miracle" still waiting to happen: performance of India's manufactured exports in comparison to China", in S Mahendra Dev (ed), *India Development Report,* Oxford University Press, New Delhi, p. 132-150.

Veeramani, C and Dhir, Garima. 2016. "India's export of unskilled labor-intensive products: a comparative analysis" in C. Veeramani and R Nagaraj (ed) *International Trade and Industrial Development in India: Emerging Trends, Patterns and Issues***,** Orient Blackswan.

Veeramani, C and Dhi, Garima. 2017. "Make What in India?" in S Mahendra Dev (ed), *India Development Report 2017*, Oxford University Press, New Delhi.

Veeramani, C., Aerath, Lakshmi and Gupta, Prachi. 2018. "Intensive and Extensive Margins of Exports: What can India Learn from China", *The World Economy*, Vol 41 (5).

Veeramani. 2019. "Fragmentation Trade and Vertical Specialisation: How Does South Asia Compare with China", *Journal of Asian Economic Integration*, Vol 1(1), 2019.

Veeramani, C and Dhir, Garima. 2019a. "Reaping Gains from Global Production Sharing: Domestic Value Addition and Job Creation by Indian Exports", *IGIDR Working Paper No WP-2019-024*, Mumbai (http://www.igidr.ac.in/pdf/publication/WP-2019-024.pdf)

Veeramani, C and Dhir, Garima. 2019b. "Dynamics and Determinants of Fragmentation Trade: Asian Countries in Comparative and Long-term Perspective" *IGIDR Working Paper No WP-2019-040*, Mumbai. (http://www.igidr.ac.in/working-paper-dynamics-determinants-fragmentation-trade-asian-countries-comparative-long-term-perspective/)

Veeramani C and Dhir, Garima. 2020. "Impact of Free Trade Agreements on India's Exports and Imports: A Quantitative Assessment", *IGIDR Working Paper.,* Mumbai

Veeramani, C and Aerath, Lakshmi. 2020. "Emerging Trends and Patterns of India's Trade Flows in A Comparative Asian Perspective", in Suresh Chand Aggarwal, Deb Kusum Das, Rashmi Banga (eds), *Accelerators of India's Growth: Industry, Trade and Employment*, Springer (forthcoming).

Targeting Ease of Doing Business in India

06
CHAPTER

"The King (i.e., the State) shall promote trade and commerce by setting up trade routes by land and by water, and establishing market towns and ports" – Kautilya's Arthashastra, 4th century B.C.

Ease of doing business is key to entrepreneurship, innovation and wealth creation. India has risen significantly in the World Bank's Doing Business rankings in recent years, but there are categories where it lags behind – Starting a Business, Registering Property, Paying Taxes and Enforcing Contracts. This chapter focuses on these parameters and compares India's performance with both its peers and with the best-in-class. For example, registering property in Delhi and Mumbai takes 49 and 68 days respectively, while it takes 9 days in China and 3.5 days in New Zealand. These performance matrices provide a measure of the scope for improvement. The chapter then explores the density of laws, rules and other statutory compliance requirements faced by a manufacturing or services business (specifically the restaurants segment).

Export competitiveness depends not only on the cost of production but also on the efficiency of logistics. A series of case studies are used to analyse the time taken at each stage for specific merchandise items to travel from factory gate to the warehouse of the foreign customer. For instance, a study found that an apparels consignment going from Delhi to Maine (U.S.) takes roughly 41 days, but 19 of these are spent within India due to delays in transportation, customs clearance, ground handling and loading at sea-ports. A study of carpets exports from Uttar Pradesh to the United States also showed similar results. The process flow for imports, ironically, is more efficient than that for exports! In contrast, however, the imports and exports of electronics through Bengaluru airport was found to be world class. The processes of Indian airports should be adapted and replicated in sea-ports.

INTRODUCTION

6.1 As India leapfrogs towards a five trillion-dollar economy by 2024-25, simplifying and maintaining a business-friendly regulatory environment is essential. To ease the constraints and gaps in the regulatory processes involved in doing business, it is necessary to assess the country's progress vis-à-vis other leading economies on various parameters.

6.2 India has made substantial gains in the World Bank's *Doing Business* rankings from 142 in 2014 to 63 in 2019. It has progressed on seven out of the 10 parameters.The Goods and Service Tax (GST) and the Insolvency and Bankruptcy Code (IBC) top the list of reforms that have propelled India's rise in rankings. The trajectory of India's performance over the last decade is shown in Table 1.

6.3 However, India continues to trail in parameters such as Ease of Starting Business (rank 136), Registering Property (rank 154), Paying Taxes (rank 115), and Enforcing Contracts (rank 163). It takes roughly 58 days and costs on an average 7.8 per cent of a property's value to register it, and 1,445 days for a company to resolve a commercial dispute through a local first-instance court. These figures are longer in time and often greater in cost than OECD high-income economies, and therefore, impede wealth creation.

6.4 This chapter analyses India's performance in the parameters used in Doing Business reports, and compares it to its peers as well as to the best-in-class countries like New Zealand, which has been ranked number one over the past several years.

Table 1: Capturing India's decade-long journey in the Doing Business Rankings

Parameters	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Ease of starting a business	169	165	166	173	179	158	155	155	156	137	136
Dealing with construction permits	175	177	181	182	182	184	183	185	181	52	27
Getting electricity	-	-	98	105	111	137	70	26	29	24	22
Registering your property	93	94	97	94	92	121	138	138	154	166	154
Getting credit for your business	30	32	40	23	28	36	42	44	29	22	25
Protecting minority investors	41	44	46	49	34	7	8	13	4	7	13
Paying taxes	169	164	147	152	158	156	157	172	119	121	115
Trading across borders	94	100	109	127	132	126	133	143	146	80	68
Enforcing contracts	182	182	182	184	186	186	178	172	164	163	163
Resolving insolvency	138	134	128	116	121	137	136	136	103	108	52
Overall Rank	**133**	**134**	**132**	**132**	**134**	**142**	**130**	**130**	**100**	**77**	**63**

Source: Doing Business database, World Bank.

6.5 In addition, this chapter presents several case studies and surveys that were conducted to capture the on-ground experience of doing business in the country including the logistics of merchandise exports and imports, the number of permissions needed to set up a restaurant and so on. This allows a close look at the nuts-and-bolts of the business environment. Case studies of merchandise exports found that logistics is inordinately inefficient in Indian sea-ports. The process flow for imports, ironically, is more efficient than that for exports. Although one needs to be careful to directly generalise

from specific case studies, it is clear that customs clearance, ground handling and loading in sea ports take days for what can be done in hours. A case study of electronics exports and imports through Bengaluru airport illustrates how Indian logistical processes can be world class. The main goal of the chapter, therefore, is to help the reader to identify the most crucial issues when evaluating Ease of Doing Business (EoDB) in India beyond the approach taken by the World Bank's surveys.

GLOBAL COMPARISONS

6.6 In this section, India's performance has been compared with its peers (China, Brazil & Indonesia) as well as the best-in-class economy in EoDB, i.e., New Zealand. In the interest of brevity, the comparisons are limited to how India fared over the decade from 2009 to 2019 across only those parameters of EoDB where India lags, namely- Starting a Business, Registering Property, Paying Taxes, and Enforcing Contracts. The comparisons demonstrate the gap that India needs to travel to achieve the best international standards.

6.7 The number of procedures required to set up a business in India, for example, has reduced from 13 to 10 over the past ten years (Table 2). Today, it takes an average of 18 days to set up a business in India, down from 30 days in 2009. On the other hand, New Zealand has a seamless process of business incorporation which takes place through a single window via one agency. It just takes half-a-day with a single form and minimal cost to set up a business in New Zealand. Although, India has significantly reduced the time and cost of starting a business, a lot more is needs to be done. Some further simplification of processes in India has been implemented very recently but it is too early to gauge its impact.

6.8 Property registration is another interesting example. It takes nine procedures, at least 49 days, and 7.4-8.1 per cent of the property value to register one's property in India. Moreover, the number of procedures, time and cost have increased over the last 10 years. Meanwhile, New Zealand has only two procedures and a minimal cost of 0.1 per cent of the property value.

6.9 In the case of paying taxes, even though the number of payments per year has significantly reduced in India from 59 to 12 over the last decade, time spent on this activity has not reduced much. While India takes 250-254 hours per year to pay taxes, New Zealand spends just 140 hours a year. Interestingly, time spent to pay taxes in New Zealand has doubled from 2009 to 2019.

6.10 Enforcing contracts is one parameter in which India's performance has been very poor over the years. While India takes 1,445 days to resolve an average dispute, New Zealand takes approximately one-seventh of it, i.e., 216 days. The previous Economic Survey[1] had argued that the single biggest constraint to ease of doing business in India is its inability to enforce contracts and resolve disputes. Given the potential economic and social multipliers of a well-functioning legal system, this may well be the best investment India can make.

6.11 When compared to the performance of India's peer nations, namely China, Brazil, and Indonesia, on the same parameters, it can be seen that China fares much better than India on virtually all parameters (Table 3).

6.12 The comparisons with other nations is not so one-sided. An entrepreneur has to go through 10 procedures to set up a business in India taking 17-18 days to do so. On the other hand, Indonesia and Brazil require one extra process than India to open a business.

[1] See Economic Survey 2018-19 Chapter 5, Volume I.

Table 2: Mapping New Zealand across EODB parameters where India struggles

	India		New Zealand	
	2009	2019	2009	2019
Starting a Business				
Number of Procedures	13	10	1	1
Time – No. of days	30	17/18*	1	0.5
Cost (% of income per capita)	66.1	5.3/ 9.3*	0.4	0.2
Registering Property				
Number of Procedures	5	9	2	2
Time – No. of days	44	49/ 68*	2	3.5
Cost (% of property value)	7.4	8.1/ 7.4*	0.1	0.1
Paying Taxes				
Number of Payments	59	10/ 12*	8	7
Time (hours per year)	271	250/ 254*	70	140
Total tax payable (% of gross profit)	64.7	49.7#	32.8	34.6
Enforcing Contracts				
Time – No. of days	1,420	1,445	216	216
Cost (% of debt)	39.6	31	22.4	27.2

Source: Doing Business database, World Bank.

*: Denotes values for Delhi/ Mumbai as these are the two centres covered by World Bank for India.

#: Before India reduced its Corporate tax rate from 30 to 25 per cent.

Table 3: India v/s Peers on EODB Parameters (2019)

	India	China	Brazil	Indonesia
Starting a Business				
Number of Procedures	10	4	11	11
Time – No. of days	17/18*	9	17	13
Cost (% of income per capita)	5.3/ 9.3*	1.1	4.2	5.7
Registering your Property				
Number of Procedures	9	4	14	6
Time – No. of days	49/ 68*	9	31	31
Cost (% of property value)	8.1/ 7.4*	4.6	3.6	8.3
Paying Taxes				
Number of Payments	10/ 12*	7	10	26
Time (hours per year)	250/ 254*	138	1,501	191
Total tax payable (% of gross profits)	49.7#	59.2	65.1	30.1
Enforcing Contracts				
Time – No. of days	1,445	496	801	403
Cost (% of debt)	31	16.2	22	70.3
Overall Doing Business Rank	**63**	**31**	**124**	**73**

Source: World Bank Doing Business Report, 2020.

Note: India numbers are for Delhi/Mumbai respectively, as these are the two centres covered by World Bank for India.

#: Before India reduced its Corporate tax rate from 30 to 25 per cent.

While Indonesia takes four days less than India, Brazil takes almost the same time as India to do so. In fact, countries like Pakistan, Turkey and Sri Lanka (ranked 72, 77, and 85 respectively in Starting a Business parameter) have a less cumbersome process to start a business than India.

6.13 Similarly, while India has five less procedures than Brazil (14) to register one's property, it takes much less time to do so in Brazil (31 days) than in India (49-68 days). Indonesia, on the other hand, has only six procedures and takes same time as Brazil to register property.

6.14 In case of paying taxes, although Indonesia (26) has more than double the number of payments per year than India (10-12), its citizens spend far less time in paying them than India. Brazil seems to fare particularly poor in this segment.

6.15 India's performance in contract enforcement is poor even when compared to India's peer nations. While it takes approximately four years to enforce a contract in India, Brazil and Indonesia spend 2.2 and 1.1 years, respectively to do so. With a rank of 163 out of 190 nations in Enforcing Contracts, only a few countries like Afghanistan, Mozambique, and Zimbabwe perform worse than India.

6.16 A holistic assessment and a sustained effort to ease business regulations and provide an environment for businesses to flourish would be a key structural reform that would enable India to grow at a sustained rate of 8-10 per cent per annum. This requires a nuts-and-bolts approach of feedback loops, monitoring and continuous adjustment. The next section, surveys some of areas where there is scope for significant efficiency gains.

DENSITY OF LEGISLATION AND STATUTORY COMPLIANCE REQUIREMENTS IN MANUFACTURING

6.17 A major challenge most companies face is the complex architecture of the Indian governance framework

Table 4: Applicable Rules and Statutory Laws for Manufacturing

S. No.	Name of the Act (A)	No. of Sections (B)	No. of Rules, etc. (A+B)	Total
1.	Apprentices Act, 1961	37	14	51
2.	Air (Prevention & Control of Pollution) Act, 1981	54	-	54
4.	Central Excise Act, 1944	40	90	130
5.	Central Excise Tariff Act, 1985	5	-	5
6.	Central Sales Tax Act, 1956	26	9	35
7.	Companies Act, 2013	470	19	489
8.	Contract Labour (Regulation and Abolition) Act, 1970	35	83	118
9.	Customs Act, 1962	161	53	214
10.	Customs Tariff Act, 1975	13	-	13
11.	Depositories Act, 1996	31	-	31
12.	Employee Compensation Act, 1923	36	52	88
13.	Employee State Insurance Act, 1948	100	211	311
14.	Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959	10	8	18

15.	Environment (Protection) Act, 1986	26	88	114
16.	Employee Provident Funds & Miscellaneous Provisions Act, 1952	22	156	178
17.	Equal Remuneration Act, 1976	18	6	24
19.	Factories Act, 1948	120	128	248
20.	Foreign Exchange Management Act, 1999	49	102	151
21.	Foreign Trade (Development & Regulation) Act, 1992	20	18	38
22.	Finance Act, 1994	36	43	79
23.	Guidelines of Department of Scientific and Industrial Research	-	6	6
24.	Income Tax Act, 1961	298	125	423
25.	Indian Stamp Act,1899	78	22	100
26.	Indian Boiler Act,1923	34	626	660
27.	Indian Electricity Act, 2003	185	-	185
28.	Indian Wireless Telegraphy Act, 1933	11	13	24
29.	Indian Standard Code of Practice for Selection, Installation and Maintenance of Portable First Aid Fire Extinguishers	-	16	16
30.	Industrial Disputes Act,1947	40	80	120
31.	Industrial Employment (Standing Orders) Act, 1946	15	22	37
32.	Legal Metrology Act, 2009	57	64	121
33.	Maternity Benefit Act, 1961	30	-	30
34.	Minimum Wages Act, 1948	31	32	63
35	Motor Vehicles Act,1988	217	164	381
36.	Narcotic Drugs and Psychotropic Substances Act, 1985	51	68	119
37.	Payment of Gratuity Act, 1972	15	17	32
38.	Patents Act, 1970	161	139	300
39.	Payment of Wages Act,1936	26	13	39
40.	Payment of Bonus Act, 1965	40	5	45
41.	Petroleum Act,1934	31	202	233
42.	Poisons Act, 1919	9	-	9
43.	Securities and Exchange Board of India Act, 1992	31	334	365
44.	Securities Contract (Regulation) Act, 1956	31	21	52
45.	Special Economic Zones Act, 2005	58	6	64
46.	Water (Prevention and Control of Pollution) Act, 1974	64	-	64
48.	Water (Prevention and Control of Pollution) Cess Act, 1977	17	9	26
49.	Shops and Establishment Act	State-wise	State-wise	State-wise
51.	Trade Marks Act,1999	159	185	344
	Total	**3,214**	**3,582**	**6,796**

Source: Federation of Indian Chambers of Commerce and Industry (FICCI).

Note: This is not a comprehensive list and not every rule applies to every manufacturer. It is just an illustration of the wide range of rules that a manufacturer faces.

including the density of legislation and statutory compliance requirements. A list containing the names of Acts applicable as well as number of Sections / Rules of such Acts required to be complied with by manufacturing units is given in Table 4. Manufacturing units have to conform with 6,796 compliance items, which is a tedious and time consuming task. It must be noted that this is not a comprehensive list and not every rule applies to every manufacturer. It is just an illustration of the bewilderingly wide range of rules that the sector faces.

STARTING A BUSINESS: REGULATORY HURDLES IN OPENING A RESTAURANT

6.18 The services sector too faces many regulatory hurdles even for routine businesses. The bars and restaurants sector is an important source of employment and growth everywhere in the world. It is also a business that, by its nature, faces a high frequency of starting new businesses and shutting old ones.

6.19 A survey showed that the number of licenses required to open a restaurant in India are significantly more than elsewhere. While China and Singapore require only four licenses, India requires several more mandatory licenses and approvals (the comparison is in Table 5 and some of Indian requirements are listed in Table 6).

6.20 According to the National Restaurants Association of India (NRAI), a total of 36 approvals are required to open a restaurant in Bengaluru, Delhi requires 26, and Mumbai 22. Moreover, Delhi and Kolkata also require a 'Police Eating House License'. The number of documents needed to obtain this license from Delhi Police is 45 – far more than the number of documents required for a license to procure new arms and major fireworks, 19 and 12 respectively (Table 7).

6.21 Moreover, in India, only the list of licenses and permissions can be obtained from a government portal or information center. On the other hand, in New Zealand, the website of Auckland Council (operated by a private third-party agency) has all detailed guides and stepwise procedures about permissions, fees and timeline to open a restaurant. The website is also equipped with ready-to-use business plan templates and comprehensive information on different businesses irrespective of the scale of business. The contrast reflects a difference in approach – government control versus curation/ partnership.

Table 5: Licenses Required to Open a Restaurant

Country	Market Size (US $ billion)	No. of licenses	Nature of licenses
India	**61**	**12-16***	**As detailed in Table 6**
Singapore	8.3	4	Food shop License Liquor License Importing Food License Halal Certificate
China	815	4	Sanitation License Environment License Fire License Sales License

Source: National Restaurants Association of India (NRAI).
Note: * These are just key licenses. In practice, each city requires several more approvals as mentioned in the text.

Table 6: Key Mandatory Licenses required to open a Restaurant in India

S. No.	License	Authority	Delhi	Mumbai	Bangalore	Kolkata
1.	Food Safety	FSSAI	Yes	Yes	Yes	Yes
2.	Heath/Trade	Municipal Corporation	Yes	Yes	Yes	Yes
3.	Police Eating House License	Police Commissioner Licensing	Yes			Yes
4.	Fire NOC	Fire Department	Yes	Yes	Yes	Yes
5.	Shops & Establishment	Labor Department	Yes	Yes	Yes	Yes
6.	Liquor License (If serving Liquor)	Excise Department	Yes	Yes	Yes	Yes
7.	Tourism License (for liquor service)	Tourism Department	Yes			
8.	Environment Clearance for Grease Trap/ETP (Water Pollution Act)	State Pollution Control Board	Yes			Yes
9.	Environment Clearance for Gen Sets (Air Pollution Act)	State Pollution Control Board	Yes			Yes
10.	Weights and Measures	Legal Metrology Department	Yes	Yes	Yes	Yes
11.	Music License	Copyright Societies registered by Govt. of India	Yes	Yes	Yes	Yes
12.	Signage License	Municipal Corporation	Yes	Yes	Yes	Yes
13.	GST/VAT Registration	GST/Tax Authorities	Yes	Yes	Yes	Yes
14.	Employees State Insurance/ PF	Labor/ PF Commissioner	Yes	Yes	Yes	Yes
15.	Lift License (if lift installed)	Electrical Inspector	Yes	Yes	Yes	Yes
16.	Delivery Bikes (if employed)	FSSAI	Yes	Yes	Yes	Yes

Source: National Restaurants Association of India (NRAI).

Table 7: Documents required for obtaining a license from Delhi Police

Type of license	Number of documents required
Eating and Lodging Establishments License	45
New Arms license	19
Fireworks license	12

Source: Delhi Police Licensing.

CONSTRUCTION PERMITS

6.22 Table 8 shows the procedures, time, and costs that businesses in Delhi have to undergo for building a factory/warehouse, including obtaining necessary licenses and permits, completing required notifications and inspections, and obtaining utility connections.

6.23 When compared to the best in class-Hong Kong, which tops the World Bank rankings for ease of obtaining construction permits, it can be seen that Hong Kong takes just over two months to obtain a construction permit, while Delhi takes almost four months. Moreover, it takes 35 days to get water and sewer connection in Delhi.

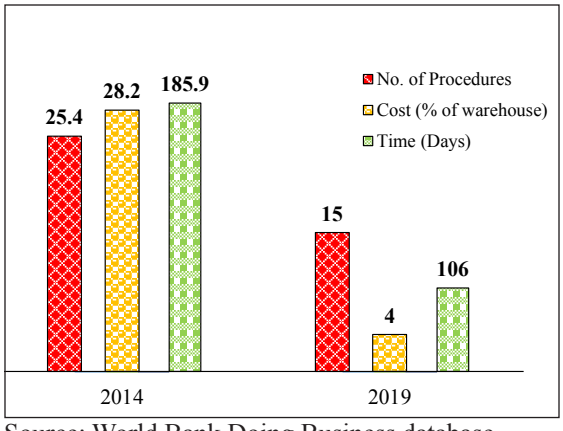
6.24 Nonetheless, it must be noted that India has considerably improved the process to obtain construction permits over the last five years. Compared to 2014, when it took approximately 186 days and 28.2 per cent of the warehouse cost; in 2019 it takes 98-113.5 days and 2.8-5.4 per cent of the warehouse cost (Figure 1).

Table 8: Construction Permits - Delhi vs Hong Kong

DELHI, INIDA (RANK 27)	Days	Days	HONG KONG (RANK 1)
Submit online Common Application Form along with requisite building permit fees and drawings	0.5	45	Obtain approval by submitting applications to the One Stop Center
Request & obtain release of building sanction plans	30	1	Receive inspection by Building Dept. on foundation strata
Submit online notice of completion up to the plinth level and get inspection done	15.5	1	Request and receive inspection on the superstructure construction
Submit notice of completion, receive final inspection & obtain Fire NOC	2.5	1	Receive an audit inspection by the Building Department
Obtain completion/occupancy permit	30	1	Submit notification of project completion and relevant applications
Request water and sewer connection approval and inspection	35	18	Obtain relevant certificates through the One Stop Center
		1	Receive joint & final inspection of licensing authorities; Obtain Water & Sewerage connection
113.5 Days		**Time Taken**	**69 Days**
2.8		**Cost (% of Warehouse)**	**0.3**

Source: World Bank Doing Business Report, 2020.

Figure 1: Cost of Construction Permits in India



Source: World Bank Doing Business database.

ACHIEVING SCALE ACROSS BUSINESS

6.25 One issue that gets in the way of business efficiency in India is that of scale. Most of the manufacturing units in India have small capacities and consequently low manufacturing efficiencies which are a disadvantage in the global supply chain. Countries like Bangladesh, China, Vietnam are able to progress in the value chain by increasing their competitiveness in the international market by improving their delivery time and domestic production capacity.

6.26 Compared to Bangladesh, China, and Vietnam, which have more than 80 per cent of market value of exports by large enterprises, India has 80 per cent by small enterprises. Moreover, in India it can take 7-10 days to reach a port whereas in countries like China, Bangladesh and Vietnam it takes less than a day. Thus, the Indian supply chain ends up with a large number of small consignments clogging already inefficient logistics pathways. A comparison of turn-around time (i.e., order to deliver) is given in Table 9.

Table 9: Emerging Economies Comparison - Scale and Logistics

	Bangladesh	China	India	Vietnam
Scale of Operations	80% large enterprises	80% or more large enterprises	80% small enterprises	80% or more large enterprises
Turn Around Time (in Days) (from order to delivery)	50	31	63	46
Time Taken to reach port (in Days)	1	0.2	7-10	0.3

Source: High Level Advisory Group (HLAG) Report, 2019.

TRADING ACROSS BORDERS

6.27 The Trading Across Borders indicator records the time and cost associated with the logistical process of exporting and importing goods. Globally, transportation by ports is the most favored followed by railways and then roads, whereas in India it is the opposite.

6.28 Italy tops the EoDB rankings in Trading Across Borders. Table 10 tabulates its comparison with India. While India takes 60-68 and 88-82 hours in border and documentary compliance for exports and imports respectively, Italy takes only one hour for each. Moreover, the cost of compliance is zero in Italy. In India, it costs US$ 260-281 and US$ 360-373 for exports and imports respectively.

6.29 It must be noted that almost 70 per cent of the delays (both in exports and imports) occur on account of port or border handling processes which essentially pertain to procedural complexities (number and multiplicity of procedures required for trade), multiple documentations and involvement of multiple agencies for approvals and clearances. It is also observed that time delays and procedural inefficiencies end up pushing cost to trade.

6.30 While the government has already reduced procedural and documentation requirements considerably, increasing digitalization and seamlessly integrating multiple agencies onto a single digital platform can further reduce these procedural inefficiencies significantly and improve user experience substantially. The accompanying box discusses the Authorized Economic Operators scheme that is being used to smoothen the process for registered exporters/ importers.

Table 10: Trading across Borders- India vs Italy

INDIA (RANK 68)	Hours Delhi	Hours Mumbai	Hours	ITALY (RANK 1)
EXPORT 1: Border Compliance	54	50	0	**EXPORT** 1: Border Compliance
2: Documentary Compliance	6	18	1	2: Documentary Compliance
IMPORT 1: Border Compliance	70	60	0	**IMPORT** 1: Border Compliance
2: Documentary Compliance	18	22	1	2: Documentary Compliance
INDIA (RANK 68)	**Cost (US$) Delhi**	**Cost (US$) Mumbai**	**Cost (US$)**	**ITALY (RANK 1)**
EXPORT 1: Border Compliance	195	231	0	**EXPORT** 1: Border Compliance
2: Documentary Compliance	65	50	0	2: Documentary Compliance
IMPORT 1: Border Compliance	260	273	0	**IMPORT** 1: Border Compliance
2: Documentary Compliance	100	100	0	2: Documentary Compliance

Source: World Bank Doing Business Report, 2020.
Note: India numbers are for Delhi/Mumbai respectively, as these are the two centres covered by World Bank for India.

BOX 1: Authorised Economic Operators (AEO)

Authorised Economic Operator (AEO) is a programme under the aegis of the World Customs Organization (WCO) SAFE Framework of Standards to secure and facilitate Global Trade. The programme aims to enhance international supply chain security and facilitate movement of goods. AEO encompasses various players in the international supply chain. Under this programme, an entity engaged in international trade is approved by Customs as compliant with supply chain security standards and granted AEO status. An entity with an AEO status is considered a 'secure' trader and a reliable trading partner. AEO is a voluntary programme. It enables Indian Customs to enhance and streamline cargo security through close cooperation with the principle stakeholders of the international supply chain viz. importers, exporters, logistics providers, custodians or terminal operators, custom brokers and warehouse operators, who benefit from preferential treatment from customs authorities. Benefits include expedited clearance times, fewer examinations, improved security and communication between supply chain partners, and more. The Circular 33/2016 – Customs dated July 22, 2016 provides the statutory framework for the AEO programme.

There are three tiers of certification in the new AEO Programme for importers and exporters:

1. AEO T1 – Verified on the basis of document submission only.
2. AEO T2 – In addition to document verification, onsite verification is also done.
3. AEO T3 – For AEO T2 holders who have enjoyed the status for two years only on the basis of document verification and for AEO T2 holders who have not enjoyed the status continuously or have introduced major changes in business, the applicant is subjected to physical verification.

For logistics providers, custodians or terminal operators, custom brokers and warehouse operators there is only one tier:

AEO LO – Here onsite verification is done in addition to document verification.

Who is entitled for AEO Certification

Anyone involved in the international supply chain that undertakes Customs related activity in India can apply for AEO status irrespective of size of the business. These may include exporters, importers, logistic providers (e.g. carriers, airlines, freight forwarders, etc.), custodians or terminal operators, customs house agents and warehouse owners. Others who may qualify include port operators, authorized couriers, stevedores. The list is not exhaustive.

Eligibility

Any legal entity that undertakes Customs related work can apply for the AEO Programme if they fulfil the following conditions:

1. They have handled 25 Import or Export documents in last Financial Year.
2. They have had their business activity for last three Financial Year (can be waived in deserving cases).
3. The applicant must have been Financially Solvent for the last three financial years.
4. The applicant must not be issued a show cause notice involving 'fraud, forgery, outright smuggling, clandestine removal of excisable goods or cases where Service Tax has been collected from customers but not deposited to the Government during last three financial years.

An entity can apply for AEO-T1 certification online, by visiting: https://www.aeoindia.gov.in/. Table A lists the number of AEO compliant entities in India.

Table A: AEO Certified Entities in India as on January 17, 2019

AEO Tier	Number of AEO status holders
AEO T1	2,842
AEO T2	491
AEO T3	8
AEO LO	745
Total	**4,086**

Source: Central Board of Indirect Taxes and Customs (CBIC).

CASE STUDIES OF INDIA'S PERFORMANCE IN LOGISTICS IN SPECIFIC SEGMENTS

6.31 This section presents the results of case studies and industry surveys conducted in October-December 2019 by the '*Quality Council of India'* in order to understand the specific points in the supply-chain that experience inordinate delays and blockages.

I. Case Study of Exporting Apparels

6.32 This case study tracks consignments from an apparel factory in Delhi, which is a non-AEO (Box 1), that exports its products to Maine, U.S. via India's largest sea port Nhava Sheva in Maharashtra, India's largest sea port. Table 11 traces the logistics of the export consignment.

6.33 The study found that after the shipment leaves the factory gate in Delhi, it takes five days to reach Jawaharlal Nehru Port Trust (JNPT). However, six processes in Nhava Sheva can take up to 14 days, of which a day or two is spent just on 'Unloading' depending

on space availability at the port. Three days are then used up in 'Custom Clearance', another three days in 'Stuffing Containers' and up to five days are taken up by 'queue for entry into the ship'. This is partly due to insufficient port infrastructure to handle the inflow of containers, narrow roads and poor strength bearing capacity of the roads at the port.

Table 11: Tracing an Apparel Export Consignment from Delhi to Maine, United States

	Place	Action	Day	No. of Days
INDIA				
19 Days in India	Delhi	Shipment ready at factory	Day 1	
	Delhi Haryana Rajasthan Gujarat Maharashtra	Transport of shipment via truck/ train to JNPT	Day 1 – 5	5 days
	Nhava Sheva, Maharashtra	Shipment reaches JNPT	Day 5	Up to 14 days
		a) Unloading	Day 5/6	
		b) Custom clearance	Day 6/7 - 8	
		c) Stuffing in container	Day 8/9 - 12	
		d) Queue for entry into ship	Day 12/13 - 17	
		e) Handover to shipping line	Day 17/18	
		a) Departure of Ship	Day 18/19	
19 Days at High Seas	High seas	Ship traveling at seas	Day 18/19 – Day 38	19 days
UNITED STATES				
3 Days in U.S.	Houston, U.S.	Reaches port	Day 38	3 days
		Clears customs (considering all documentation is in place and inspections render safe results)	Day 38/39	
		Loading & Departure	Day 39	
	Maine, U.S.	Reaches buyer in US	Day 40/41	

Source: QCI Calculations.

However, much of the delay is due to the misalignment of processes that do not allow for "just in time" protocols. The uncertainty of time needed to clear each step means that exporters have to pad up the time spent waiting. This adds to the clogging of port space.

6.34 Once the ship leaves the port, the consignment travels for 19 days by sea, reaching Houston, U.S. on day 38. Here, Customs take at most a day's time to clear the consignment, provided all paper work and regulatory requirements are met. The consignment then reaches the buyer's warehouse in Maine within two days.

6.35 In short, of the total 41 days taken by the consignment from factory in Delhi to warehouse in Maine, 19 days were spent in India, 19 days at sea and roughly three days in the United States. There is obvious scope for improvement.

Table 12: Tracing a Carpet Export Consignment from Mirzapur to New Jersey

	Place	Action	Day	No. of Days
INDIA (AEO)				
13 Days in India	Mirzapur, U.P.	Shipment ready at factory	Day 1	1 day
	Mirzapur to Piyala, Haryana	Transport of shipment via truck to ICD Piyala	Day 1 – 3	2 days
	Piyala	Shipment reaches Piyala	Day 3	4 days
		Custom clearance	Day 3/4	
		Stuffing in container	Day 4-7	
		Departure to Mundra Sea Port by Train	Day 7	
	Rail Travel	Transport of shipment via train to Mundra	Day 7 – 10/11	3-4 days
	Mundra Sea Port (Gujarat)	Queue with the truck to enter the port	Day 11 (6-7 hours)	2 days
		Loading of vessel	Day 11-13	
		Departure of Ship	Day 13	
22 Days at High Seas	High seas	Ship traveling at seas	Day 13 – Day 35/36	22/23 days
UNITED STATES				
5 Days in U.S.	New York Sea Port	Reaches port	Day 36	4-5 days
		Clears customs (considering all documentation is in place and inspections render safe results)	Day 36-39	
	Road Travel	Transportation to New Jersey Warehouse	Day 39/40	
	New Jersey	Reaches warehouse	Day 40	

Source: QCI Calculations.

II. Case Study of Exporting Carpets

6.36 A similar exercise was done for a carpet manufacturer, who is an AEO, exporting products from Mirzapur in Uttar Pradesh to New Jersey in the U.S. (Table 12).

6.37 After the shipment leaves the factory in Mirzapur, it takes two days to reach the Inland Container Depot (ICD) in Piyala, Haryana. At the ICD, the consignment is cleared by Customs in a day's time. In the next three days the consignment is stuffed in containers and sent to Mundra.

6.38 It takes three to four days to transport the shipment via train to Mundra sea port. Another 6-7 hours are used up in queue to enter the port. The vessel is loaded in the next two days and the ship departs on day 13. The ship takes around 23 days to reach New York sea port on day 36. Here, Customs takes two-three days to clear the consignment, provided all paper work and regulatory requirements are met. In the next two days the consignment is transported to the warehouse in New Jersey.

6.39 To sum up, of the 40 days, 13 days are spent in India, another 22 days at sea and 4-5 days in the U.S. before the consignment reaches the final buyer in New Jersey. Although, being an AEO significantly reduces the number of days a shipment takes to depart from India (compared to the previous case), it still takes an inordinate amount of time within the country.

III. Case Study of Importing Carpets

6.40 Another way to understand the process flow of logistics is to look at it in reverse. This case study tracks the timelines involved while importing carpets from Milan, Italy to a warehouse in Beawar, Rajasthan (Table 13).

6.41 Once the shipment is ready at the factory gate in Milan, it takes only 10 Hours to transport the shipment to Naples, 773 kms away. Just two hours are spent in custom clearances and then it takes only an hour's time to load the ship. This means that the consignment spends less than a day from factory to ship. It is possible to do this because of well-oiled "just-in-time" processes. The ship then spends 23 days on high seas, reaching Mundra sea port in Gujarat on Day 24. The next six days are spent at Mundra port, of which, about two days are used up waiting outside the port for entry, followed by another two days in custom clearance and a queue of 6-7 hours to exit the port. Lastly, the shipment reaches its final destination- Beawar, Rajasthan on Day 31, including the two days of travel time by road. Thus, it takes 8 days in India to undergo border compliances and travel time before the consignment reaches the buyer.

6.42 To summarize, while it takes only one day in Italy to transport, and complete border compliance and documentation, India takes eight days to complete the import process (note that the importer for this study was an Authorised Economic Operator). Nonetheless, it is interesting to note that the imports process takes less time than the exports process.

6.43 The results of the case study approach, by definition, are limited by sample size, but the above results were cross verified by QCI by interacting with a wide cross section of importers and exporters in order to confirm that the collected data broadly fits their experience. The following were the outcomes (a) the inordinate delays in loading and customs processes in Indian sea-ports (b) the processes for imports, ironically, are better than those for exports (c) the large variance in process time means that exports are forced to account for the uncertainty by padding extra waiting time. This means that it is not good enough to simply improve the "average" without improving reliability.

6.44 It must be noted that the turnaround time of ships in India has been on a continuous decline, almost halving from 4.67 days in 2010-11 to 2.48 days in 2018-19[2]. This shows that achieving significant efficiency gains in the case of sea ports is possible. Although, a full case study of Chennai port was not done, partial data suggests that its processes are smoother than those of the ports discussed above.

Table 13: Tracing a Carpet Import consignment from Milan to Beawar

	Place	Action		Time	No. of Days/ Hours
ITALY					
13 Hours in Italy	Milan	Shipment ready at factory in Milan			
	Milan Bologna San Marino Rome Naples (773 km)	Transport of shipment to Naples		Day 1	10 Hours
	Naples	Customs clearance Documentary compliances		Day 1	2 Hours
		Loading Departure of ship		Day 1	1 Hour
23 Days at High Seas	High seas	Ship traveling at seas		Day 2-24	23 days
INDIA (AEO)					
8 days in India	Mundra Sea Port (Gujarat)	Shipment reaches Mundra Port at Sea Shore		Day 24	6 days
		Vessel waiting time outside the port before entry		Day 24-26	
		Unloading shipment at port		Day 26	
		Custom Clearance	Handling shipment at port	Day 27	
			Clearing security inspections conducted by port authorities	Day 28	
		Queue with the truck to exit port		Day 29 (6-7 Hours)	
	Road Travel	Transport of shipment via truck to Beawar Rajasthan		Day 29	2 days
	Beawar (Rajasthan)	Shipment reaches factory at Beawar		Day 31	

Source: QCI Calculations.

[2] See Economic Survey 2019-20 Chapter 9, Volume II.

IV. Case Study of Electronics

6.45 Although, the processes at sea-ports remain very inefficient, those at airports have dramatically improved. Indeed, a case study of an electronics company based in Bangaluru, which is currently AEO-T2 certified, found that Indian systems can be world class. It also provides some insight into how the business environment has changed for some segments after the implementation of AEO policy in 2016.

6.46 Tables 14 (a) and (b) compare the time taken for exporting electronics from Bangaluru to Hong Kong, with and without AEO registration. Once the shipment is ready at the factory in Bangaluru, it takes three hours to transport it to Kempegowda Airport. At the airport, it takes one hour to enter exports terminal. So far, there is no difference between AEO and non-AEO. However, total time spent at the airport for Customs and examination process is just two hours for AEO-T2 operators. Non-AEO operators take 6 hours.

6.47 In fact, after AEO implementation, the total time spent in India (six hours) is less than that spent in Hong Kong (seven hours). This shows, with the help of right policies, India can achieve international standards, or even better them.

Table 14 (a): Tracing Electronics Export consignment from Bangaluru to Hong Kong (Non AEO)

	Place	Action	Time
INDIA- (NON AEO)			
10 Hours in India	Bangaluru, Karnataka	Shipment ready at factory	
	Warehouse to Kempegowda Airport, Bangaluru Distance – 70Km	Transport of shipment via truck to Airport	3 Hours
	Shipment reaches Airport	Export Terminal Entry	1 Hour
		Customs Registration	2 Hours
		Examination & Let Export of Shipping Bill	4 Hours
5 Hour Flight	Air travel		5 Hours
HONG KONG			
7 Hours in Hong Kong	Hong Kong	Reaches Hong Kong Airport	
	Customs Clearance	Inspection & Pass out Order	4 Hours
	Road Travel	Transportation from airport to warehouse	3 Hours

Source: Survey Calculations.

Table 14 (b): Tracing Electronics Export consignment from Bangaluru to Hong Kong (AEO)

	Place	Action	Time
INDIA (AEO T2)			
6 Hours in India	Bangaluru, Karnataka	Shipment ready at factory	
	Warehouse to Kempegowda Airport, Bangaluru Distance – 70Km	Transport of shipment via truck to Airport	3 Hours
	Shipment reaches Airport	Export Terminal Entry	1 Hour
		Customs Registration	1 Hour
		Examination & Let Export of Shipping Bill	1 Hour
5 Hour Flight	Air travel		5 Hours
HONG KONG			
7 Hours in Hong Kong	Hong Kong	Reaches Hong Kong Airport	
	Customs Clearance	Inspection & Pass out Order	4 Hours
	Road Travel	Transportation from airport to warehouse	3 Hours

Source: Survey Calculations.

6.48 Again, the process flow was studied in reverse. Tables 15 (a) and (b) compare the time taken in importing electronics from China to Bangaluru, with and without AEO. After the shipment is ready in factory at Shenzhen, it takes two days to transport it to Hong Kong airport.

6.49 At the airport, an hour is spent on export declaration, two hours on customs clearance and another four hours in loading the aircraft at the terminal. After a five hour air travel, the consignment reaches Kempegowda Airport, Bangaluru. It then takes 14 and 11 hours respectively for a Non-AEO and AEO consignment to reach the warehouse in Bangaluru.

6.50 The case study suggests the following conclusions: (a) the processes in Indian airports is vastly superior to those at sea ports for both imports and exports; (b) AEO did significantly improve the process but it is reasonably smooth even for non-AEO operators importing/ exporting electronics (c) Indian processes can beat international standards.

Table 15 (a): Tracing Electronics Import consignment from China to Bangaluru (Non AEO)

	Place	Action	Time
CHINA			
2 days & 7 Hours in China	Shenzhen, China	Shipment ready at factory	
	From warehouse in Shenzhen to Hong Kong Airport	Transport of shipment via truck to Airport	2 days
	Shipment reaches Airport	Export Declaration	1 Hour
		Customs Clearance	2 Hours
		Acceptance to flight at Terminal	4 Hours
5 Hour Flight	Air travel		5 Hours
INDIA- (NON AEO)			
14 Hours in India	Shipment reaches Airport in Bangaluru	Bonding/ Manifest of Cargo	3 Hours
		Customs Clearance	6 Hours
		Cargo Delivery process	1 Hours
	Road Travel	Transportation from airport to warehouse	4 Hours

Source: Survey Calculations.

Table 15 (b): Tracing Electronics Import consignment from China to Bangaluru (AEO)

	Place	Action	Time
CHINA			
2 days & 7 Hours in China	Shenzhen, China	Shipment ready at factory	
	From warehouse in Shenzhen to Hong Kong Airport	Transport of shipment via truck to Airport	2 days
	Shipment reaches Airport	Export Declaration	1 Hour
		Customs Clearance	2 Hours
		Acceptance to flight at Terminal	4 Hours
5 Hour Flight	Air travel		5 Hours
INDIA- (AEO T2)			
11 Hours in India	Shipment reaches Airport in Bangaluru	Bonding/ Manifest of Cargo	3 Hours
		Customs Clearance	3 Hours
		Cargo Delivery process	1 Hours
	Road Travel	Transportation from airport to warehouse	4 Hours

Source: Survey Calculations.

CONCLUSION

6.51 This chapter looked at the Ease of Doing Business in India from various aspects. First, it compared India's performance on World Bank's EoDB rankings with its peers as well as the best-in-class. The analysis focused on the four parameters where India lags behind *viz*- Starting Business Registering Property, Paying Taxes, and Enforcing Contracts. The findings clearly show the large scope for improvement in all categories. While it takes approximately four years to enforce a contract in India; New Zealand, Indonesia, China and Brazil require 0.6, 1.2, 1.4 and 2.2 years respectively. With a rank of 163 out of 190 nations in Enforcing Contracts, only a few countries like Afghanistan, Mozambique, and Zimbabwe perform worse than India. Similar comparisons have been shown for other categories.

6.52 Secondly, the chapter throws light on the maze of laws, rules and regulations in manufacturing and services (particularly restaurants) sector. While China and Singapore require only four licenses to open a restaurant, India requires several more mandatory licenses and approvals: Delhi requires 26, Bangaluru 36, and Mumbai requires 22. In addition, Delhi requires a 'Police Eating House License' from Delhi Police that asks for 45 documents compared to just 19 needed to buy a gun. The scope for streamlining is clear.

6.53 Lastly, a series of case studies and industry surveys are used to analyse the time taken at each stage of the supply chain for specific merchandise items to travel from factory gate to the warehouse of the foreign customer. These confirmed the following (a) the inordinate delays in loading and customs processes in Indian sea-ports (b) the processes for imports, ironically, are better than those for exports (c) the large variance in process time means that exports are forced to account for the uncertainty by padding extra waiting time. In contrast, however, the imports and exports of electronics through Bengaluru airport was found to be world class. The processes of Indian airports should be adapted and replicated in sea-ports.

CHAPTER AT A GLANCE

- India has jumped up 79 positions in World Bank's Doing Business rankings, improving from 142 in 2014 to 63 in 2019. However, it continues to trail in parameters such as Ease of Starting Business (rank 136), Registering Property (rank 154), Paying Taxes (rank 115), and Enforcing Contracts (rank 163).
- Enforcing a contract in India takes on average 1,445 days in India compared to just 216 days in New Zealand, and 496 days in China. Paying taxes takes up more than 250 hours in India compared to 140 hours in New Zealand, 138 in China and 191 in Indonesia. These parameters provide a measure of the scope for improvement.
- Setting up and operating a services or manufacturing business in India faces a maze of laws, rules and regulations. Many of these are local requirements, such as burdensome documentation for police clearance to open a restaurant. This must be cleaned up and rationalized one segment at a time.

- Case studies of merchandise exports found that logistics is inordinately inefficient in Indian sea-ports. The process flow for imports, ironically, is more efficient than that for exports. Although one needs to be careful to directly generalize from specific case studies, it is clear that customs clearance, ground handling and loading in sea ports take days for what can be done in hours. A case study of electronics exports and imports through Bengaluru airport illustrates how Indian logistical processes can be world class.
- It must be noted that the turnaround time of ships in India has been on a continuous decline, almost halving from 4.67 days in 2010-11 to 2.48 days in 2018-19. This shows that achieving significant efficiency gains in the case of sea ports is possible. Although, a full case study of Chennai port was not done, partial data suggests that its processes are smoother than those of the ports discussed above.
- The streamlining of the logistics process at sea-ports requires close coordination between the Logistics division of the Ministry of Commerce and Industry, the Central Board of Indirect Taxes and Customs, Ministry of Shipping and the different port authorities. The simplification of the Ease of Doing Business landscape of individual sectors such as tourism or manufacturing, however, requires a more targeted approach that maps out the regulatory and process bottle-necks for each segment. Once the process map has been done, the correction can be done at the appropriate level of government - central, state or municipal.

REFERENCES

World Bank. "Doing Business." The World Bank Group. (Various Editions). https://www.doingbusiness.org/en/doingbusiness

Department of Commerce. "Logistics Ease Across Different States (LEADS Index)." New Delhi, 2019. https://commerce.gov.in/writereaddata/UploadedFile/MOC_637051086790146385_LEAD_Report.pdf

Department of Commerce. "High-Level Advisory Group (HLAG)." New Delhi, 2019. https://commerce.gov.in/writereaddata/uploadedfile/MOC_637084607407371826_HLAG%20Report%20.pdf

Niti Aayog. "Ease of Doing Business: An Enterprise Survey of Indian States." New Delhi, 2017. https://niti.gov.in/writereaddata/files/document_publication/EoDB_Single.pdf

Golden Jubilee of Bank Nationalisation: Taking Stock

07
CHAPTER

"It is not by augmenting the capital of the country, but by rendering a greater part of that capital active and productive than would otherwise be so, that the most judicious operations of banking can increase the industry of the country."

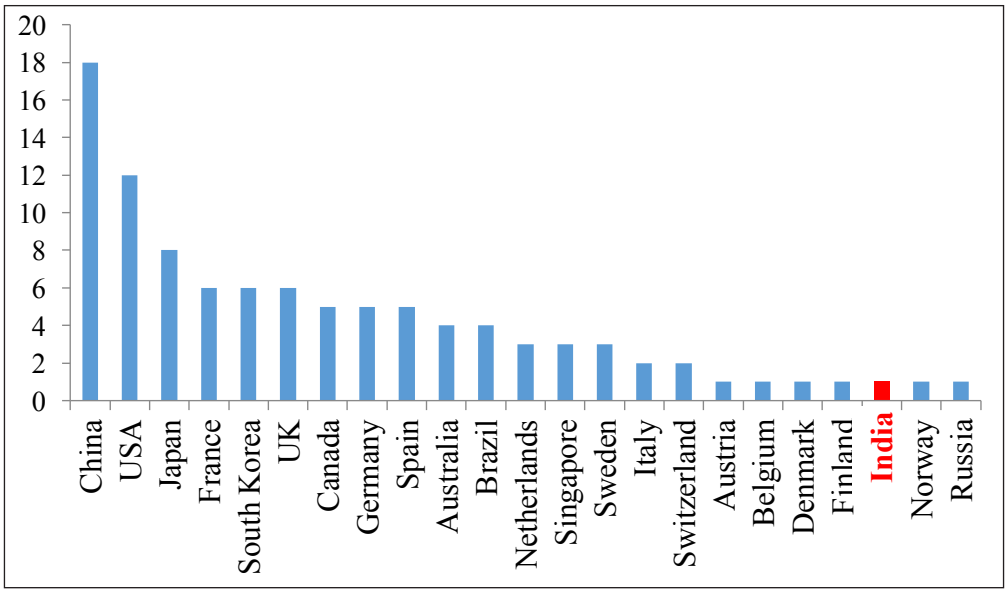
– Adam Smith

In 2019, India completed the 50th anniversary of bank nationalization. It is, therefore, apt to celebrate the accomplishments of the 3,89,956 officers, 2,95,380 clerks, and 1,21,647 sub-staff who work in Public Sector Banks (PSBs). At the same time, an objective assessment of PSBs is apposite. Since 1969, India has grown significantly to become the 5th largest economy in the world. Yet, India's banking sector is disproportionately under-developed given the size of its economy. For instance, India has only one bank in the global top 100 – same as countries that are a fraction of its size: Finland (about 1/11th), Denmark (1/8th), Norway (1/7th), Austria (about 1/7th), and Belgium (about 1/6th). Countries like Sweden (1/6th) and Singapore (1/8th) have thrice the number of global banks. A large economy needs an efficient banking sector to support its growth. Historically, in the last 50 years, the top-five economies have always been ably supported by their banks. Should India's banks play a role proportionate to its economic size, India should have six banks in the top 100. As PSBs account for 70 per cent of the market share in Indian banking, the onus of supporting the Indian economy and fostering its economic development falls on them. Yet, on every performance parameter, PSBs are inefficient compared to their peer groups. Previously, the Narasimhan Committee (1991, 1997), Rajan Committee (2007) and P J Nayak Committee (2014) have provided several suggestions to enhance the efficiency of PSBs. The survey suggests use of FinTech (Financial Technology) across all banking functions and employee stock ownership across all levels to enhance efficiencies in PSBs. These will make PSBs more efficient so that they are able to adeptly support the nation in its march towards being a $5 trillion economy. All these recommendations need to be seriously considered and a definite, time-bound plan of action drawn up. With the cleaning up of the banking system and the necessary legal framework such as the Insolvency and Bankruptcy Code (IBC), the banking system must focus on scaling up efficiently to support the economy.

7.1 In 2019, India completed the 50th anniversary of the bank nationalization programme undertaken in 1969. It is, therefore, apt to celebrate the accomplishments of the 389,956 officers, 295,380 clerks, and 121,647 sub-staff who work in public sector banks (PSBs). As PSBs account for 70 per cent of the market share in banking, an assessment of the state of India's public sector banks (PSBs) is apposite. Even though PSBs are the dominant players in the banking sector, they lag considerably in performance metrics when compared to their peers.

7.2 Figure 1 shows that India's banks are disproportionately small compared to the size of its economy. In 2019, when Indian economy is the fifth largest in the world, our highest ranked bank—State Bank of India—is ranked a lowly 55th in the world and is the only bank to be ranked in the Global top 100. India has only one bank in the global top 100 and gets grouped on this characteristic with countries that are a fraction of its size: Finland (about 1/11th), Denmark (1/8th), Norway (1/7th), Austria (about 1/7th), and Belgium (about 1/6th). Countries like Sweden and Singapore, which are respectively about 1/6th and 1/8th the economic size of India, have thrice the number of global banks as India does.

Figure 1: Number of banks in the Global Top 100 (2019)



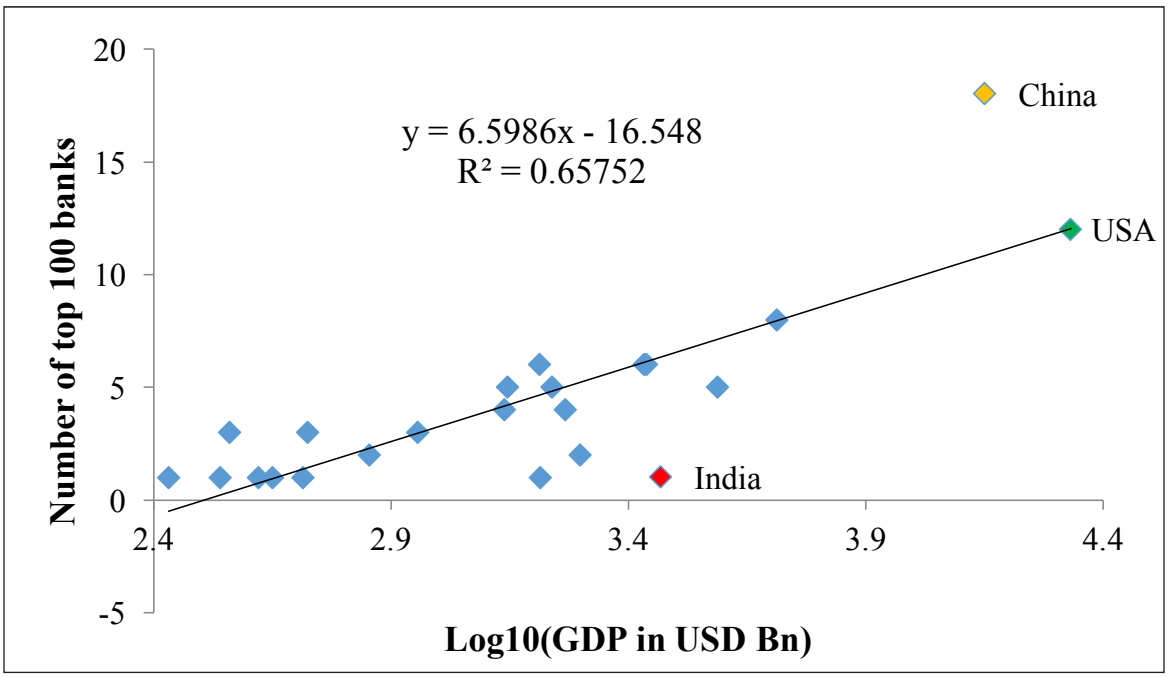
Source: Wikipedia

7.3 Figure 2 clearly highlights this disproportionate dwarfism of the Indian banks when compared to the size of the Indian economy. A fit of the number of banks in the global top 100 and the size of the economy shows clearly that India is a significant outlier on the negative side. All the largest economies have proportionately large banks with China being an outlier on the positive side with 18 banks in the global top 100. Figure 3, similarly, shows India as an outlier when the penetration of credit to the private sector is plotted against the GDP per capita of a country; as credit in India is provided primarily by banks, this measure proxies the penetration of credit by banks in India.

[1] Source: RBI data

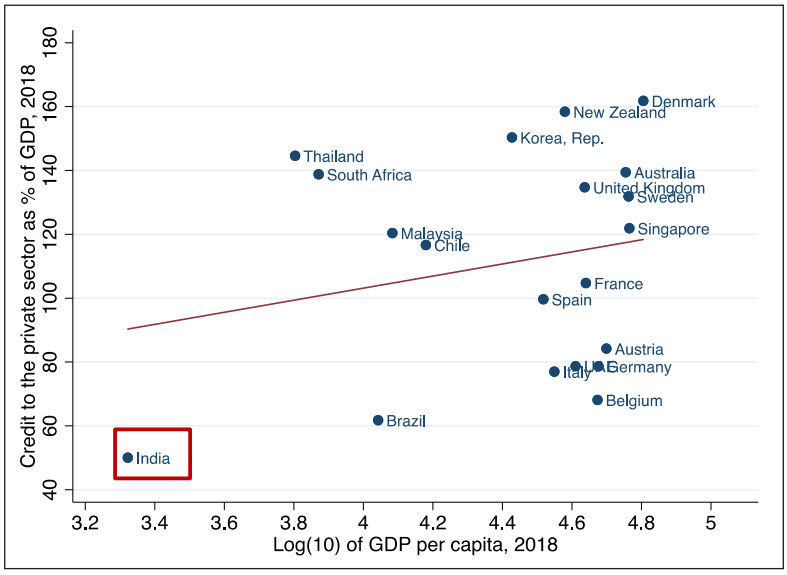
Figure 4 shows that the disproportionately lower penetration is not just because of our greater population. While greater population does lower penetration of credit, such penetration is disproportionately lower in India when compared to our population. In sum, Figures 1-4 clearly show the dwarfism of our banking sector when compared to the country's characteristics: size of the economy (GDP), development of the economy (GDP per capita) and population.

Figure 2: Country's GDP and number of banks in the Global Top 100



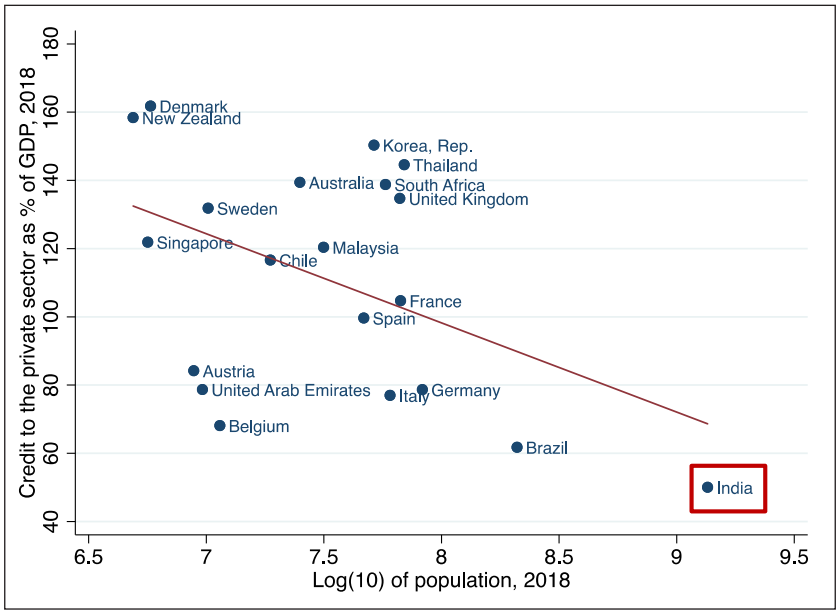
Source: Wikipedia for banks in the top 100 and GDP 2019 estimates from IMF.

Figure 3: Country's GDP per capita and penetration of credit in the country



Source: World Bank WDI Database.

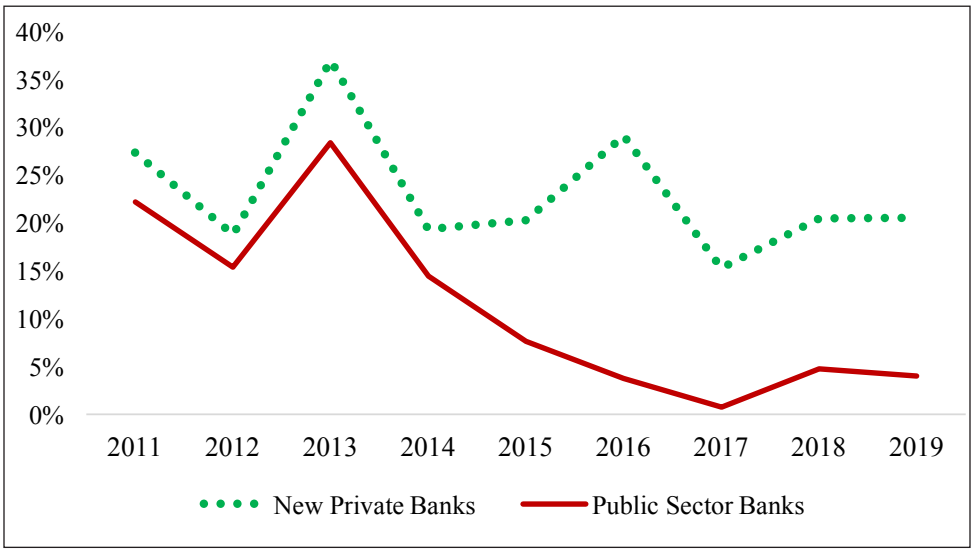
Figure 4: Country's population and penetration of credit in the country



Source: World Bank WDI database

7.4 A large economy needs an efficient banking sector to support its growth. Yet, Figure 5 shows that credit growth among PSBs has declined significantly since 2013 and has also been anaemic since 2016. Even as NPBs grew credit at between 15 per cent and 29 per cent per year between 2010 and 2019, PSB credit growth essentially stalled to the single digits after 2014, ending up at a 4.03 per cent growth in 2019 compared 15 per cent to 28 per cent from 2010 to 2013. As Section 2 in Chapter 1 of Volume 2 of this Survey clearly demonstrates, anaemic credit growth has impacted economic growth. This needs to be remedied because the economy needs PSBs to perform to their fullest potential and support economic growth rather than pullback lending, which has a detrimental effect on growth and welfare.

Figure 5: Bank Credit Growth (per cent)



Source: RBI Data and Survey Calculations

7.5 Historically, in the last 50 years, the top-five economies have always been ably supported by their banks. The support of the U.S. Banking system in making the U.S. an economic superpower is well documented. Similarly, in the eighties during the heydays of the Japanese economy, Japan had 15 of the top 25 largest banks then. In recent times, as China has emerged as an economic superpower, it has been ably supported by its banks—the top four largest banks globally are all Chinese banks. The largest bank in the world—Industrial and Commercial Bank of China—is nearly two times as big as the 5th or 6th largest bank, which are Japanese and American banks respectively. Using the above relationship, we estimate that if Indian banks were proportionately large in relation to the size of the Indian economy, we should have at least six banks in the global top 100. Similarly, India becoming a $ 5 trillion economy will require at least eight Indian banks to be large enough to belong in the top 100 globally. The state of the banking sector in India, therefore, needs urgent attention.

7.6 As PSBs account for 70 per cent of the market share in Indian banking, the onus of supporting the Indian economy and fostering its economic development falls on them. However, in 2019, PSBs' collective loss—largely due to bad loans—amounted to over ₹ 66,000 crores, an amount that could nearly double the nation's budgetary allocation for education. PSBs account for 85 per cent of reported bank frauds while their gross non-performing assets (NPAs) equal ₹ 7.4 lakh crores which is more than 150 per cent of the total infrastructure spend in 2019. Estimate of return on equity in 2019 highlights that every rupee of taxpayer money invested in PSBs as equity by the Government loses 23 paise. The market-to-book ratio, which indicates the quality of a bank's governance, is 0.8 as on 20th January, 2020 for PSBs while that of the average NPB is close to 4. To enable PSBs to become efficient and thereby catalyse the banking sector and stimulate economic growth, structural solutions are necessary.

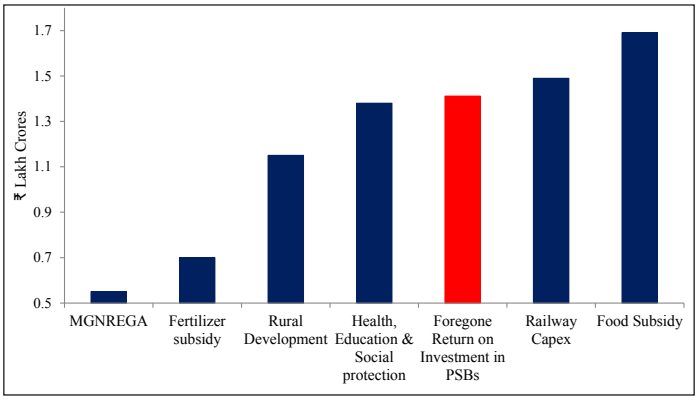
7.7 Over ₹ 4,30,000 crores of taxpayer money is invested as Government's equity in PSBs. In 2019, every rupee of taxpayer money invested in PSBs, on average, lost 23 paise. In contrast, every rupee of investor money invested in "New Private Banks" (NPBs)—banks licensed after India's 1991 liberalization—on average gained 9.6 paise. As PSBs and NPBs operate in the same domestic market, there is a case for enhancing the efficiency of PSBs.

7.8 To understand the scale of inefficiencies in PSBs, we estimate the potential gain only from changes in the return on the taxpayer's investment in PSBs. The return earned by an investor in an average NPB represents the benchmark that must be employed to estimate the losses that the taxpayer bears from her investment in PSBs. Using this benchmark, Figure 6 shows that the foregone return on the taxpayer's investment in PSBs must rank as one of the largest subsidies as the foregone amount of over ₹ 1.4 lakh crores compares similarly to the amount provided for the food subsidy.

7.9 Another way to understand the scale of inefficiencies is to ask the following question: What is the overall value that the taxpayer derives from her investment in PSBs? For this purpose, we use the ratio of stock market-to-book value of PSBs on average vis-à-vis that of new private sector banks (NPBs). As on 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 ₹ 3.70 i.e., more than five times as much value as that of a rupee invested in PSBs. This leads to the natural question: What if the market-to-book ratio of each PSB doubled, which envisages an extremely modest and unambitious increase, as the average PSB will still generate about one-third the value

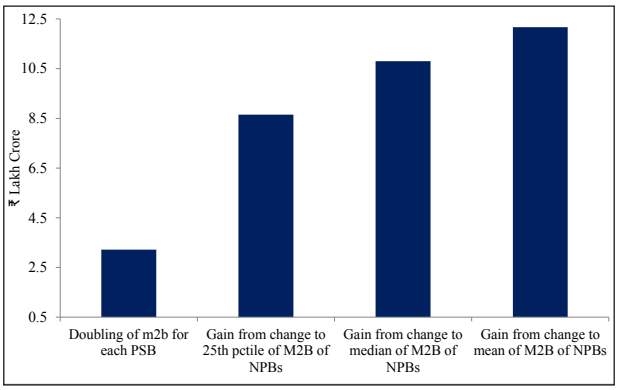
that a NPB generates on average? Figure 7 shows that the gain would be ₹ 5.2 lakh crores, an amount that is about five times the budgeted estimate for disinvestment for 2019 (₹ 1.05 lakh crores). A more realistic, but not desperately modest, scenario would be to assume that the market-to-book ratio of each PSB becomes equal to that of the second worst performing NPB; this is a realistic scenario as the worst performing NPB has a market-to-book ratio that is greater than the average for PSBs. Thus, we assume here that the taxpayer investment in each PSB would at least equal the market-to-book ratio of the NPBs that are at the bottom of their heap. This change would gain the Government about ₹9.1 lakh crores, which is more than about 8.5 times budgeted estimate for disinvestment for 2019. A change in the market-to-book ratio of each PSB to the median for the NPBs would gain the Government ₹ 10.2 lakh crores, which is over nine times the disinvestment target for 2019. Finally, a change in the market-to-book ratio of each PSB to the median for the NPBs would gain the Government ₹ 11.8 lakh crores, which is about 11 times the disinvestment target for 2019. As argued above, the primary difference between PSBs and NPBs stems from the difference in efficiencies and all the consequent differences that result from the same. This scenario analysis clearly suggests that the costs stemming from inefficiency of PSBs are enormous.

Figure 6: Comparison of the foregone return on taxpayer money investment in PSBs with large subsidy heads (2019)



Source: Budget documents, RBI Data and Survey Calculations

Figure 7: Potential gains to the taxpayer from enhanced efficiency in PSBs



Source: Survey Calculations
Note: M2B denotes the market-to-book ratio of a listed bank

7.10 India needs to recognise that the fulfilment of social goals can happen at scale through financial intermediation. The exponential growth of microfinance and its impact illustrates this point (see Box 1). Also, as is clarified later, highlighting the odd weakness in other business models – NPBs or in microfinance institutions (MFIs) – to make the case for continuing status quo in PSBs suffers from the fallacy of an apples-to-oranges comparison. As with any economic activity, heterogeneity in performance is inevitable. Just as there is a wide variation within PSBs in their performance with some PSBs performing better than others, similarly, there has to be some variation in the performance of NPBs and MFIs. However, to compare the performance of the average PSB with either the best performing NPB/MFI or the worst performing one is incorrect as that mixes up two statistical measures – averages and outliers – and leads to an apples-to-oranges comparison. In sum, the case for enabling efficiencies in PSBs is compelling.

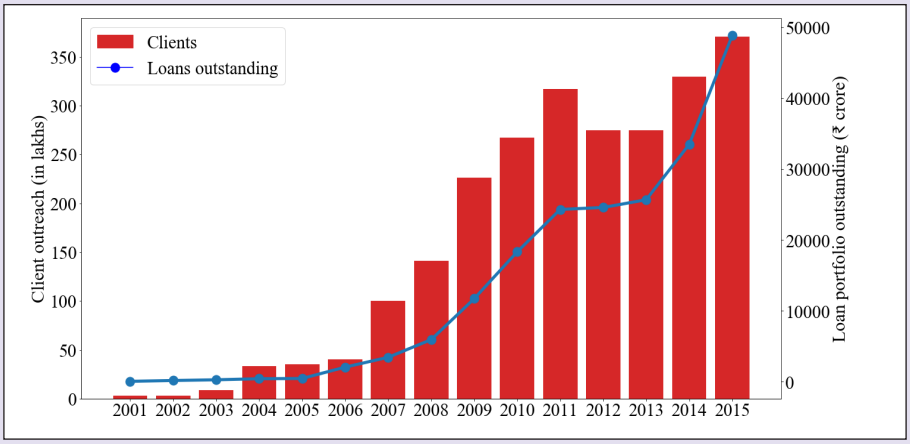
7.11 India is at a critical inflection point in her growth trajectory due to a unique confluence of factors, which (i) a positive demographic dividend; (ii) a modern digital infrastructure supported by the JAM "trinity" of near-100 per cent financial inclusion, a biometrics-based unique identity system, and a mobile network structure, and (iii) a de novo GST network with uniform, electronic indirect taxation system across India. These investments set the stage for a modern economy in which tens of crores of individuals and businesses are entering the formal financial system.

7.12 Given India's demographics and the growth opportunities on hand, we need a thriving banking sector now. A vibrant banking system can support and unleash a multiplier effect and permanently alter India's growth trajectory in a positive way. Conversely, inefficient PSBs can severely handicap the country's ability to exploit the unique opportunities she can utilize today. The result could be a generational setback to the country's economic growth. As mentioned earlier, no country has been a dominating global economy without the support of an efficient banking system. So for India to march in its goal of becoming a $5 trillion economy, PSBs—the dominant banks in our banking system—need to become efficient.

Box 1: Financial intermediation in the private sector for social impact: The case of microfinance

The microfinance sector, especially given its transformation since 2000, provides a good illustration of how social goals can be achieved at scale using business models that are different from that of PSBs. Most microfinance institutions (MFIs) started as not-for-profit institutions. Post 2000, while their objective remained poverty alleviation via inclusive growth and financial inclusion, MFIs moved from purely pursuing social goals to the double bottom-line approach of achieving social and financial returns. The emphasis on social impact at the "bottom of the pyramid" combined with good financial returns of some of the leading MFIs, brought many mainstream commercial entities into the sector. For instance, some banks partnered with MFIs by lending to MFIs for on-lending the money to this segment and thereby fulfil their priority lending obligations. The United Nation's declaration of Microfinance year in 2005 highlighted the role of MFIs in poverty alleviation. Some MFIs have transformed themselves into banks as well. Figure A shows the exponential growth in the impact that MFIs have had since 2000. As of 2016, 97 per cent of the borrowers were women with SC/ST and minorities accounting for around 30 per cent and 29 per cent of the borrowers. This shows that the loans given by these MFIs primarily cater to the marginal sections of the society.

Figure A: Exponential growth in customer reach by MFIs



Source: The Bharat Microfinance Report 2012 and 2015

BANKING STRUCTURE: NATIONALIZATION TO TODAY

7.13 Banking in India dates back to thousands of years. Several of India's ancient texts including those in the Vedic period mention bank lending functions. The modern banking system in India has its roots in the colonial era starting in the 1800s. India's public sector banks (PSBs) are essentially legacy banks from the colonial period that were subsequently nationalized. For example, India's largest PSB which is currently the 55th largest bank globally, State Bank of India (SBI), was founded as Bank of Calcutta in 1806, took the name Imperial Bank of India in 1921 and became state-owned in 1955. The remaining PSBs in India were formed through two waves of nationalizations, one in 1969 and the other in 1980. After the 1980 nationalization, PSBs had a 91 per cent share in the national banking market with the remaining 9 per cent held by "old private banks" (OPBs) that were not nationalized.

7.14 The market structure of the banking sector has evolved in the 50 years since the 1969 nationalization. As of March 2019, PSBs had ₹ 80 lakh crore in deposits, held ₹ 20 lakh crore in government bonds, and made loans and advances of ₹ 58 lakh crore, representing between 65 per cent and 70 per cent of the aggregates for all scheduled commercial banks operating in India.[2] They also hold about ₹ 20 lakh crore of the government debt, a large part of it driven by the requirements for a minimum "statutory liquidity" ratio. PSBs thus continue to have a significant footprint today albeit with a market share that is less than the 91 per cent share after the 1980 nationalization. The decline in PSB market share has been largely absorbed by "new private banks" (NPBs), which were licensed in the early 1990s after a liberalization of licensing rules that earlier regulated bank entry.

7.15 PSBs, OPBs, and NPBs are currently subject to similar banking regulations on virtually all aspects of their functioning including branching and priority sector lending. The key difference between the state-owned PSBs and private banks is that PSBs enjoy less strategic and operating freedom

[2] Aggregate banking statistics are from the Database on the Indian Economy (DBIE) maintained by the Reserve Bank of India. See https://dbie.rbi.org.in/

because of majority government ownership. The government exercises significant control over all aspects of PSB operations ranging from policies on recruitment and pay to investments and financing and bank governance including board and top management appointments. The majority ownership of the government and its writ on bank functioning also results in an implicit promise of the bailout of bank liabilities which is an implicit cost to the taxpayer. The majority ownership by the government also subjects PSB officers to scrutiny of their decisions by the central vigilance commission and the comptroller auditor general. With no real restrictions on what can be investigated and under what circumstances, officers of state-run banks are wary of taking risks in lending or in renegotiating bad debt, due to fears of harassment under the veil of vigilance investigations.

BENEFITS OF NATIONALIZATION

7.16 What did nationalization achieve? The allocations of banking resources to rural areas, agriculture, and priority sectors increased. Consider some of the raw statistics in the first decade after the 1969 nationalization. The number of rural bank branches increased ten-fold from about 1,443 in 1969 to 15,105 in 1980 compared to a two-fold increase in urban and semi-urban areas from 5,248 to 13,300 branches. Credit to rural areas increased from ₹ 115 crore to ₹ 3,000 crore, a twenty-fold increase and deposits in rural areas increased from ₹ 306 crore to ₹ 5,939 crore, again a twenty-fold increase. Between 1969 and 1980, credit to agriculture expanded forty-fold from ₹ 67 crore to ₹ 2,767 crore, reaching 13 per cent of GDP from a starting point of 2 per cent. This growth represents a significant correction to the undersupply of credit to farmers that drove nationalization. Both rural bank deposit mobilization and rural credit increased significantly after the 1969 nationalization.

7.17 However, some caution is necessary in interpreting the above trends as being entirely caused by nationalisation. A key confounder in such an interpretation is the role played by other interventions around bank nationalization. For instance, the government initiated a "green revolution" between 1967 and 1977. In addition, multiple anti-poverty programmes mark India's 4th and 5th five-year plans that bookend its nationalization. Confounding effects are introduced by the policies pursued by RBI after nationalization. Its directed lending programmes set lending targets for priority sectors, using a complex mix of pricing formulas that determined the rates of interest to be charged by banks on different types of credit, in styles reminiscent of central planning rather than market economies. RBI used both formal means and moral suasion to persuade banks to achieve the targets it set. These tools carried special force given that banks were essentially operating in a marketplace sheltered from entry.

Box 2: Research based evidence on the impact of Nationalisation

Conclusions about what nationalisation has achieved must consider the counter-factual situation of what could have been achieved had there been no nationalization. The benefits of nationalization can only be estimated using this counterfactual. There have been some careful studies that have looked at the impact of bank nationalization using this careful lens. The findings are mixed.

Burgess and Pande (2005) study the RBI's 4:1 formula where a bank was required to open 4 rural branches to obtain a license to open an urban branch between years 1977 and 1991. They find that the

policy led to significant reduction in poverty in financially less developed states. However, Kochar (2005) argues that integrated rural development program (IRDP), the Government's flagship poverty alleviation program, was actively implemented during this period with greater intensity in financially less developed states. Therefore, it is almost impossible to conclude that government bank branch expansion caused reduction in poverty. Panagariya (2006) also rejects the findings in Burgess and Pande (2005) by arguing that the branch expansion program of similar intensity existed even before nationalization and hence the 1977-1991 period is not special in terms of branch expansion. In other words, differential impact on poverty seen during 1977-1991 cannot be attributed to nationalization.

Finally, Cole (2009) carefully examines the impact of the second wave of bank nationalization undertaken in the year 1980. He exploits the fact that banks above certain threshold size were nationalized and compares regions having higher proportion of banks that marginally crossed the nationalization threshold and regions having higher proportion of banks that narrowly missed the threshold. The study finds no significant benefit of nationalization on the real economy. In fact, he shows that employment in trade and services declines and the quality of financial intermediation deteriorated. There was increase only in the quantity of credit.

Over and above these studies, we also know that despite nationalization a significant portion of the poor remained unbanked till 2014. Financial inclusion, in large part, happened in August 2014 through the Pradhan Mantri Jan Dhan Yojana (PMJDY), the first week of which saw more than 18 million bank accounts—a record in the Guinness Book of World Records.

THE WEAKENING OF PUBLIC SECTOR BANKS

7.18 The 2019 performance statistics concerning PSBs are sobering. In 2019 public sector banks reported gross and net NPAs of ₹ 7.4 lakh crore and ₹ 4.4 lakh crore respectively, amounting to about 80 per cent of the NPAs of India's banking system. The gross NPAs of PSBs amount to a significant 11.59 per cent of their gross advances, although a slightly encouraging trend is that the NPA ratio is below the 14.58 per cent ratio in 2018, raising hopes that the non-performing asset problem has peaked and is now coming down. Moreover, in 2019, PSBs suffered losses of ₹ 661 billion compared to profits of ₹ 421 billion of other scheduled commercial banks or profits of ₹390 billion of the NPBs. Besides the NPAs leading to losses, frauds are another source of concern in PSBs. The Reserve Bank of India (RBI)'s supervisory returns reveal that PSBs account for 92.9 per cent of the 5,835 cases of fraud and 85 per cent of the fraud amounts of about ₹ 41,000 crore reported in 2017-2018.[3] Despite the past accomplishments of PSBs, of which plenty are noted later in this chapter, PSBs are clearly not efficient today.

Comparing averages

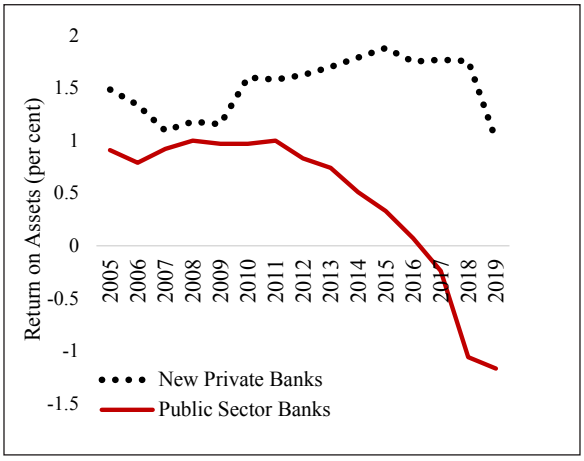
7.19 Trends over time that contrast PSBs and NPBs in a "difference-in-difference" sense reveal that the PSB weaknesses did not develop suddenly. Figure 8 reports the return on assets (ROA) for PSBs and NPBs from 2005 to 2019. While both PSBs and NPBs have similar ROAs prior to 2009, PSB ROAs decline starting in 2009 and continue through 2019. ROA of NPBs increases till 2013 and declines thereafter, which reflects common trends in all banks since 2013. However, the decline in ROA for PSB is far steeper.

[3] Statistics from chapter VI of the RBI Annual Report released on August 29, 2018, accessed at https://rbi.org.in/scripts/AnnualReportPublications.aspx?Id=1233

7.20 Figure 9 shows a similar trend in the Return on Equity (ROE). Figures 10 and 11 display the ratio of the gross and net NPAs to gross advances. Both ratios increase sharply after 2010 for PSBs but the trend lines are far less step or even flat until recently for the NPBs. Figures 10 and 11 clearly suggest that asset quality problems developing over a few years are at the root of the PSB performance slide. Figure 12 displays the total capital adequacy ratio for the two types of banks while Figure 13 depicts the core "Tier 1" capital ratio. These ratios show that the bank losses have impaired the capital bases of the PSBs relative to their private peers.

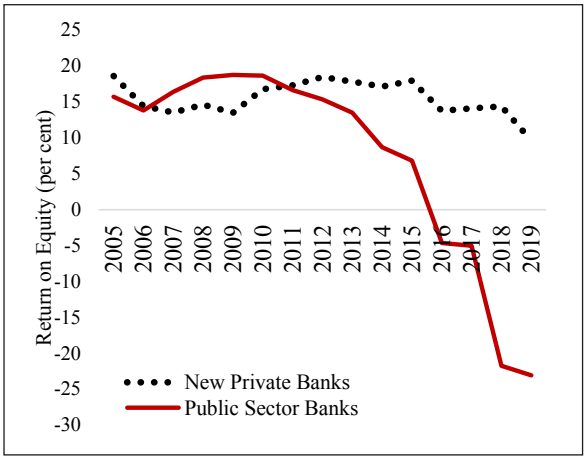
7.21 A plausible explanation for the NPA problems of PSBs is that in the Indian economy's growth phase between 2004 and 2011, PSBs grew their loan portfolios but this credit growth was of suspect quality. When the economy slowed, the banking system saw a dramatic increase in NPAs.

Figure 8: Return on Assets of Banks (per cent)



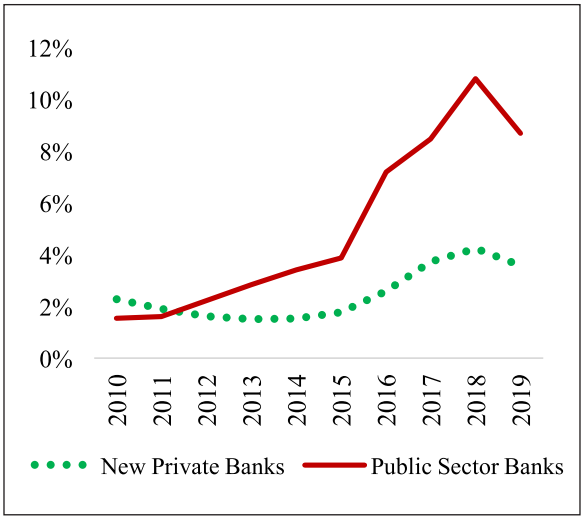
Source: RBI Data and Survey Calculations

Figure 9: Return on Equity of Banks (per cent)



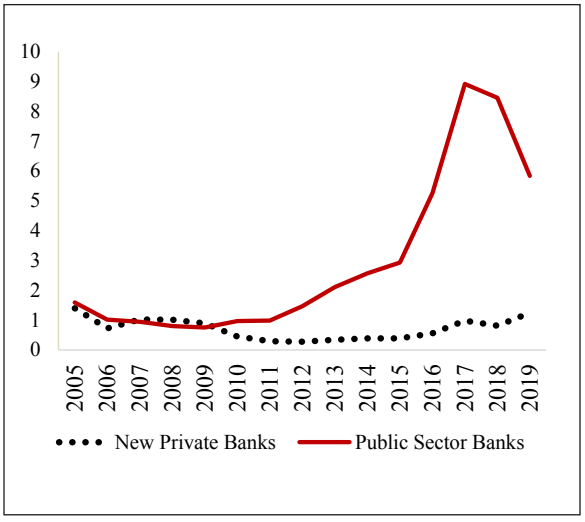
Source: RBI Data and Survey Calculations

Figure 10: Gross Non-Performing Assets to Advances (per cent)



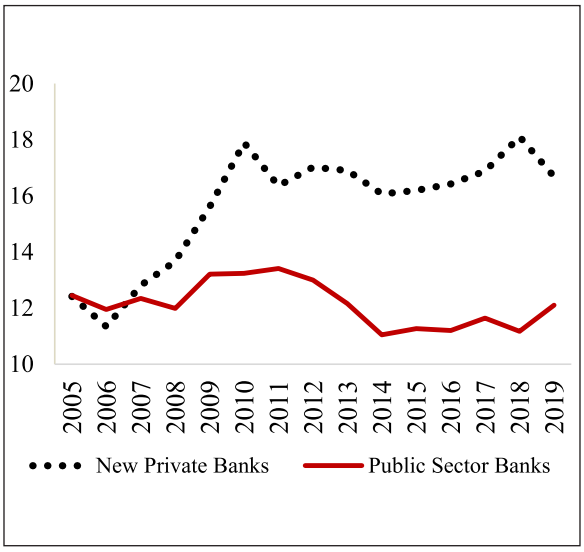
Source: RBI Data and Survey Calculations

Figure 11: Net Non-Performing Assets to Advances (per cent)



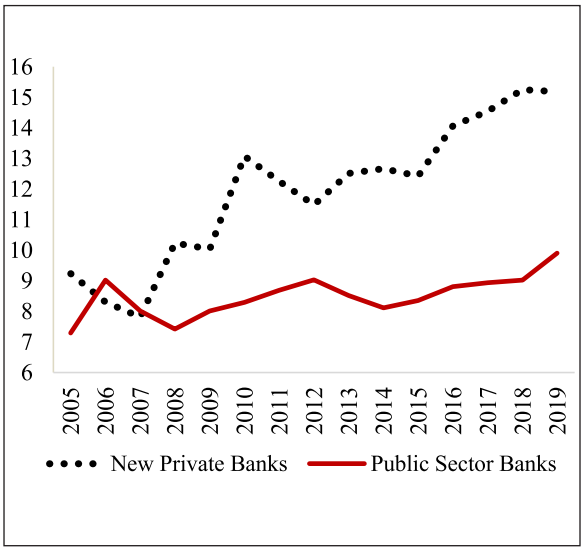
Source: RBI Data and Survey Calculations

Figure 12: Total Capital Adequacy Ratio (per cent)



Source: RBI Data and Survey Calculations

Figure 13: Tier-1 Capital Adequacy Ratio (per cent)

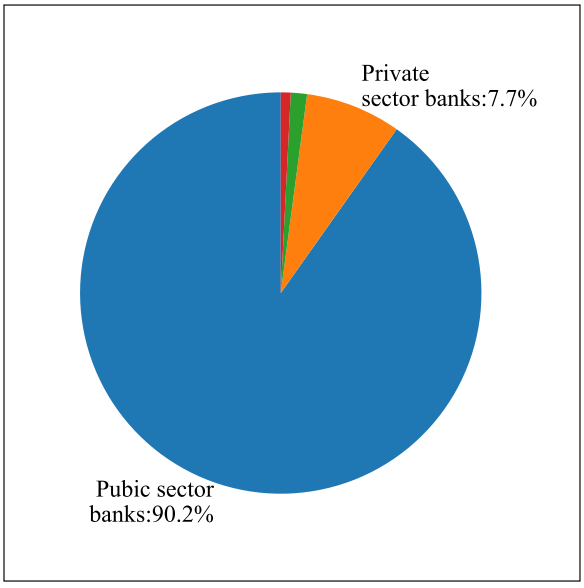


Source: RBI Data and Survey Calculations

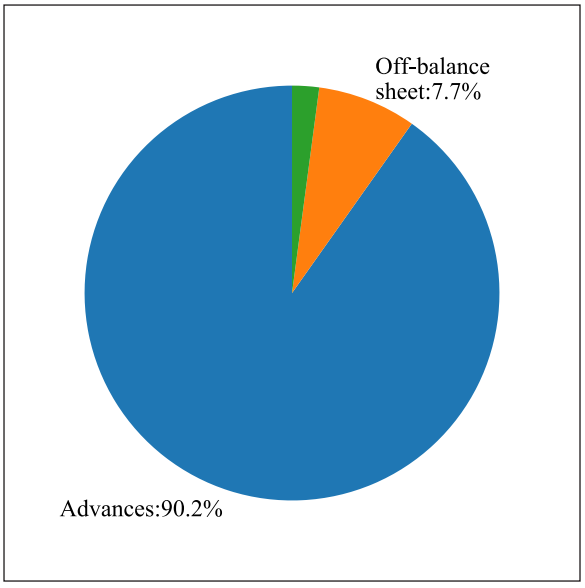
7.22 Figure 14a shows clearly that over 90 per cent of the cases of bank frauds based on the amount involved occurred in PSBs with private sector banks accounting for less than 8 per cent. A large majority (90.2 per cent) of these frauds related to advances (Figure 14b). Chakrabarty (2013) highlights that about 90 per cent of advances above ₹ 1 crore occur in PSBs. Therefore, the quality of screening and monitoring processes for corporate lending adopted by PSBs needs urgent attention.

Figure 14: Frauds in banks (per cent)

(a) Group-wise summary of fraud cases based on amount involved



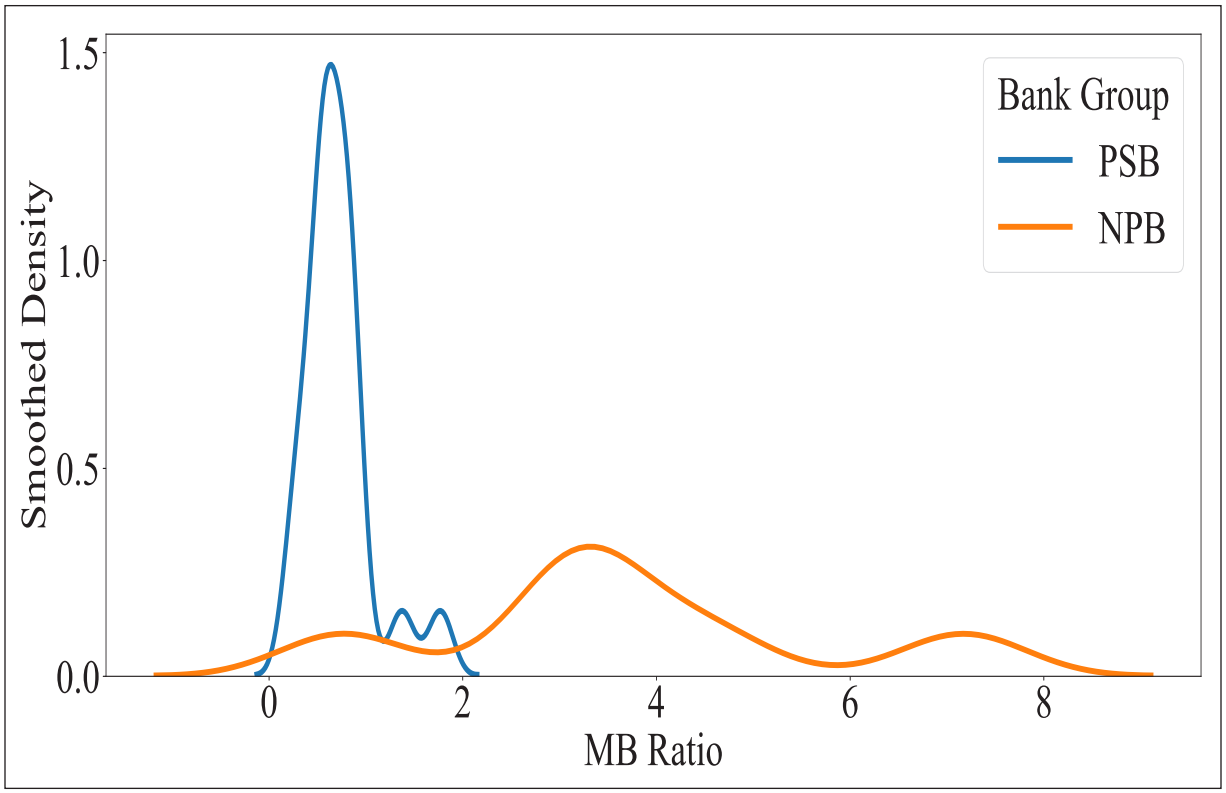
(b) Operation-wise summary of fraud cases based on amount involved



Source: RBI and Survey Calculations

7.23 The poor performance of PSBs across the range of metrics is also reflected in their equity values. Figure 15 shows the ratio of the market value of equity to the book value of equity for the two types of banks. The median market-to-book ratio of PSBs equals 0.64, which is less than 1/5th the median of 3.33 for the NPBs.

Figure 15: Distribution of Market-to-book ratios of Banks



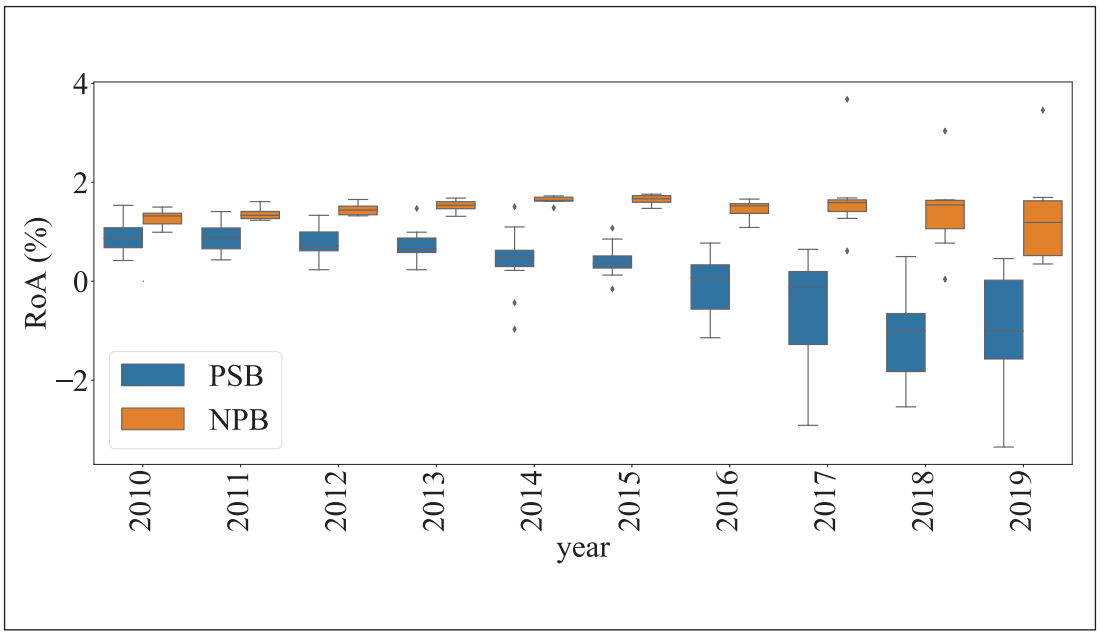
Source: Data from Moneycontrol

Comparison accounting for heterogeneity among PSBs and within NPBs

7.24 It must be carefully noted why a comparison between the average performance of PSBs and average performance in NPBs is an appropriate, apples-to-apples comparison. As with any economic activity, heterogeneity in performance is inevitable. Just as there is a wide variation within PSBs in their performance with some PSBs performing better than others, similarly, there is some variation in the performance of NPBs as well. However, to compare the performance of the average PSB with either the best performing NPB or the worst performing one is incorrect as that mixes up two statistical measures – averages and outliers – and leads to an apples-to-oranges comparison.

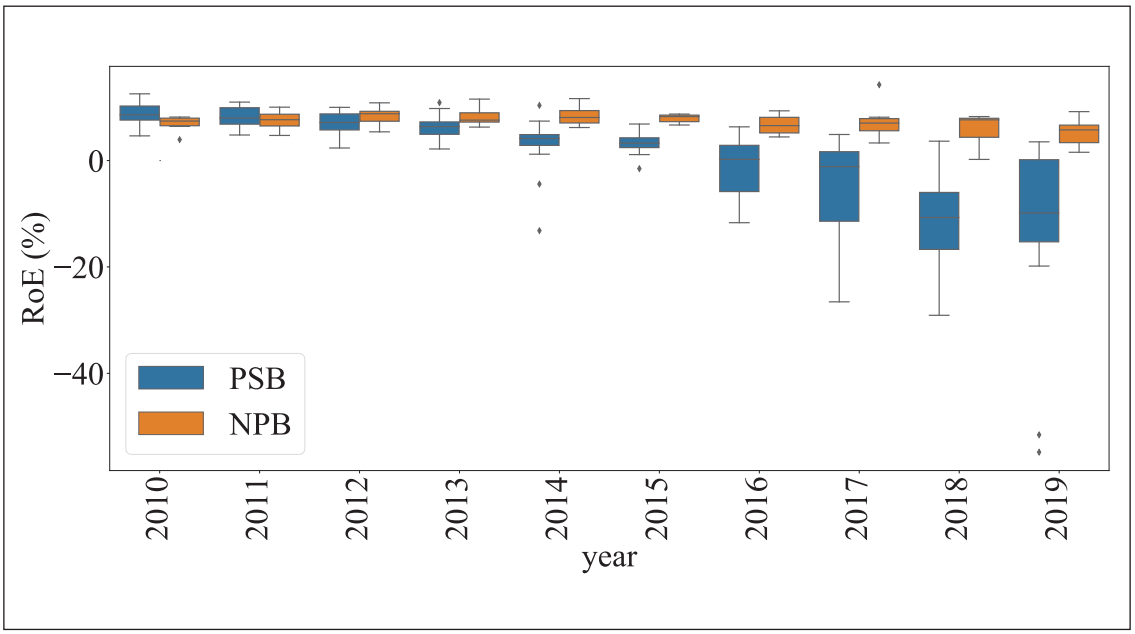
7.25 To undertake a comparison by accounting for the heterogeneity in performance, we examine the distribution of ROA for PSBs and NPBs in Figure 16 using box plots (see box 3 to understand the box plot). It is clear from this figure that for every year since 2013 the ROA of the best performing PSB has been lower than the ROA of the worst performing NPB. A similar, albeit less stark, pattern is observed for the ROE as well.

Figure 16a: Heterogeneity in Return-on-assets



Source: RBI Data and Survey Calculations

Figure 16b: Heterogeneity in Return-on-equity



Source: RBI Data and Survey Calculations

Box 3 – Box plot explained

The boxplot displays: (a) the minimum denoted by the lowest horizontal line, (b) first quartile denoted by the bottom line of the rectangle (c) median denoted by the line inside the rectangle, (d) third quartile denoted by the top line of the rectangle, and (e) the maximum denoted by the top most horizontal line.

7.26 These statistics are particularly telling because both the NPBs and PSBs operate in the same domestic market. Yet, we see an asymmetry in bank performance which has cleaved significantly over the last decade. It is important to note that the pictures do not necessarily denote worse decision-making by banks in the last decade. The history of financial crises across the world shows that the effect of bad governance shows up only in bad times, never in good times. As the 2014 P. J. Nayak Committee report shows, the structural weaknesses in PSBs explains their poor performance.

7.27 Some may contend that the poor performance over the last few years represents a passing phase. However, this interpretation essentially ignores the considerable body of knowledge about the histories of banking crises, which tells us that poor banking sector performance inevitably stems from a set of known systemic factors. As Laven (2011) points out, banking crises are due to some combination of unsustainable macroeconomic policies, market failures, regulatory distortions, and government interference in the allocation of capital. Moreover, crises that are not resolved effectively and swiftly impose enormous costs on society.

ENHANCING EFFICIENCY OF PSBs: THE WAY FORWARD

7.28 The key drivers of India's growth prospects are now (a) highly favourable demographics – with 35 per cent of its population between 15 and 29 years of age; (b) a modern and modernizing digital infrastructure that encompasses the "JAM" trinity of financial inclusion, the Aadhaar unique identification system, and a well-developed mobile phone network, and (c) a uniform indirect taxation system (GST) to replace a fragmented, complex state-level system.[4] India's growth path depends on how quickly and productively these growth levers are deployed using a well-developed financial system.

7.29 Previously, the Narasimhan Committee (1991, 1997), Rajan Committee (2007) and P J Nayak Committee (2014) have provided several suggestions to enhance the efficiency of PSBs. The Survey, therefore, focuses on two ideas for enhancing the efficiency of PSBs that have hitherto not been explored.

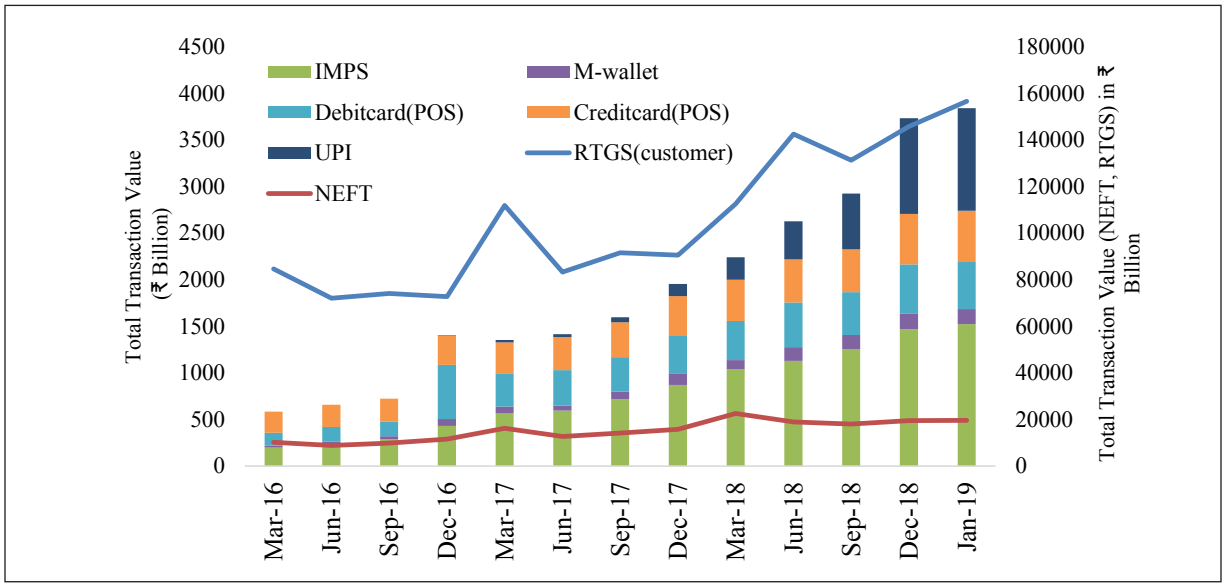
Credit Analytics using Artificial Intelligence and Machine Learning

7.30 India's growth opportunities today, which stem from a unique confluence of several positives, position PSBs well to utilise FinTech. One is India's demographic dividend. 62 per cent of India's population is between 15 and 60 and a further 30 per cent of the population is under 15. Thus, India is poised to enjoy the benefits of a substantial working age population for a long period of time. The second force driving India's growth opportunities is the JAM "trinity," viz., the PMJDY bank account programme, the Aadhaar unique identity programme, and the mobile phone infrastructure, each of which has been implemented to cover practically the entire country. The growth in digital transactions as a result of these two factors has been significant (Figure 17). The use of direct benefit transfers, which increased from has increased exponentially over the last five years (Figure 18), has helped to bring both credit and deposits into the banking system (Figure 19) across all geographies (rural, semi-urban, urban and metropolitan). The high elasticities

[4] The "JAM" trinity underpins the digital infrastructure. The "PMJDY" bank account programme enrolled 37.8 crore beneficiaries whose balances have crossed ₹ 1.11 lakh crore. Over 120 crore unique identification cards have been issued. More than 128 crore mobile phones and a unified payments interface serve India's population of 137 crore.

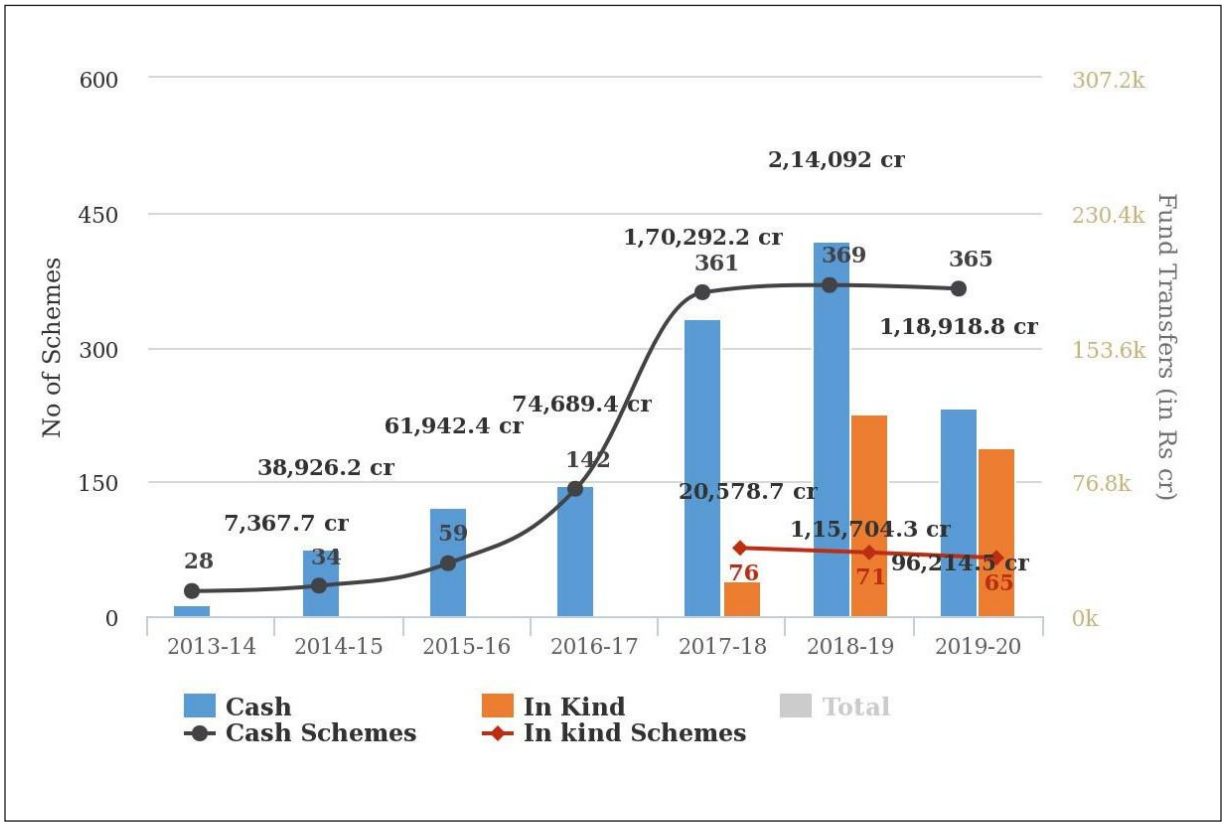
shown in Figure 19 across all geographies clearly demonstrate the opportunity that exists for Indian banks to benefit from the greater use of DBT by the Government.

Figure 17: Total Value of Digital Transactions between March 2016 and January 2019



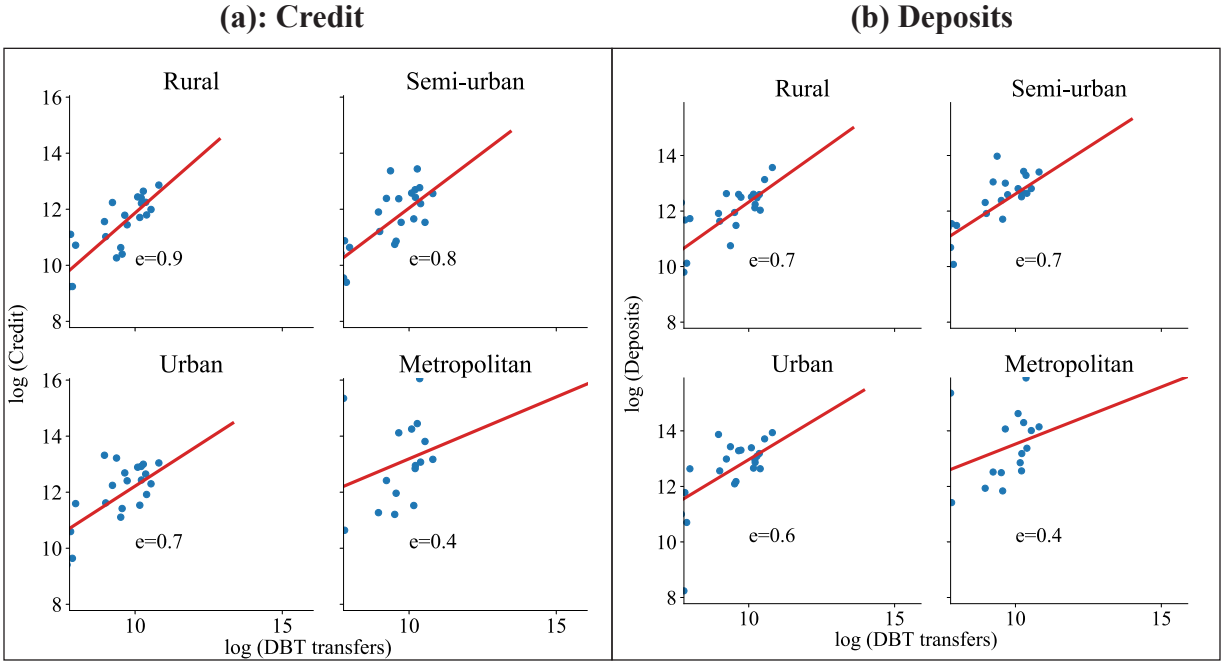
Source: Payment System Indicators, RBI

Figure 18: Trends in Amount Transferred and the Number of DBT Schemes



Source: DBT

Figure 19: Benefits of DBT to the Banking System



Source: DBT, RBI and Survey Calculations

7.31 All the above indicates the possibilities that exist for the Indian banking sector to grow proportionate to the scale of the Indian economy. The new programmes have resulted in a surge of individuals and businesses being brought into the formal economy. Perhaps more important is that the inclusion is backed by state-of-art digital infrastructure that generates and stores an abundance of high quality structured data on the all aspects of the economic lives of firms and individuals. Such data are, of course, the gold mine for economic growth in the 21st century. They offer essentially unlimited and uncharted possibilities, especially for firms and individuals who have been traditionally excluded from the financial system.

7.32 PSBs have many important ingredients in place to cater to this new demand. For example, they have local market insights and relationships based on operating histories spanning many decades. Their geographic footprint is vast. PSBs, however, need significant investments are in the capabilities to exploit the coming data-rich environment in India. Analytics based on market data are quite capable of providing accurate predictions of corporate distress. Variants of such approaches appear to hold promise for both consumer loans and commercial and industrial loans.

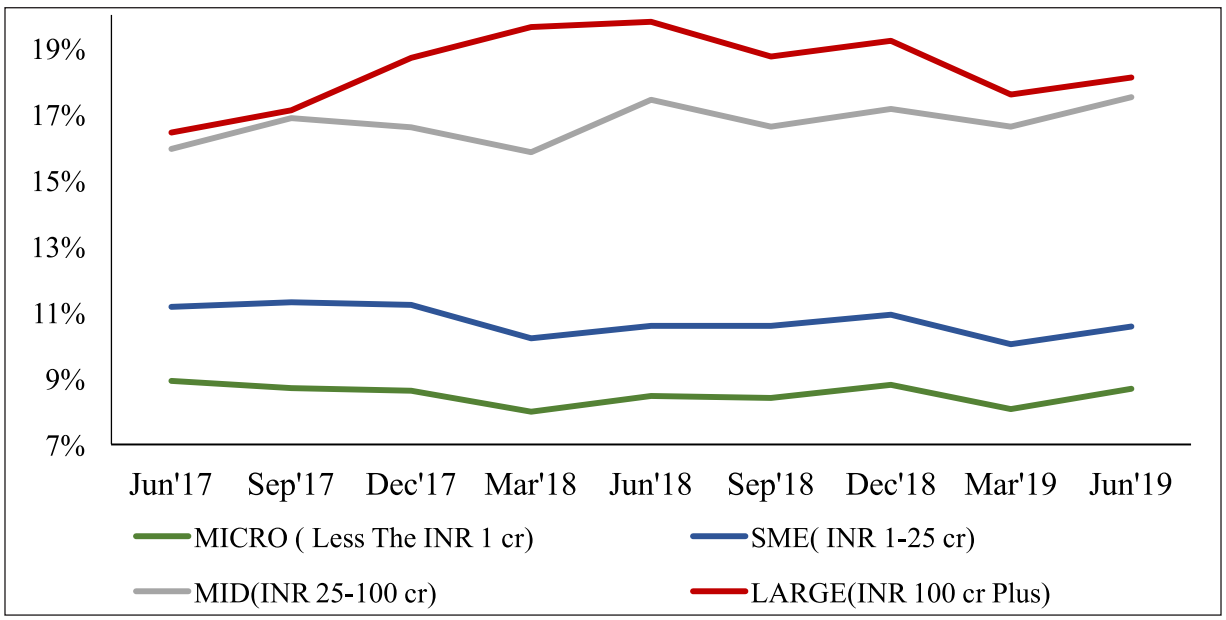
7.33 The data that can be employed for credit analytics is available in both structured and unstructured form. Data in a structured form include credit information and credit scores based on loan grants and repayments held in the credit registries or credit bureaus. The richer, though unstructured, micro-data is available in text, images, geo-tagged data, social network data, mobile apps, as well as other shallow or deep digital footprints of current and potential customers. Leveraging these data requires new data, analytics, and modelling skills. Likewise, banks need to invest in credit recovery infrastructure. The adoption of these new technologies to exploit a data rich environment will require complementary investments such as specialist

human capital with an orientation towards analytics. The barriers to such technologies are not insurmountable. While there are some instances in which PSBs have been lax, technology aversion does not seem to be an intrinsic characteristic of PSBs. For example, when credit bureaus were introduced in India, PSBs in the aggregate were relatively quick to adopt scoring for their new clients (Mishra, Rajan, and Prabhala, 2019).

The benefits of credit analytics

7.34 A large proportion of NPAs of Indian banks, especially PSBs, could have been prevented if data and analytics were employed in corporate lending. Figure 20 shows that the rates of default were the highest with larger loans (above INR 100 crores). Figure 21-24 demonstrate clearly the several leading indicators that data and analytics could have clearly highlighted about wilful defaulters. Figure 21 shows the systematic differences in the disclosure of related party transactions, pledging of promoter shares, and large loans to related parties between wilful defaulters and non-defaulters, on the one hand, and wilful defaulters and distressed defaulters, on the other hand. These are easily quantifiable measures that a robust credit analytics platform could have easily picked up and provided warning signals.

Figure 20: Non-Performing Asset (NPA) Rate by Size of the Loan



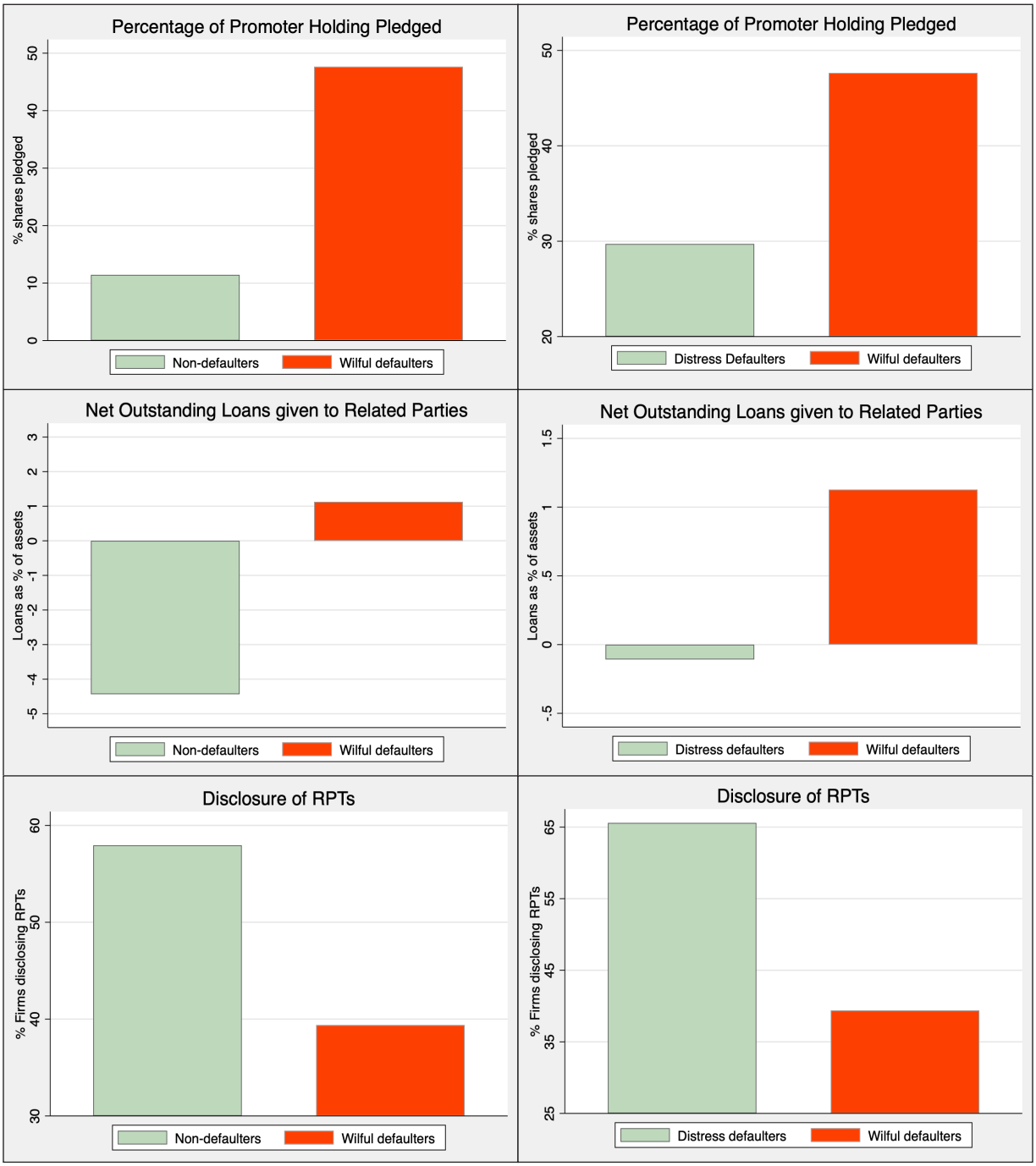
Source: TransUnion Cibil-Sidbi

7.35 In June 2017, the Reserve Bank of India (RBI) identified twelve companies constituting 25 per cent of India's total Non-Performing Assets (NPAs). As shown in Figure 22, the accounting quality of these large defaulters is much below the median accounting quality of other similar listed corporates in 2012, 2013 and 2014. As accounting quality is easily quantifiable, a robust credit analytics platform could have easily picked up and provided warning signals.

Figure 21: Leading indicators of wilful default using disclosure of related party transactions, pledging of promoter shares, and large loans to related parties

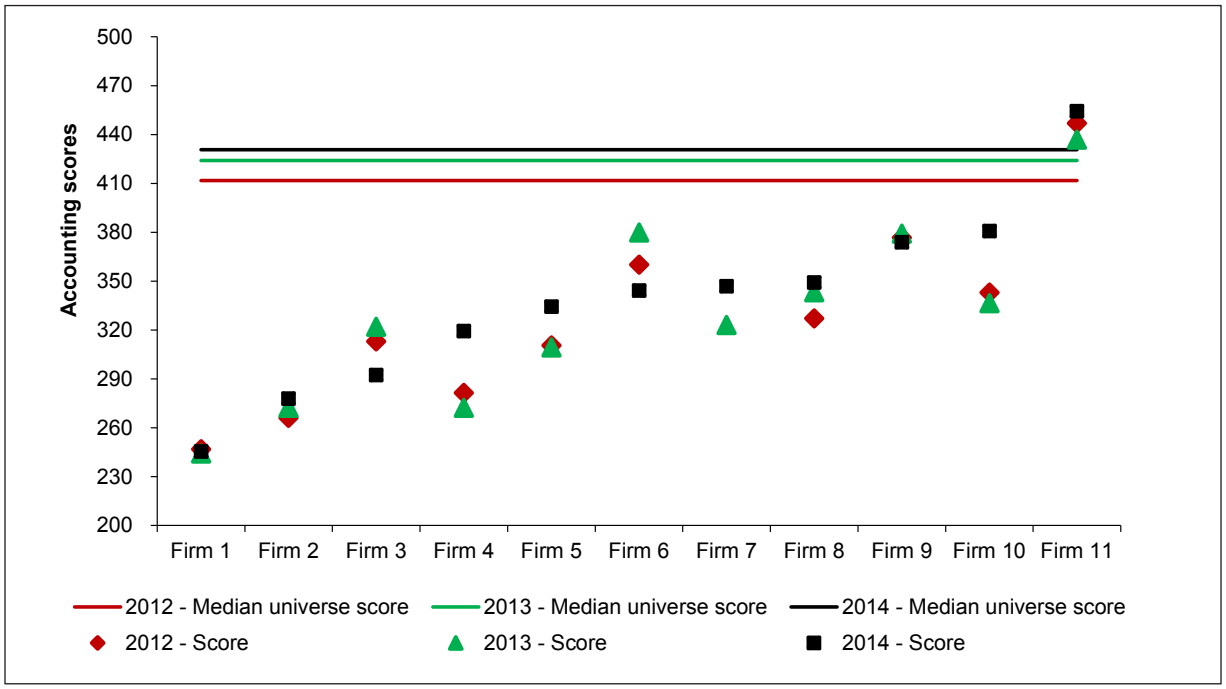
Panel A: Comparing Wilful Defaulters and Non-Defaulters

Panel B: Comparing Wilful Defaulters and Distress Defaulters



Source: CMIE Prowess, TransUnion CIBIL Suits Filed database. Notes: A firm is said to have made an RPT disclosure if its annual filing contains an RPT section (even if the firm states it had no transactions that year). Net outstanding loans refers to the total balance of loans given by firms to their related parties, net of loans taken from them. It is expressed as a percentage of the firm's total assets. Wilful defaulters are those classified as such in the CIBIL Suits Filed database, while distress defaulters are those with a default credit rating at least once in the sample period but those who have not been classified as 'wilful defaulters'. Non-defaulters are all other firms. Data spans 2002-18

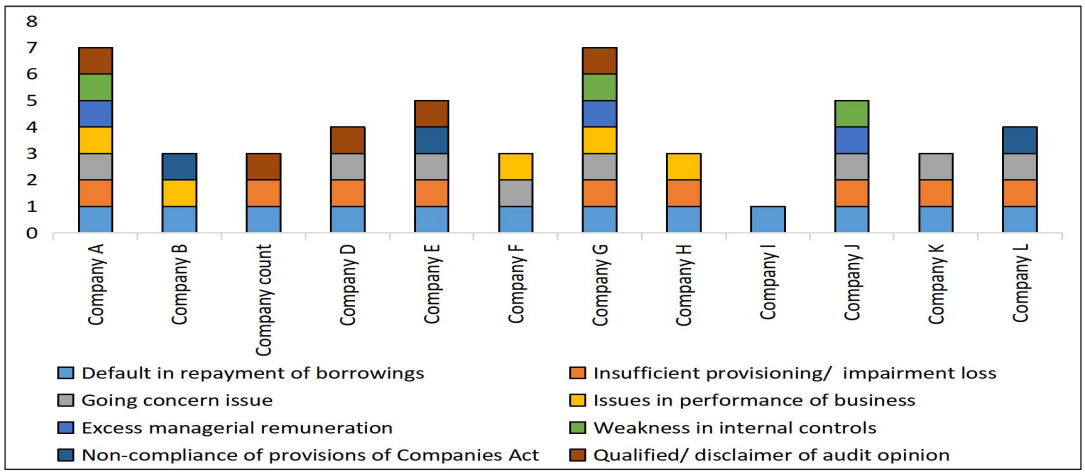
Figure 22: Leading indicators using accounting quality measures for large defaulters



Source: Company Financials, Insolvency and Bankruptcy Board of India, RBI

7.36 Similarly, an analysis of the annual reports of the large defaulters suggests that the quality of audit disclosure in these firms was very poor. As can be seen from Figure 23, out of the twelve large defaulters, one of them had just one indicator disclosed with most others having three to four indicators disclosed of the eight leading indicators. Again, this is an easily detectable characteristic that a robust credit analytics platform could easily flag.

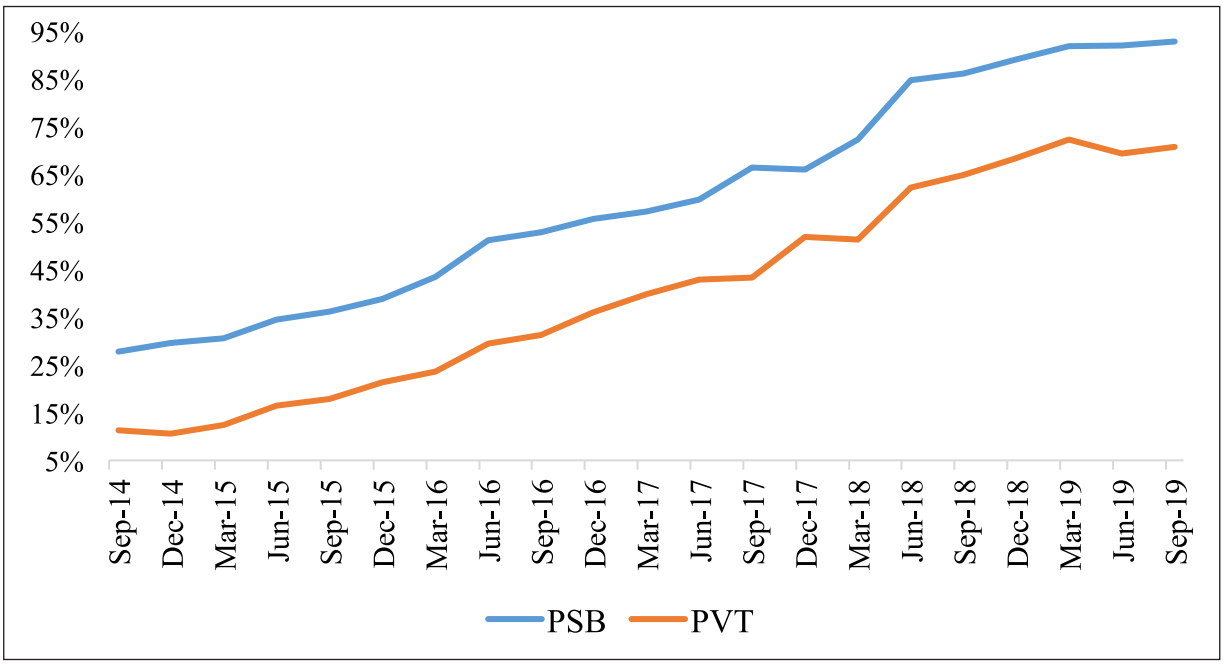
Figure 23: Leading Indicators using quality of financial statement disclosures by large defaulters



Source: Company Financial Reports and Survey calculations

7.37 Figure 24 shows that the information sharing among lenders on NPAs was minimal as of 2014. While this information sharing was better among PSBs than NPBs, about a quarter of accounts that were declared as NPAs by other banks were classified as NPA in the bank's account. This proportion has increased dramatically to reach 95 per cent in just a few years.

Figure 24: Proportion of Lenders Tagging an already tagged NPA (by another bank) as NPA in their books



Box 4: A note on leveraging data to protect creditors' collateral

Most corporate term loans are secured and lenders have recourse to pledged assets in the event of default. However, when dealing with wilful defaulters, lenders find their hands tied even when they have a contractual lien on pledged assets. Wilful defaulters have a natural incentive to misrepresent the value of collateral. In more egregious cases, they may pledge fictitious collateral. If they pledge genuine collateral, they have an incentive to dispose of these assets without the lender's knowledge, lest they lose control of valuable assets after they default.

Data can come to lenders' rescue in such cases. For example, geo-tagging – the process of adding geographical identification such as latitude and longitude to photos, videos or other media – can help lenders keep track of the location of assets. If borrowers are mandated to periodically share geo-tagged evidence of collateralized assets with their lenders, it would be difficult for them to remove these assets by stealth. Several government departments have already taken the lead in geo-tagging; the Ministry of Rural Development geo-tags MGNREGA assets and the Department of Land Resources geo-tags watershed projects. Lenders may learn from these examples to monitor their collateral. Geo-tagging can also help verify the value of pledged land or property. Armed with the exact location of land, lenders are better placed to evaluate the market value of these assets, the bulk of whose value derives from their location.

GPS systems can confer even more monitoring power. GPS devices, when affixed to collateralized equipment or machinery, can alert lenders if these assets are moved out of the plant. Such tracking

systems ensure that the asset never leaves the lender's sight. For instance, renting companies that lease laptops, appliances etc. have demonstrated a powerful use of remote monitoring using GPS. These electronic items often come with remote kill switches that disable all functions if the renter attempts to tamper with the asset, dispose of it, or delay rent payments. It may similarly serve lenders well if they could, say, disable a vehicular asset remotely if the borrower attempts to dispose of it or wilfully defaults on the loan. Kingfisher Airlines pledged a few helicopters (among other assets) to obtain loans. Only when the lenders attempted to take possession of these assets did they realize that the helicopters had fallen into disrepair and could fetch little more than scrap value. Therein lies a strong application of low-cost technology to track the presence, use and quality of assets.

Integrated data on collateral across all lenders in a geography may be particularly useful in curbing double-pledging of collateral. For example, a party may pledge the same collateral to multiple lenders to obtain multiple lines of credit for the same project, or a buyer and his seller may both separately obtain credit for the same trade by presenting the same invoice to their respective lenders. As long as lenders rely on human control processes and paper-based documentation to verify trades, such double-pledging easily escapes notice. SWIFT India – the messaging platform that PNB used to transmit messages in the Nirav Modi case – recently announced a pilot blockchain effort that allows lenders to log invoices and e-bills submitted to them online, allowing other lenders to verify whether a trade they are looking to finance has already been funded or the underlying collateral already pledged. Such integrated data systems are essential to protect lenders.

While these technologies are powerful, they carry an important risk, i.e., the risk of infringing upon the borrower's privacy and dignity. Enforcement of debt obligations should not encroach into the borrower's private sphere, as much as a lender may suspect an impending case of wilful default. Therefore, strong and clear policy guidelines are needed on what data may be collected, how, by whom and for how long.

In sum, wilful default would not be as much of a drain on an economy's wealth if lenders could fully recover their dues from selling pledged assets. Technology and data can be put to powerful use to keep these assets secure and saleable, thus keeping intact an important recourse for lenders. In fact, the threat of losing valuable assets may itself be a deterrent to wilful default in the first place, as these firms often wilfully default only when they are unafraid of losing control of other valuable pledged assets.

Learning on use of credit analytics for corporate lending from retail loans

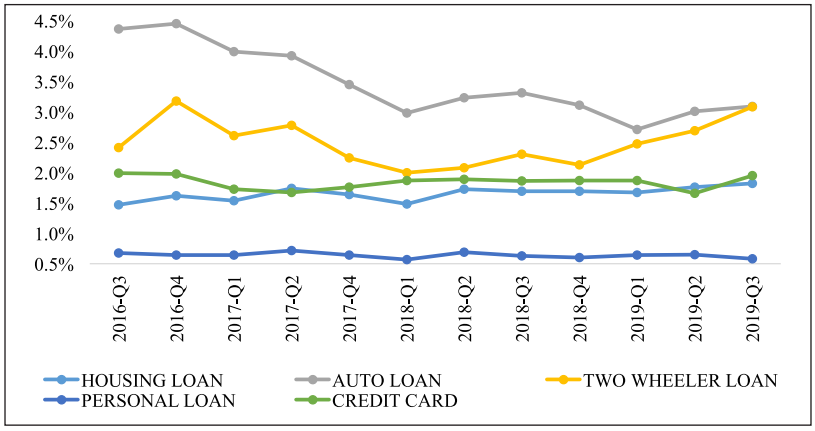
7.38 Retail lending in India passed through a painful and steep learning curve after 2007-2008. The NPAs in retail loans primarily impacted the unsecured loans originated by NPBs. While the size of the NPAs was insignificant from a systemic perspective, the sector took its learning from the same. As seen in Figure 25, the NPA levels across various retail products has been less than 5 per cent during 2016-19. The use of credit analytics and the resultant reduction in defaults offers important lessons that can be implemented in corporate lending in India.

7.39 In fact, the use of data and credit analytics, such as consumer credit bureau data, has significantly enhanced growth in retail lending. As Figure 26 shows, India has now caught up the OECD economies in the proportion of population covered using credit bureau data. NPBs, in fact, expanded the use of consumer credit bureau data significantly since 2006 (Figure 27).

Creation of a FinTech Hub for PSBs: The Public Sector Banking Network (PSBN)

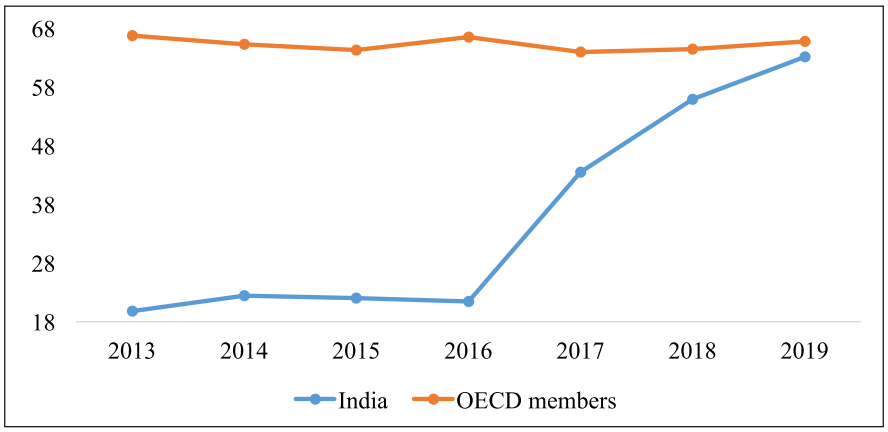
7.40 PSBs were quick to adopt credit score by bureaus (Mishra, Rajan, and Prabhala, 2019).

Figure 25: NPA Levels in Retail Loans by Major Products (2016-19)



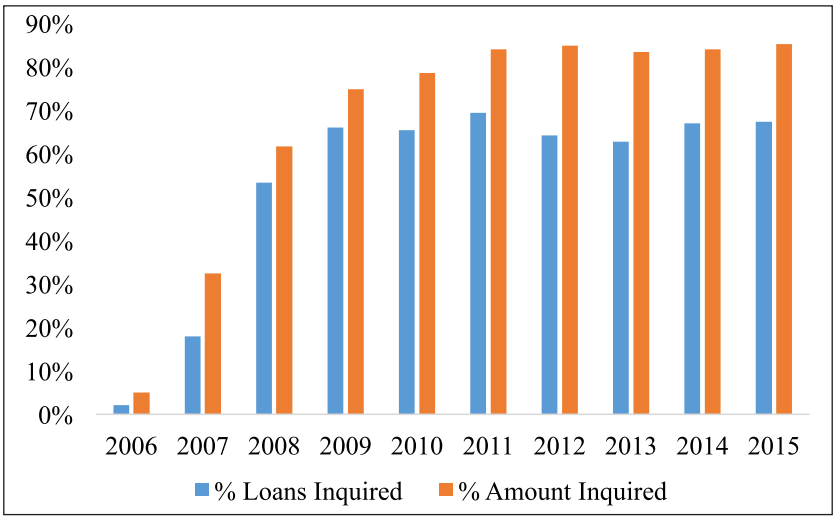
Source: CIBIL Data

Figure 26: India caught up with OECD Credit Bureau Coverage (per cent of Adult Population)



Source: World Bank –Ease of Doing Business Report 2019

Figure 27: Usage of Credit Bureau Data in New Private Sector Banks

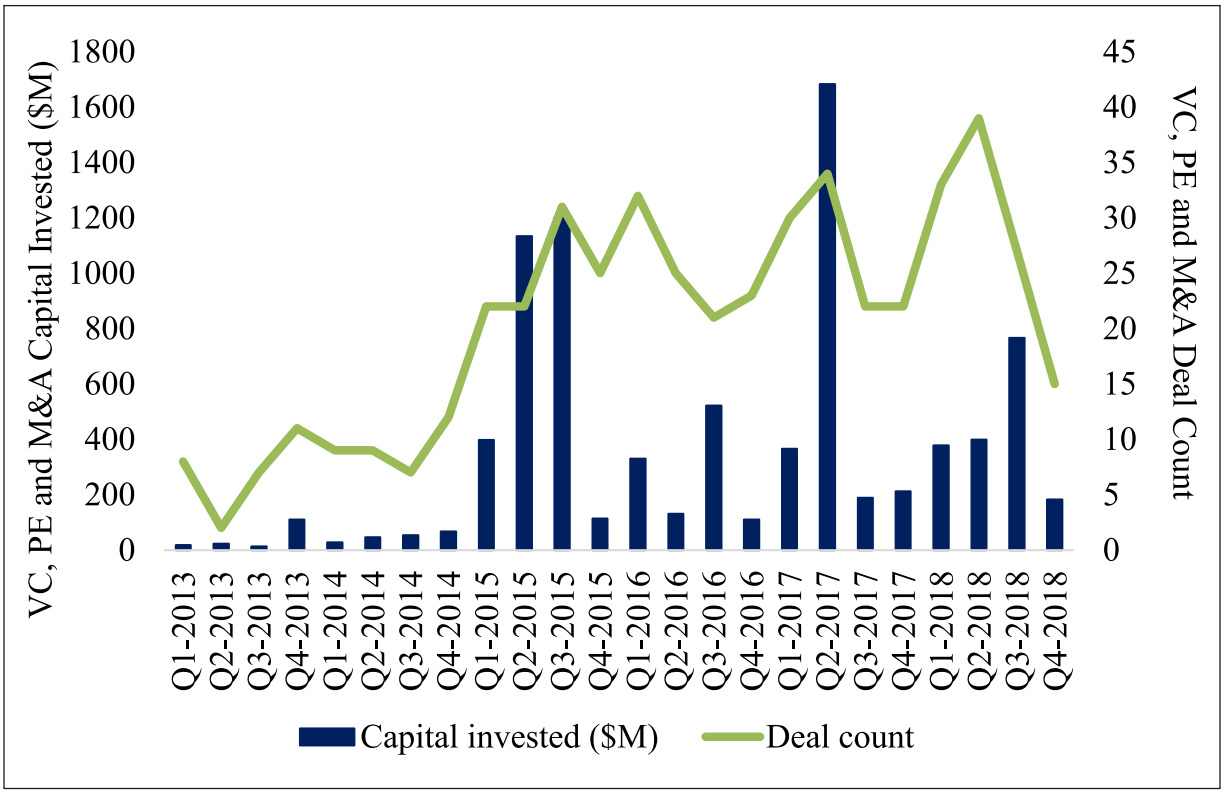


Source : Mishra, Prabhala, Rajan 2019

Similarly, they need to embrace FinTech, which is revolutionising the global financial landscape. FinTech is forcing traditional banks to review their outdated business paradigms to come up with effective, low-cost, banking solutions. PSBs have the maximum to gain from FinTech as their use of even conventional information technology is not all-pervasive, except in the use of core banking solutions. As of now, PSBs employ technology mostly for MIS and reporting while most information processing on loans happens manually which causes inefficiency, frauds and loan defaults. Information processing includes all activities related with the ex-ante screening of potential borrowers and the ex-post monitoring of their behaviour.

7.41 FinTech has radically changed the way information is processed by banks. In corporate lending, for instance, a huge mass of quantitative data such as company financials and qualitative data such as company filings and analyst call reports are machine-analysed using both supervised and unsupervised learning algorithms. Tools such as Machine Learning (ML), Artificial Intelligence (AI) as well as Big Data and matching provide banks the ability to recognize patterns quickly by analysing vast datasets, an activity that would be virtually impossible for humans, even using conventional information technology. The idea is not new as even standard econometric models are but tools for pattern recognition. The novelty lies in analysing extremely large sets of data using algorithms that explore, learn and identify patterns. As Figure 28 shows, investments in FinTech in India are significant. Therefore, PSBs can benefit from the expertise that already resides in India in this area.

Figure 28: VC, PE and M&A Investment Activity in FinTech in India, 2013-18



Source: Pulse of Fintech 2018, Biannual Global Analysis of Investment in Fintech, KPMG International.

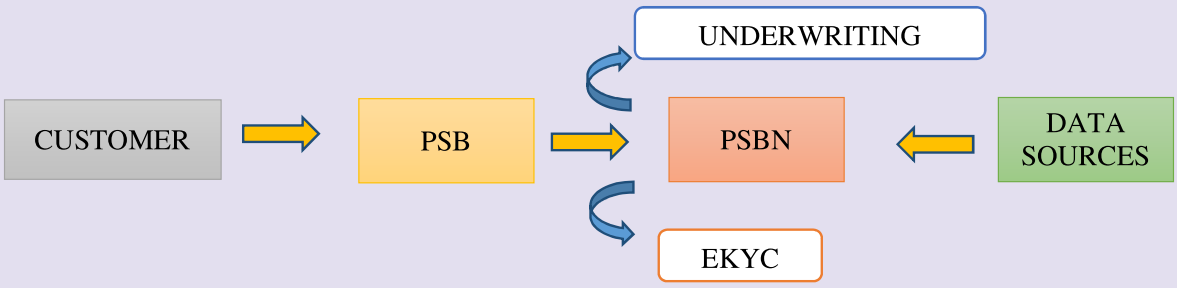
7.42 Currently, PSBs face many challenges such as high operating costs, disjointed process flows from manual operations and subjective decision making. These challenges hinder PSB's ability to rigorously screen corporate borrowers ex-ante by evaluating the prospects of the potential borrowers and the value of the collateral that they may be posting. They also need to monitor the borrower ex-post along the whole duration of the lending relationship, possibly enforcing covenants capable of limiting losses in case of default. Using FinTech allows banks to better screen borrowers and set interest rates that better predict ex-post loan performances (Rajan, 2015).

7.43 PSBs will be able to enhance their efficiency by fulfilling their role of delegated monitors if all the PSBs can pool their data into one entity. Private information held by their corporate borrowers leads to contracting problems, because it is costly to assess the solvency of a borrower or to monitor her actions after lending has taken place (Stigliz and Weiss, 1981). Moreover, the delegation of screening and monitoring to banks has been shown to be an efficient mechanism (Diamond, 1984). This efficiency can be enhanced further by packaging all the information held by various PSBs into a common entity. This would have the additional benefit of reducing the costs of screening and monitoring.

7.44 As the Government is the owner of all the PSBs, it can mandate the PSBs to share this data so that economies of scale can be utilized to make the necessary investments in undertaking analytics using Artificial Intelligence and Machine Learning (AI-ML). The survey proposes establishment of a GSTN like entity, called PSBN (PSB Network), to use technology to screen and monitor borrowers comprehensively and at length. Apart from utilizing data from all PSBs, which would provide a significant information advantage, PSBN would utilize other Government sources and service providers to develop AI-ML ratings models for corporates. The AI-ML models can not only be employed when screening the corporate for a fresh loan but also for constantly monitoring the corporate borrower so that PSBs can truly act as delegated monitors. Box 3 provides the architecture and solution flow for the proposed PSBN for all types of bank customers including individuals, SMEs and large corporations.

Box 5: Suggested Architecture and Solution Flow for FinTech in PSBs

Schematic Architecture:

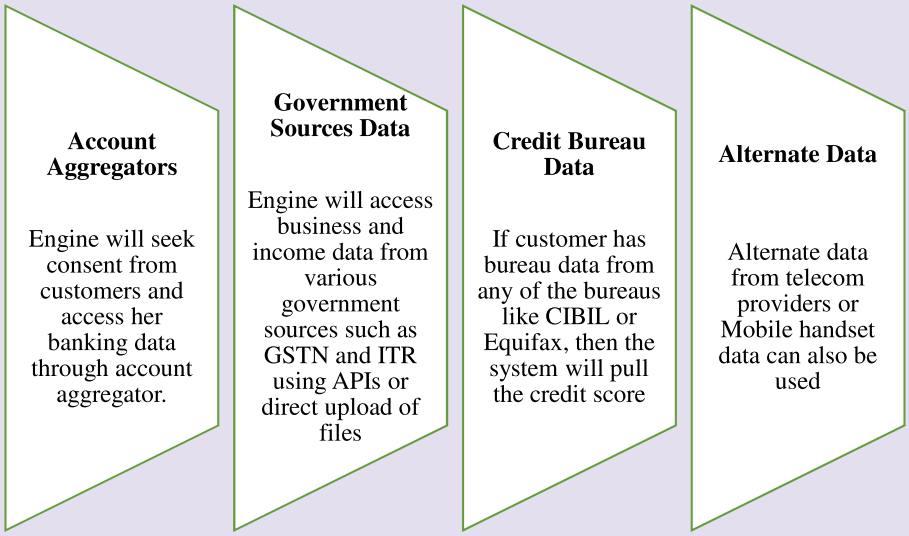


Solution Flow:

1. **Customer contact:** Customer approaches the PSB and indicates the amount and type of loan she wishes to borrow.

2. **KYC verification:** PSB transfers the above information to the entity. The entity will complete KYC process for customer based on data provided by identity verification agencies e.g., Aadhaar based EKYC. As per norms, KYC must be confirmed by Banks for loan provision through PSBs. So, engine will collate data and pass on to PSBs for KYC confirmation.

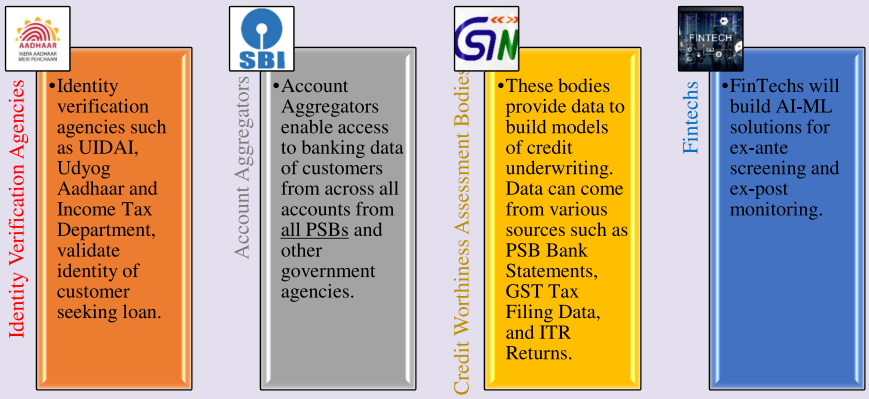
3. **Data Collections:** Engine will further collate data from various data sources based on customer profile. Data will be collected from:



System will have complete credit underwriting, which refers to generating credit profile of the customer after analysing all available data, based on the model built into it. Different AI-ML underwriting models will be built for different types of customers such as individuals, SMEs and large corporations.

4. **Loan provision:** Based on KYC and underwriting, system will assess customer eligibility of loans and transfer all the information to the PSB. On the basis of the information provided, PSB can take the decision on the amount and the rate at which the loan is to be given.

Key Participants:



7.45 The benefit of PSBN would be that it would take advantage of the data that all PSBs have of the last 50 years to create better underwriting solutions. Using PSBN, they would be able to do better underwriting of loans to their corporate clients. Better decision making on credit underwriting would reduce the burden of NPAs, apart from helping them in fraud prevention. The high operating costs of each PSB would

decrease by helping them automate the end-to-end process of lending. PSBs would be able to make quicker decisions, process loan applications faster, and reduce turn-around-times (TAT). These would, in turn, help PSBs to compete better with NPBs. In fact, PSBN can provide informational advantages that NPBs are unlikely to be able to match.

The case for employee stakes in PSBs

7.46 Employees paid largely in salaries—as PSBs employees currently are—have claims that resemble debt contracts in the sense that they are fixed pay-outs made by banks. Employees paid through such fixed compensation contracts rely on implicit promise by the state to make good on their salaries (and post-retirement pensions) in the event of bank distress. In the parlance of financial economists, such employees have "inside debt," which induces conservatism and preference for safety over risk-taking even among senior executives (e.g., Edmans and Liu, 2011). Given the current flat compensation contracts of employees and the pressures from ex-post monitoring by the vigilance agencies, it is hardly surprising that bank employees of state-owned banks prefer safety and conservatism over risk-taking and innovation. A long-term solution to this problem is enabling employees to own stakes in the PSBs.

7.47 To enable employees to become owners in the banks and thereby incentivise them to embrace risk-taking and innovation continually, a portion of the government stakes can be transferred to employees exhibiting good performance across all levels of the organization through Employee Stock Option Plans (ESOPs).

7.48 Part-ownership of PSBs by employees will reduce agency problems. This is because employees who own shares are incentivized to increase market value of equity, since their direct compensation depends on share values. Other benefits include the possible change of the mind-set from that of an employee to that of an owner. Employees can constitute one of the blocks of new owners of PSBs through an employee stock ownership plan (ESOP) that is conditioned on employee performance. Ownership by motivated, capable employees across all levels in the organization could give such employees tangible financial rewards for value enhancement, align their incentives with what is beneficial to the PSB, and create a mind-set of enterprise ownership for employees.

The need for best talent and organizational verticals based on technology

7.49 A related issue pertains to the process for recruitment of bank officials. PSBs cannot, for instance, recruit professional MBAs directly from the campuses. Given the FinTech disruptions described above, PSBs need to enable cutting-edge recruitment practices that allow lateral entry of professionals and recruitment of professionally trained talent at the entry level. For example, the possibilities generated by FinTech call for recruitment of professionals with domain skills in technology, data science, finance, and economics. With a large ownership stake available for employees, attracting the best talent in the industry may not be a constraint, as it is currently. The advances in FinTech and data science may even call for entirely new verticals such as innovation labs, accelerators, venture arms, and sandboxes for experimentation, that take stakes in and empower smaller entrepreneurial ventures, much as in the collaborations between big pharma and the biotech sectors.

7.50 Embracing disruptive innovations through disruptive processes is difficult. It requires a degree of risk-taking, a more flexible human capital acquisition strategies at all levels, and complementary incentive structures that may, for instance, offer more

high-powered incentives that offer greater pay for success. A generous ownership offer by the Government to PSBs employees would help them provide the incentive structures to attract high-quality banking professionals and thereby improve their human capital acquisition strategies.

CONCLUSION

7.51 The Indian banking system is currently sub-scale compared to the size of the economy. A large economy needs an efficient banking sector to support its growth. Historically, in the last 50 years, the top-five economies have always been ably supported by their banks. Should India's banks play a role proportionate to its economic size, India should have six banks in the top 100. As PSBs account for 70 per cent of the market share in Indian banking, the onus of supporting the Indian economy and fostering its economic development falls on them. Yet, on every performance parameter, PSBs are inefficient compared to their peer groups. Previously, the Narasimhan Committee (1991, 1997), Rajan Committee (2007) and P J Nayak Committee (2014) have provided several suggestions to enhance the efficiency of PSBs. The survey suggests use of FinTech (Financial Technology) across all banking functions and employee stock ownership across all levels to enhance efficiencies in PSBs. These will make PSBs more efficient so that they are able to adeptly support the nation in its march towards being a $5 trillion economy. All these recommendations need to be seriously considered and a definite, time-bound plan of action drawn up. With the cleaning up of the banking system and the necessary legal framework such as the IBC, the banking system must focus on scaling up efficiently to support the economy.

CHAPTER AT A GLANCE

- In 2019, India completed the 50th anniversary of bank nationalization. It is, therefore, apt to celebrate the accomplishments of the 389,956 officers, 295,380 clerks, and 121,647 sub-staff who work in Public Sector Banks (PSBs). At the same time, an objective assessment of PSBs is apposite.
- Since 1969, India has grown leaps and bounds to become the 5th largest economy in the world. Yet, India's banking sector is disproportionately under-developed given the size of its economy. For instance, India has only one bank in the global top 100 – same as countries that are a fraction of its size: Finland (about 1/11th), Denmark (1/8th), Norway (1/7th), Austria (about 1/7th), and Belgium (about 1/6th). Countries like Sweden (1/6th) and Singapore (1/8th) India's size have thrice the number of global banks as India does.
- A large economy needs an efficient banking sector to support its growth. Historically, in the last 50 years, the top-five economies have always been ably supported by their banks.
- As PSBs account for 70 per cent of the market share in Indian banking, the onus of supporting the Indian economy and fostering its economic development falls on them. Yet, on every performance parameter, PSBs are inefficient compared to their peer groups. In 2019, every rupee of taxpayer money invested in PSBs, on average, lost 23 paise. In contrast, every rupee of investor money invested NPBs on average gained 9.6 paise. Also, credit growth in PSBs has been much lower than NPBs for the last several years.

- The survey suggests solutions that can make PSBs more efficient so that they are able to adeptly support the nation in its march towards being a $5 trillion economy.
- To incentivize employees and align their interests with that of all shareholders of banks, bank employees should be given stakes through an employee stock ownership plan (ESOP) together with proportionate representation on boards proportionate to the blocks held by employees.
- A GSTN type of entity should be setup to enable the use of big data, artificial intelligence and machine learning in credit decisions, especially those pertaining to large borrowers. As Government is the owner of all the PSBs, Government has the right to use the data that PSBs generate during their business. Therefore, the Government as the promoter must set up this entity that will aggregate data from all PSBs to enable decision making using big data techniques. The patterns in default that such powerful techniques can unearth are far beyond the capacity of any unscrupulous promoter to escape. Therefore, such investments are critical to ensuring better screening and monitoring of borrowers, especially the large ones.
- With the cleaning up of the banking system and the necessary legal framework such as the Insolvency and Bankruptcy Code (IBC), the banking system must focus on scaling up efficiently to support the economy.

REFERENCES

Chakrabarty, K.C., (2013), Two decades of credit management in banks: Looking back and moving ahead (Address by Dr. K. C. Chakrabarty, Deputy Governor, Reserve Bank of India).

Diamond, Douglas W. "Financial Intermediation and Delegated Monitoring." The Review of Economic Studies 51, no. 3 (1984): 393-414. Accessed January 25, 2020. www.jstor.org/stable/2297430.

Edmans, Alex and Liu, Qi, Inside Debt (June 29, 2011). Review of Finance, Vol. 15, No. 1, pp. 75-102, January 2011; EFA 2007 Ljubljana Meetings Paper. Available at SSRN: https://ssrn.com/abstract=758508.

Mishra, Prachi and Prabhala, Nagpurnanand and Rajan, Raghuram G., The Relationship Dilemma: Organizational Culture and the Adoption of Credit Scoring Technology in Indian Banking (March 5, 2019). Johns Hopkins Carey Business School Research Paper No. 19-03. Available at SSRN: https://Ssrn.com/Abstract=3347299.

Narasimhan Committee I (1991), Report of the Committee on Financial Systems, Reserve Bank of India.

Narasimhan Committee II (1998), Report of the Committee on Banking Sector Reforms, Reserve Bank of India.

Nayak Committee (2014), Report of the Committee to Review Governance of Boards of Banks in India, Reserve Bank of India.

Rajan Committee (2007), Report of the Committee on Financial Sector Reforms, Government of India.

Rajan, U., Seru, A., and Vig, V. (2015). The Failure of Models That Predict Failure: Distance, Incentives, and Defaults. Journal of Financial Economics, 115, 237-260.

Stiglitz, Joseph E., and Andrew Weiss. "Credit Rationing in Markets with Imperfect Information." The American Economic Review 71, no. 3 (1981): 393-410. Accessed January 25, 2020. www.jstor.org/stable/1802787.

Financial Fragility in the NBFC Sector

08
CHAPTER

देवान्भावयतानेन ते देवा भावयन्तु वः।
परस्परं भावयन्तः श्रेयः परमवाप्स्यथ॥

3.11 (Shrimad Bhagvad Gita)

Creating sustainable systems requires a good understanding of the basic principle of mutuality and inter-dependence

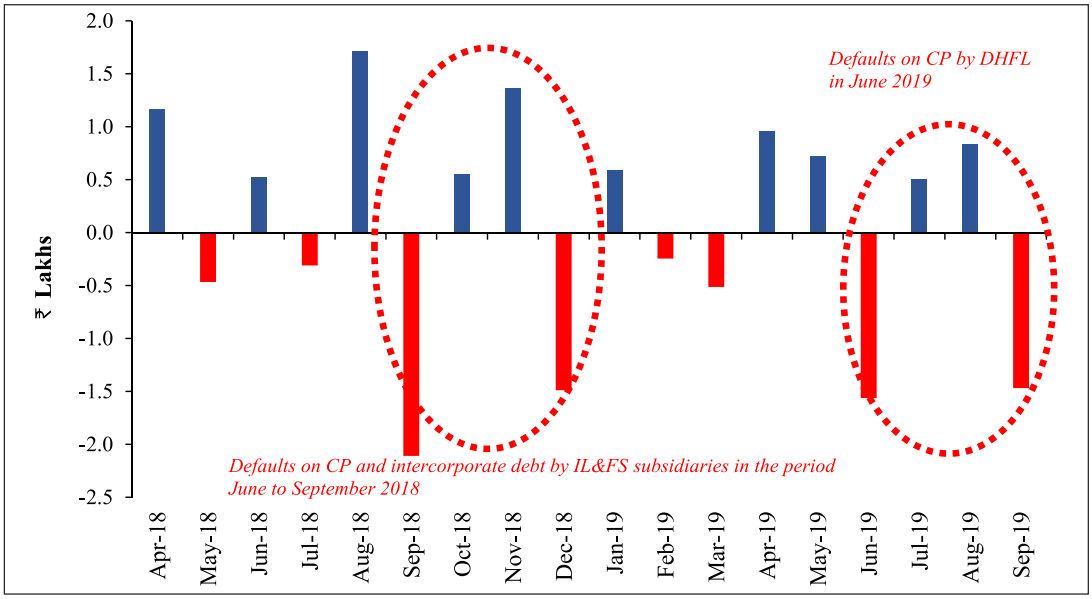
Following payment defaults by subsidiaries of Infrastructure Leasing and Financing Services and by Dewan Housing Finance Limited, investors in Liquid Debt Mutual Funds (LDMFs) ran collectively to redeem their investments. In fact, the defaults triggered panic across the entire gamut of NBFC-financiers, thereby causing a funding (liquidity) crisis in the NBFC sector. This chapter highlights that problems faced by the NBFCs stemmed from their over-dependence on short-term wholesale funding from the Liquid Debt Mutual Funds. While such reliance works well in good times, it generates significant risk to NBFCs from the inability to roll over the short-term funding during times of stress. An asset-side shock not only exacerbates the Asset Liability Management (ALM) problem but also makes investors in LDMFs jittery and thereby leads to a redemption pressure that is akin to a "bank run." This run on LDMFs then precipitates the refinancing (rollover) risk for NBFCs and further exacerbates the initial problems caused on the asset side. A dynamic health index (Health Score) is constructed that captures these risks and can be used as an early warning system to anticipate liquidity crisis in an NBFC. Policy makers can use this tool to monitor, regulate and avert financial fragility in the NBFC sector.

8.1 The liquidity crunch in the shadow banking system in India (Box 1) took shape in the wake of defaults on loan obligations by major Non-Banking Financial Companies (NBFCs). Two subsidiaries of Infrastructure Leasing & Financial Services (IL&FS) defaulted on their payments in the period from June to September 2018, while Dewan Housing Finance Limited (DHFL) did so in the period from June to August 2019. Both these entities defaulted on non-convertible debentures and commercial paper obligations for amounts of approximately ₹ 1500-1700 crore.

8.2 In response to the defaults, mutual funds started selling off their investments in the NBFC sector to reduce exposure to stressed NBFCs. A case in point is DSP Mutual Fund selling DHFL commercial

papers (CPs) worth ₹ 300 crore at a steep discount in September 2018.[1] Panic-stricken investors in debt mutual funds started pulling out their investments in these funds rapidly. Coinciding with the news of payment defaults by IL&FS and DHFL being known to the wider market, the months of September 2018 and June 2019 saw the highest net outflows from LDMFs and money market funds, as shown in Figure 1.

Figure 1: Net Inflows – Liquid Debt Mutual Funds (LDMFs) & Money Market Funds (₹ Crore)



Source: ACE-MF Database, based on a sample of prominent LDMFs

8.3 On June 4, 2019, the net asset value of debt funds, which held debt instruments issued by the stressed NBFCs, fell by 53 per cent in one day when news about its default became public.[2] The drop in net asset value was due to the twin effects of debt mutual funds writing off their investments in stressed NBFCs and asset sales at fire sale prices to meet unexpected high redemptions.

8.4 The impact of these defaults was not limited to debt markets. There was a sharp decline in the equity prices of stressed NBFCs as equity market participants anticipated repayment troubles at these firms a few months in advance of actual defaults. As illustrated in Figure 2, the equity prices in stressed NBFCs showed a consistent downward trend from May 2018. Interestingly, the plot shows that the equity prices dipped dramatically in September 2018.

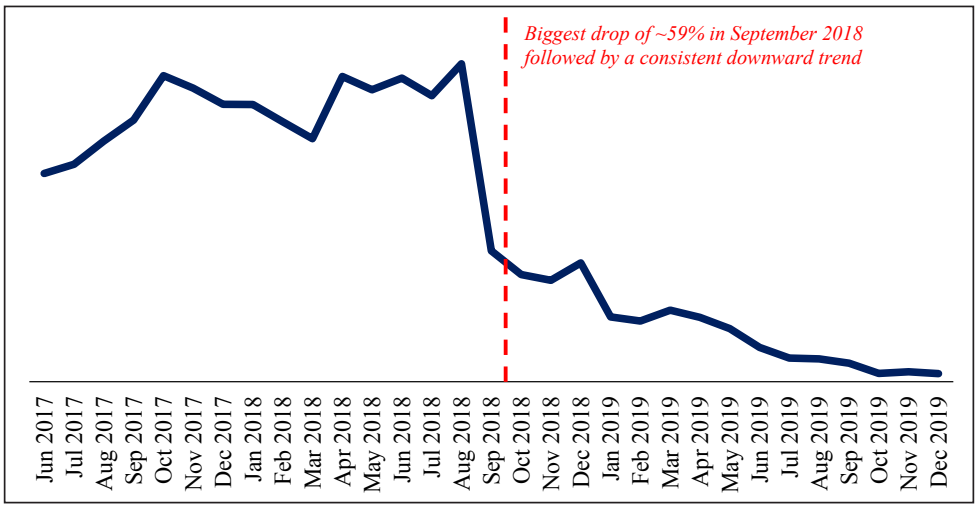
8.5 Therefore, both debt and equity investors suffered a massive erosion in wealth due to the defaults. To get a sense of the quantum of losses, debt mutual funds with exposure to stressed NBFCs lost approximately ₹ 4000 crore after adjusting for recoveries in the aftermath of defaults.[3] Debt mutual funds, facing increasing redemptions, were hesitant to finance the NBFC sector. This, in turn, led to the difficulty

[1] Economic Times article titled "DHFL Paper Sale by DSP triggered panic" dated 22nd September 2018.
[2] NewsClick article titled "Mutual Funds in Trouble as Housing Finance Firm DHFL Defaults on Debt Repayment" dated 6th June 2019.
[3] LiveMint article titled "Debt Mutual Funds: Quantum of Loss and Solace" dated 29th April 2019.

of NBFCs to raise funds, which took a toll on the overall credit growth in the Indian economy and a decline in GDP growth.

8.6 Given the significant economic impact of the liquidity crisis on the domestic economy, it would be a fruitful exercise to investigate whether there were any early warning signs of stress in the NBFC sector. An index is developed to estimate the financial fragility of the NBFC sector and it was found that it can predict the constraints on external financing (or refinancing risk) faced by NBFC firms. This index is called as the Health Score, which ranges between -100 to +100 with higher scores indicating higher financial stability of the firm/sector. The Health Score employs information on the key drivers of refinancing risk such as Asset Liability Management (ALM) problems, excess reliance on short-term wholesale funding (Commercial Paper) and balance sheet strength of the NBFCs.

Figure 2: Trend in Equity Prices of stressed NBFC (July 2017- December 2019)

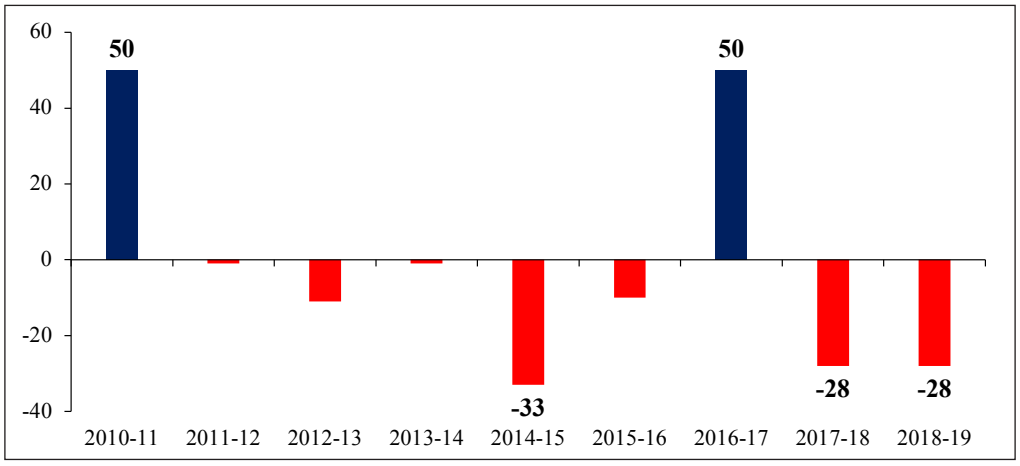


Source: Bloomberg

Note: To focus on the trend in prices, the actual price on the y-axis are omitted.

8.7 The Health Score provides a good diagnostic for the problems in the NBFC sector. For instance, figure 3 shows that

Figure 3: Health Score of a stressed NBFC



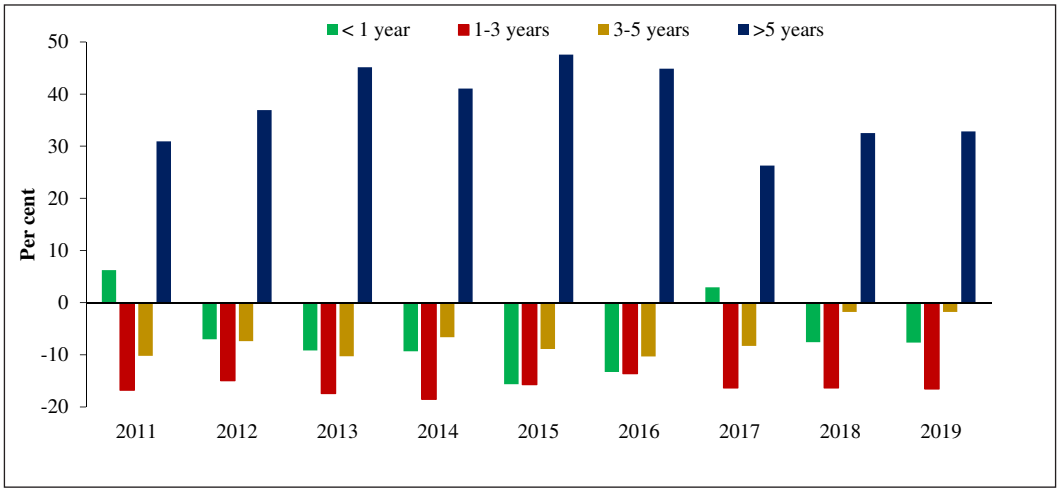
Source: Annual Reports

the Health Score of a stressed NBFC was consistently low throughout the period 2011-19 with a sharp decrease in 2017-18. Hence, the Health Score of the stressed NBFC over the entire eight- year period provided significant early warning signals.

8.8 Figure 4, which highlights the ALM problem in the stressed NBFC and Figure 5, which highlights the over-dependence of the NBFC on short-term wholesale funding, show adverse trends in the refinancing risk faced by the NBFC. Except for 2011 and 2017, Figure 4 shows that ALM mismatch in the shorter tenures was negative for all the years coinciding with the years when the Health Score of the NBFC was low.

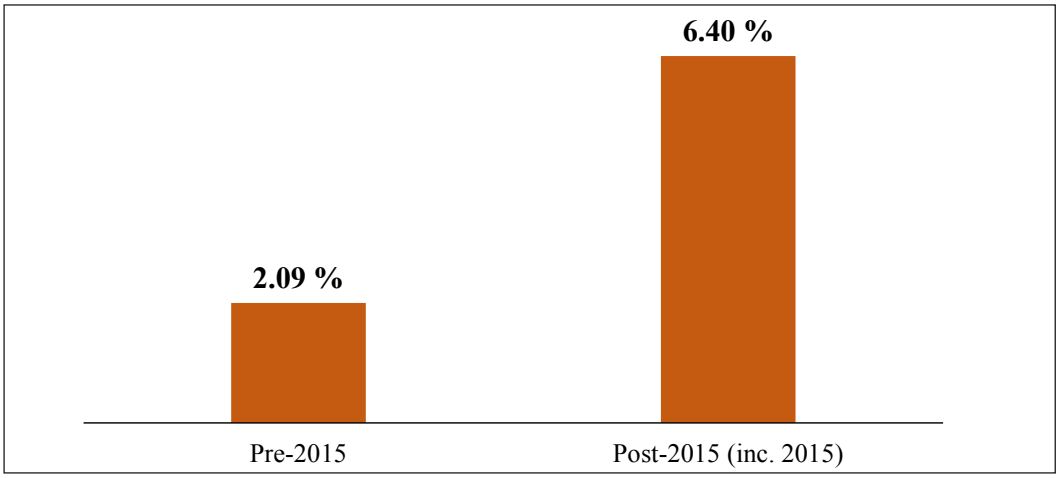
8.9 Figure 5 highlights that for the post-2015 period, the average reliance on short-term wholesale funding increased steeply by more than 200 per cent relative to pre-2015. Given the long term duration of assets of the stressed NBFC, this over dependence on commercial paper funding created exposure to refinancing risk. This is also consistent

Figure 4: ALM Profile (Assets – Liabilities as a percentage of Total Assets) of a stressed NBFC



Source: Annual Reports

Figure 5: Reliance on Short-Term Wholesale Funding (Commercial Paper as a percentage of Borrowings) of a stressed NBFC

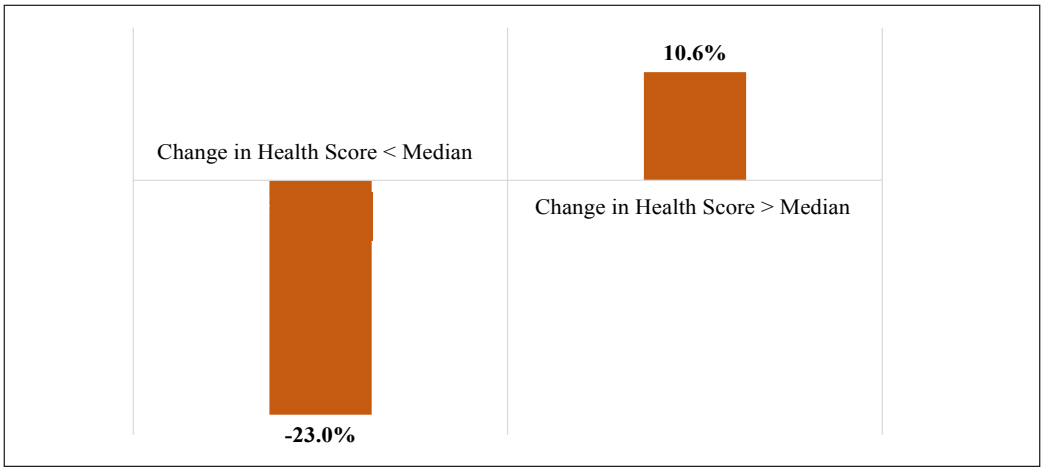


Source: Annual Reports

with the Health Scores of the stressed NBFC which have been very low for three out of four years post-2015.

8.10 Figure 6 further validates the use of the Health Score by showing that it is a leading indicator of stress at a stressed NBFC. It was observed that if the year-over-year change in Health Score is higher (lower) than the median, the cumulative abnormal returns for of a stressed NBFC stock was higher (lower). Cumulative abnormal returns net out the impact of other confounding factors that affect stock markets and are thereby able to capture the pure effect of events relating to a particular stock or set of stocks. This indicates that equity markets reacted favorably to impovement in Health Scores.

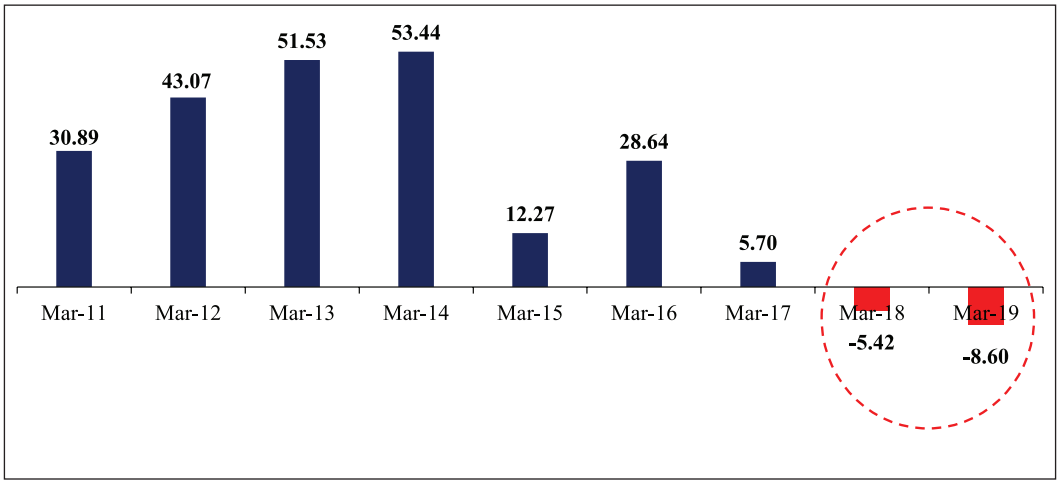
Figure 6: Cumulative Abnormal Returns vs. Change in Health Score of a stressed NBFC



Source: Bloomberg

8.11 Turning to the Housing Finance Companies (HFCs), it was found that the Health Score of the HFC sector also exhibited a declining trend post 2013-14, as indicated in Figure 7. The trend of the Health Score showed early warning signs, well before the HFC sector eventually faced constraints on external financing from 2017-18 onwards. Again, this confirms that the Health Score is a leading indicator of stress in the HFC sector.

Figure 7: Health Score of HFC Sector



Source: Annual Reports of HFCs: 2011-2019, based on a sample of prominent HFCs

8.12 These diagnostic plots on the Health Scores of a stressed NBFC and the HFC sector indicate that the Health Score can serve the critical role of predicting refinancing related stress faced by the financial firms in advance. It can serve as an important monitoring mechanism to prevent such problems in future. Furthermore, disaggregating the components and examining their trends can shed light on how to regulate NBFCs.

8.13 Other than its utility as a leading indicator of stress in the NBFC sector, the Health Score can also be used by policy makers to allocate scarce capital to stressed NBFCs in an optimal way to alleviate a liquidity crisis.

8.14 To summarize, redemption pressure faced by debt mutual funds is akin to a "bank run", which is a characteristic of any crisis in the financial sector. The redemption pressure gives rise to refinancing risk (rollover risk) for NBFCs, thereby affecting the real sector. The extent of refinancing risk faced by NBFCs is fundamentally driven by their reliance on short-term wholesale funding. The chapter analyze the mechanisms through which the reliance on short-term wholesale funding is manifested with an aim to develop a quantifiable measure (Health Score) that can predict stress in the NBFC sector.

BOX 1: THE SHADOW BANKING SYSTEM

To quote (Ghosh et al., 2012), "Shadow banking comprises a set of activities, markets, contracts and institutions that operate partially (or fully) outside the traditional commercial banking sector and are either lightly regulated or not regulated at all. A shadow banking system can be composed of a single entity that intermediates between end-suppliers and end-users of funds, or it could involve multiple entities forming a chain". Shadow banks do not have explicit access to central bank liquidity. The shadow banking system is highly levered with risky and illiquid assets while its liabilities disposed to "bank runs".

The focus in this chapter is on three important segments of the shadow banking system in India, namely, Non-Banking Housing Finance Companies (HFCs), Retail Non-Banking Financial Companies (Retail-NBFCs) and Liquid Debt Mutual Funds (LDMFs). The NBFC sector is lightly regulated as compared to the traditional banking system consisting of public and private sector banks and other financial institutions. However, the regulation in NBFC sector has evolved over time with prudential norms discouraging deposit-taking by NBFC (Reserve Bank of India (RBI), 1998) and encouraging the entry of non-deposit-taking NBFCs (RBI, 2006). The combination of these two effects has led to a steady decline in the share of deposits and increase in wholesale funding in the funding sources of the NBFCs. The wholesale funding sources of the NBFCs comprise mainly of banks (primarily via term loans and rest through non-convertible debentures and commercial paper) and debt mutual funds (via non-convertible debentures and commercial paper).

CONCEPTUAL FRAMEWORK OF ROLLOVER RISK

8.15 Financial institutions rely on short-term financing to fund long-term investments. This reliance on short-term funding causes an asset liability management (ALM) problem because asset side shocks expose financial institutions to the risk of being unable to finance their business.

8.16 More specifically, in the context of the liquidity crisis in the NBFC sector, a conceptual framework is built based on the following insights:

(i) NBFCs raise capital in the short-term (1-3 months) commercial paper (CP) market at a lower cost, as compared to the long term (5-10 years) non-convertible debenture (NCD) market

but face the risk of rolling over the CP debt at short frequencies of a few months.[4] The frequent repricing exposes NBFCs to the risk of facing higher financing costs and, in the worst case, credit rationing. Such refinancing risks are referred as Rollover Risk.

(ii) When an asset-side shock reduces expected future cashflows for an NBFC, it adversely affects the ALM problem in the NBFC and thereby risk perceptions about the NBFC.

(iii) Such a shock amplifies the NBFC's problems when its liability structure is over-dependent on short-term wholesale funding such as commercial paper, which requires frequent refinancing.

(iv) The LDMF sector is a primary source of short-term wholesale funds in the NBFC sector. Thus, the NBFC sector is intricately connected with the Liquid Debt Mutual Fund (LDMF) sector.[5]

(v) This interconnectedness is a channel for the transmission of systemic risk from the NBFC sector to the LDMF sector. Shocks in the NBFC sector may lead to concerted redemptions by investors in the LDMF sector at fire-sale prices. Faced with this situation, LDMFs may withdraw funding to the NBFC sector when refinancing is due. Such a reinforcing cycle can quickly turn into a vicious cycle, leading to a liquidity crisis in the NBFC sector. More technically, systemic risk is transmitted from the NBFC sector to the LDMF sector and vice-versa, i.e., interconnectedness causes systemic risk transmission between an NBFC sector and the LDMF sector.

(vi) In general, if the quantum of defaults is large enough (as was the case with IL&FS and DHFL), it can spread panic among the investors in CP leading to concerted redemptions in the LDMF sector (systemic risk within the LDMF sector). Moreover, the liquidity crunch in an NBFC adversely affects risk perceptions about other NBFCs when they are due for rolling over their CP obligations. Hence, Rollover risk, initially contained within a few NBFCs may rapidly spillover and affect the entire NBFC sector (systemic risk within the NBFC sector).

(vii) The key drivers of the redemption problem in the LDMF sector, and thereby the Rollover Risk problem in the NBFC sector, are threefold: The first risk stems from the magnitude of the ALM problem in the NBFC. The second risk originates from the interconnectedness of the NBFC with the LDMF sector. This risk depends on the extent to which an NBFC relies on short-term wholesale funding and the liquidity buffers in the LDMF sector to absorb redemption pressure. The third risk stems from the inherent resilience of the NBFC, as reflected in the strength of the balance sheet, which allows it to absorb shocks in the first place.

(viii) These three risks work in tandem

---

[4] For one of the largest HFCs, the rate of interest on CP was 7.01% - 8.00% while that on NCD was 10.01 – 11.95%, as of 31 March 2019.

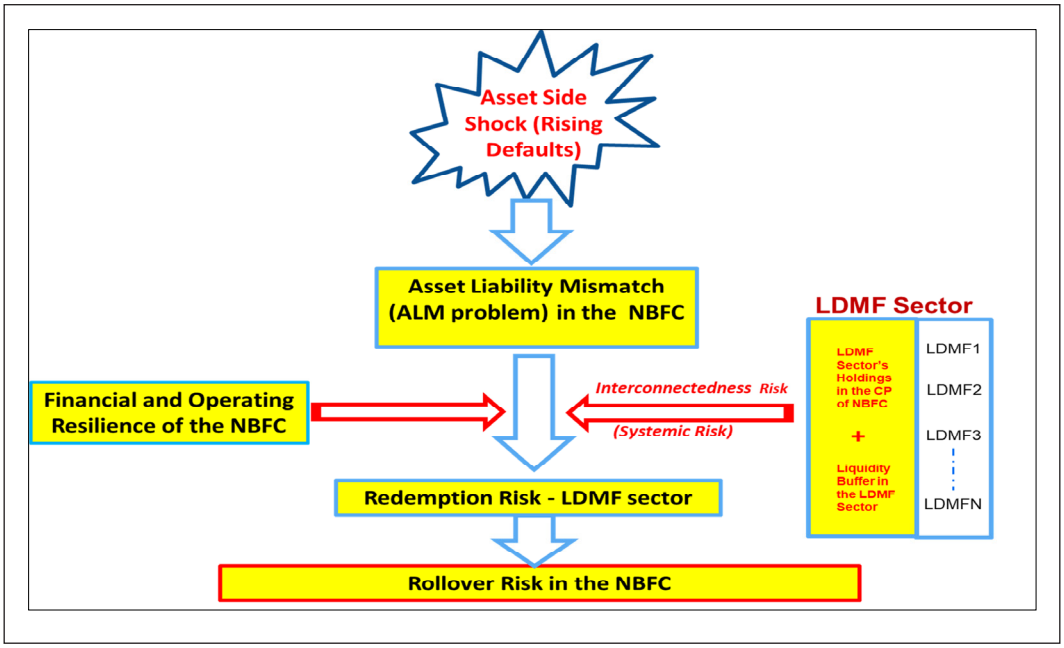
[5] The share of CP issued by NBFCs that are subscribed to by mutual funds was the highest (79.7% as of 31 March 2019) among all classes of subscribers (Retail-NBFC Credit Trends: ICRA Report, July 2019). Among mutual funds, LDMFs have the highest share of investments in CP (~80% on average), which is highlighted in Figure 11, sub-section 3.2. Together, these two facts suggest that the LDMF sector is a primary source of short-term wholesale funds in the NBFC sector.

to cause Rollover Risk. At the time of refinancing their CP obligations, the NBFCs having stronger balance sheets are successful in rolling over CPs, albeit at a higher cost. Other NBFCs with weaker balance sheets face higher default probabilities and find it difficult to access the CP market at affordable rates or are unable to raise money at all, i.e., they are unable to avoid default.

(ix) At the most fundamental level, the root cause of the liquidity crisis in the NBFC sector can be traced to the over-dependence of NBFCs on the short-term wholesale funding market. This factor works through two channels, a direct channel and an indirect channel. First, an increase in short-term wholesale funding causes a direct effect by increasing the amount of funding that is subject to frequent repricing, and therefore, Rollover Risk. Second, there are indirect effects in that an increase in short-term wholesale funding influences the two key drivers of Rollover Risk - it worsens the ALM mismatch problem and increases the degree of interconnectedness of the NBFC sector with the LDMF sector. In addition, if the NBFC's balance sheet strength is suspect, Rollover Risk is further exacerbated. In short, over-dependence on short-term wholesale funding has direct and indirect impact on Rollover Risk.

8.17 Figure 8 illustrates the drivers of rollover risk in the NBFC sector. Redemptions pressures in the LDMF sector are exacerbated when NBFCs face an asset-side shock and experience an ALM problem, which gets compounded due to interconnectedness and lack of balance sheet resilience. Faced with redemption pressures, the LDMF sector is reluctant to roll over loans to the NBFC sector (Rollover Risk), causing a liquidity crunch in the NBFC sector.

Figure 8: Rollover Risk Schematic (NBFC Sector)



Source: Adapted from V. Ravi Anshuman and Rajdeep Sharma, "Financial Fragility in Housing Finance Companies", IIMB Working Paper, 2020

8.18 To develop policy implications, financial metrics were employed to estimate the drivers of Rollover Risk and weigh them appropriately based on their relative contribution to Rollover Risk. This procedure helps to generate a measure of the health of an NBFC. This measure is called as the Health Score, which is an indicator of potential rollover risk issues faced by an NBFC. The validity of this indicator as a predictor of future performance is also tested using market data.

DIFFERENCES BETWEEN HFCs AND RETAIL-NBFCs

8.19 The NBFC sector analysis is conducted for two sub-sectors: (i) Housing Finance Companies (HFCs) and (ii) Retail-NBFCs. To analyse the HFC sector, select a set of the five largest HFCs is selected which control, on average, ~82 per cent of the non-banking housing finance sector with an on-book portfolio of ₹ 8.6 lakh crore as of 31 March 2019. These five HFCs, therefore, are representative of the non-banking housing finance sector in India. To analyse the Retail-NBFC sector, a set of fifteen private sector NBFCs operating in the retail credit segment were selected for analysis. These fifteen NBFCs have assets under management (AUM) of ₹ 6.8 lakh crore while the total AUM of the industry including PSUs is ₹ 9.1 lakh crore as of 31 March 2019. These fifteen Retail-NBFCs, therefore, control ~75 per cent of the market and serve as a good proxy for the Retail-NBFC sector. The fifteen Retail-NBFCs are classified into large, medium and small-sized Retail-NBFCs based on assets under management to analyse firm size effects.

8.20 The drivers of Rollover Risk differ between HFCs and Retail-NBFCs are demonstrated first due to the following reasons. First, HFCs hold much longer duration assets (housing loans, developer loans etc.,) as compared to Retail-NBFCs, which hold medium-term assets (auto, consumer durables, gold loans, etc.,). HFCs face a greater gap between the average maturity of their assets and liabilities, as compared to Retail-NBFCs, which typically provide loans of shorter duration in the form of working capital loans to MSME, automobile financing loans or gold loans. Thus, asset side shocks cause significant deterioration in the asset liability mismatch of the HFCs, but they induce less of an adverse impact on asset liability mismatch of Retail-NBFCs.

8.21 Second, Retail-NBFCs rely much more on the short-term wholesale funding market as compared to HFCs. For the sample, the average level of CP as a percentage of borrowings in HFCs was 8.50 per cent while that in Retail-NBFCs was 12.74 per cent from March 2015 till March 2019. Thus, HFCs are less exposed to interconnectedness risk, as compared to Retail-NBFCs. For computing the Rollover Risk score of Retail-NBFCs data is collected on the month-on-month portfolio holdings of the top fifteen LDMFs' in the Retail-NBFC sector and their overall corpus from March 2014 till March 2019. These fifteen LDMFs control ~70 per cent of the assets under management of the LDMF sector and are representative of the risks emanating out of the Retail-NBFC and the LDMF sector interconnectedness. For computing the redemption risk in the LDMF sector, data is collected on the portfolio holdings of the LDMFs by asset class (i.e., cash, G-secs, T-bills, CP, CD, NCD, and corporate debt). Source of data for LDMFs is the ACE-Mutual Fund database.

8.22 Given these two differences, it is argued that the key drivers of the redemption problem in the LDMF sector (and the rollover problem for NBFCs) differ between HFCs and Retail-NBFCs. The implication of these factors is that the key drivers of Rollover Risk for HFCs are ALM Risk and

Financial and Operating Resilience, whereas, for Retail-NBFCs, Interconnectedness Risk and Financial and Operating Resilience are the key drivers of Rollover Risk. A more detailed analysis is presented in next section to support these arguments.

RISKS FROM ASSET LIABILITY MANAGEMENT MISMATCH

8.23 This risk arises in most financial institutions due to a mismatch in the duration of assets and liabilities. Liabilities are of much shorter duration than assets which tend to be of longer duration, especially loans given to the housing sector. This mismatch implies that an NBFC must maintain a minimum amount of cash or cash-equivalent assets to meet its short-term obligations.

8.24 If cash flows from the long-term assets are inadequate to meet its immediate debt obligations, an NBFC can still repay its obligations by issuing fresh CP to avoid defaulting. However, such a refinancing strategy works well only when there are no asset side shocks or liability side shocks.

8.25 During periods of stress, there may be a significant drop in periodic cash flows that would normally arise from an NBFC's long-term assets. This exacerbates Rollover Risk. NBFCs that maintain adequate cash buffers and do not have asset liability management problems are able to survive through the stress period as they can meet their obligations without having to tap the wholesale funding market. This implies that they have much lower Rollover Risk.

8.26 For HFCs, which invest in significantly longer duration (15 to 20-year horizon) assets, the key driver of Rollover Risk is the ALM risk. ALM risk arises if the future contractual cash inflows from loan assets are not enough to meet the future contractual cash outflows from debt obligations. The cash flows are split into multiple buckets based on the duration of assets and liabilities and the difference between expected inflows and outflows is measured. This difference is normalized by dividing the difference by total assets for meaningful comparison across years. Negative asset liability gap in short tenor buckets can lead to defaults if there is a shock to the asset/liability side and the firm is unable to roll over its debt obligations.

8.27 Figure 9 (a & b) illustrates that the ALM risk is more problematic for HFCs based on a quarter-on-quarter comparison of trends in ALM for the HFC and Retail-NBFC sector. HFCs short term liabilities (up to maturities of 3 years) are clearly greater than their assets in these maturity buckets. Therefore, HFCs face significant rollover risk due to their ALM mismatch problem. In contrast, for Retail-NBFCs, the assets are greater than their liabilities with respect to the profile of cashflows for all maturity buckets. The Rollover Risk stemming from ALM mismatch is, therefore, lower for Retail-NBFCs.

RISKS FROM INTERCONNECTEDNESS

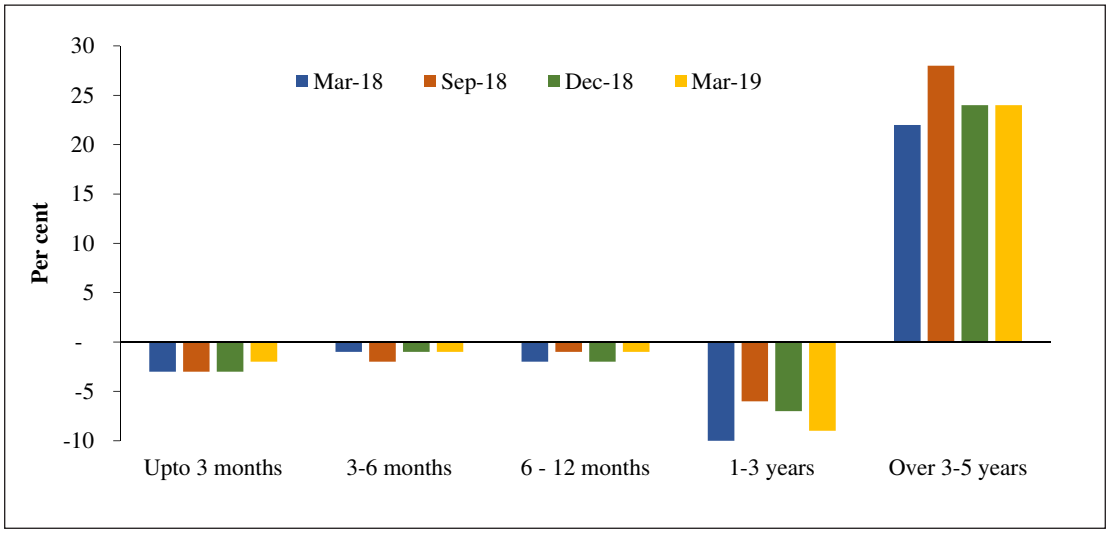
8.28 Interconnectedness Risk is a measure of the transmission of systemic risk between an NBFC and the LDMF sector that arises from two factors. First, if the LDMF sector, on average, holds concentrated positions in the CPs of a specific *stressed* NBFC, it may lead to a greater redemption risk from their own investors who fear rise in default probabilities due to deterioration of asset quality of the NBFC. This factor is measured by the LDMF sector's average exposure to CP issued by the NBFC.

8.29 Second, LDMFs are subject to run risk or redemption risk from their investors if their cash holdings do not account for extreme tail events. Thus, low levels of cash holdings in the LDMF sector, on average,

diminish the ability of the LDMF sector to absorb redemption pressures.

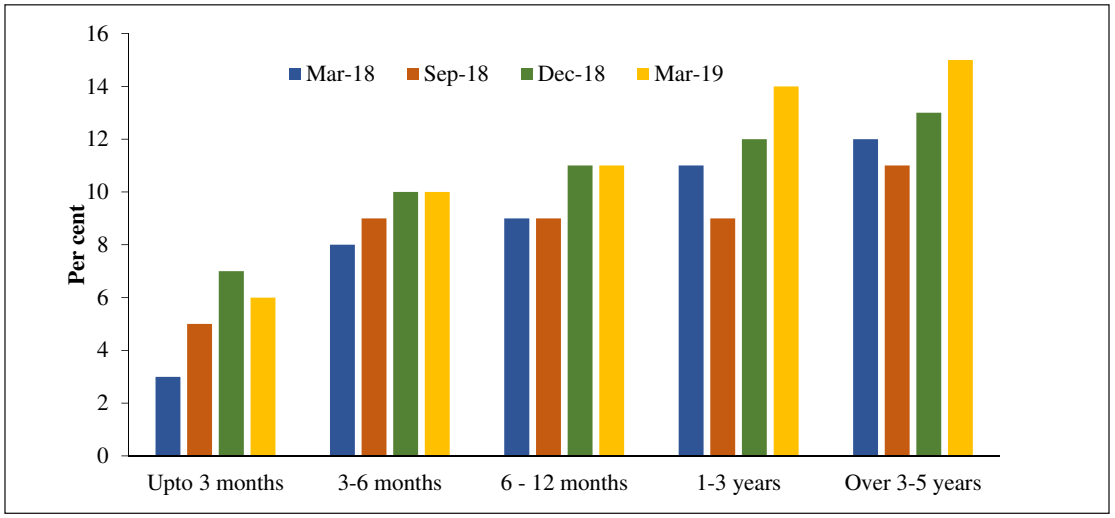
8.30 The combined impact of these two factors are referred to as the Interconnectedness Risk, which increases the likelihood of concerted redemption by investors across the entire LDMF sector,

Figure 9: ALM Profile
(a) HFC Sector



Source: Indian Mortgage Finance Market: ICRA Reports, June 2019, March 2019, November 2018

(b) Retail-NBFC Sector



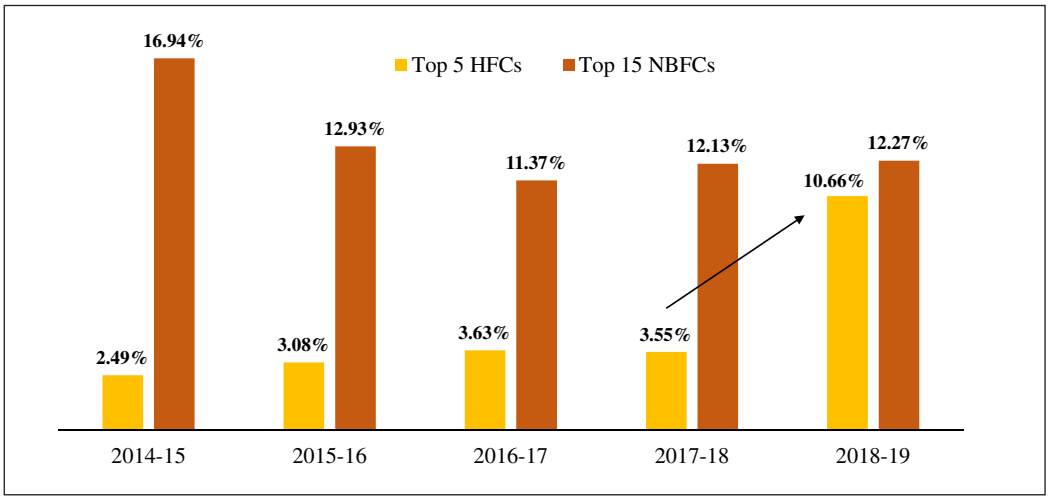
Source: Retail-NBFC Credit Trends: ICRA Report, July 2019

leading to fire sales of LDMF assets. These redemptions increase Rollover Risk in a vicious cycle for the stressed NBFCs.

8.31 To shed light on the first factor driving Interconnectedness Risk, a comparison of the average dependence of the HFC sector and the Retail-NBFC sector on the LDMF sector is provided, as shown in Figure 10. This dependence is measured by the average of

the ratio of commercial paper of the *specific* HFC/Retail-NBFC held by the LDMF sector and the total commercial paper holdings of the LDMF sector in the overall HFC/Retail-NBFC sector. Then the dependence over the HFC/Retail-NBFC sectors is averaged and the figures are tracked from 2014 till 2019.

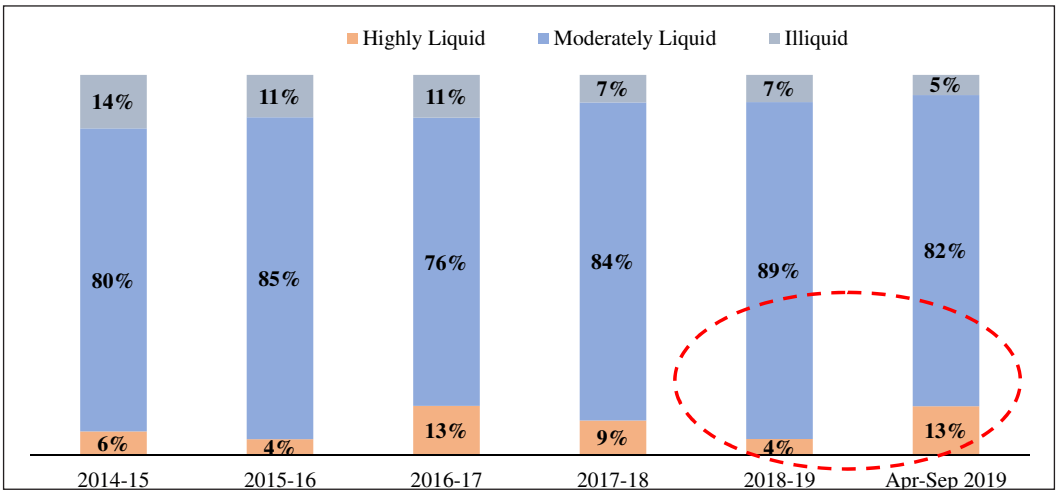
Figure 10: YoY Average Dependence of HFC/Retail-NBFC Sectors on the LDMF Sector



Source: ACE-MF Database

8.32 The average dependence for the HFC sector from March 2014 till March 2019 was 4.68 per cent while the average dependence for the Retail-NBFC sector during the same period was 13.13 per cent. Although the average dependence of HFCs had spiked in financial year 2019, the dependence was lower than that of Retail-NBFCs in 4 out of 5 years in the chapter.

Figure 11: Liquidity Buffer of Top 15 LDMFs (percentage of Assets under Management)

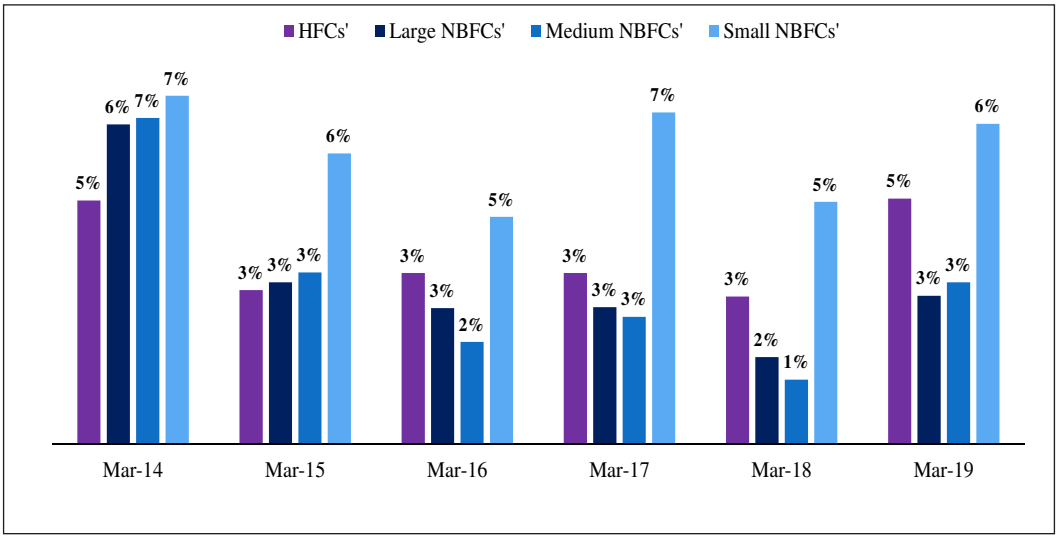


Source: ACE-MF Database

*Note: Highly liquid investments include cash and cash equivalents, G-secs, T-bills, Bills rediscounting and cash management bills. These are the most liquid investments having the lowest liquidity risk. Moderately liquid investments include certificates of deposits (CD) and commercial paper (CP). Illiquid investments include corporate debt, (NCD), deposits, floating rate instruments and pass-through certificates/securitized debt.

8.33 Turning to the second factor driving Interconnectedness Risk, the asset class wise holdings of the LDMFs in sample from March 2014 till March 2019 is plotted, as shown in Figure 11. The proportion of highly liquid investments such as cash, G-secs etc., is a measure of the Liquidity Buffer in the LDMF sector. Higher the Liquidity Buffer, lower is the redemption risk faced by the LDMFs and by extension the Rollover Risk faced by HFCs/Retail-NBFCs. A steep jump in the average level of highly liquid investments of LDMFs post the IL&FS and DHFL defaults was observed, probably in anticipation of higher than usual redemptions.

Figure 12: Cash (Percentage of Borrowings)



Source: Annual Reports 2014-2019, HFCs and Retail-NBFCs

FINANCIAL AND OPERATING RESILIENCE

8.34 Liquidity crunch in debt markets often leads to credit rationing. Credit rationing results when firms with robust financial and operating performance get access to credit while the less robust ones are denied credit. Firms with robust financial and operating performance can withstand a prolonged period of liquidity crunch if they choose not to raise funds from debt mutual funds.

8.35 Measures of financial resilience of NBFCs are commercial paper (CP) as a percentage of borrowings, Capital Adequacy Ratio (CAR) and provisioning policy, while measures of operating resilience are cash as a percentage of borrowings, loan quality and operating expense ratio (Opex Ratio). As an example, the trends in cash as a percentage of borrowings which is a measure of operating resilience for NBFCs is plotted, as shown in Figure 12.

8.36 From 2015-16 onwards, large and medium-sized Retail-NBFCs had lower operating resilience, measured by cash as a percentage of borrowings, as compared to HFCs and small-sized NBFCs.

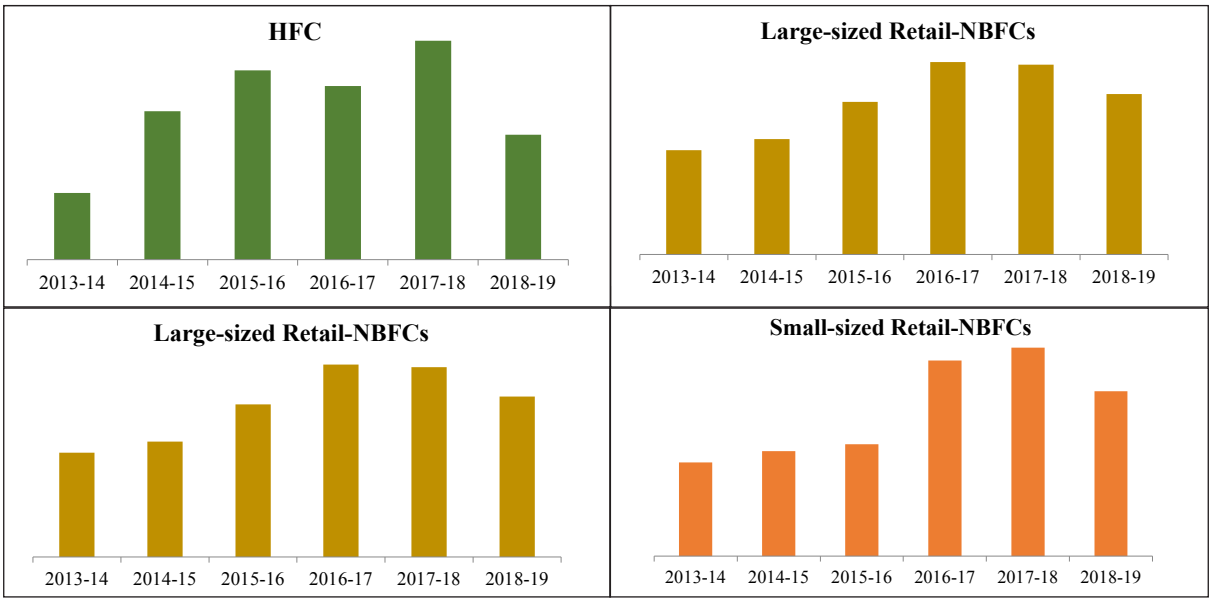
RELIANCE ON SHORT-TERM WHOLESALE FUNDING

8.37 As pointed out earlier, it is argued that the fundamental factor that influences Rollover Risk can be traced to the over-dependence of the NBFC sector on the short-term wholesale funding market. First, greater short-term funding implies a greater exposure

to repricing risk (direct channel). Second, both the key drivers of Rollover Risk, ALM Risk and the Interconnectedness Risk increase when short-term funding increases (indirect channel).

8.38 This issue is investigated by comparing the reliance on short-term wholesale funding (CP as a percentage of liabilities) of HFCs and Retail-NBFCs, as shown in Figure 13. It was observed that the average level of commercial paper in sources of funds was 5-6.5 per cent for the HFC sector and large-sized Retail-NBFCs while it was 11.5-12.5 per cent for medium and small-sized Retail-NBFCs. While the HFC sector is less exposed to short-term wholesale funding, one must recognize that given the much longer duration of their assets, a lower 5-6.5 per cent exposure is sufficiently high to influence ALM Risk but not high enough to affect Interconnectedness Risk. In contrast, small and medium Retail-NBFCs have high exposure to short-term wholesale funding which makes Interconnectedness Risk an important driver of Rollover Risk without causing ALM problems. The large Retail-NBFCs are in a better position as their exposure to short-term wholesale funding is low enough to keep both ALM Risk and Interconnectedness Risk within reasonable levels.

Figure 13: Commercial Paper as a percentage of Liabilties



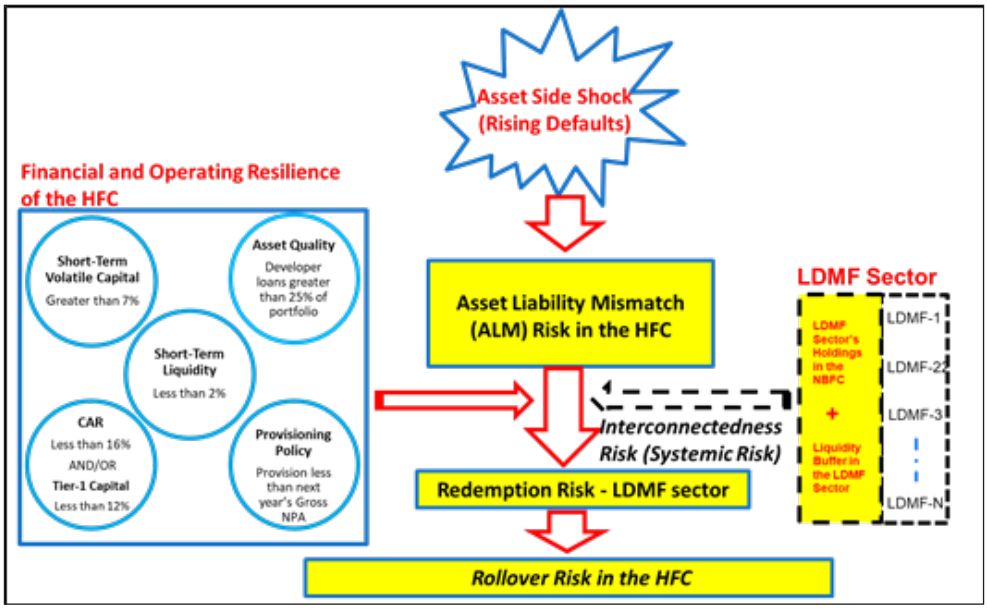
Source: Annual Reports 2014-2019, HFCs and Retail-NBFCs

8.39 Hahm, Shin and Shin (2013) have found that legacy banks with more reliance on deposit funding are safer than banks that depend heavily on wholesale funding. Defaults on wholesale funding obligations by NBFCs in September 2018 and more recently in June 2019 exposed the risks of heavy reliance on wholesale funding sources, consistent with the findings of Hahm, Shin and Shin (2013).

ROLLOVER RISK SCHEMATICS OF HFCs/RETAIL-NBFCs

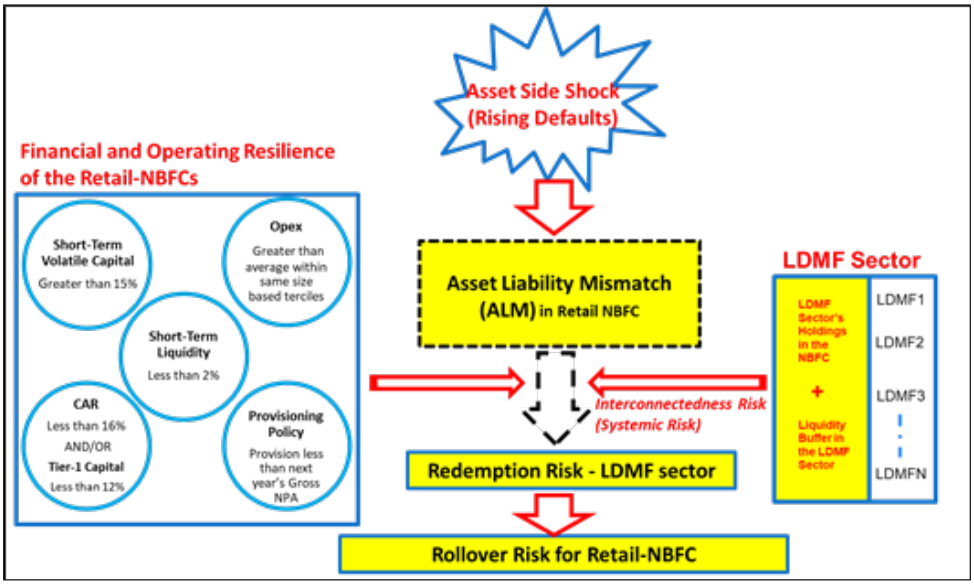
8.40 Figures 14 and 15 provide the modified schematics of the conceptual framework underlying the drivers of Rollover Risk in the HFC and the Retail-NBFC sectors. These schematics highlight the difference in the mechanism through which asset side shocks affect Health Score of HFCs and Retail-

Figure 14: Rollover Risk Schematic (HFCs)



Source: Adapted from V. Ravi Anshuman and Rajdeep Sharma, "Financial Fragility in Housing Finance Companies", IIMB Working Paper, 2020
Note: Solid Red Arrows - Strong Effect
Dotted Black Arrows – Weak Effect

Figure 15: Rollover Risk Schematic (Retail-NBFCs)



Source: Adapted from V. Ravi Anshuman and Rajdeep Sharma, "Financial Fragility in Housing Finance Companies", IIMB Working Paper, 2020
Note: Solid Red Arrows - Strong Effect
Dotted Black Arrows – Weak Effect

NBFCs, respectively. More specifically, the schematic for the HFC sector highlights the ALM Risk and the Financial and Operating Resilience as strong effects while the Interconnectedness Risk as a weak effect. On the other hand, in the schematic for the Retail-NBFC sector, the ALM Risk, is highlighted as a weak effect, but the Interconnectedness Risk and the Financial and Operating Resilience are strong effects.

DIAGNOSTIC TO ASSESS FINANCIAL FRAGILITY

8.41 In this section, a methodology is developed to estimate a dynamic health index for an individual NBFC (referred to this index as the Health Score). The sample consists of data on HFCs from March 2011 till March 2019 and Retail-NBFCs from March 2014 till March 2019. The fifteen Retail-NBFCs is divided into three equal sized groups based on the size of their loan books as there is significant variation in the size of the loan book among the fifteen firms. This helps to differentiate between the Retail-NBFCs in terms of their Health Scores while controlling for loan book size. There is not much variation in size among the five HFCs in the sample and thus the five HFCs are treated as representative of the HFC sector.

8.42 Overall, it was found that the Health Score for the HFC sector exhibited a declining trend post 2014. By the end of 2018-19, the health of the overall sector had worsened considerably. The Health Score of the Retail-NBFC sector was consistently below par for the period 2014 till 2019. Further, the large Retail-NBFCs had higher Health Scores but among the medium and small Retail-NBFCs, the medium size Retail-NBFCs had a lower Health Score for the entire period from March 2014 till March 2019.

8.43 Finally, the change in Health Score is demonstrated as a significant predictor of future abnormal returns of these stocks/ portfolios. The Health Score, therefore, can serve as a timely indicator of future performance of these firms.

HEALTH SCORE (HFCs)

8.44 Based on the relative contribution to Rollover Risk, the key drivers of Rollover Risk are combined for HFCs into a composite measure (Health Score). ALM Risk and Financial and Operating Resilience are the most important constituents of the Health Score of HFCs, as shown earlier in the Health Score schematic for the HFC sector. As discussed, Interconnectedness Risk was low for the HFC sector and, therefore, not a key driver of Rollover Risk for these firms.

8.45 Metric 1 captures ALM Risk, while Metrics 2-6 capture the Financial and Operating Resilience of HFCs. Metrics 2, 5 and 6 are measures of Financial Resilience and Metrics 3 and 4 are measures of Operating Resilience for the HFCs.

8.46 In Box 2, definitions of each of the metrics is provided, which affect Health Score of HFCs. There may be metrics other than the ones considered here that may explain Health Score of HFCs, but the most important ones are focussed in this chapter. Box 3 provides a short description of the method used to arrive at the Health Score for the HFC sector.

BOX 2: Key Metrics affecting Health Scores of HFCs

Metric 1: ALM Profile - ALM Profile is measured by the difference between assets and liabilities in each cash flow bucket normalized by the total assets of the HFC.

Metric 2: Short-Term Volatile Capital – This is measured by CP as a percentage of borrowings of the HFC.

Metric 3: Asset Quality - This is measured by the ratio of retail loans to the overall loan portfolio of the HFC.

Metric 4: Short-term Liquidity – This is measured by the percentage of cash to the total borrowings of the HFC.

Metric 5: Provisioning Policy – This is measured by the difference between provision for bad loans made in any financial year and the gross non-performing assets (NPA) in the subsequent financial year.

Metric 6: Capital Adequacy Ratio (CAR) – This is the sum of Tier-I and Tier-II capital held by the HFC as a percentage of Risk-Weighted Assets (RWA).

8.47 The Health Score can range from -100 to +100 with higher scores indicating lower Rollover Risk. A Health Score of 0 is a neutral score, not risky, but not too safe either. A benchmark of 50 is used, above which the individual HFC/Sector may be deemed to be sufficiently safe.

BOX 3: Weighting Scheme to determine the Health Score of HFCs

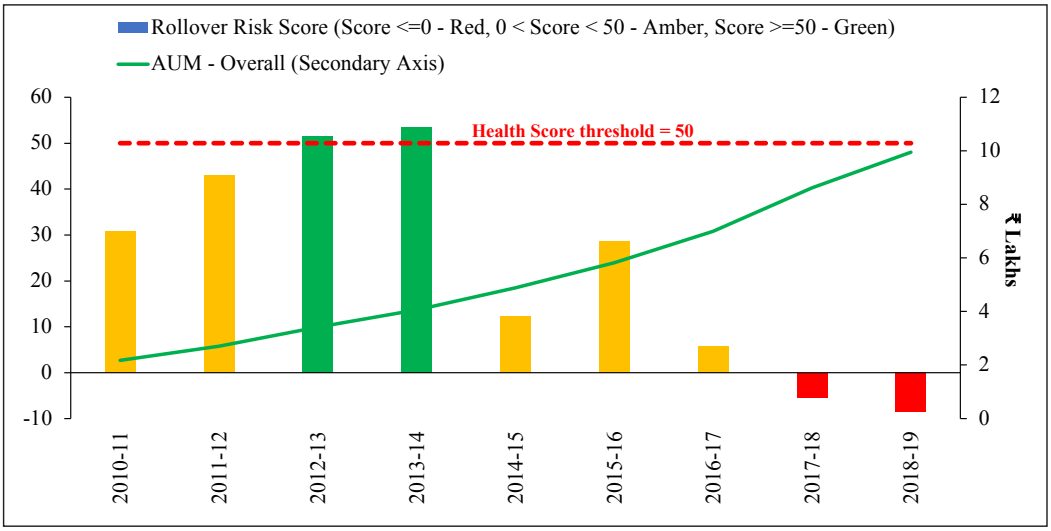
Weights are assign to each of the six metrics defined in Box 2. The assigned weights are subjective, and the sum of the weights is 100 points. To capture the relative contributions of each of the metrics to Health Score, maximum weight of 50 points is assigned to ALM Risk (Metric 1) and 50 points to Financial and Operating Resilience (Metrics 2-6). The 50 points to Financial and Operating Resilience are further broken down, with 20 points to Metric 2, 10 points each to Metrics 3-4 and 5 points each to Metrics 5-6.

For each of the five HFCs, a Health Score is computed based on Metrics 1-6. The variables defining each metric are compared with pre-defined thresholds, which reflect the level of the variable for an HFC facing average Rollover Risk. The maximum possible score for a metric is the weight assigned to that metric (for example, 50 for ALM Risk).

For computing the Health Score for the HFC sector as of 31st March in any financial year, the AUM (Assets under Management) weighted average of the scores obtained for each of the Metrics 1-6 is computed and added upon. Using this approach, the Health Score is computed at the end of each financial year from March 2011 till March 2019 for the overall HFC sector.

8.48 Figure 16 plots the trends in Health Scores for the HFC sector as of 31st March each year from 2011 till 2019. The start of the decrease in Health Score for the HFC sector followed soon after the real estate sector slowdown in 2013-14. The dynamics of the Health Score for a stressed NBFC have been provided in Figure 3 to illustrate the validity of Health Score. It is evident from figure 3, that the Health Score declined significantly from 2015 onward. However, AUM of the HFC sector continued to increase substantially during this period. Taken together, these trends suggest a build-up of risk that does not bode well for the HFC sector in the future.

Figure 16: Health Score and Portfolio Trends (HFC Sector)



Source: Annual Reports of top 5 HFCs (2011-2019)

HEALTH SCORE (RETAIL-NBFCs)

8.49 Based on the relative contribution to Rollover Risk, the key drivers of Rollover Risk are combined for Retail-NBFCs' to compute the Health Score. Interconnectedness Risk between an NBFC and the LDMF sector and Financial and Operating Resilience are the most important constituents of Health Score of Retail-NBFCs, as shown earlier in the Health Score schematic for the Retail-NBFC sector. Interconnectedness Risk arises from both the LDMF sector exposure to CP issued by Retail-NBFCs (Metric 1) and Liquidity Buffer levels in the LDMF Sector (Metric 2). The analysis is also illustrated that ALM Risk was low for the Retail-NBFC sector and, therefore, not a key driver of Rollover Risk for these firms.

8.50 Metrics 1 and 2 capture the Interconnectedness Risk and Metrics 3-7 capture the Financial and Operating Resilience of Retail-NBFCs. Metrics 3, 6 and 7 are measures of Financial Resilience while Metrics 4 and 5 are measures of Operating Resilience for the HFCs. Together, they reflect the Financial and Operating Resilience of Retail-NBFCs.

BOX 4: Key Metrics affecting Health Scores of Retail-NBFCs

Metric 1: LDMF sector exposure to CP issued by Retail-NBFCs - This is measured by the average of the ratio of commercial paper of the *specific* HFC/Retail-NBFC held by the LDMF sector and the total commercial paper holdings of the LDMF sector in the overall HFC/Retail-NBFC sector.

Metric 2: Liquidity Buffer levels in the LDMF Sector – This is measured by the average proportion of highly liquid investments such as cash, G-secs etc., that are held by the LDMFs.

Metric 3: Short-Term Volatile Capital - This is measured by CP as a percentage of borrowings of the Retail-NBFC.

Metric 4: Operating Expense Ratio (Opex Ratio) – This is measured by the operating expenses in a financial year divided by the average of the loans outstanding in the current financial year end and previous financial year end. Opex Ratio is an indicator of efficiency of a Retail-NBFC.

Metric 5: Short-term Liquidity - This is measured by the percentage of cash to the total borrowings of the Retail-NBFC.

Metric 6: Provisioning Policy – This is measured by the difference between provision for bad loans made in any financial year and the gross non-performing assets (NPA) in the subsequent financial year.

Metric 7: Capital Adequacy Ratio (CAR) – This is the sum of Tier-I and Tier-II capital held by the Retail-NBFC as a percentage of Risk-Weighted Assets (RWA).

BOX 5: Weighting Scheme to determine the Health Score of Retail-NBFCs

Weights are assigned to each of the seven metrics defined in Box 4. The assigned weights are subjective, and the sum of the weights is 100 points. To capture the relative contributions of each of the metrics to Health Score, 50 points to Interconnectedness Risk (25 points each to Metrics 1 and 2) and 50 points to Financial and Operating Resilience (Metrics 3-7). The 50 points to Financial and Operating Resilience are further broken down, with 20 points to Metric 3, 10 points each to Metrics 4-5 and 5 points each to Metrics 6-7.

For each of the fifteen Retail-NBFCs, the Health Score is computed based on the scores of Metrics 1-7. The variables defining each metric are compared with pre-defined thresholds, which reflect the level of the variable for a Retail-NBFC that is facing average Rollover Risk.

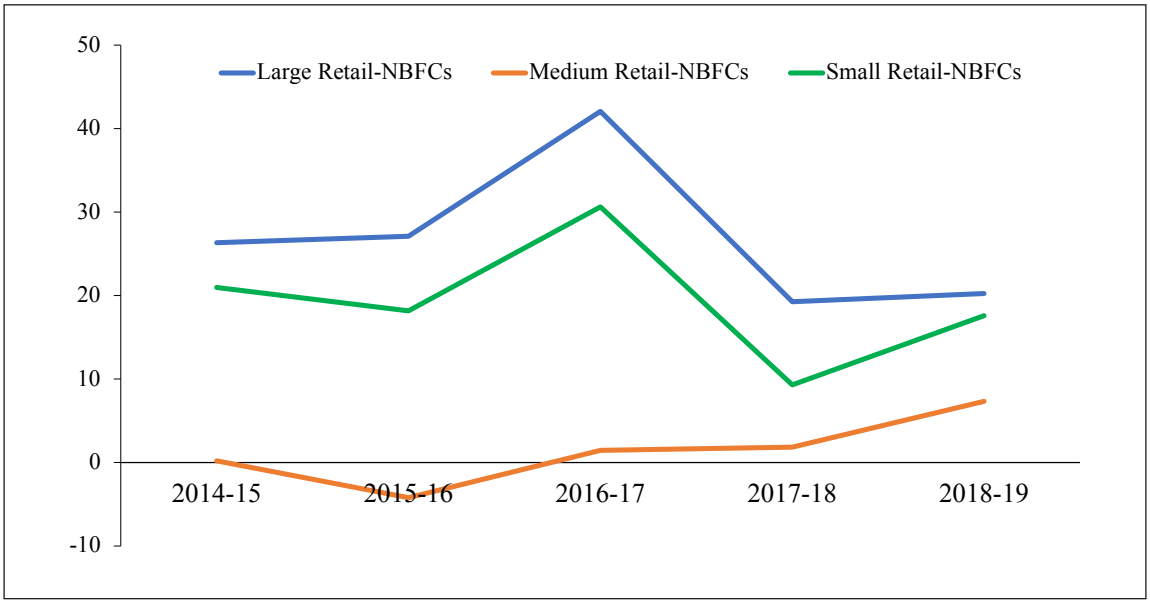
The maximum possible score for a metric is the weight assigned to that metric (for example, 50 for Interconnectedness Risk). The sum of the scores obtained for all seven metrics for a Retail-NBFC is its Health Score. The Health Score is computed in each of the financial years from 2014-15 till 2018-19 for each of the fifteen Retail-NBFCs' in the sample. Although some of the metrics for Retail-NBFCs and HFCs are same, the thresholds for these common metrics differ. In this way, different nature of assets and liabilities of HFCs and Retail-NBFCs is accounted in the Health Score computation.

8.51 In Box 4, definitions of each of the metrics is provided which affect Health Score of Retail-NBFCs. There may be metrics other than the ones considered here that may explain Rollover Risk of Retail-NBFCs, but the chapter tried to capture the most important ones in this chapter. Box 5 provides a brief description of the method used to arrive at the Health Score for the Retail-NBFC sector.

8.52 The sample of fifteen Retail-NBFCs' is divided into three equal sized groups based on the loan book size to examine Health Scores within each sub-class of Retail-NBFCs. For each group, the average Health Score of the five firms within the group is computed. As in the case of HFCs, the Health Score of Retail-NBFCs can range from -100 to +100 with higher scores indicating lower Rollover Risk. A Health Score of 0 is a neutral score, not risky, but not too safe either. A benchmark of 50 is used, above which the individual Retail-NBFC/Sector may be deemed to be sufficiently safe. Figure 17 plots the trends in average Heath Score for the three size-based groups of Retail-NBFCs. Among the three size-based groups, it was observed that medium-sized Retail-NBFCs had low Health Score almost throughout the period. The Health Score of large-sized Retail-NBFCs started declining post 2016-17.

8.53 Figure 17 shows that size is not always inversely related to Rollover Risk exposure. Throughout the period, it was evident that, on average, smaller sized Retail-NBFC had higher Health Scores than the medium-sized ones. Hence, targetting liquidity enhancements based on size, would be a sub-optimal capital allocation strategy.

Figure 17: Average Health Scores (Retail-NBFCs)



Source: Annual Reports of top 15 Retail-NBFCs (2014-2019)

PREDICTIVE POWER OF HEALTH SCORE

Housing Finance Companies (HFCs)

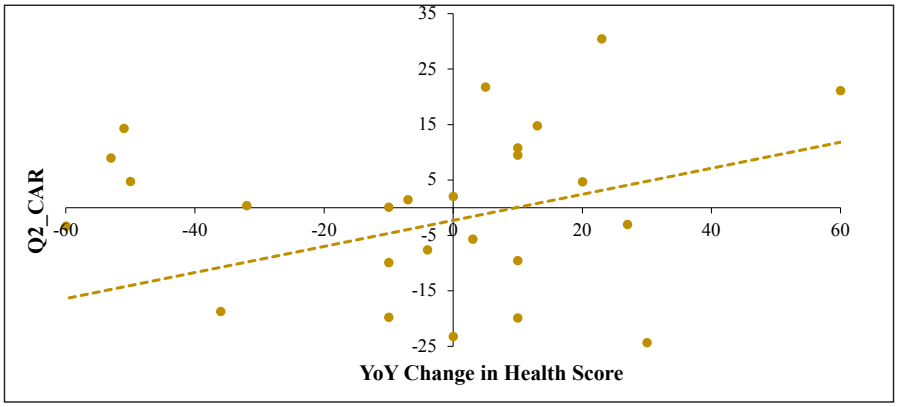
8.54 In this section, an attempt is made to understand whether the year-over-year (YoY) change in Health Score of individual HFCs has any predictive power on future abnormal stock returns of these firms. This test is useful in validating the Health Score as an early warning signal. The annual reports for each financial year are generally released in the period from July to August each year. The dates of release, however, vary for each of the HFCs. Information in the annual reports that provide insights on the Health Score of the HFC should gradually reflect in the share price over horizon of a few months as the information is absorbed by active traders. If the Health Score is a forward-looking measure of the prospects of the HFCs, the YoY change in Health Score should explain future abnormal returns of their stocks.

8.55 Given the uncertainty on the date of release of annual reports of the HFC and the time required for the information to be reflected in future stock price movements/ returns of these firms, the price effect is estimated using the cumultaive return of an NBFC's stock from July to September (Q2) of each year from 2011 till 2018. The contemporaneous NIFTY 500 index returns is subtracted to compute the abnormal returns on a weekly basis. The cumulative abnormal return (Q2_CAR) is calculated by adding the weekly abnormal returns every week from July to September (~ 12 weeks in a year).

8.56 Q2_CAR is calculated in this way for all the five HFCs for each year from 2011-2018. Based on the year of listing of the five HFCs'in the sample, a set of 32 Q2_CAR values are obtained and the corresponding Health Scores of individual HFCs.

8.57 Figure 18 shows a scatter plot of Q2_ CAR and YoY Change in Health Scores of the HFC sector in the sample. The positively sloped trend line in the scatter plot confirms the ex-ante expectation that an improvement in the YoY Health Score should result in an increase in future short-term cumulative abnormal returns of the HFC stocks.

Figure 18: Cumulative Abnormal Returns (Q2_CAR) vs YoY Change in Health Score (HFCs)



Source: Based on data from Bloomberg

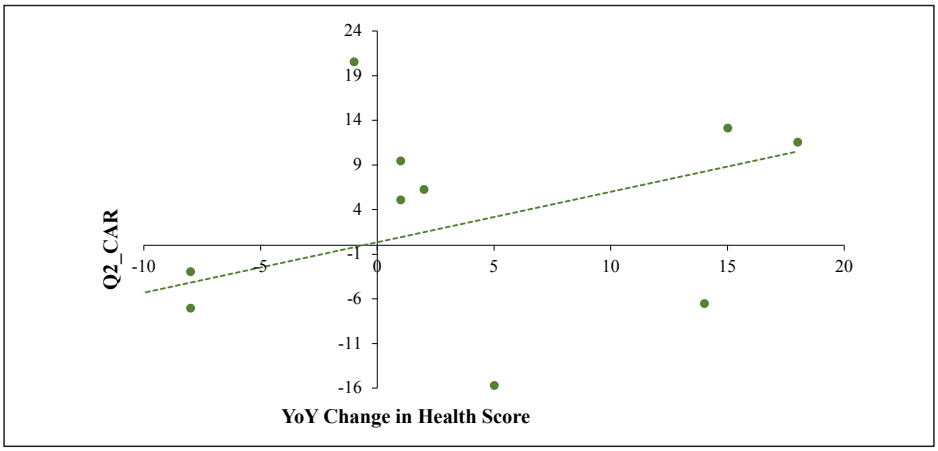
RETAIL-NBFCs

8.58 In this section an attempt is made to understand whether the year-over-year (YoY) change in Health Score of individual Retail-NBFCs has any predictive power on future abnormal stock returns of these firms. Q2_CAR for the fifteen Retail-NBFCs is computed in exactly the same way as done for HFCs (illustrated in sub-section 4.3.1) for each year from 2015-2019.

8.59 A set of Q2_CAR values and corresponding Health Scores for each of the fifteen Retail-NBFCs is obtained. The fifteen Retail-NBFCs are classified into three terciles comprising of large, medium and small NBFCs. An equally weighted portfolio of size-based NBFC stocks is constructed and the Q2_CAR is computed for the three size-based portfolios for each of the years from 2015 till 2019. Corresponding to each Q2_CAR value for the three portfolios, the average Health Score is computed of the constituent set of Retail-NBFCs.

8.60 Figure 19 shows a scatter plot of Q2_CAR and YoY Change in Health Scores of the three size-based portfolios. The positively sloped trend line in the scatter plot confirms the ex-ante expectation that an improvement in the YoY Health Score should result in an increase in future short-term cumulative abnormal returns of the three portfolios.

Figure 19: Cumulative Abnormal Returns (Q2_CAR) vs YoY Change in Health Score (Retail-NBFCs)



Source: Based on data from Bloomberg

POLICY IMPLICATIONS

8.61 The above analysis suggests that firms in the NBFC sector are susceptible to rollover risk when they rely too much on the on the short-term wholesale funding market for financing their investments in the real sector. The following policy initiatives can be employed to arrest financial fragility in the shadow banking system:

(i) Regulators can employ the Health Score methodology presented in this analysis to detect early warning signals of impending rollover risk problems in individual NBFCs. Downtrends in the Health Score can be used to trigger greater monitoring of an NBFC. Furthermore, an analysis of the trends in the components of the Health Score can shed light on the appropriate corrective measures that should be applied to reverse the adverse trends.

(ii) When faced with a dire liquidity crunch situation, as experienced recently, regulators can use the Health Score as a basis for optimally directing capital infusions to deserving NBFCs to ensure efficient allocation of scarce capital.

(iii) The above analysis can also be used to set prudential thresholds on the extent of wholesale funding that can be permitted for firms in the shadow banking system. Such a norm would be consistent with macroprudential regulations that are required to internalize the systemic risk concerns arising due to an individual NBFC's financing strategy. These norms could be countercyclically adjusted because the seeds of a liquidity crunch are sown during good times.

CHAPTER AT A GLANCE

- Motivated by the current liquidity crunch the NBFC sector, this chapter investigates the key drivers of Rollover Risk of the shadow banking system in India.
- The key drivers of Rollover Risk are: ALM Risk, Interconnectedness Risk and Financial and Operating Resilience of an NBFC.
- The over-dependence on short-term wholesale funding exacerbates Rollover Risk.
- Using a novel scoring methodology, Rollover Risk is quantified for a sample of HFCs and Retail-NBFCs (which are representative of their respective sectors) and thereby compute a diagnostic (Health Score).
- The Health Score for the HFC sector exhibited a declining trend post 2014. By the end of FY2019, the health of the overall sector had worsened considerably.
- The Health Score of the Retail-NBFC sector was consistently below par for the period 2014 till 2019.
- Larger Retail-NBFCs had higher Health Scores but among medium and small Retail-NBFCs, the medium size ones had a lower Health Score for the entire period from March 2014 till March 2019.
- The above findings suggest that the Health Score provides an early warning signal of impending liquidity problems.
- The analysis find significant evidence that equity markets react favourably to increase in Health Score of individual HFCs and Retail-NBFCs, thereby confirming the validity of Health Score as an early warning signal.

- Thus, the analysis provides a dynamic leading indicator of the financial health of firms in the NBFC sector, after incorporating the macroprudential externalities of their investment and financing decisions.
- Policy makers intending to revive the shadow banking channel of growth can use this analysis to efficiently allocate liquidity enhancements across firms (with different Health Scores) in the NBFC sector, thereby arresting financial fragility in a capital-efficient manner.

REFERENCES

"Chernenko, S., and Sunderam A., 'Frictions in Shadow Banking: Evidence from the Lending Behavior of Money Market Mutual Funds', The Review of Financial Studies, 2014,"

"Hahm, Shin and Shin, 'Non-Core Bank Liabilities and Financial Vulnerability', Journal of Money, Credit and Banking, 2013,"

"Acharya V.V., Khandwala H., and Oncu T.S., 'The Growth of a Shadow Banking System in Emerging Markets: Evidence from India', Journal of International Money and Finance, 2013,"

"Ghosh, S., Del Mazo I.G., and Inci O. R., 'Chasing the Shadows: How Significant Is Shadow Banking in Emerging Markets?', Economic Premise, Washington, World Bank, 2013,"

"M.T Kusy and W.T Ziemba, 'A Bank Asset and Liability Model', Working Paper, 1983,"

"S. Bokhari, D. Geltner and A. Minne, 'A Bayesian Structural Time Series Approach to Constructing Rent Indexes: An Application to Indian Office Markets', Working Paper, 2017,"

V. Ravi Anshuman and Rajdeep Sharma, "Financial Fragility in Housing Finance Companies", IIMB Working Paper, 2020

V. Ravi Anshuman and Rajdeep Sharma, "Financial Fragility in Retail-NBFCs", IIMB Working Paper, 2020

09 CHAPTER

Privatization and Wealth Creation

Free enterprise has enabled the creative and the acquisitive urges of man to be given expression in a way which benefits all members of society. Let free enterprise fight back now, not for itself, but for all those who believe in freedom.

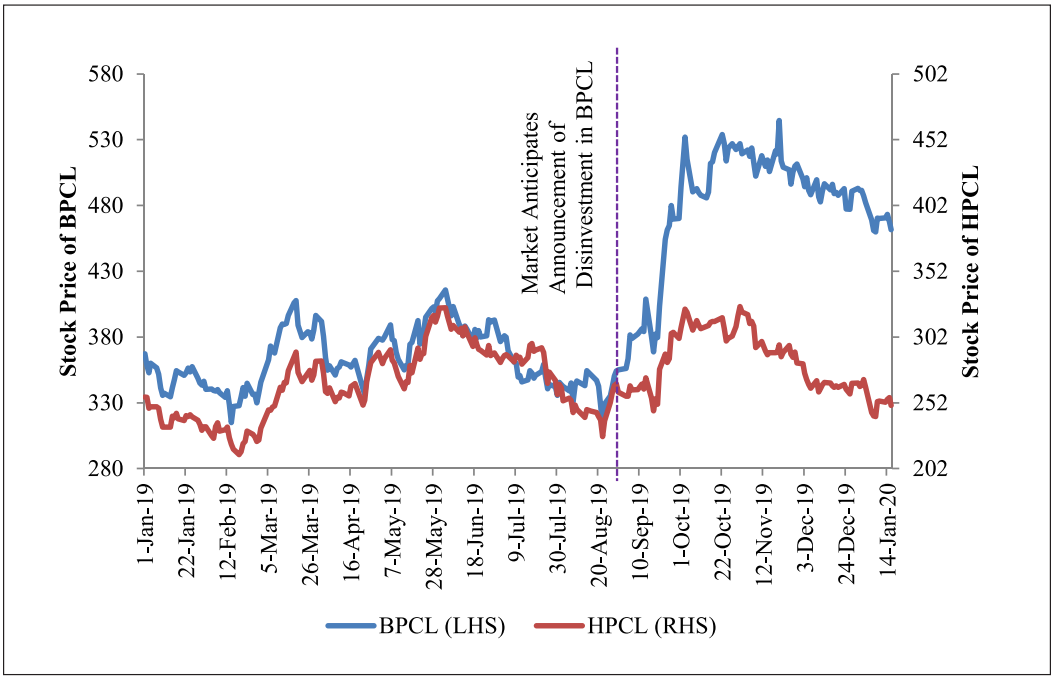
- Margaret Thatcher

The recent approval of strategic disinvestment in Bharat Petroleum Corporation Limited (BPCL) led to an increase in value of shareholders' equity of BPCL by ₹ 33,000 crore when compared to its peer Hindustan Petroleum Corporation Limited (HPCL)! This reflects an increase in the overall value from anticipated gains from consequent improvements in the efficiency of BPCL when compared to HPCL which will continue to be under Government control. This chapter, therefore, examines the realized efficiency gains from privatization in the Indian context. It analyses the before-after performance of 11 CPSEs that had undergone strategic disinvestment from 1999-2000 to 2003-04. To enable a careful comparison using a difference-in-difference methodology, these CPSEs are compared with their peers in the same industry group. The analysis shows that these privatized CPSEs, on an average, perform better post privatization than their peers in terms of their net worth, net profit, return on assets (ROA), return on equity (RoE), gross revenue, net profit margin, sales growth and gross profit per employee. More importantly, the ROA and net profit margin turned around from negative to positive surpassing that of the peer firms, which indicates that privatized CPSEs have been able to generate more wealth from the same resources. This improved performance holds true for each CPSE taken individually too. The analysis clearly affirms that privatization unlocks the potential of CPSEs to create wealth. The chapter, therefore, bolsters the case for aggressive disinvestment of CPSEs.

9.1 In November, 2019, India launched its biggest privatization drive in more than a decade. An "in-principle" approval was accorded to reduce Government of India's paid-up share capital below 51 per cent in select Central Public Sector Enterprises (CPSEs). Among the selected CPSEs, strategic disinvestment of Government's shareholding of 53.29 per cent in Bharat Petroleum Corporation Ltd (BPCL) was

approved. Figure 1 shows the share price of BPCL when compared to its peer Hindustan Petroleum Corporation Limited (HPCL). The Survey focuses on the difference in BPCL and HPCL prices from September 2019 onwards when the first news of BPCL's privatization appeared.[1] The comparison of BPCL with HPCL ensures that the effect of any broad movements in the stock market or in the oil industry is netted out. Figure 1 shows that the stock prices of HPCL and BPCL moved synchronously till September. However, the divergence in their stock prices started post the announcement of BPCL's disinvestment. The increase in the stock price of BPCL when compared to the change in the price of HPCL over the same period translates into an increase in the value of shareholders' equity of BPCL of around ₹ 33,000 crore. As there was no reported change in the values of other stakeholders, including employees and lenders, during this time, the ₹ 33,000 crore increase translates into an unambiguous increase in the BPCL's overall firm value, and thereby an increase in national wealth by the same amount.

Figure 1: Comparison of Stock Prices of BPCL and HPCL



Source: Bombay Stock Exchange (BSE)

9.2 As stock markets reflect the current value of future cash flows of a firm, the increase in value reflected anticipated gains from improvements in the efficiency of BPCL when compared to HPCL, which will continue to be under Government control. Strategic disinvestment is guided by the basic economic principle that Government should discontinue its engagement in manufacturing/ producing goods and services in sectors where competitive markets have come of age. Such entities would most likely perform better in the private hands due to various factors e.g. technology up-gradation and efficient management practices; and would thus create wealth and add to the economic growth of the country. Therefore, the increase in BPCL's value when compared to HPCL reflects

[1] https://www.livemint.com/market/mark-to-market/why-privatization-of-bpcl-will-be-a-good-thing-for-all-stakeholders-1568309050726.html

these anticipated gains. A large literature in financial economics spanning a large number of countries establishes very clearly that privatization brings in significant efficiency gains from the sources mentioned above (see Box 2). The experience of the UK under the leadership of Ms. Margaret Thatcher is particularly noteworthy in this context (see Box 1).

Box 1: UK Model of Privatization

The British privatization programme started in 1980 under the stewardship of then Prime Minister of United Kingdom (UK), Margaret Thatcher. In the initial phase (1979-81), the focus was on privatizing already profitable entities to raise revenues and thus reduce public-sector borrowing like in British Aerospace and Cable & Wireless. In the next phase (1982-86), focus shifted to privatizing core utilities and the government sold off Jaguar, British Telecom, the remainder of Cable & Wireless and British Aerospace, Britoil and British Gas. In the most aggressive phase (1987-91), British Steel, British Petroleum, Rolls Royce, British Airways, water and electricity were sold.

The dominant method was through an initial public offering (IPO) of all or a portion of company shares. British Aerospace was privatized in 1981 with an IPO of 52 per cent of its shares, with remaining shares unloaded in later years. The British Telecom (BT) IPO in 1984 was a mass share offering, and more than two million citizens participated in the largest share offering in world history to that date. The OECD (2003: 24) called the BT privatization "the harbinger of the launch of large-scale privatizations" internationally. In subsequent years, the British government proceeded with large public share offerings in British Gas, British Steel, electric utilities, and other companies. A second privatization method is a direct sale or trade sale, which involves the sale of a company to an existing private company through negotiations or competitive bidding. For example, the British government sold Rover automobiles and Royal Ordnance to British Aerospace. Other privatizations through direct sale included British Shipbuilders, Sealink Ferries, and The Tote. A third privatization method is an employee or management buyout. Britain's National Freight Corporation was sold to company employees in 1982, and London's bus services were sold to company managers and employees in 1994.

In most cases, British privatizations went hand-in-hand with reforms of regulatory structures. The government understood that privatization should be combined with open competition when possible. British Telecom, for example, was split from the post office and set up as an arms-length government corporation before shares were sold to the public. Then, over time, the government opened BT up to competition. The British government opened up intercity bus services to competition beginning in 1980. That move was followed by the privatization of state-owned bus lines, such as National Express. Numerous British seaports were privatized during the 1980s, and the government also reformed labour union laws that had stifled performance in the industry. Florio (2004) in his extensive research on UK privatization has found that the divestiture benefited shareholders and employee (especially managers), small impact on firms and other employees. Sector specific studies (Affuso, Angeriz, & Pollitt, 2009) found that privatization in train companies in UK was associated with increased efficiency. Parker (2004) found that the privatization facilitated creation of competitive market.

Box 2: Evidence on the Benefits of Privatization

Brown et al. (2015) found that the average privatization effects are estimated to be significantly positive, about 5-12 per cent, but these vary across countries and time periods. There is evidence of significant positive impacts for better quality firms and in better macroeconomic and institutional

environments. Chibber and Gupta (2017) showed that disinvestment has a very strong positive effect on labour productivity and overall efficiency of PSUs in India. O' Toole et al. (2016) in their study from Vietnam find that privatization improves capital allocation and economic efficiency. Chen et al. (2008) showed that there is a significant improvement in performance of Chinese companies after transfer of ownership control, largely due to cost reductions but only when the new owner is a non-state entity.

Subramanian, K. and Megginson, W (2018) found that stringent employment protection laws (EPL) are a deterrent to privatization, and the effect of EPL on privatization is disproportionately greater in industries with higher relocation rates and in less productive industries. Megginson and Netter (2001), Boardman and Vining (1989), La Porta and Lopez de Silanes (1999) found that in the post-privatization period, firms show significantly higher profitability, higher efficiency, generally higher investment levels, higher output, higher dividends, and lower leverage post privatization. According to Gupta (2005), both the levels and growth rates of profitability, labour productivity, and investment spending improve significantly following partial privatization. Majumdar (1996) documented that efficiency levels are significantly higher than state owned enterprises which show efficiency only during efficiency drives only to decline afterwards based on a study of Indian firms over the period 1973-89.

Borisova and Megginson (2010) indicated that on an average across firms, a one percentage point decrease in government ownership is associated with an increase in the credit spread, used as a proxy for the cost of debt, by three-quarters of a basis point. According to Li et al. (2016), profitability of newly privatized companies increases significantly (by 2-3 percentage points) after adjusting for negative listing effect. Capital spending and sales growth also improve significantly based on triple difference-in-difference tests. Wolf and Pollitt (2008) showed that privatization is associated with significant and comprehensive performance improvements over 7-year period (−3 to +3 years). Oum et al. (2006) provides strong evidence that airports with majority government ownership and those with multi-level government ownership are significantly less efficient than those with private majority ownership. Increased customer satisfaction comes in form of reduction in tariffs, increased data usage etc. in the telecommunication sector; increased penetration of banking services in the rural areas; and reduced air-fares comparable to high-end consumers in the railways.

9.3 To examine the efficiency gains from privatization and whether the purported benefits of privatization have indeed manifested in the Indian context, this chapter analyses the before-after performance of 11 CPSEs that had undergone strategic disinvestment from 1999-2000 to 2003-04. To provide a historical context for the current disinvestment drive, Box 3 summarizes the evolution of disinvestment policy in India.

Box 3: Evolution of Disinvestment Policy in India

The liberalization reforms undertaken in 1991 ushered in an increased demand for privatization/ disinvestment of PSUs. In the initial phase, this was done through the sale of minority stake in bundles through auction. This was followed by separate sale for each company in the following years, a method popularly adopted till 1999-2000. India adopted strategic sale as a policy measure in 1999-2000 with sale of substantial portion of Government shareholding in identified Central PSEs (CPSEs) up to 50 per cent or more, along with transfer of management control. This was started with the sale of 74 per cent of the Government's equity in Modern Food Industries Limited (MFIL). Thereafter, 12 PSUs (including four subsidiaries of PSUs), and 17 hotels of Indian Tourism Development Corporation (ITDC) were sold to private investors along with transfer of management control by the Government.

In addition, 33.58 per cent shareholding of Indo Bright Petroleum (IBP) strategically sold to Indian Oil Corporation (IOC). IBP, however, remained a PSU after this strategic sale, since IOC held 53.58 per cent of its paid-up equity. Another major shift in disinvestment policy was made in 2004-05 when it was decided that the government may "dilute its equity and raise resources to meet the social needs of the people", a distinct departure from strategic sales.

Strategic Sales have got a renewed push after 2014. During 2016-17 to 2018-19, on average, strategic sales accounted for around 28.2 per cent of total proceeds from disinvestment. Department of Investment and Public Asset Management (DIPAM) has laid down comprehensive guidelines on "Capital Restructuring of CPSEs" in May, 2016 by addressing various aspects, such as, payment of dividend, buyback of shares, issues of bonus shares and splitting of shares. The Government has been following an active policy on disinvestment in CPSEs through the various modes:

i. Disinvestment through minority stake sale in listed CPSEs to achieve minimum public shareholding norms of 25 per cent. While pursuing disinvestment of CPSEs, the Government will retain majority shareholding, i.e., at least 51 per cent and management control of the Public Sector Undertakings;

ii. Listing of CPSEs to facilitate people's ownership and improve the efficiency of companies through accountability to its stake holders - As many as 57 PSUs are now listed with total market capitalisation of over ₹ 13 lakh crore.

iii. Strategic Disinvestment;

iv. Buy-back of shares by large PSUs having huge surplus;

v. Merger and acquisitions among PSUs in the same sector;

vi. Launch of exchange traded funds (ETFs) - an equity instrument that tracks a particular index. The CPSE ETF is made up of equity investments in India's major public sector companies like ONGC, REC, Coal India, Container Corp, Oil India, Power Finance, GAIL, BEL, EIL, Indian Oil and NTPC; and

vii. Monetization of select assets of CPSEs to improve their balance sheet/reduce their debts and to meet part of their capital expenditure requirements.

NITI Aayog has been mandated to identify PSUs for strategic disinvestment. For this purpose, NITI Aayog has classified PSUs into "high priority" and "low priority", based on (a) National Security (b) Sovereign functions at arm's length, and (c) Market Imperfections and Public Purpose. The PSUs falling under "low priority" are covered for strategic disinvestment. To facilitate quick decision making, powers to decide the following have been delegated to an Alternative Mechanism in all the cases of Strategic Disinvestment of CPSEs where Cabinet Committee on Economic Affairs (CCEA) has given 'in principle' approval for strategic disinvestment:

(i) The quantum of shares to be transacted, mode of sale and final pricing of the transaction or lay down the principles/ guidelines for such pricing; and the selection of strategic partner/ buyer; terms and conditions of sale; and

(ii) To decide on the proposals of Core Group of Disinvestment (CGD) with regard the timing, price, terms & conditions of sale, and any other related issue to the transaction.

On November 20, 2019, the government announced that full management control will be ceded to buyers of Bharat Petroleum Corporation Ltd. (BPCL), Shipping Corporation of India (SCI) and Container Corporation of India Ltd (CONCOR). On January 8, 2020, strategic disinvestment was approved for Minerals & Metals Trading Corporation Limited (MMTC), National Mineral Development Corporation (NMDC), MECON and Bharat Heavy Electricals Ltd. (BHEL).

IMPACT OF PRIVATIZATION: A FIRM LEVEL ANALYSIS

9.4 To assess the impact of strategic disinvestment/privatization on performance of select CPSEs before and after privatization, 11 CPSEs are studied, that had undergone strategic disinvestment from 1999-2000 to 2003-04 for which data is available both before and after privatization.[2] To enable careful comparison using a difference-in-difference methodology, these CPSEs have been compared with their peers in the same industry group (Table 1). Box 4 gives an explanation of the difference-in-difference methodology.

Table 1: List of Selected CPSEs and Peers

Industry Group	Privatized CPSE	Peers
Metals-Non Ferrous	Hindustan Zinc	Tinplate Co. Of India, Hindustan Copper, Vedanta
Aluminium& Aluminium Products	Bharat Aluminium Company Ltd. (BALCO)	NALCO, Hindalco, PG Foils
Computers, peripherals & storage devices	Computer Management Corporation Ltd. (CMC)	Moserbear, Zenith Computers, Izmo Limited
Automobile	Maruti Suzuki	Ashok Leyland Ltd, Tata Motors., Mahindra & Mahindra Ltd
Petrochemicals	Indian Petrochemicals Corporation Ltd. (IPCL)	Chemplast Sanmar, Bhansali Engineering Polymers, Ineos Styrolution India Ltd
Telecommunication Services	Tata Communications	Tata Teleservices, MTNL, GTL infra
Heavy Engineering	Lagan Engineering	Gujarat Toolroom, Gujarat Textronics, Integra Engineering India Ltd.

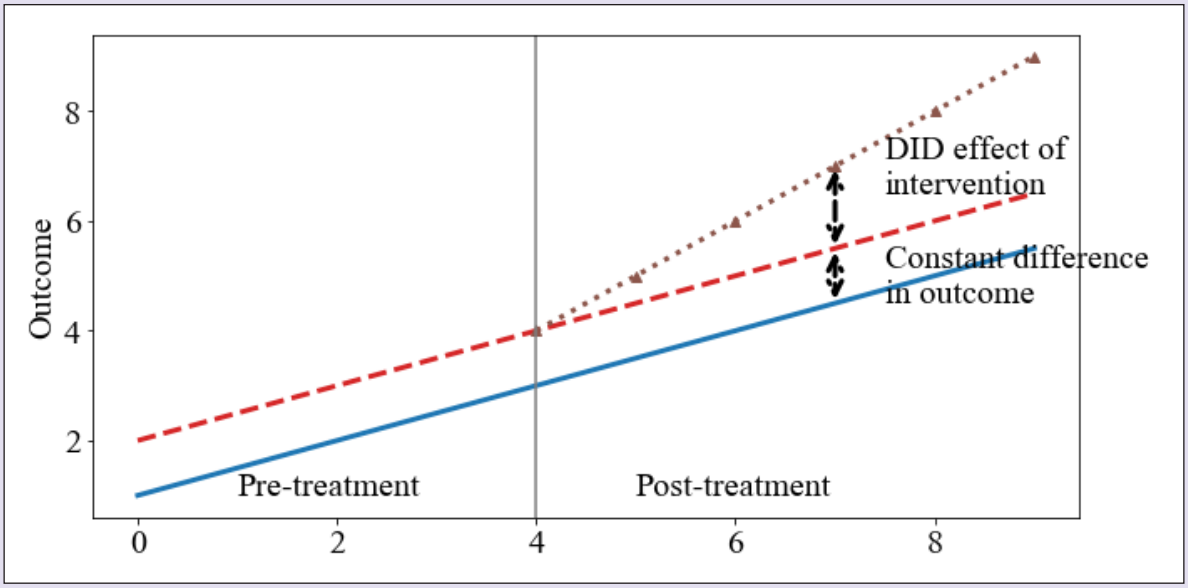
[2] Of the 30 CPSEs that were privatised from 1999-2000 to 2003-04, 18 were subsidiaries of India Tourism Development Corporation (ITDC) and 1 was a subsidiary of Hotel Corporation of India (HCI). For the purpose of our analysis, we require information on all financial performance indicators of each disinvested company over a period of 10 years pre and post privatization. However, in the case of disinvested subsidiaries of ITDC (18) and HCI (1), the financial statements are subsumed in the consolidated financial statements of the parent companies. Post disinvestment, these subsidiaries are attached to buyer companies and the financial statements are again presented as consolidated statements of the new parent companies. Due to this challenge, these subsidiaries could not be included in our analysis. Indo Bright Petroleum (IBP) Private Ltd. was merged with Indian Oil Corp (IOC), which is a government enterprise and hence is not considered for the analysis.

Medium & Light Engineering	Jessop &Co.	Elgi Ultra, Disa India, Alfa Laval, Filtron Engineers
Bakery Products	Modern Food India Ltd. (MFIL)	Britannia
Wires and Cables	Hindustan Teleprinters (HTL)	Anamika Conductors, Delton Cables, Fort Gloster Ltd
Chemicals and Fertilizers	Paradeep Phosphates	GSFC, Fertilizers & Chemicals-Travancore, Godavari Chemicals and Fertilizers
Total	**11**	**32**

Source: Survey calculations based on data from CMIE Prowess

Box 4: Difference-in-Differences Methodology

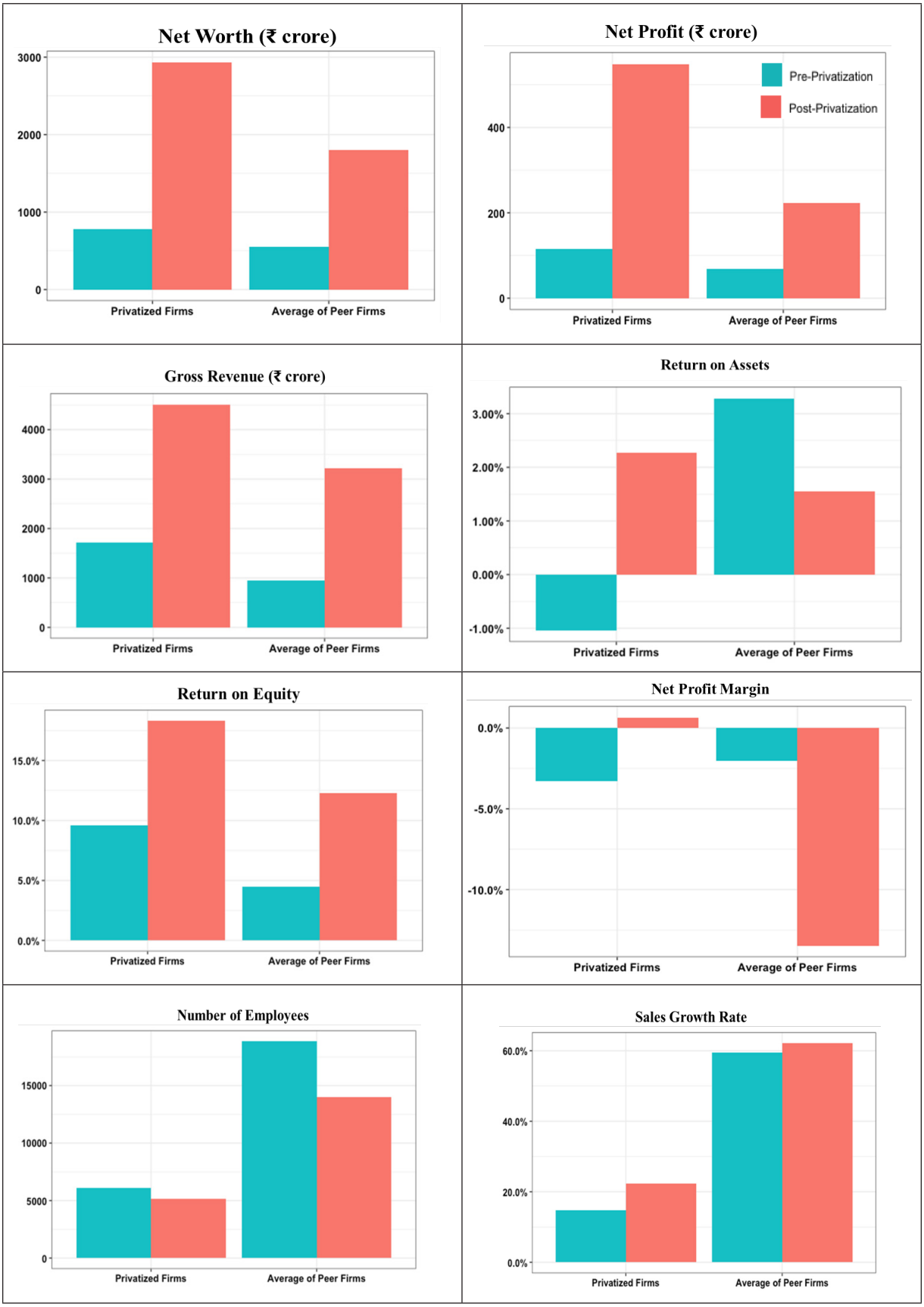
Difference-in-differences (DiD) is a statistical technique used to estimate the effect of a specific intervention or treatment (such as a passage of law, enactment of policy, or large-scale program implementation). The technique compares the changes in outcomes over time between a population that is affected by the specific intervention (the treatment group) and a population that is not (the control group). DiD is typically used to mitigate the possibility of any extraneous factors affecting the estimated impact of an intervention. This is accomplished by differencing the estimated impact of the treatment on the outcome in the treatment group as compared to the control group.

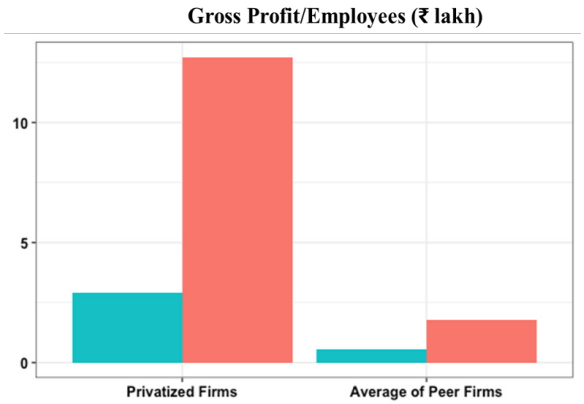


9.5 Figure 2 shows the average performance of these CPSEs using various financial indicators as compared to their peers for ten years before and after the year of privatization of the specific CPSE.[3] It is clear from Figure 2 that the performance of privatized firms, after controlling for other confounding factors using the difference in performance of peer firms over the same period, improves significantly following privatization.

[3] Given data limitations, the financial data of MFIL and IPCL have been taken for less than 10 years after their disinvestment.

Figure 2: Comparison of Financial Indicators of Privatized Firms vis-à-vis Peers





Source: Survey calculations based on data from CMIE Prowess

9.6 The differences for each metric are described in detail below.

i) *Net worth:* The net worth of a company is what it owes its equity shareholders. This consists of equity capital put in by shareholders, profits generated and retained as reserves by the company. On an average, the net worth of privatized firms increased from ₹ 700 crore before privatization to ₹ 2992 crore after privatization, signalling significant improvement in financial health and increased wealth creation for the shareholders (Table 2). Difference in difference (DiD) analysis attributes an increase of ₹ 1040.38 crore in net worth due to privatization.

Table 2: Net Worth (₹ Crore)

	Name of privatized CPSE	Pre average	Post average	Post minus Pre
1	BALCO	656.25	1921.60	1265.35
2	CMC	35.28	275.41	240.13
3	Maruti	1426.02	8191.98	6765.96
4	Jessop	-212.07	77.19	289.26
5	Lagan Engineering	5.15	6.30	1.15
6	IPCL	2258.52	3106.69	848.17
7	HTL	33.35	-145.98	-179.33
8	Hindustan Zinc	818.06	12874.57	12056.51
9	Modern Food India	10.63	-79.34	-89.97
10	Paradeep Phosphates	-3.98	214.12	218.1
11	Tata Communications	2683.82	6468.49	3784.67
12	**Combined average of all privatized firms**	701.00	2991.91	2290.91
13	**Combined average of peer firms**	551.61	1802.14	1250.53
14	**Privatized firm minus peer firms**	149.39	1189.77	**DiD = 1040.38**

Source: Survey calculations based on data from CMIE Prowess

ii) *Net Profit:* This is the net profit of the company after tax. An increase in net profit indicates greater realizations from the company after incurring all the operational expenses. On an average, the net profit of privatized firms increased from ₹ 100 crore before privatization to ₹ 555 after privatization compared to the peer firms (Table 3 below). DiD analysis attributes an increase of ₹ 300.27 crore in net profit due to privatization.

Table 3: Net Profit (₹ Crore)

Name of privatized CPSE	Pre average	Post average	Post minus Pre
1 BALCO	45.47	348.94	303.47
2 CMC	6.77	73.22	66.45
3 Maruti	205.28	1321.99	1116.71
4 Jessop	-36.44	7.87	44.31
5 Lagan Engineering	-0.49	0.18	0.67
6 IPCL	238.48	606.42	367.94
7 HTL	3.16	-43.84	-47
8 Hindustan Zinc	72.47	3237.04	3164.57
9 Modern Food India	-1.2	-18.4	-17.2
10 Paradeep Phosphates	-53.93	114.83	168.76
11 Tata Communications	620.34	452.25	-168.09
12 **Combined average of all privatized firms**	100	554.6	454.6
13 **Combined average of peer firms**	68.51	222.84	154.33
14 Privatized firm minus peer firms	**31.49**	**331.76**	**DiD=300.27**

Source: Survey calculations based on data from CMIE Prowess

iii) *Gross Revenue:* On an average, the gross revenue of privatized firms increased from ₹ 1560 crore to before privatization to ₹ 4653 crore after privatization, signalling increase in income from sales of goods and other non-financial activities (Table 4). DiD analysis attributes an increase of ₹ 827.65 crore in gross revenue due to privatization.

iv) *Return on assets (ROA):* ROA captures the ratio of profits after taxes (PAT) to the total average assets of the company, expressed in percentage terms. On an average, ROA for the privatized firms have turned around from (-)1.04 per cent to 2.27 per cent surpassing the peer firms which indicates that privatized firms have been able to use their resources more productively (Table 5). DiD analysis attributes an increase of 5.04 per cent in ROA due to privatization.

Table 4: Gross Revenue (₹ Crore)

Name of privatized CPSE	Pre average	Post average	Post minus Pre
1 BALCO	747.84	2858.48	2110.64
2 CMC	261.55	792.88	531.33
3 Maruti	6013.28	22958.8	16945.52
4 Jessop	79.76	178.33	98.57
5 Lagan Engineering	6.52	12.87	6.35
6 IPCL	3791.56	9341.25	5549.69
7 HTL	141.21	126.89	-14.32
8 Hindustan Zinc	999.16	7923.77	6924.61
9 Modern Food India	77.21	192.6	115.39
10 Paradeep Phosphates	824.52	2692.56	1868.04
11 Tata Communications	4219.51	4106.69	-112.82
12 **Combined average of all privatized firms**	1560.19	4653.19	3093
13 **Combined average of peer firms**	945.42	3210.77	2265.35
14 **Privatized firm minus peer firms**	614.77	1442.42	**DiD=827.65**

Source: Survey calculations based on data from CMIE Prowess

Table 5: Return on Assets (per cent)

Name of privatized CPSE	Pre average	Post average	Post minus Pre
1 BALCO	4.62	6.84	2.22
2 CMC	-0.89	8.7	9.59
3 Maruti	8.24	10.29	2.05
4 Jessop	-35.95	4.34	40.29
5 Lagan Engineering	-2.19	0.78	2.97
6 IPCL	4.34	6.74	2.4
7 HTL	-3.12	-24.17	-21.05
8 Hindustan Zinc	5.29	26.7	21.41
9 Modern Food India	3.35	-39.5	-42.85
10 Paradeep Phosphates	-8.78	2.57	11.35

11 Tata Communications	13.4	4.03	-9.37
12 **Combined average of all privatized firms**	-1.04	2.27	3.31
13 **Combined average of peer firms**	3.28	1.55	-1.73
14 **Privatized firm minus peer firms**	-4.32	0.72	**DiD=5.04**

Source: Survey calculations based on data from CMIE Prowess

v) *Return on equity (ROE):* Return on equity (ROE) is profit after tax (PAT) as percentage of average net worth. On an average, the ROE of privatized firms increased from 9.6 per cent before privatization to 18.3 per cent after privatization, reflecting increase in firm's efficiency at generating profits from every unit of shareholders' equity. For the average peer group, the increase in ROE over pre privatization period was 7.8 per cent (Table 6). DiD analysis attributes an increase of 0.89 per cent in ROE due to privatization.

Table 6: Return on Equity (per cent)

Name of privatized CPSE	Pre average	Post average	Post minus Pre
1 BALCO	6.1	16.9	10.8
2 CMC	11.2	26.6	15.4
3 Maruti	19	16.6	-2.4
4 Jessop	5	12.9	7.9
5 Lagan Engineering	-4.5	1.4	5.9
6 IPCL	11.2	17.9	6.7
7 HTL	9.8	2.3	-7.5
8 Hindustan Zinc	9.2	28.8	19.6
9 Modern Food India	11.4	27.8	16.4
10 Paradeep Phosphates	3.5	-0.1	-3.6
11 Tata Communications	-44.8	7.3	52.1
12 **Combined average of all privatized firms**	9.6	18.3	8.7
13 **Combined average of peer firms**	4.5	12.31	7.81
14 **Privatized firm minus peer firms**	5.1	5.99	**DiD=0.89**

Source: Survey calculations based on data from CMIE Prowess

vi) *Net profit margin:* Net profit margin of a company is PAT as percentage of total income. On an average, the net profit margin of privatized firms increased from (-3.24) per cent before privatization to 0.65 per cent after privatization, reflecting that out of a rupee that is generated as income, the share of after-tax profit in the income increases. For the average peer group, the net profit margin has fallen to (-13.4) per cent in the post privatization period from (-2.03) per cent in the pre privatization period (Table 7). DiD analysis attributes an increase of 15.26 per cent in net profit margin due to privatization.

Table 7: Net profit margin (per cent)

Name of privatized CPSE	Pre average	Post average	Post minus Pre
1 BALCO	5.8	10.1	4.3
2 CMC	1.9	9.1	7.2
3 Maruti	6.5	34.3	27.8
4 Jessop	2.9	-66.9	-69.8
5 Lagan Engineering	6.7	5.9	-0.8
6 IPCL	-65	5.8	70.8
7 HTL	-3.1	-0.2	2.9
8 Hindustan Zinc	3.7	5.9	2.2
9 Modern Food India	-2.1	-9.8	-7.7
10 Paradeep Phosphates	-6.6	1.8	8.4
11 Tata Communications	13.7	11.1	-2.6
12 **Combined average of all privatized firms**	-3.24	0.65	3.89
13 **Combined average of peer firms**	-2.03	-13.4	-11.37
14 **Privatized firm minus peer firms**	-1.21	14.05	**DiD= 15.26**

Source: Survey calculations based on data from CMIE Prowess

vii) *Sales growth:* On an average, growth rate of sales of privatized firms increased from 14.7 per cent before privatization to 22.3 per cent after privatization (Table 8). DiD analysis attributes 4.9 per cent increase in sales growth due to privatization.

viii) *Gross profit per employee:* Figure 2 shows that on average, the number of employees has declined for both set of firms, but the reduction is lesser in magnitude as compared to its peers. Gross profit per employee has been estimated for only 8 out of the selected eleven CPSEs as per the availability of relevant data. DiD analysis attributes an increase of ₹ 21.34 lakh in gross profit per employee due to privatization (Table 9).

Table 8: Sales growth y-o-y (per cent)

	Name of privatized CPSE	Pre average	Post average	Post minus Pre
1	BALCO	7.87	22.25	14.38
2	CMC	20.19	4.66	-15.53
3	Maruti	20.26	16.18	-4.08
4	Jessop	-2.45	17.26	19.71
5	Lagan Engineering	0.22	17.05	16.83
6	IPCL	14.33	23.90	9.58
7	HTL	19.29	82.10	62.81
8	Hindustan Zinc	10.44	28.34	17.90
9	Modern Food India	18.36	4.02	-14.34
10	Paradeep Phosphates	6.41	32.39	25.99
11	Tata Communications	46.58	-2.94	-49.52
12	**Combined average of all privatized firms**	14.68	22.29	7.61
13	**Combined average of peer firms**	59.37	62.09	2.72
14	**Privatized firm minus peer firms**	-44.69	-39.80	**DiD =4.89**

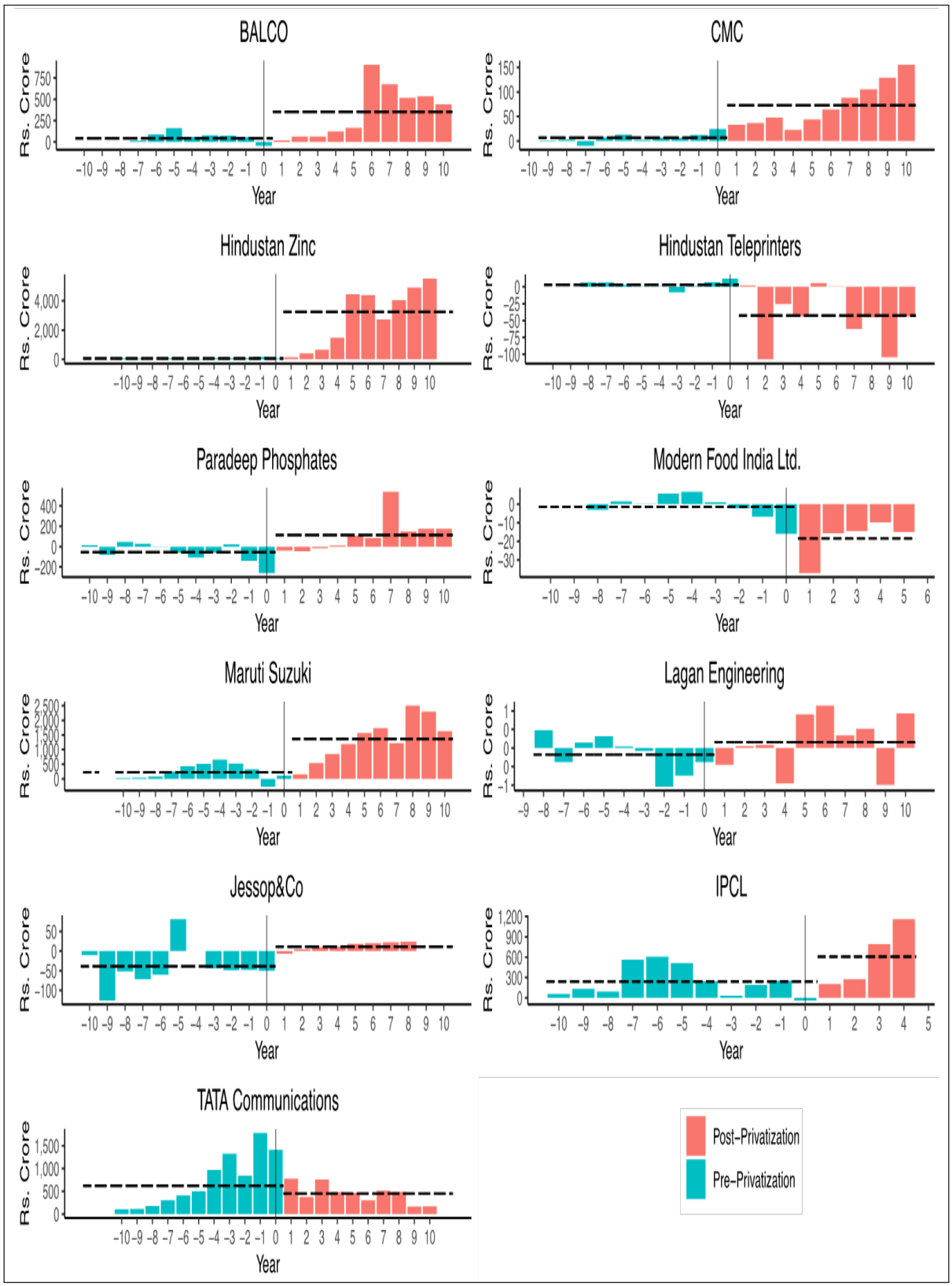
Table 9: Gross profit/employee (₹ lakh)

	Name of privatized CPSE	Pre average	Post average	Post minus Pre
1	BALCO	0.46	10.87	10.42
2	CMC	0.17	1.49	1.32
3	Maruti	4.75	21.01	16.26
4	Jessop	-1.06	0.77	1.82
5	IPCL	1.89	4.14	2.26
6	Hindustan Zinc	0.26	166.66	166.40
7	Paradeep Phosphates	-6.02	-14.96	-8.94
8	Tata Communications	22.28	13.42	-8.85
9	**Combined average of all privatized firms**	2.84	25.43	22.58
10	**Combined average of peer firms**	0.54	1.78	1.24
11	**Privatized firm minus peer firms**	2.30	23.65	**DiD= 21.34**

Source: Survey calculations based on data from CMIE Prowess

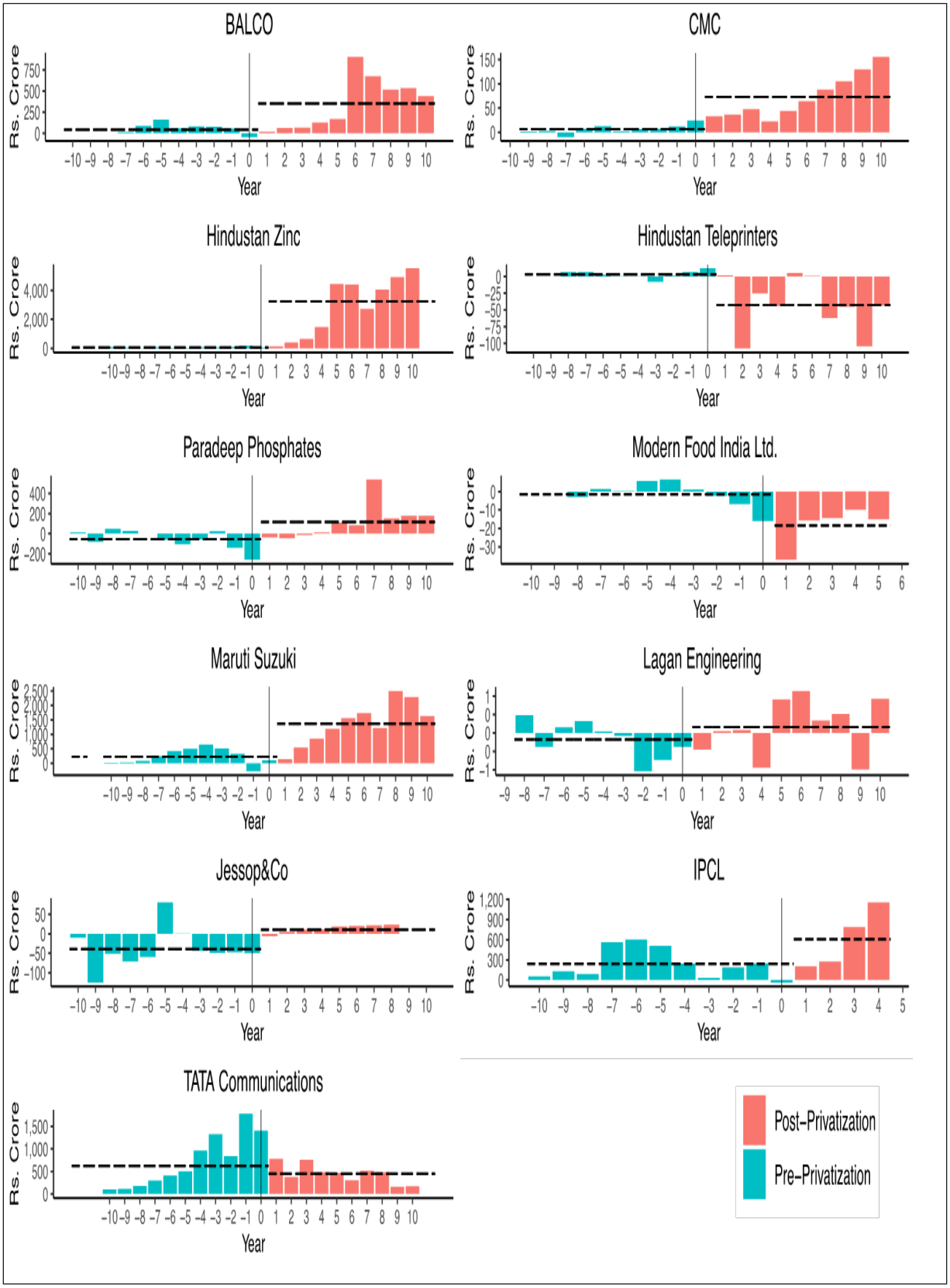
9.7 The Survey also examines the change in performance for each individual CPSE. Figures 3 to 10 show the movement in these major financial indicators for each of the firm ten years before and after the year of strategic disinvestment/privatization. Taken individually, each privatized CPSE witnessed improvement in net worth, net profit, gross revenue, net profit margin, sales growth in the post privatization period compared to pre privatization period (except for Hindustan Teleprinters, MFIL and Tata Communications in the case of few indicators).

Figure 3: Net worth of privatized firms (pre and post privatization)



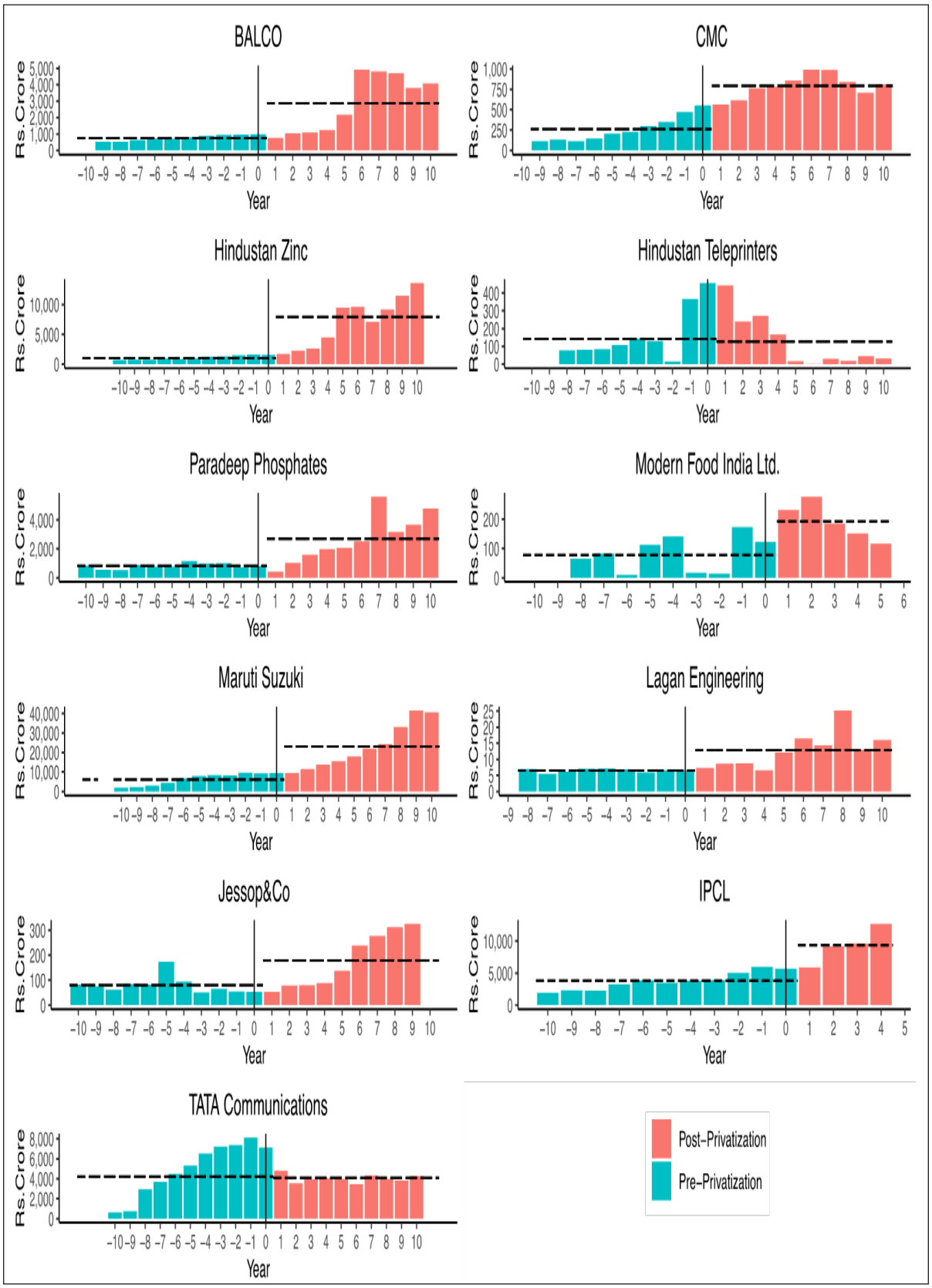
Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

Figure 4: Net Profit of privatized firms (pre and post privatization)



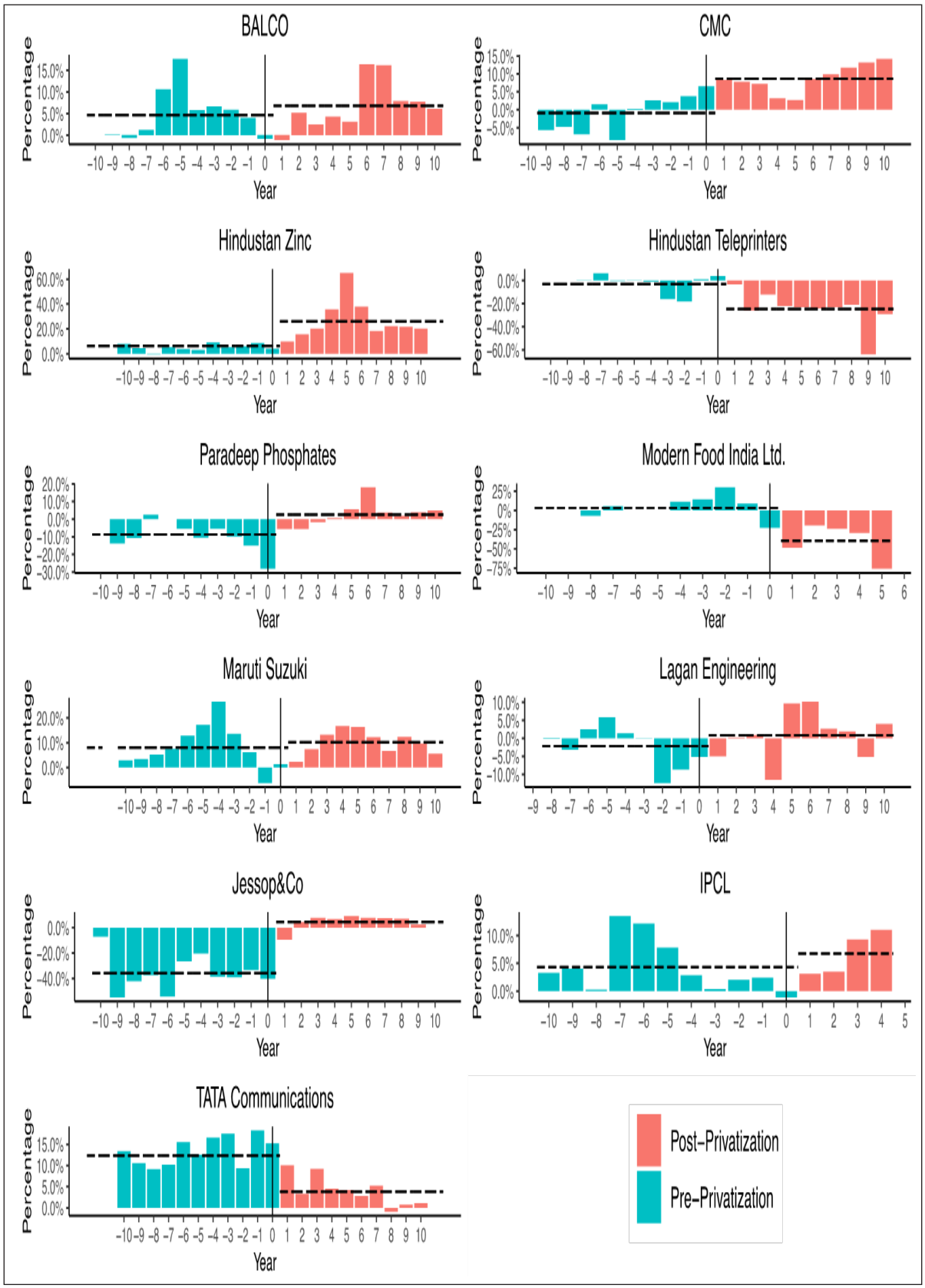
Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

Figure 5: Gross Revenue of privatized firms (pre and post privatization)



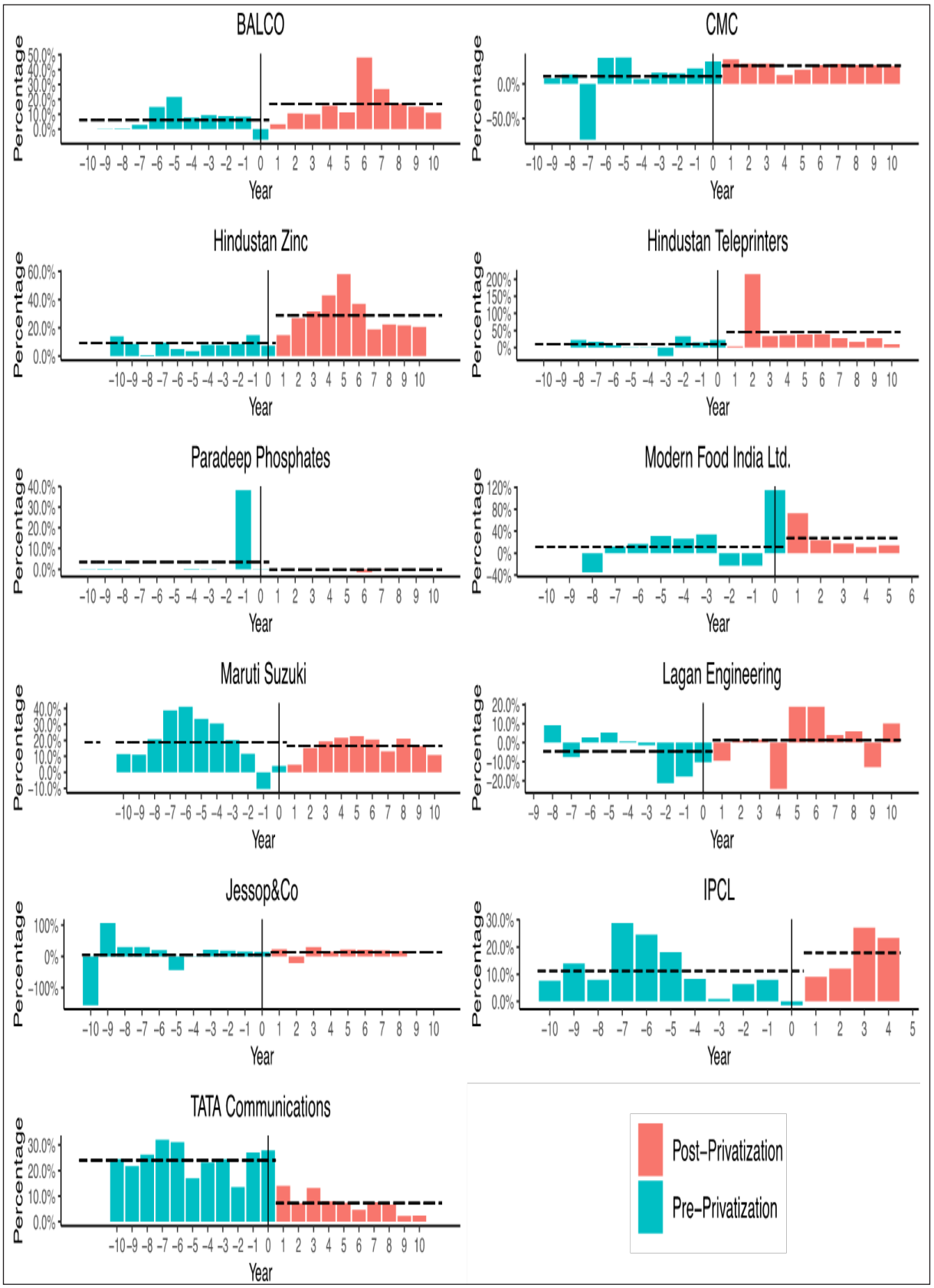
Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

Figure 6: Return on Assets (ROA) of privatized firms (pre and post privatization)



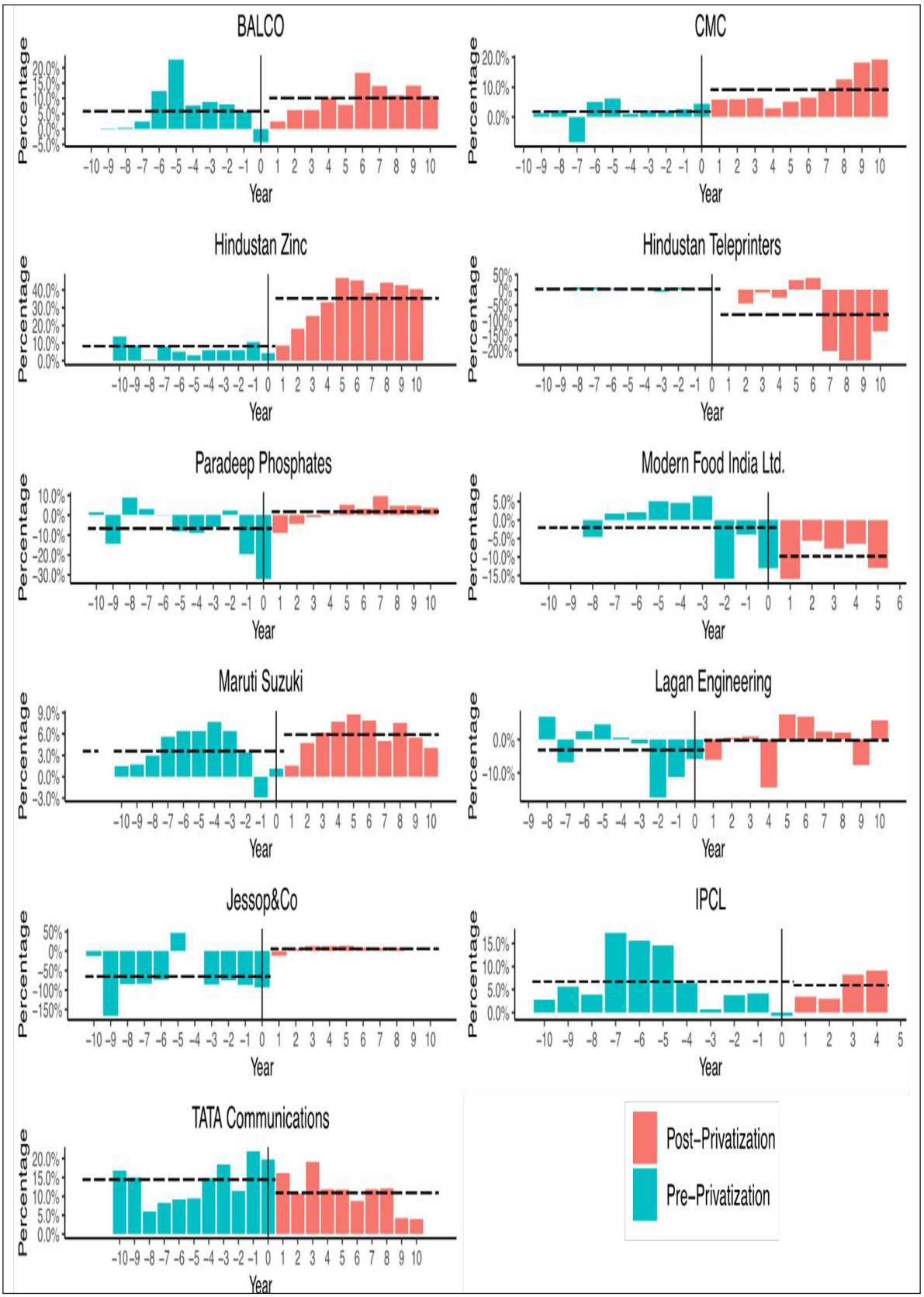
Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

Figure 7: Return on Equity (ROE) of privatized firms (pre and post privatization)



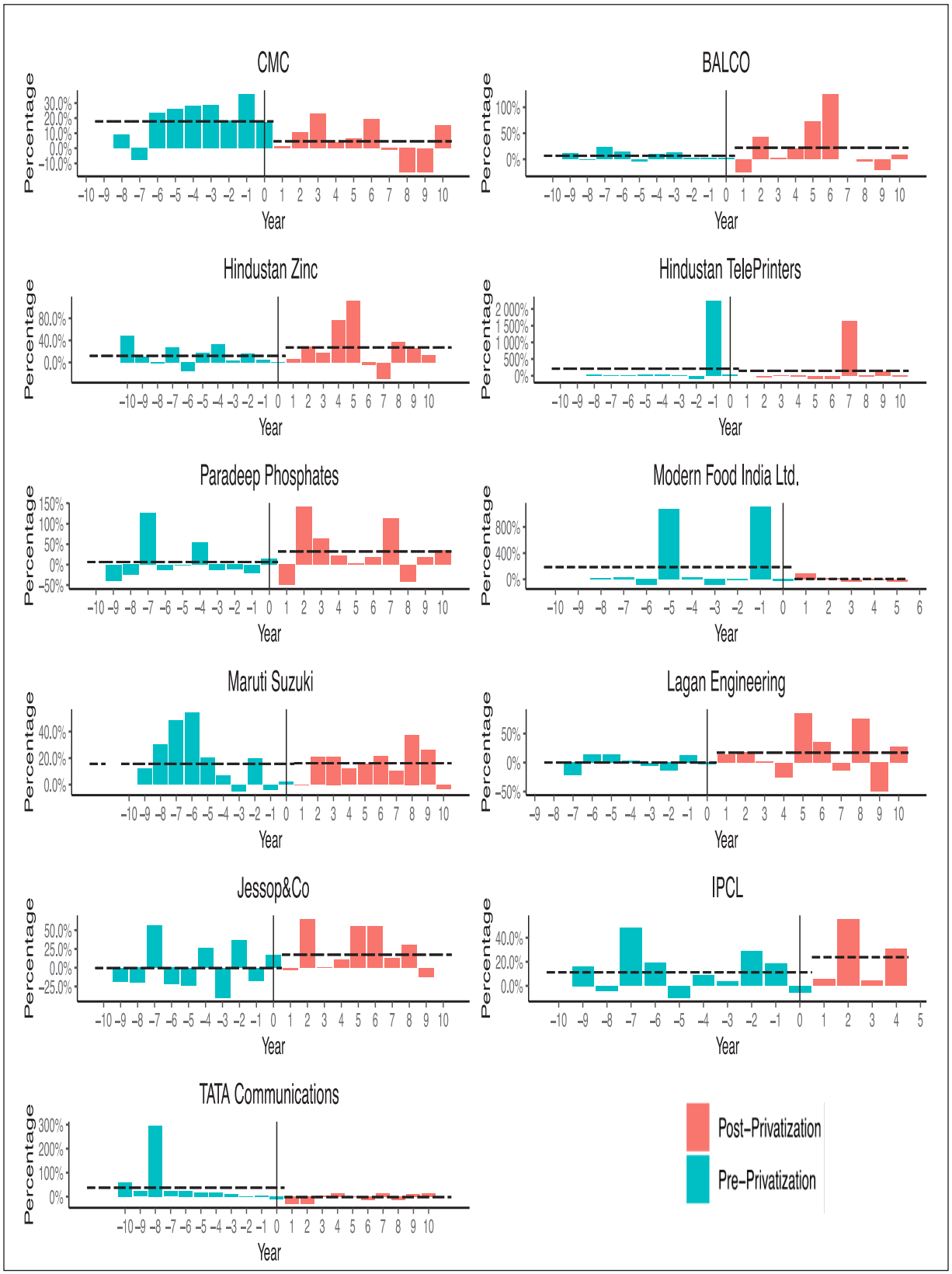
Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

Figure 8: Net Profit Margin of privatized firms (pre and post privatization)



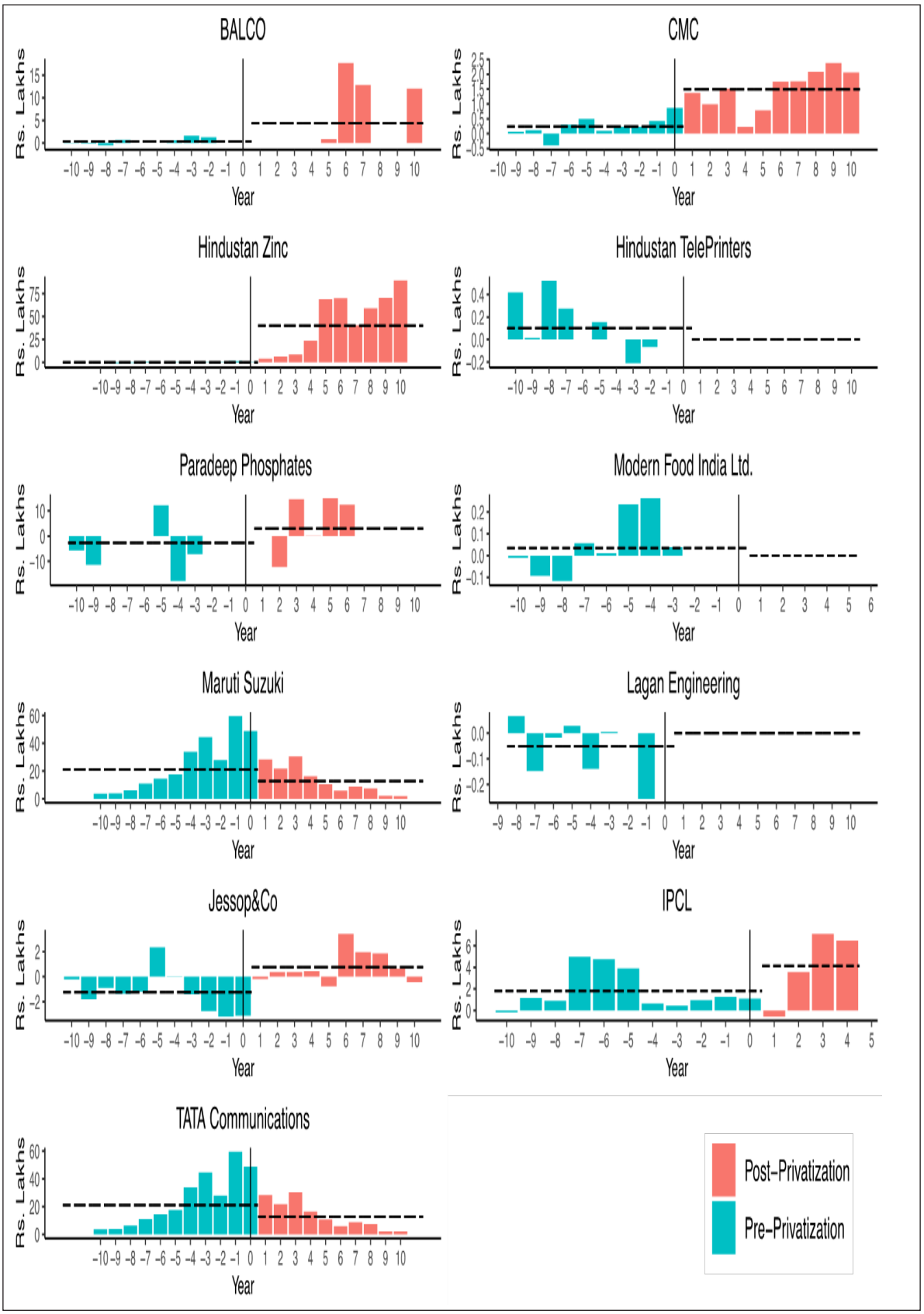
Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

Figure 9: Sales growth of privatized firms (pre and post privatization)



Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

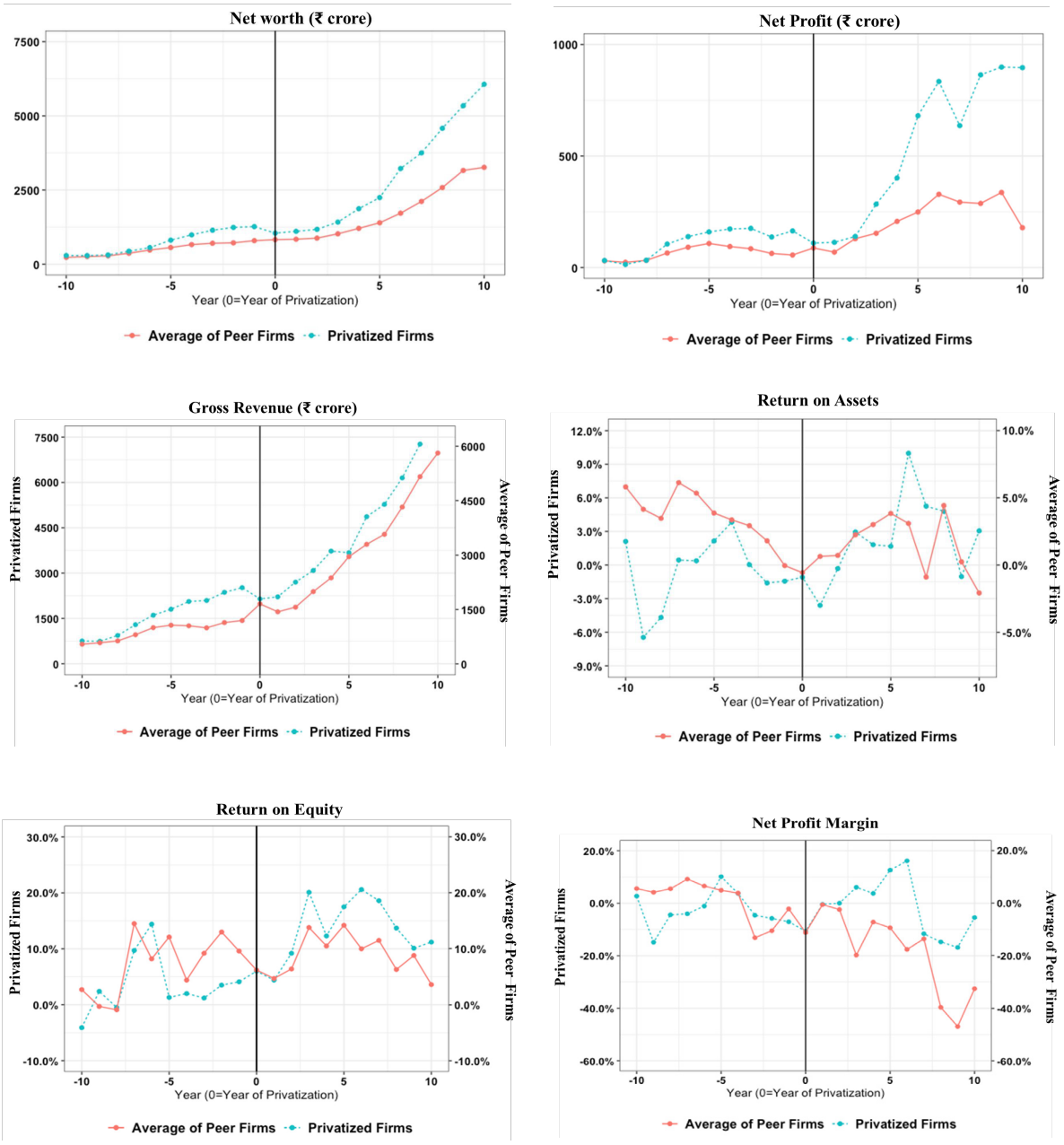
Figure 10: Gross Profit per Employee of privatized firms (pre and post privatization)

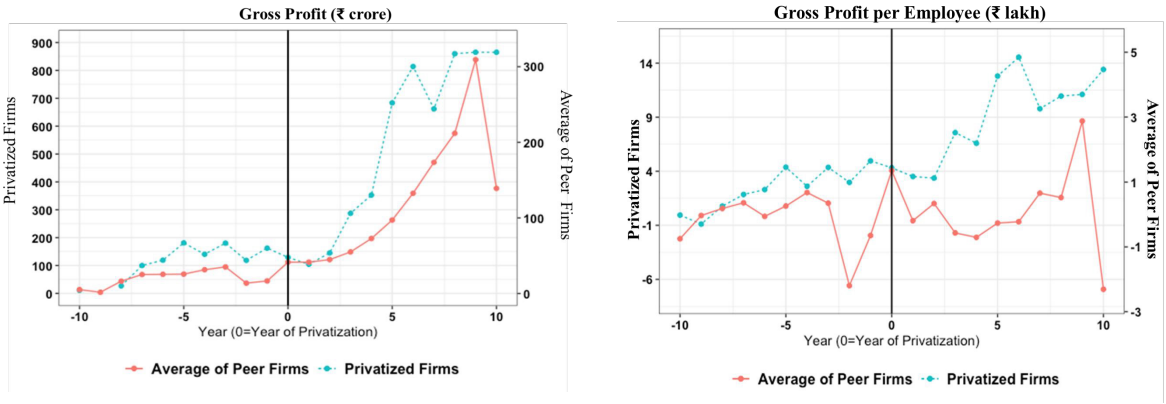


Source: Survey calculations based on data available from CMIE Prowess
Note: 0 denotes the year of privatization

9.8 Figure 11 below shows the trend in the performance of the privatized CPSEs, on an average, as compared to their peers over the period of ten years before and after the year of privatization of the specific CPSE. The trend thereby enables us to understand the dynamic aspects of the change in performance of the privatized firms after privatization when compared to its peer firms. The trends confirm that the performance of the privatized CPSE and its peers is quite similar till the year of privatization. However, post privatization, the performance of the privatized entity improves significantly when compared to the change in the peers' performance over the same time period.

Figure 11: Trend in Performance of privatized firms vs. Peers





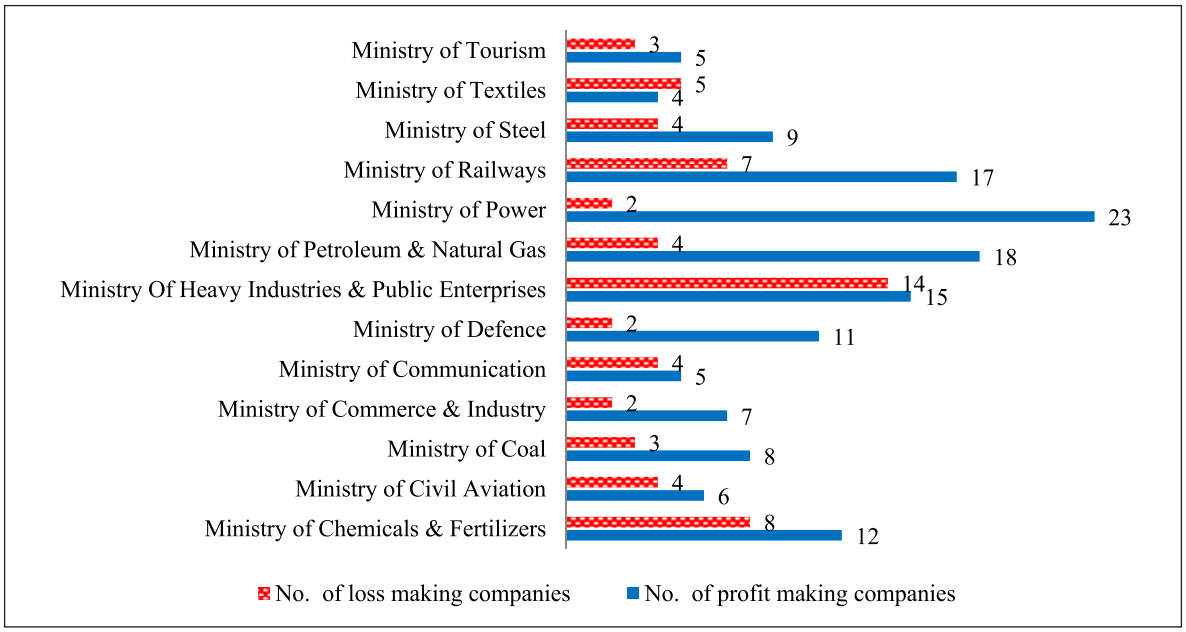
Source: Survey calculations based on data available from CMIE Prowess

Way Forward

9.9 The analysis in this chapter clearly affirms that disinvestment improves firm performance and overall productivity, and unlocks their potential to create wealth. This would have a multiplier effect on other sectors of the economy. Aggressive disinvestment, preferably through the route of strategic sale, should be utilized to bring in higher profitability, promote efficiency, increase competitiveness and to promote professionalism in management in CPSEs. The focus of the strategic disinvestment needs to be to exit from non-strategic business and directed towards optimizing economic potential of these CPSEs. This would, in turn, unlock capital for use elsewhere, especially in public infrastructure like roads, power transmission lines, sewage systems, irrigation systems, railways and urban infrastructure. It is encouraging that the enabling provisions by DIPAM are already in place (as detailed in Box 3 earlier). The Cabinet has 'in-principle' approved the disinvestment in various CPSEs (as detailed in Annex to the chapter). These need to be taken up aggressively to facilitate creation of fiscal space and improve the efficient allocation of public resources.

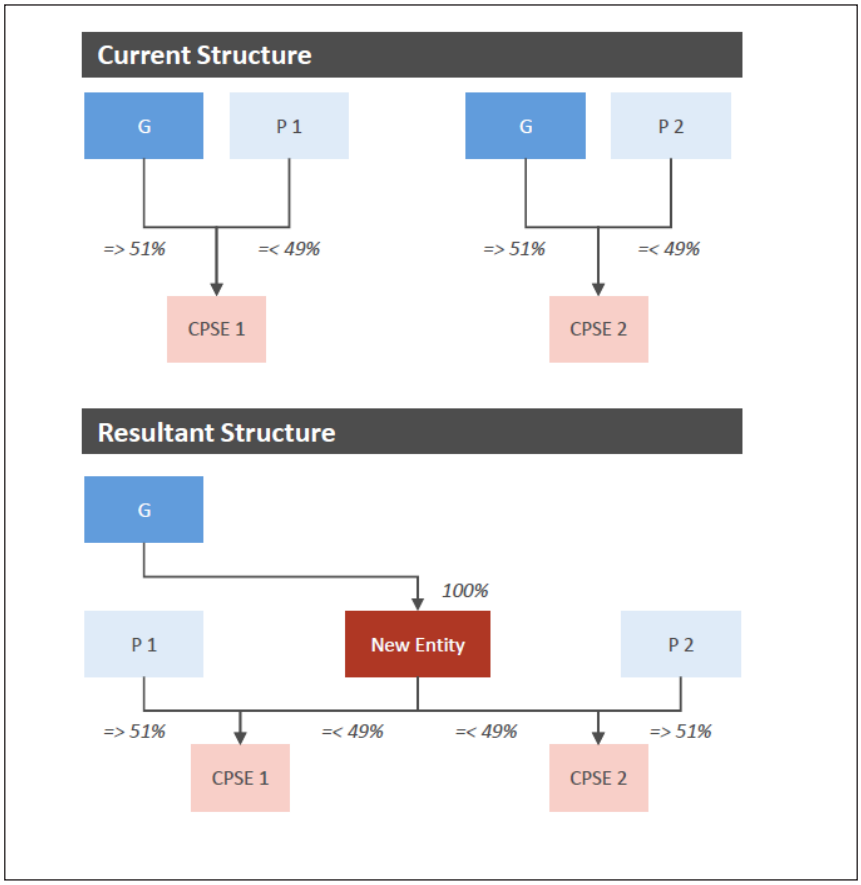
9.10 There are about 264 CPSEs under 38 different Ministries/Departments. Of these, 13 Ministries/Departments have around 10 CPSEs each under its jurisdiction. It is evident from Figure 11 that many of the CPSEs are profitable. However, CPSEs have generally underperformed the market as is evident from the average return of only 4 per cent of BSE CPSE Index against the 38 per cent return of BSE SENSEX during the period 2014-2019. The aim of any privatization or disinvestment programme should, therefore, be the maximisation of the Government's equity stake value. The learning from the experience of Temasek Holdings Company in Singapore may be useful in this context (Box 4). The Government can transfer its stake in the listed CPSEs to a separate corporate entity (Figure 12). This entity would be managed by an independent board and would be mandated to divest the Government stake in these CPSEs over a period of time. This will lend professionalism and autonomy to the disinvestment programme which, in turn, would improve the economic performance of the CPSEs.

Figure 11: No. of CPSEs under various Ministries which are profitable



Source: Department of Public Enterprises

Figure 12: Proposed Structure for Corporatization of Disinvestment



Box 4: Temasek Holdings Ltd – Privatization Model of Singapore

Temasek Holdings was incorporated by Government of Singapore on 25 June 1974, as a private commercial entity, to hold and manage its investments in its government-linked companies (GLCs). Temasek Holdings is wholly owned by the Ministry for Finance and operates under the provisions of the Singapore Companies Act. Temasek's board comprises 13 members—mostly non-executive and independent business leaders from the private sector. The company has since expanded its operations to cover key areas of business in sectors such as telecommunications, media, financial services, energy, infrastructure, engineering, pharmaceuticals and the bio-sciences.

Many of the original investments that Temasek managed included national treasures such as shipping firms (NOL, Keppel, Sembawang), a bank (DBS Bank), and systems engineering conglomerates (Singapore Technologies, Singapore Telecom). Temasek has retained strategically important investments, including its original stakes in all of these GLCs. Since March 2002, Temasek began diversifying its portfolio outside of Singapore such that a third of its investments are in developed markets, a third in developing countries and a third in Singapore. Some of the company's major investments in foreign companies include Standard Chartered, ICICI Bank (India), Bank Danamon (Indonesia), Telekom Malaysia and ShinCorp (Thailand). Temasek's investments in local companies include Singapore Airlines, Singtel, DBS Bank, SMRT, ST Engineering, MediaCorp and Singapore Power.

It manages a net portfolio of over US$230 billion as on 31st March 2019 – around fourfold jump from US$66 billion in 2004. Its compounded annualised total shareholder return since inception in 1974 is 15 per cent in Singapore dollar terms.

CHAPTER AT A GLANCE

- Approval for strategic disinvestment of Government's shareholding of 53.29 per cent in Bharat Petroleum Corporation Limited (BPCL) led to an increase of around ₹ 33,000 crore in the value of shareholders' equity of BPCL when compared to Hindusta Petroleum Corporation Limited (HPCL). This translates into an unambiguous increase in the BPCL's overall firm value, and thereby an increase in national wealth by the same amount.
- A comparative analysis of the before-after performance of 11 CPSEs that had undergone strategic disinvestment from 1999-2000 to 2003-04 reveals that net worth, net profit, return on assets (ROA), return on equity (ROE), gross revenue, net profit margin, sales growth and gross profit per employee of the privatized CPSEs, on an average, have improved significantly in the post privatization period compared to the peer firms.
- The ROA and net profit margin turned around from negative to positive surpassing that of the peer firms which indicates that privatized CPSEs have been able to generate more wealth from the same resources.
- The analysis clearly affirms that disinvestment (through the strategic sale) of CPSEs unlocks their potential of these enterprises to create wealth evinced by the improved performance after privatization.
- Aggressive disinvestment should be undertaken to bring in higher profitability, promote efficiency, increase competitiveness and to promote professionalism in management in the selected CPSEs for which the Cabinet has given in-principle approval.

REFERENCES

Affuso, L., A. Angeriz, and M. Pollitt. 2009. "The impact of privatization on the efficiency of train operation in Britain". CGR Working Paper No. 28. Centre for Globalization Research School of Business and Management. Queen Mary University of London.

Berkman, Henk, Rebel A. Cole, and Jiang Lawrence Fu. 2012. "Improving Corporate Governance Where the State is the Controlling Block Holder: Evidence from China". *SSRN Electronic Journal.*

Borisova, Ginka, and William L. Megginson. 2011. "Does Government Ownership affect the Cost of Debt? Evidence from Privatization". *Review of Financial Studies* 24 (8): 2693-2737.

Boubakri, Narjess, Sadok El Ghoul, Omrane Guedhami, and William L. Megginson. 2018. "The Market Value of Government Ownership". *Journal of Corporate Finance* 50: 44-65.

Brown, David J., John S. Earle, and Almos Telegdy. 2015. "Where Does Privatization Work? Understanding The Heterogeneity in Estimated Firm Performance Effects". *Journal of Corporate Finance* 41: 329-362.

Brown, J. David, John S. Earle, and Almos Telegdy. 2006. "The Productivity Effects of Privatization: Longitudinal Estimates from Hungary, Romania, Russia, And Ukraine". *Journal of Political Economy* 114 (1): 61-99.

Chen, Gongmeng, Michael Firth, Yu Xin, and Liping Xu. 2008. "Control Transfers, Privatization, And Corporate Performance: Efficiency Gains in China's Listed Companies". *Journal of Financial and Quantitative Analysis* 43 (1): 161-190.

Choi, Seung-Doo, Inmoo Lee, and William Megginson. 2010. "Do Privatization IPOs Outperform in The Long Run?". *Financial Management* 39 (1): 153-185.

Conway, Paul, and Richard Herd. 2009. "How Competitive Is Product Market Regulation in India?". OECD *Journal: Economic Studies* 2009 (1): 1-25.

Dinc, I. Serdar, and Nandini Gupta. 2011. "The Decision to Privatize: Finance and Politics". *The Journal of Finance* 66 (1): 241-269.

Florio, Massimo. *The great divestiture: Evaluating the welfare impact of the British privatizations,* 1979-1997. MIT press. 2004.

Gan, Jie, Yan Guo, and Chenggang Xu. 2014. "Decentralized Privatization and Change of Control Rights in China". *The Review of Financial Studies* 31 (10): 3854-3894.

Ghosh, Saibal. 2011. "R&D in Public Enterprises". *Science, Technology and Society* 16 (2): 177-190.

Gupta, Nandini. 2005. "Partial Privatization and Firm Performance". *The Journal of Finance* 60 (2): 987-1015.

Li, Bo, William L. Megginson, Zhe Shen, and Qian Sun. 2016. "Do Share Issue Privatizations Really Improve Firm Performance in China?". *SSRN Electronic Journal.*

Makhija, Anil K. "Privatization in India." *Economic and Political Weekly* 41, no. 20 (2006): 1947-951.

Megginson, William L, and Jeffry M Netter. 2001. "From State to Market: A Survey of Empirical Studies On Privatization". *Journal of Economic Literature* 39 (2): 321-389.

Megginson, William L. 2007. "Introduction to The Special Issue On Privatization". *International Review of Financial Analysis* 16 (4): 301-303.

Megginson, William L. 2017. "Privatization, State Capitalism, And State Ownership of Business in The 21St Century". Foundations and Trends® In Finance 11 (1-2): 1-153.

Megginson, William L., Robert C. Nash, Jeffry M. Netter, and Annette B. POULSEN. 2004. "The Choice of Private Versus Public Capital Markets: Evidence from Privatizations". *The Journal of Finance* 59 (6): 2835-2870.

Megginson, William. 2010. "Privatization and Finance". *Annual Review of Financial Economics* 2 (1): 145-174.

Meher, Kishor & Samiran, Jana. (2012). Bottom line of Divested PSE's in Post Privatization Scenario. 4D *International Journal of Management & Science*. III.

Ministry of Finance, Department of Disinvestment, Government of India. 2007. Dipam.Gov.In. https://dipam.gov.in/sites/default/files/white_paper.pdf.

Muhlenkamp, Holger. 2013. "From state to market revisited: a reassessment of the empirical evidence on the efficiency of public (and privately-owned) enterprises". *Annals of Public and Cooperative Economics* 86 (4): 535-557.

OECD. 2008. "Improving Product Market Regulation in India". OECD Economics Department Working Papers.

O'Toole, Conor M., Edgar L.W. Morgenroth, and Thuy T. Ha. 2016. "Investment Efficiency, State-Owned Enterprises and Privatization: Evidence from Viet Nam in Transition". *Journal of Corporate Finance* 37: 93-108.

Oum, Tae H., Nicole Adler, and Chunyan Yu. 2006. "Privatization, Corporatization, Ownership Forms and Their Effects On the Performance of the World's Major Airports". *Journal of Air Transport Management* 12 (3): 109-121.

Parker, David. 2004. "The UK's Privatization Experiment: The Passage of Time Permits A Sober Assessment". Cesifo Working Paper No. 1126.

Stiglitz, Joseph E. *Privatization: Successes and Failures.* Edited by Roland Gerard. Columbia University Press, 2008.

Subramanian, Krishnamurthy, and William L. Megginson. 2018. "Employment Protection Laws and Privatization". *SSRN Electronic Journal.*

Tran, Ngo My, Walter Nonneman, and Ann Jorissen. 2015. "Privatization of Vietnamese Firms and Its Effects On Firm Performance". *Asian Economic and Financial Review* 5 (2): 202-217.

Wolf, Christian O. H., and Michael G. Pollitt. 2008. "Privatizing National Oil Companies: Assessing The Impact On Firm Performance". *SSRN Electronic Journal.*

List of CPSE that have received 'in-principle' approval of Cabinet Committee on Economic Affairs (CCEA) for strategic disinvestment

SL. No	Name of CPSE	Date of CCEA approval
	ONGOING	
1	Nagarnar Steel Plant of NMDC	27.10.2016
2	Alloy Steel Plant, Durgapur; Salem Steel Plant; Bhadrwati units of SAIL:	27.10.2016
3	Ferro Scrap Nigam Ltd (Subsidiary)	27.10.2016
4	Central Electronics Ltd.	27.10.2016
5	Bharat Earth Movers Ltd. (BEML)	27.10.2016
6	Cement Corporation of India Ltd.	27.10.2016
7	Bridge & Roof Co. India Ltd.	27.10.2016
8	Engineering Projects (India) Ltd.	27.10.2016
9	Scooters India Ltd	27.10.2016
10	Bharat Pumps & Compressors Ltd.	27.10.2016
11	Hindustan Newsprint Ltd. (Subsidiary)	27.10.2016
12	Hindustan Fluorocarbons Ltd. (Subsidiary)	27.10.2016
13	Pawan Hans Ltd.	27.10.2016
14	Projects Development India Ltd.	27.10.2016
15	Hindustan Prefab Ltd. (HPL)	27.10.2016
16	Hindustan Antibiotics Ltd.	28.12.2016
17	Bengal Chemicals and Pharmaceuticals Limited (BCPL)	28.12.2016
17	Air India and its subsidiaries	28.06.2017
19	India Medicines & Pharmaceuticals Corporation Ltd. (IMPCL)	01.11.2017
20	Karnataka Antibiotics and Pharmaceuticals Ltd.	01.11.2017
21	HLL Lifecare	01.11.2017
22	Kamarajar Port Limited	28.02.2019
23	Shipping Corporation of India (SCI)	20.11.2019
24	(a) Bharat Petroleum Corporation Ltd (except Numaligarh Refinery Limited) (b) BPCL stake in Numaligarh Refinery Limited to a CPSE strategic buyer	20.11.2019
25	Container Corporation of India Ltd. (CONCOR)	20.11.2019
26	THDC India Limited (THDCIL)	20.11.2019
27	North Eastern Electric Power Corp. Ltd. (NEEPCO)	20.11.2019
28	Neelanchal Ispat Nigam Ltd (NINL)	08.01.2020
	TRANSACTION COMPLETED	
29	Hindustan Petroleum Corporation Limited	19.07.2017
30	Rural Electrification Corporation Limited	06.12.2018
31	Hospital Services Consultancy Corporation Limited (HSCC)	27.10.2016
32	National Projects Construction Corporation Limited (NPCC)	27.10.2016
33	Dredging Corporation of India Limited	01.11.2017

Note: The Government has already strategically sold its stake in 5 CPSEs namely Hindustan Petroleum Corporation Limited (HPCL) (to Indian Oil Corporation (IOC)), Rural Electrification Corporation Limited (REC) (to Power Finance Corporation (PFC)), Dredging Corporation of India Limited (DCIL) (to a consortium of four ports), Hospital Services Consultancy Corporation Limited (HSCC) (to NBCC) & National Projects Construction Corporation Limited (NPCC) (to WAPCOS) in last two years resulting in a yield of Rs. 52,869 crore.

Source: Department of Investment and Public Asset Management (DIPAM) and Press Information Bureau (PIB)

Is India's GDP Growth Overstated? No!

10
CHAPTER

Correlation is the basis of superstition and causation the foundation of science.

- Anonymous

As investors deciding to invest in an economy care for the country's GDP growth, uncertainty about its magnitude can affect investment. Therefore, the recent debate about India's GDP growth rates following the revision in India's GDP estimation methodology in 2011 assumes significance, especially given the recent slowdown in the growth rate. Using careful statistical and econometric analysis that does justice to the importance of this issue, this chapter finds no evidence of mis-estimation of India's GDP growth. The chapter starts from the basic premise that countries differ among each other in various observed and unobserved ways. Therefore, cross-country comparisons are fraught with risks of incorrect inference due to various confounding factors that stem from such inherent differences. As a result, cross-country analysis has to be carefully undertaken so that correlation is distinguished from causality. The models that incorrectly over-estimate GDP growth by 2.77 per cent for India post-2011 also mis-estimate GDP growth over the same time period for 51 other countries out of 95 countries in the sample. The magnitude of mis-estimation in the incorrectly specified model is anywhere between +4 per cent to -4.6 per cent, including UK by +1.6 per cent, Germany by +1.0 per cent, Singapore by -2.3 per cent, South Africa by -1.2 per cent and Belgium by -1.3 per cent. Given the lower growth rates for UK and Germany compared to India, the mis-estimation in percentage terms in the incorrectly specified model is much larger for UK (76 per cent) and Germany (71 per cent) than for India (40 per cent). However, when the models are estimated correctly by accounting for all unobserved differences among countries as well as the differential trends in GDP growth across countries, GDP growth for most of these 52 countries (including India) is neither over- or under-estimated. In sum, concerns of over-estimation of India's GDP are unfounded.

The larger point made by this chapter needs to be understood by synergistically viewing its findings with the micro-level evidence in Chapter 2, which examines new firm creation in the formal sector across 504 districts in India. Two observations are critical. First, the granular evidence shows that a 10 per cent increase in new firm creation increases district-level GDP growth by 1.8 per cent. As the pace of new firm creation in the formal sector accelerated significantly more after 2014, the resultant impact on district-level growth

and thereby country-level growth must be accounted for. Along these lines, Purnanandam (2019) shows that India's improvement in indicators such as access to nutrition and electricity might explain the higher growth rate in Indian GDP post the methodological change. Second, granular evidence on new firm creation shows that new firm creation in the Service sector is far greater than that in manufacturing, infrastructure or agriculture. This micro-level evidence squares up fully with the well-known macro fact on the relative importance of the Services sector in the Indian economy. The need to invest in ramping up India's statistical infrastructure is undoubted. In this context, the setting up of the 28-member Standing Committee on Economic Statistics (SCES) headed by India's former Chief Statistician is important. Nevertheless, carefully constructed evidence in the Survey must be taken on board when assessing the quality of Indian data.

INTRODUCTION

10.1 To achieve the objective of becoming a USD 5 trillion economy by 2025, a strong investment climate is critical. The Economic Survey of 2018-19 laid out the role of investment, especially private investment, in driving demand, creating capacity, increasing labour productivity, introducing new technology, allowing creative destruction, and generating employment. Undoubtedly, investment assumes primacy in catalyzing the economy into a virtuous cycle.

10.2 In recent times, India has taken several initiatives to foster investment, be it relaxing FDI norms, cutting corporate tax rates, containing inflation, accelerating infrastructure creation, improving ease of doing business, or reforming taxation. Investors, including international investors, see an unparalleled opportunity in India as it is one of the fastest growing large economies in the world. The growth rate of the economy is a pre-eminent driver of investment decisions. Moreover, the level and growth rate of a country's GDP informs several critical policy initiatives by serving as a barometer of the economy's size and health.

10.3 In recent times, there has been significant debate about the veracity of India's GDP growth rates, with particular focus being placed on these growth rates following the change in the GDP estimation methodology in 2011-12 (see Box 1 for a note on the revision). Both national and international experts including Bhalla (2019), Goyal and Kumar (2019), Roy and Sapre (2019), Panagariya (2019), Purnanandam (2019), Subramanian (2019) and Vaidya Nathan (2019) have contributed to the debate on whether the GDP growth rates in India are correctly estimated or not. As concerns about the veracity of India's GDP growth rates may generate substantial concerns not only to investors but also to policymakers, this issue warrants a careful examination. Such an examination is important especially given the slowdown in the GDP growth rates over recent quarters. If investors apply a "discount" to a lower growth rate, even if incorrectly, the same can really affect investor sentiment. This chapter, therefore, studies this important issue.

10.4 The aim of the chapter is to estimate the inaccuracy, if any, in the GDP growth rate using the difference-in-difference methodology as implemented in Subramanian (2019) and Purnanandam (2019). Estimating the inaccuracy of any measured variable requires a benchmark for the "accurate estimate", which by definition represents a "counter-factual", i.e. one that

Box 1: Change in the Base Year of the GDP Series

The Base Year of the GDP Series was revised from 2004-05 to 2011-12 and released on 30 January, 2015 after adaptation of the sources and methods in line with the System of National Accounts (SNA) 2008 of the United Nations. The methodology of compilation of macro aggregates was finalized by the Advisory Committee on National Accounts Statistics (ACNAS) comprising experts from academia, National Statistical Commission, Indian Statistical Institute (ISI), Reserve Bank of India (RBI), Ministries of Finance, Corporate Affairs, Agriculture, NITI Aayog and selected State Governments. The decision taken by the Committee was unanimous and collective after taking into consideration the data availability and various methodological aspects.

For the purpose of global standardization and comparability, countries follow the SNA evolved in the UN after elaborate consultation. The SNA 2008 is the latest version of the international statistical standard for the national accounts, adopted by the United Nations Statistical Commission (UNSC) in 2009 and is an update of the earlier 1993 SNA. The Inter-Secretariat Working Group on National Accounts (ISWGNA) in India was mandated to develop the 2008 SNA through intense discussions and consultation with member countries. India also participated in the deliberations of the Advisory Expert Group. In its adoption of the 2008 SNA the UNSC encouraged Member States, regional and sub-regional organizations to implement its recommendations and use it for the national and international reporting of national accounts statistics based on the available data sources.

is not revealed in fact and therefore has to be estimated. This assessment is undertaken by comparing the Indian GDP growth rates to those of other countries. Effectively, this methodology asks the question "what would have been the estimate of the Indian GDP growth rate if the methodological change had not been implemented" and compares this estimate to the actual growth rate to infer the incorrectness in the estimates.

10.5 This methodology is similar to ones that researchers in medicine use to estimate whether a drug is effective or not. For concreteness, think of testing a drug for blood pressure (BP). Create two groups of identical guinea pigs – a treatment group that is administered the drug and a control group that is given sugar pills. Identical groups ensure apples-to-apples, instead of apples-to-oranges, comparison. When the groups are identical, before-after difference in BP for treatment group minus the same difference for control group estimates the correct effect of the drug by removing any confounding placebo effects. Effectively, the change in BP for the control group asks the question "what would have been the change in BP even if the drug had not been administered?" This methodology that researchers call "difference-in-difference" is used extensively in economic research.

10.6 In the context of GDP growth rate estimation, India represents the treatment group and other countries represent the control group. Countries differ from each other in ways that can be measured and, especially, in ways that cannot be measured; both sets of differences can affect economic activity. Therefore, cross-country comparisons are fraught with risks of incorrect inference due to various confounding factors that stem from such inherent differences. As a result, cross-country analysis has to be carefully undertaken so that correlation is distinguished from causality. So, researchers using data across several countries implement careful statistical techniques, called panel-data econometrics,

to ensure an apples-to-apples comparison across countries and thereby mimic the above example of testing a drug's effectiveness on BP.

10.7 Using careful statistical and econometric analysis that does justice to the importance of this issue, no evidence of mis-estimation of India's GDP growth is found. Indeed, the models that incorrectly over-estimate GDP growth by over 2.77 per cent for India post-2011 also mis-estimate GDP growth over the same time period for 51 other countries by any where between +4 per cent to -4.6 per cent, including UK by +1.6 per cent, Germany by +1.0 per cent, Singapore by -2.3 per cent, South Africa by -1.2 per cent and Belgium by -1.3 per cent. However, when the models are estimated correctly by accounting for all unobserved differences among countries as well as the differential trends in GDP growth across countries, GDP growth for most of these 52 countries is neither over- or under-estimated. In sum, concerns of over-estimation of India's GDP are unfounded.

10.8 The analysis is concluded by examining other signs that may indicate a problem with the GDP estimation methodology. As in Subramanian (2019), the GDP growth rates are correlated with other indicators that have not undergone any changes in methodology. In essence, the methodology involves correlating the "suspect" variable – the GDP growth rate – with several other "reliable" variables to uncover any suspicious patterns. As in Subramanian (2019), these "reliable" variables include exports, imports, real credit to industry, petroleum consumption, railway freight traffic, electricity consumption, etc. This diagnostic exercise is undertaken while recognizing that correlations can be non-stationary, i.e., can vary over time due to factors that may be unrelated to the change in the GDP methodology.

10.9 The results clearly establish the concern that the correlations studied as a diagnostic for GDP growth are notoriously non-stationary: not only do they flip signs frequently over various 3-year or 5-year time periods from 1980 to 2015, their values change significantly over this time period as well. Given such change in the correlations for reasons unrelated to the specific change in the GDP methodology in 2011, there seems to be no cause for concern regarding the mis-estimation of India's GDP. Further, the relationship of these indicators with the new GDP series does not diverge from their relationship with the old series. In other words, the relationship between these indicators and GDP is preserved even after the methodology revision, thereby adding to the evidence that the revised methodology estimates the GDP correctly.

IS GDP MISESTIMATED?

The Choice of Model: Is the Standard Difference-in-Difference Appropriate?

10.10 Cross-country data is gathered from the World Bank's World Development Indicators (WDI) database as in Purnanandam (2019) and Subramanian (2019). The sample exclude oil exporters[1], countries with population less than 1 million, and war-torn and politically fragile countries, in line with Subramanian (2019). Although the sample is unlikely to be an exact replica of these papers' samples, hence, a substantial overlap[2] is expected. In any case, this chapter aims to test the robustness of results to an independent verification, among other objectives. A sample that varies slightly from the original serves as a check of robustness to sample selection.

[1] Net export status of Ghana and Azerbaijan during the sample period being ambiguous, these countries are included in the sample.

[2] It was found that by running Subramanian (2019)'s main empirical specification using the sample, India's GDP is overestimated by 2.77 per cent, which is quite close to the original study's estimate of 2.5 per cent. This indicates a strong overlap in the samples. Scholarly literature are leveraged to modify the model to take care of additional sources of heterogeneity among the countries in the sample.

10.11 The standard difference-in-difference (DID) model is an econometric technique that attempts to mimic an experimental research design by studying the differential effect of a quasi-experiment such as a GDP methodology change. The differential effect studied is the difference in average GDP growth rate in a country that has gone through the methodology change, such as India (treatment group), versus other countries which have not gone through the change (control group). See Box 2 for a note on this methodology.

Box 2: A Note on the Difference-in-difference Method

The difference-in-difference (DID) methodology asks the question "what would have been the estimate of the Indian GDP growth rate if the methodological change had not been implemented?" and compares this estimate to the actual growth rate to infer the incorrectness in the estimates.

Let $\overline{GDP}_{c,t}$ denote the average GDP growth in country c in year t, where the subscript c tells whether average GDP growth rate is from India or from other countries used as controls (controls hereafter) in the study and the subscript t tells whether average growth rates looked is from 2002-2011 (before the GDP methodology change) or 2012-2016 (after the GDP methodology change). The DID estimate (δ_{DID}) of the effect of GDP methodology change in the average GDP growth estimates of India is:

$$\delta_{DID} = \left(\overline{GDP}_{India,2012-2016} - \overline{GDP}_{India,2002-2011}\right) - \left(\overline{GDP}_{Controls,2012-2016} - \overline{GDP}_{Controls,2002-2011}\right)$$

Instead of comparing average GDP growth of India and the controls, DID contrasts the change in the average GDP growth between India and the controls.

Comparing changes instead of average GDP growth levels adjusts for the fact that before the GDP methodology change (pre-treatment period), India's average GDP growth may have been higher than that of the controls. To see this, the DID bottom line can be constructed this way:

$$\delta_{DID} = \left(\overline{GDP}_{India,2012-2016} - \overline{GDP}_{Controls,2012-2016}\right) - \left(\overline{GDP}_{India,2002-2011} - \overline{GDP}_{Controls,2002-2011}\right)$$

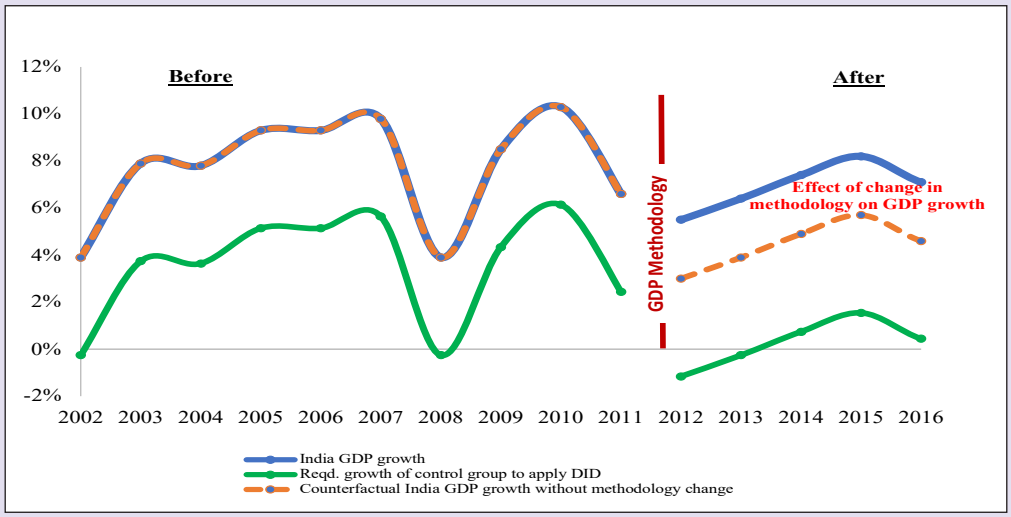
This version of DID calculation subtracts the average GDP growth rate difference before the GDP methodology change (pre-treatment difference) between India and the controls from the average GDP growth rate difference after the GDP methodology change (post-treatment difference), thereby adjusting for the fact that GDP growth rates in India and the rest of the other countries used as controls in the chapter were not the same initially.

DID logic is depicted in Figure 1 which plots the GDP growth of India and the control countries for the period 2002-2011 (Before) with the period 2012-2016 (After) by a solid line. The DID tool amounts to a comparison of trends in average GDP growth between India and other control countries. The dotted line in the figure is the counterfactual outcome that lies at the heart of the DID research design. This dotted line indicate what would have happened to GDP growth estimation without the GDP methodology change and more crucially if everything evolved in India as it did with the control countries i.e., the GDP growth rates moved parallelly between India and the control countries.

The DID counterfactual comes with an easily stated but even so, a formidable assumption of

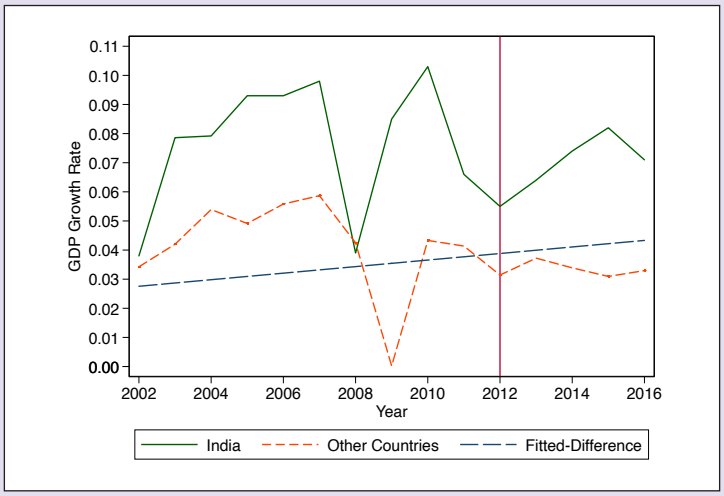
common trends. In the GDP methodology quasi-experiment, DID presumes that, absent any GDP methodology change, the average GDP growth trend in countries used as controls in the chapter is what one should expect to see in India as well. This assumption requires that before the "treatment" in 2011, India and the other countries followed a parallel trend in GDP growth – one that would have continued had India not been "treated" to a methodology revision. This assumption can seen from Figure 2 does not hold good. Notwithstanding the fact that DID is only an imperfect model to estimate GDP overstatement, this chapter nevertheless employs the methodology, with caveats, for comparability with other studies on the subject.

Figure 1: Illustration of the treatment effect in an ideal difference-in-difference design



Source: World Bank WDI Database.

Figure 2: India and other countries did not follow a parallel trend before the "treatment" before 2012, making DID an imperfect model to measure mis-estimation



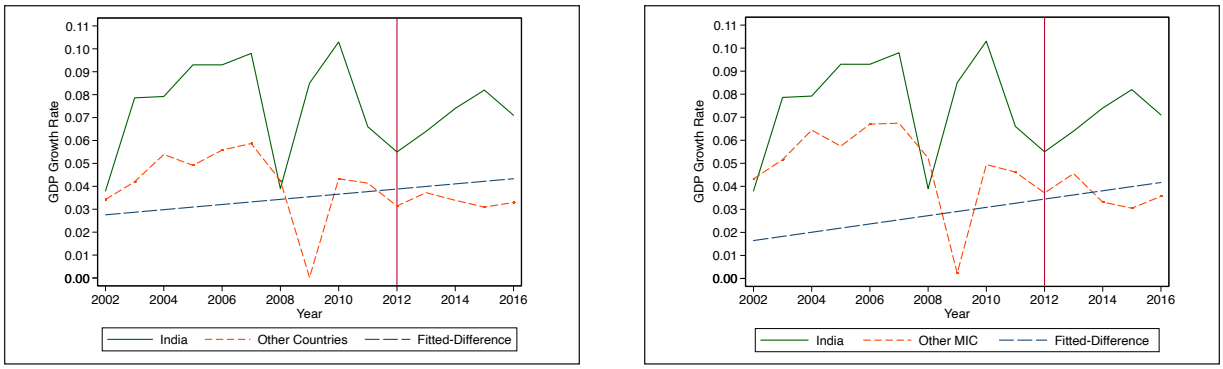
Source: World Bank WDI Database.

10.12 A fundamental assumption required for the standard DID model to correctly measure the magnitude of mis-estimation in GDP growth is the "parallel trends" assumption. In the GDP methodology quasi-experiment, DID presumes that, absent any GDP methodology change, the average GDP growth trend in countries used as controls in

the chapter is what one should expect to see in India as well. This assumption requires that before the "treatment" in 2011-12, India and the other countries followed a parallel trend in GDP growth – one that would have continued had India not been "treated" to a methodology revision. Only then one can do an apples-to-apples comparison. If the parallel trends assumption is violated, then the standard DID is not an appropriate tool for the current problem (see Box 2 for an illustration of the parallel trends assumption).

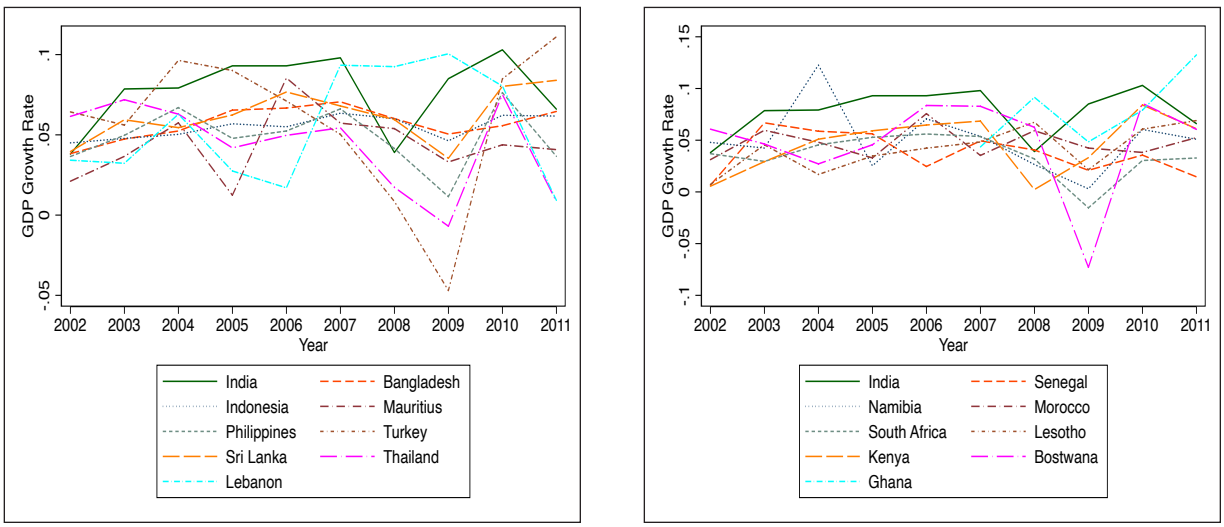
10.13 Figure 3, derived from Purnanandam (2019), compares in the two panels respectively, a) India's growth trajectory with all other sample countries, b) India's trajectory with the average for other middle income countries in the sample. Figure 4 plots the trajectories of India against other middle income countries individually until the year of methodology revision, 2011-12. All charts make it clear that India and the other countries did not follow a parallel trend in growth before 2011. Even when compared to other Asian middle income countries (the first panel of Figure 4), the analysis fail to see parallel trends. There is not only variation between the treatment and control groups, but also variation within the control group.

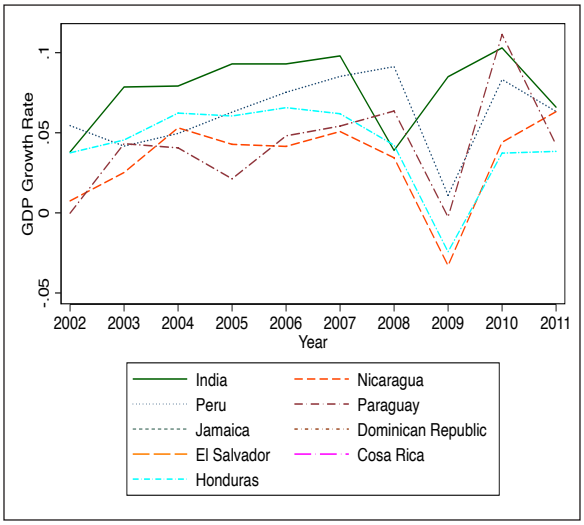
Figure 3: India and other countries do not follow a parallel trend in GDP growth prior to 2011

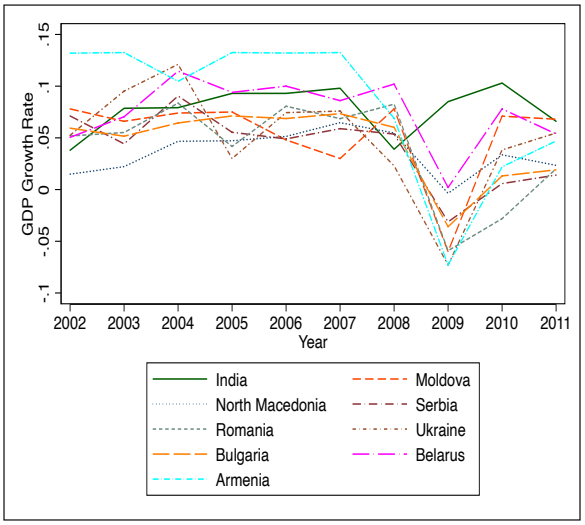


Source: Purnanandam (2019)

Figure 4: India and other middle income countries do not follow a parallel trend in GDP growth prior to 2011







Source: World Bank WDI Database.

10.14 The parallel trends assumption is critical for any inference from a standard DID model. However, as the figures make clear, India did not follow a parallel trend compared to other countries prior to 2011, so there is no reason to assume that India would have continued on a parallel trend after 2011 in the absence of a methodology revision, and the measured difference-in-difference (treatment effect of the 2011 revision) should therefore be treated with caution.

10.15 The other challenge is the choice of independent variables. As GDP is an immensely complex phenomenon that is influenced directly and indirectly by a range of socio-economic factors, some of which are measured and most of which are non-measurable, there is a high risk of omitted variable bias – an issue considered in the next section.

10.16 The lack of a parallel trend between the treatment and control, as well as the possibility of omitted variable bias, render the standard DID methodology an imperfect tool to evaluate whether India's GDP is misestimated. Nevertheless, to begin with, a baseline standard DID model is estimated as implemented in Subramanian (2019). In order to bring out comparability with other studies such as Subramanian (2019). In subsequent sections, various ways are explored to adjust the model to overcome these limitations.

10.17 The following cross-sectional regression is estimated twice, once for the pre-change period and once for the post-change period:

$$g_i = \beta_0 + \beta_1 X_i + \theta\, India_i + \varepsilon_i$$

The dependent variable is the real GDP growth rate of country i in period T. The independent variables include real growth rates of exports, imports and credit to the private sector, as well as a dummy for India. For each country, the continuous variables are averaged over all pre-change years for the first estimation, and over all post-change years for the second estimation. The coefficient of interest is the $India_i$ dummy. The difference between the coefficient from the post-change specification and the pre-change one gives the magnitude of mis-estimation in the post-change period.

10.18 The two pooled cross-sectional regressions above can be clubbed into one specification as follows:

$$g_{iT} = \beta_0 + \beta_1 X_i + \beta_1 X_i \times T + \theta_1 India_i + \theta_2 India_i \times T + \gamma T + \varepsilon_{iT}$$

In this model, the treatment period is captured by T, which equals one for the post-change

period and zero for the pre-change period. The variable of interest now is θ_2 which captures the level of mis-estimation of the Indian GDP post-change.

10.19 Table 1 presents results. Using this rudimentary specification, it was found that India's GDP was overstated by 2.77 per cent. Results mirror the results of Subramanian (2019), who finds an overestimation of 2.5 per cent. Further, the analysis considered the issues associated with this model and implementation adjustments. After making these adjustments, the evidence in favour of a misestimated GDP weakened considerably.

Table 1: Estimation of abnormal growth in GDP using a cross-country standard DID model

Dependent variable: Average GDP growth	2002-11	2012-16	Pooled
India	**0.0092****	**0.0369*****	**0.0092****
	(2.4151)	**(15.7342)**	**(2.4151)**
India x Post-Change			**0.0277*****
			(6.1757)
Post-Change			0.0042
			(1.0690)
Export Growth Rate	0.0929*	0.0805**	0.0929*
	(1.9697)	(2.1591)	(1.9697)
Import Growth Rate	0.1856***	0.0225	0.1856***
	(3.3672)	(0.6245)	(3.3672)
Credit Growth Rate	0.0632***	0.1892***	0.0632***
	(3.3336)	(6.4593)	(3.3336)
Export Growth x Post-Change			-0.0125
			(-0.2075)
Import Growth x Post-Change			-0.1631**
			(-2.4767)
Credit Growth x Post-Change			0.1260***
			(3.6123)
Constant	0.0139***	0.0181***	0.0139***
	(4.3905)	(7.7800)	(4.3905)
Observations	95	95	190
R^2	0.5323	0.5304	0.5443

Note: Columns 1 and 2 estimate the following cross-sectional regression: $g_i = \beta_0 + \beta_1 X_i + \theta\, India_i + \varepsilon_i$. For each country *i*, the dependent and independent variables are averaged over the period 2002-11 and 2012-16 in columns 1 and 2 respectively. Column 3 pools the observations from both periods and estimates the following regression: $g_{iT} = \beta_0 + \beta_1 X_i + \beta_1 X_i \times T + \theta_1 India_i + \theta_2 India_i \times T + \gamma T + \varepsilon_{iT}$. g_i equals the average growth rate for country i in either 2002-11 or 2012-16 period. T equals one for the post-change period and zero otherwise. India equals one for India and zero for all other countries. t-statistics are provided in parentheses. *, ** and *** denote significance levels of 10 per cent, 5 per cent and 1 per cent respectively[3].

[3] Standard errors reported in this table and elsewhere, unless explicitly stated otherwise, are unclustered, as the small size of the treatment group (one country only) is insufficient to calculate a robust covariance matrix. Subramanian (2019) reports clustered standard errors in some of his specifications, which may not be suitable given the extremely small number of clusters in the treatment group (see Cameron, Gelbach, & Miller (2008); Cameron & Miller (2015)).

Choice of Covariates: A Generalized DID to Handle Omitted Variable Bias

10.20 The omission of important variables in a regression model can lead to what is known as omitted variable bias (see Box 3). For example, the regression attempted above excludes important agriculture- and services-related indicators as well as other unobserved factors that may affect GDP growth. To illustrate the effect of omitted variable bias on the results, the analysis re-estimate rudimentary baseline model with different combinations of independent variables:

$$g_{iT} = \beta_0 + \beta_1 X_i + \beta_1 X_i \times T + \theta_1 India_i + \theta_2 India_i \times T + \gamma T + \varepsilon_{iT}$$

In particular, besides the existing covariates – real growth in exports, imports and credit – real growth in agriculture and real growth in services were added to the model. Table 2 presents results. Column 1 indicates the baseline estimation in which India's GDP growth appears overstated by 2.77 per cent, as earlier. Column 2 includes real services growth in the model, which yields a much lower mis-estimation of 1.18 per cent. Moreover, the coefficient of interest in this case is only weakly statistically significant. Column 3 includes real agriculture growth in the model, which causes the mis-estimation to drop to 2.6 per cent. Column 4 includes both agriculture and services growth, which also causes the mis-estimation to drop further to 1.1 per cent. The final column runs a model with only the agriculture and services indicators and finds the level of mis-estimation to be negative.

10.21 The objective of Table 2 is not to provide a refined estimate of the level of mis-estimation, but to illustrate the extremely high sensitivity of the findings to the choice of covariates used in the model. Clearly, the baseline model with only three covariates significantly overestimates the level of overestimation.

Box 3: A note on omitted variable bias in regression models

Regression is a statistical technique, which if done the right way, is a way to make other things equal by controlling for or removing the effects of variables (such as indicators from the services, industrial and agriculture sectors of the economy) that are related to the dependent variable (such as GDP growth rate). One may be interested in the effect on GDP growth rate from a GDP methodology change and not particularly interested in the variables from the services, industrial and agriculture sectors of the economy. But equality is established only for the variables included as controls. Failure to include enough controls or the right controls gives biased results from the regression. This bias in the results is called Omitted Variable Bias (OVB).

Suppose the following 'short' regression does not have either enough controls or the right controls:

$$GDP = \alpha_S + \beta_{1S} X_1 + \beta_S X_{India} + \varepsilon_S$$

where GDP denotes the GDP growth in a particular country in a given year, α_S is the intercept of the short regression, β_{1S} is the regression coefficient of X_1, X_1 is a vector of independent variables in the 'short' regression of say industrial indicators and consequently does not have enough/right controls for GDP growth, β_S is the causal effect estimated of

the GDP methodology change on GDP growth rate, X_{India} is the India country dummy and ε_S is the residual or the error term.

Now, suppose following 'long' regression is run such that it has enough/right controls:

$$GDP = \alpha_L + \beta_{1L}X_1 + \beta_{2L}X_2 + \beta_L X_{India} + \varepsilon_L$$

where α_L is the intercept of the long regression, β_{2L} is the regression coefficient of X_2, X_2 is a vector of omitted controls, β_L is the causal effect estimated of the GDP methodology change on GDP growth rate, and ε_L is the residual.

The bias in the estimation of GDP growth rate from methodology change due to omitted variables is:

$$OVB = \beta_S - \beta_L = \pi_1\beta_{2L}$$

where π_1 is the coefficient of the following regression:

$$X_2 = \pi_0 + \pi_1 X_1 + \pi_2 X_{India} + \varepsilon$$

The illustration below summarizes the direction of the omitted variable bias. The dependent variable is GDP, X_1 and X_2 are the independent variables, and X_2 is the omitted variable.

	X_1 and X_2 are positively correlated	**X_1 and X_2 are negatively correlated**
X_2 has a positive effect on GDP	Positive bias	Negative bias
X_2 has a negative effect on GDP	Negative bias	Positive bias

For example, with regard to the study by Subramanian (2019) that aimed to explain GDP growth using indicators of real economic activity, the Economic Advisory Council recently wrote, "a cursory look at the indicators suggests a strong link with industry indicators (a sector that contributes an average of 22 per cent to India's GDP), while the representation of services (60 per cent of GDP) and agriculture (18 per cent of GDP) is as good as missing. It is difficult to believe that indicators in the services sector would not correlate with Indian GDP." (Economic Advisory Council to the Prime Minister, 2019)

In the above analysis, say X_1 indicates the manufacturing-related indicators and X_2 represents the missing indicators from services and agriculture. The indicators from industry are expected to be positively correlated with that of services and agriculture, so X_1 and X_2 are positively correlated. Similarly, the missing indicators from services and agriculture will have a positive effect on GDP growth rate. So, omitted variable bias is expected to be positive. Notwithstanding the fact that DID is an imperfect model to estimate GDP overstatement, the overestimation of 2.5 per cent found in Subramanian (2019) is itself likely to be overestimated because of omitted variable bias, as the explanatory variables (exports, imports and credit) do not adequately cover all the sources of variation in GDP growth.

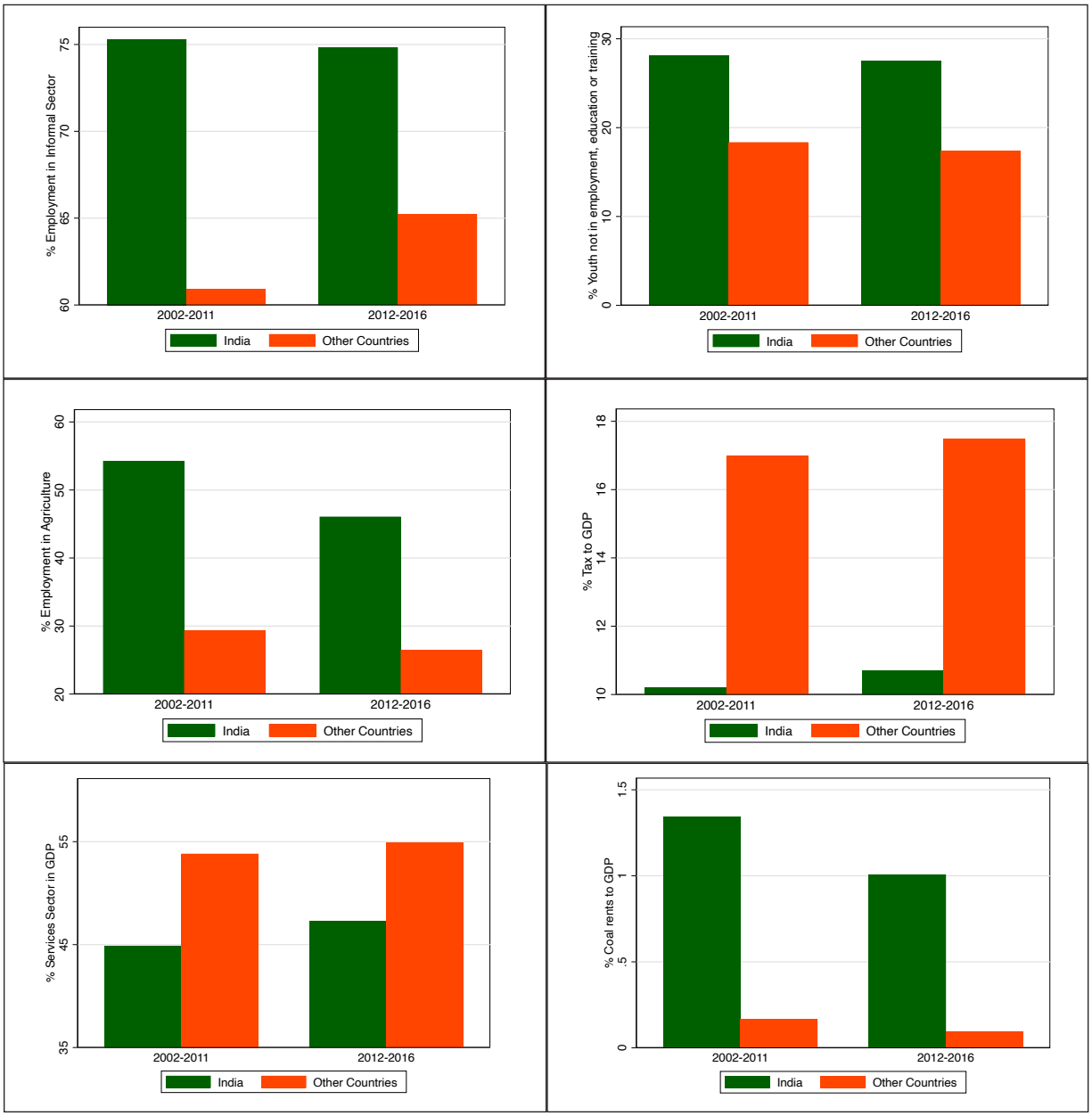
Table 2: Illustration of the effect of omitted variable bias on level of mis-estimation

	Baseline	Incl. services	Incl. agri.	Incl. both services & agri.	Excl. exports, imports, credit
India x Post-Change	**0.0277*** **	**0.0118***	**0.0261*** **	**0.0112****	**-0.0090****
	(6.1757)	**(1.9719)**	**(5.7183)**	**(2.1128)**	**(-2.0210)**
India	**0.0092****	**0.0059***	**0.0087****	**0.0066****	**0.0173*** **
	(2.4151)	**(1.8999)**	**(2.2617)**	**(2.4470)**	**(7.4551)**
Post-Change	0.0042	0.0064*	0.0051	0.0076**	0.0034
	(1.0690)	(1.9675)	(1.3677)	(2.4421)	(0.8392)
Agriculture Growth			0.0022***	0.0019***	0.0021***
			(3.8005)	(5.2800)	(4.6917)
Services Growth		0.5485***		0.5094***	0.6592***
		(8.5362)		(8.5219)	(9.3156)
Export Growth	0.0929*	0.0401	0.0819*	0.0541*	
	(1.9697)	(1.2310)	(1.7386)	(1.9165)	
Import Growth	0.1856***	0.1234***	0.1991***	0.1107***	
	(3.3672)	(2.6379)	(3.3378)	(2.9288)	
Credit Growth	0.0632***	0.0125	0.0377*	0.0010	
	(3.3336)	(0.8320)	(1.9493)	(0.0758)	
Agri. Growth x Post-Change			-0.0004	-0.0006	-0.0007
			(-0.4541)	(-1.1001)	(-1.0330)
Services Growth x Post-Change		-0.1085		-0.1060	-0.0728
		(-0.9346)		(-0.9803)	(-0.6774)
Export Growth x Post-Change	-0.0125	0.0024	-0.0022	-0.0090	
	(-0.2075)	(0.0449)	(-0.0368)	(-0.1851)	
Import Growth x Post-Change	-0.1631**	-0.0965	-0.1866***	-0.0912*	
	(-2.4767)	(-1.5804)	(-2.6874)	(-1.7305)	
Credit Growth x Post-Change	0.1260***	0.0720**	0.1409***	0.0847***	
	(3.6123)	(2.0397)	(4.2821)	(2.6902)	
Constant	0.0139***	0.0026	0.0106***	0.0006	0.0056*
	(4.3905)	(1.2230)	(3.4347)	(0.2944)	(1.9176)
Observations	190	187	190	187	187
Adjusted R^2	0.5443	0.7608	0.6073	0.7962	0.7218

Note: All columns estimate the following regression: $g_{iT}=\beta_0+\beta_1 X_i+\beta_1 X_i \times T+\theta_1 India_i+\theta_2 India_i \times T+\gamma T+\varepsilon_{iT}$. g_i equals the average growth rate for country i in either 2002-11 or 2012-16 period. T equals one for the post-change period and zero otherwise. India equals one for India and zero for all other countries. Columns vary by the choice of covariates used in the model. t-statistics are provided in parentheses. *, ** and *** denote significance levels of 10 per cent, 5 per cent and 1 per cent respectively.

10.22 The solution to omitted variable bias is not as simple as adding more covariates to the model. Thousands of indicators immediately present themselves as candidates, most of which exert their influence on the dependent variable in very indirect, non-linear ways. For example, compared to other countries, India has very high informal sector employment and a large proportion of youth that is not in employment, education or training. Agriculture contributes disproportionately to India's employment whereas services contributes disproportionately to GDP.

Figure 5: Structural differences between the economies of India and other countries



Source: World Bank WDI database.

Note: Informal sector employment share is a percentage of total non-agricultural employment. Share of youth not in education, employment or training represents the proportion of such individuals aged 15-24 among all individuals aged 15-24. Coal rents as defined by World Bank are the difference between the value of both hard and soft coal production at world prices and their total costs of production. It represents a measure of natural resource contribution to GDP.

10.23 Figure 5 illustrates some of these structural differences between the Indian economy and others. All these variables undoubtedly affect GDP, but in indirect ways that cannot be easily measured or observed.

10.24 A complete model must capture the idiosyncratic drivers of growth of each country in the sample. For example, institutional and legal structures are inherently different across countries, which affect countries in ways that cannot be measured directly. Purnanandam (2019) argues that cross-country regressions of this kind must include country fixed effects to account for such unobserved variations across countries. After controlling for such variation, it finds that the erstwhile mis-estimation of 2.4 per cent in his model disappears altogether.

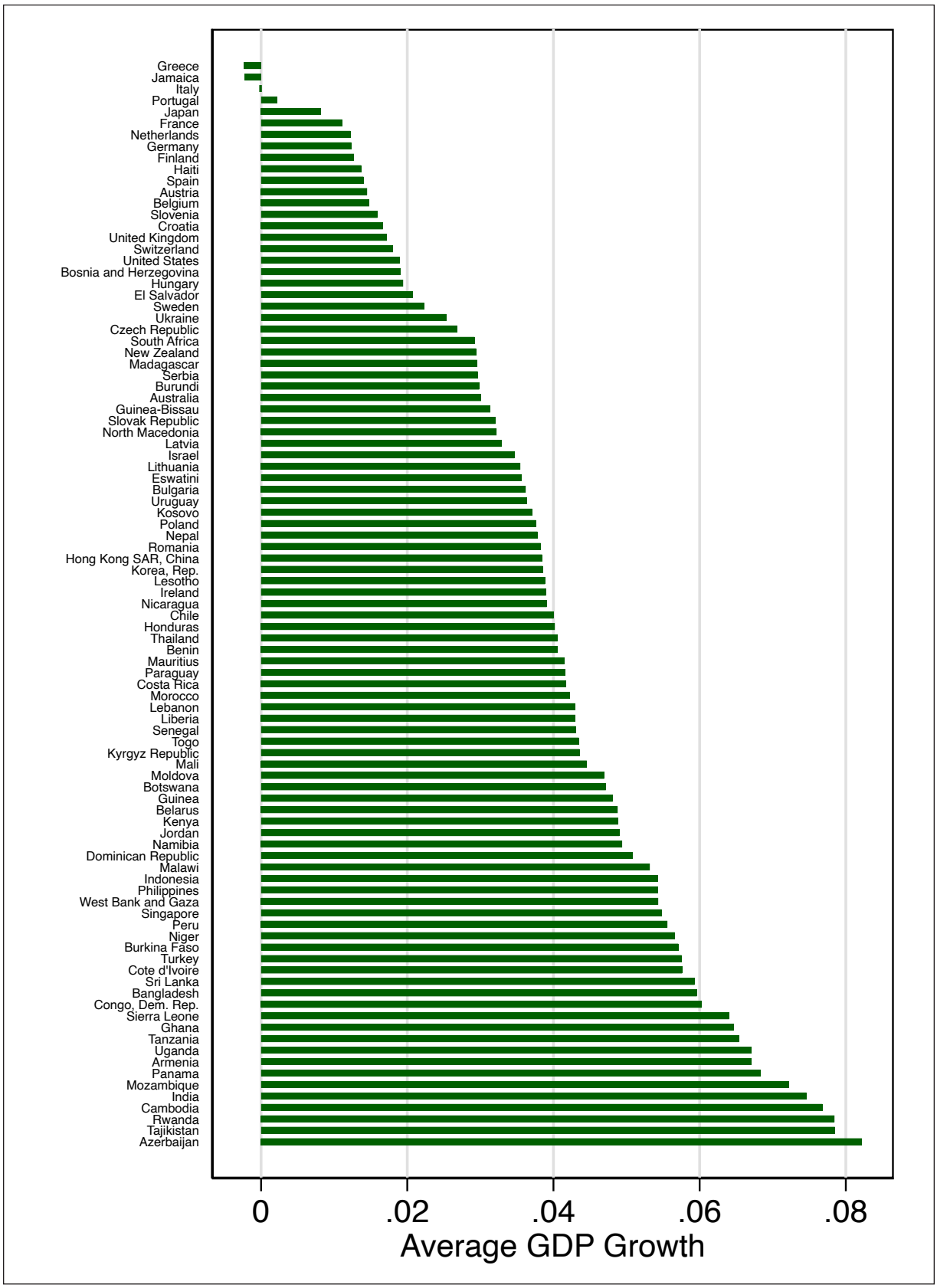
10.25 Figure 6 plots the average growth rate of all countries in the sample over the period 2002-16. Clearly, countries exhibit tremendous variation in their average GDP growth rates. Because average growth rates vary, each country has a different average "effect" on the dependent variable which must be held fixed before it examine the effect of treatment. Put differently, the difference in average growth rates represents important structural differences among countries that must be held fixed before it can examine the effect of treatment. Including country fixed effects in the model achieves exactly this – it accounts for the differences in average growth rates, and by extension all unobserved differences across countries that may influence the dependent variable. Only by including country fixed effects in the model the influence of such unobserved variation can be isolated, counter the omitted variable bias discussed above, and get an unbiased estimate of the effect of treatment.

10.26 In a similar vein, Figure 7 motivates the case for year fixed effects. The chart depicts the cross-sectional average GDP growth of all sample countries in every year from 2002 to 2016. The average is far from constant over time; every year, the sample countries' average GDP growth behaves differently compared to the previous year. In 2009, the average GDP growth of all sample countries reaches rock bottom owing to the financial crisis – an important factor that affected all countries and therefore must be included in the model as a control. Year fixed effects would control for all such unobserved factors that affect all countries in a given year, and thus take care of another source of omitted variable bias.

10.27 In line with Purnanandam (2019), the baseline specification is modified to include country fixed effects and results are presented in Table 3. As a baseline, the first two columns depict cross-sectional regressions for 2002-11 and 2012-16 respectively without fixed effects. The variable of interest is the $India_i$ dummy, which increases from 0.92 per cent pre-change to 3.69 per cent post-change, indicating a mis-estimation of 2.77 per cent, as demonstrated earlier. The third column simply pools the observations in columns 1 and 2, i.e. the pre-change and post-change observations, such that the coefficient of interest now is the interaction between the $India_i$ dummy and T, the post-change dummy. As earlier, the coefficient reflects the mis-estimation of 2.77 per cent.

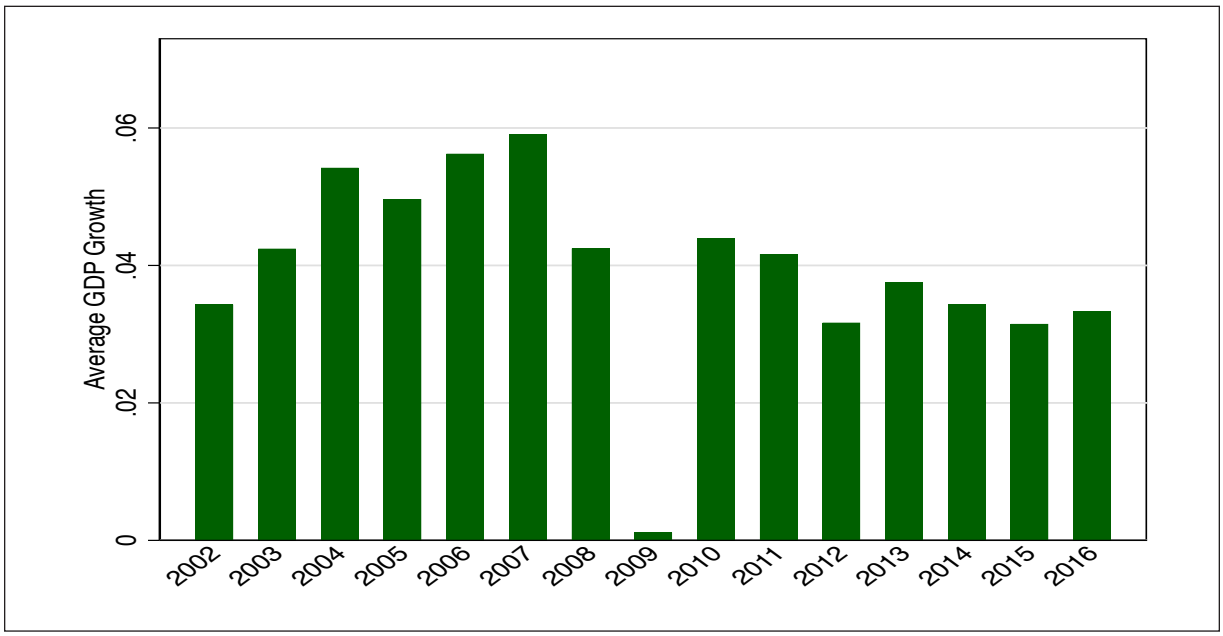
10.28 The final column shows the preferred specification that includes country fixed effects, thus implementing a generalized DID model. Here, the coefficient on the *India x post-change* interaction term turns insignificant. Clearly, a substantial variation in GDP growth is absorbed by unobserved differences across countries, leaving little evidence of any mis-estimation in India's GDP growth rates.

Figure 6: Need for controlling for difference in average GDP growth across countries



Source: World Bank WDI database.

Figure 7: Need for controlling for difference in global growth rates across years



Source: World Bank WDI database.

Table 3: Estimation of abnormal growth with and without controls for differences across countries

Description of sample:	2002-11	2012-16	Pooled	Pooled
Does the econometric specification control for differences across countries?	No	No	No	Yes and therefore the correct model
India	**0.0092****	**0.0369*****	**0.0092****	
	(2.4151)	**(15.7342)**	**(2.4151)**	
India x Post-Change			**0.0277*****	**0.0170**
			(6.1757)	**(0.9067)**
Post-Change			0.0042	-0.0009
			(1.0690)	(-0.3852)
Export Growth Rate	0.0929*	0.0805**	0.0929*	0.0500
	(1.9697)	(2.1591)	(1.9697)	(1.2545)
Import Growth Rate	0.1856***	0.0225	0.1856***	0.0725**
	(3.3672)	(0.6245)	(3.3672)	(2.1073)
Credit Growth Rate	0.0632***	0.1892***	0.0632***	0.0756***
	(3.3336)	(6.4593)	(3.3336)	(3.7686)
Export Growth x Post-Change			-0.0125	
			(-0.2075)	

Import Growth x Post-Change			-0.1631**	
			(-2.4767)	
Credit Growth x Post-Change			0.1260***	
			(3.6123)	
Constant	0.0139***	0.0181***	0.0139***	0.0247***
	(4.3905)	(7.7800)	(4.3905)	(7.1371)
Observations	95	95	190	190
R^2	0.5323	0.5304	0.5443	0.6564
Fixed Effects				Country

Note: Columns 1 and 2 estimate the following cross-sectional regression: $g_i = \beta_0 + \beta_1 X_i + \theta India_i + \varepsilon_i$. For each country i, the dependent and independent variables are averaged over the period 2002-11 and 2012-16 in columns 1 and 2 respectively. Column 3 pools the observations from both periods and estimates the following regression: $g_{iT} = \beta_0 + \beta_1 X_i + \beta_1 X_i \times T + \theta_1 India_i + \theta_2 India_i \times T + \gamma T + \varepsilon_{iT}$. Column 4 also pools the pre-change and post-change observations and includes country fixed effects. gi equals the average growth rate for country i in either 2002-11 or 2012-16 period. T equals one for the post-change period and zero otherwise. India equals one for India and zero for all other countries. t-statistics are provided in parentheses. *, ** and *** denote significance levels of 10 per cent, 5 per cent and 1 per cent respectively.

10.29 The perils of estimating incomplete models without controlling for differences across countries is exemplified in the following experiment. Using baseline specification without country fixed effects, many other countries seems to have misstated their GDPs. Table 4 depicts the results for a subset of these countries. To derive the results in Table 4, now model is re-run with the specifications in columns 3 and 4 of Table 3, with other countries instead of India as the treated group. When the model excludes country fixed effects, many countries appear to have their GDPs overstated or understated, as shown in panels A and B respectively. The over-or under-statement disappears or reduces in magnitude when country fixed effects are introduced in the model. Results reinforce similar findings in other independent studies, notably Bhalla (2019) who finds Germany's GDP "overstated" and Jamaica's GDP "understated", as chapter do, in a model without controls for differences across countries.

10.30 Table 5 shows the results for all the countries in the sample where it was found a "mis-estimation" disappeared after including fixed effects[4]. These countries amount to more than half of the sample. The average absolute level of what seems to be "misrepresentation" that diminishes after including fixed effects is a massive 1.68 per cent. In the absence of fixed effects, one may erroneously conclude that all the countries in the tables below, including several advanced economies like United Kingdom, Singapore, Germany etc., have flawed methodologies for their respective GDP estimations – an extremely unlikely scenario.

[4] For a small number of countries, even though the coefficients are significant even after including country fixed effects, they drop substantially in magnitude.

Table 4: Countries with GDP appearing misstated without fixed effects and correction resulting from adding fixed effects (FE)

Panel A: Countries with GDP appearing overstated without country fixed effect

	United Kingdom		Bangladesh		Germany	
	No FE (incorrect)	FE (correct)	No FE (incorrect)	FE (correct)	No FE (incorrect)	FE (correct)
Country x Post-Change	0.0163***	0.0131	0.0389***	0.0289	0.0092**	0.0051
	(4.3289)	(0.7077)	(8.7502)	(1.5596)	(2.4795)	(0.2742)
Observations	190	190	190	190	190	190
R^2	0.5298	0.6552	0.5383	0.6624	0.5315	0.6536

Panel B: Countries with GDP appearing understated without country fixed effect

	Singapore		South Africa		Belgium	
	No FE (incorrect)	FE (correct)	No FE (incorrect)	FE (correct)	No FE (incorrect)	FE (correct)
Country x Post-Change	-0.0226***	-0.0229	-0.0116***	-0.0130	-0.0135***	-0.0100
	(-8.0765)	(-1.2451)	(-3.6358)	(-0.6997)	(-4.3818)	(-0.5377)
Observations	190	190	190	190	190	190
R^2	0.5334	0.6592	0.5292	0.6552	0.5335	0.6544

Note: For each country, the first column estimates the model: $g_{iT}=\beta_0+\beta_1 X_i+\beta_1 X_i \times T+\theta_1 Country_i+\theta_2 Country_i \times T+\gamma T+\varepsilon_{iT}$. The second column estimates the model: $g_{iT}=\beta_i+\gamma t+\beta_1 X_{iT}+\theta Country_i \times T+\varepsilon_{it}$, i.e. with country fixed effects. T equals one for the post-change period, i.e. the post-change period, and zero otherwise. Country equals one for the country in question and zero for all other countries. t-statistics are provided in parentheses. *, ** and *** denote significance levels of 10 per cent, 5 per cent and 1 per cent respectively.

Table 5: Countries with GDP appearing misstated without fixed effects and correction resulting from controls for variation across countries

	Country	Country x Post-Change Coefficient				
		Coefficient without FE (incorrect)	Coefficient with FE (correct)	Is the coefficient significant in FE model?	If yes, whether magnitude lower	Amount of "mis-estimation" corrected (Diff. in coefficients, %)
1	Burundi	0.0404***	0.0113	No		4.04
2	Bangladesh	0.0389***	0.0289	No		3.89
3	Hungary	0.0385***	0.0209	No		3.85
4	Romania	0.0334***	0.0187	No		3.34
5	Sierra Leone	0.0309***	0.018	No		3.09
6	Slovenia	0.0255***	0.0138	No		2.55
7	Ghana	0.0229***	0.0021	No		2.29
8	United Kingdom	0.0163***	0.0131	No		1.63
9	Ireland	0.0495***	0.0338*	Yes	Yes	1.57
10	Kosovo	0.0152***	0.0103	No		1.52
11	Kenya	0.0147***	0.0163	No		1.47
12	Moldova	0.0133***	0.0042	No		1.33
13	Kyrgyz Republic	0.0130**	0.0145	No		1.30
14	Guinea-Bissau	0.0123*	0.0208	No		1.23
15	Haiti	0.0116***	0.0185	No		1.16
16	Bulgaria	0.0099**	-0.0006	No		0.99
17	Germany	0.0092**	0.0051	No		0.92
18	Nicaragua	0.0088**	0.0197	No		0.88
19	Senegal	0.0079***	0.0171	No		0.79
20	Spain	0.0076*	0.0021	No		0.76
21	New Zealand	0.0058**	0.0118	No		0.58
22	Niger	0.0598***	0.0551***	Yes	Yes	0.47
23	Congo, Dem. Rep.	0.0354***	0.0339*	Yes	Yes	0.15
24	Azerbaijan	-0.0515***	-0.0474**	Yes	Yes	-0.41
25	Hong Kong SAR, China	-0.0058**	-0.0099	No		-0.58
26	Philippines	-0.0076**	0.0045	No		-0.76
27	Namibia	-0.0091**	-0.0059	No		-0.91
28	Botswana	-0.0094***	-0.0037	No		-0.94
29	Honduras	-0.0095***	-0.0037	No		-0.95
30	Finland	-0.0097***	-0.0092	No		-0.97
31	Jamaica	-0.0101*	0.0096	No		-1.01
32	Serbia	-0.0105***	-0.021	No		-1.05
33	Dominican Republic	-0.0108***	0.0031	No		-1.08

34	South Africa	-0.0116***	-0.013	No		-1.16
35	Mauritius	-0.0121***	-0.004	No		-1.21
36	Rwanda	-0.0122***	-0.0118	No		-1.22
37	Costa Rica	-0.0131***	-0.0058	No		-1.31
38	Belgium	-0.0135***	-0.01	No		-1.35
39	Burkina Faso	-0.0138**	-0.0078	No		-1.38
40	Sri Lanka	-0.0146***	-0.0073	No		-1.46
41	West Bank and Gaza	-0.0501***	-0.0349*	Yes	Yes	-1.52
42	Slovak Republic	-0.0164***	-0.0087	No		-1.64
43	Greece	-0.0187***	-0.0164	No		-1.87
44	Nepal	-0.0221***	-0.0079	No		-2.21
45	Singapore	-0.0226***	-0.0229	No		-2.26
46	Peru	-0.0233***	-0.0159	No		-2.33
47	Mali	-0.0241***	-0.0223	No		-2.41
48	Jordan	-0.0274***	-0.0252	No		-2.74
49	Lebanon	-0.0281***	-0.0302	No		-2.81
50	Cambodia	-0.0351***	-0.0084	No		-3.51
51	Armenia	-0.0465***	-0.0306	No		-4.65

Note: For each country, we estimates two models: $g_{iT} = \beta_0 + \beta_1 X_i + \beta_1 X_i \times T + \theta_1 Country_i + \theta_2 Country_i \times T + \gamma T + \varepsilon_{iT}$, and $g_{iT} = \beta_i + \gamma t + \beta_1 X_{iT} + \theta Country_i \times T + \varepsilon_{it}$, the latter with country fixed effects and the former without. T equals one for the post-change period and zero otherwise. Country equals one for the country in question and zero for all other countries. Continuous variables are averaged over the whole pre- and post-change periods. *, ** and *** denote significance levels of 10 per cent, 5 per cent and 1 per cent respectively. The last column lists the coefficient from the first estimation if the coefficient from the second estimation is insignificant, and the difference between the two coefficients if the coefficient from the second estimation is significant at least at the 10 per cent level.

Panel Data Dynamics: A Modified DID to Account for Country-Specific Trends

10.31 Although the generalized DID model presented in previous section mitigates the risk of omitted variable bias, the analysis must still contend with the parallel trends assumption, which is not fully satisfied in the current sample. If this assumption is not satisfied, at a minimum, one must include a trend line in the specification, as argued in Purnanandam (2019). Baseline model is not amenable to inclusion of a trend line because it has only two time periods – a pre-change and post-change period. However, one can exploit a panel data specification with each country-year treated as an individual observation to implement trend dynamics.

10.32 Purnanandam (2019) shows that in a panel data estimation with country fixed effects, year fixed effects and country-specific trends, the abnormal growth rate obtained in the cross-sectional regressions is completely explained away by differential trend lines across countries. In Table 6, the modified DID model on panel data is estimated by, regressing GDP growth rate on the same independent variables as before but with each country-year treated as an individual observation.

The first column is a baseline without fixed effects or country trends. The results in this column are comparable to a similar panel data specification in Subramanian (2019), with one significant difference – the latter study uses the *levels*, rather than *growth rates*, of all variables to establish its results. However, growth rates were chosen because in levels, the variables used in the regression are non-stationary. When variables are growing, a regression in levels can give spurious results (Goyal & Kumar, 2019). In specification, even the baseline model without fixed effects fails to yield a significant coefficient on India x post-change.

10.33 Further, the inclusion of country or year fixed effects to the baseline panel data specification serves to reduce the magnitude of the coefficient of the variable of interest, India x post-change. Lastly, the inclusion of an India trend, or a trend for each country, turns the coefficient negative (although still insignificant)!

Table 6: Estimation of abnormal growth with panel dynamics, including country-specific trends

	No FE	Country FE	Year FE	Country & Year FE	Country & Year FE, India Trend	Country & Year FE, Country Trends
India x Post-Change	**0.0221**	**0.0198**	**0.0199**	**0.0166**	**-0.0144**	**-0.0138**
	(1.4838)	**(1.4930)**	**(1.3629)**	**(1.3057)**	**(-0.6535)**	**(-0.6522)**
India	**0.0193****		**0.0209****			
	(2.2456)		**(2.4765)**			
Post-Change	-0.0006	-0.0016		0.0022	0.0019	-0.0185
	(-0.3777)	(-1.1147)		(0.6384)	(0.5477)	(-0.4221)
India x Time-Trend					0.0041*	
					(1.7200)	
Export Growth Rate	0.0670***	0.0601***	0.0587***	0.0471***	0.0475***	0.0491***
	(8.1153)	(7.8152)	(7.1055)	(6.2332)	(6.2844)	(6.6301)
Import Growth Rate	0.0936***	0.0867***	0.0839***	0.0731***	0.0729***	0.0703***
	(11.4934)	(11.6266)	(10.3110)	(10.0078)	(9.9931)	(9.5350)
Credit Growth Rate	0.0705***	0.0529***	0.0645***	0.0422***	0.0424***	0.0355***
	(13.7564)	(10.6660)	(12.5500)	(8.6036)	(8.6377)	(6.8477)
Observations	1349	1349	1349	1349	1349	1349
Adjusted R^2	0.3810	0.5102	0.4050	0.5507	0.5514	0.5897
Country FE	No	Yes	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes
Time Trend	None	None	None	None	India	Country

Note: Each column estimates a regression on a panel data of countries with annual data from 2002-2016. Column 1 includes no fixed effects, Column 2 a country fixed effect, Column 3 a year fixed effect and Column 5 both fixed effects. Column 5 includes both fixed effects and a separate time trend for India. Column 6 additionally includes a separate time trend for each country. The dependent variable is the annual growth rate in GDP. t-statistics are provided in parentheses. *, ** and *** denote significance levels of 10 per cent, 5 per cent and 1 per cent respectively.

A DIAGNOSTIC ANALYSIS

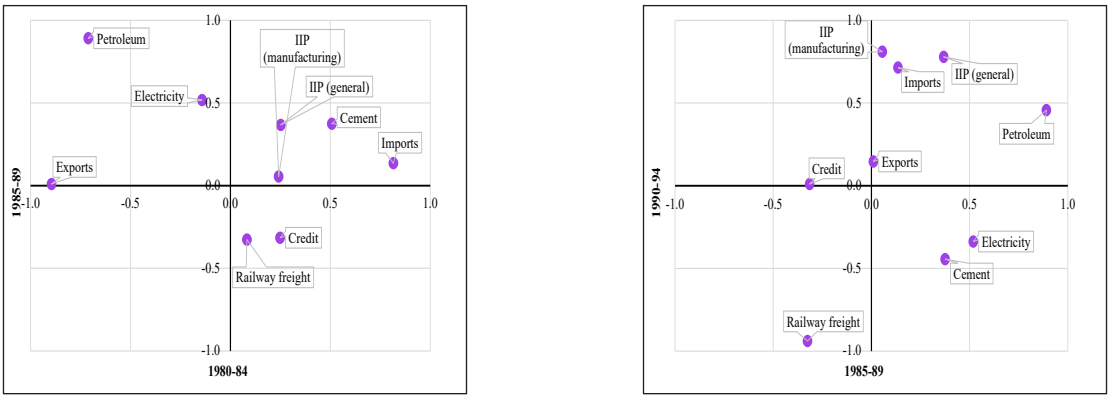
10.34 DID models fail to show any mis-estimation in the Indian GDP. The analysis is concluded by examining other signs that may indicate a problem with the GDP estimation methodology. Subramanian (2019) offers a useful diagnostic, wherein the GDP growth rates are correlated with other indicators that have not undergone any changes in methodology. In essence, the methodology involves correlating the "suspect" variable – the GDP growth rate – with several other "reliable" variables to uncover any suspicious patterns.

10.35 Figure 8 plots the correlations between GDP growth and several indicators of economic activity in successive five-year periods starting 1980-84[5]. Indeed, over half the correlations change sign in the latest period. But before attributing the counterintuitive signs to the methodology revision in 2011 and resulting mis-estimation of GDP, it is important to check whether these indicators have had a stable and predictable relationship with GDP prior to 2011. However, the relationship between these indicators and GDP growth has been far from stable in the past. The correlations have changed their signs several times even before the 2011 methodology revision. These changes in sign are summarized in Table 7.

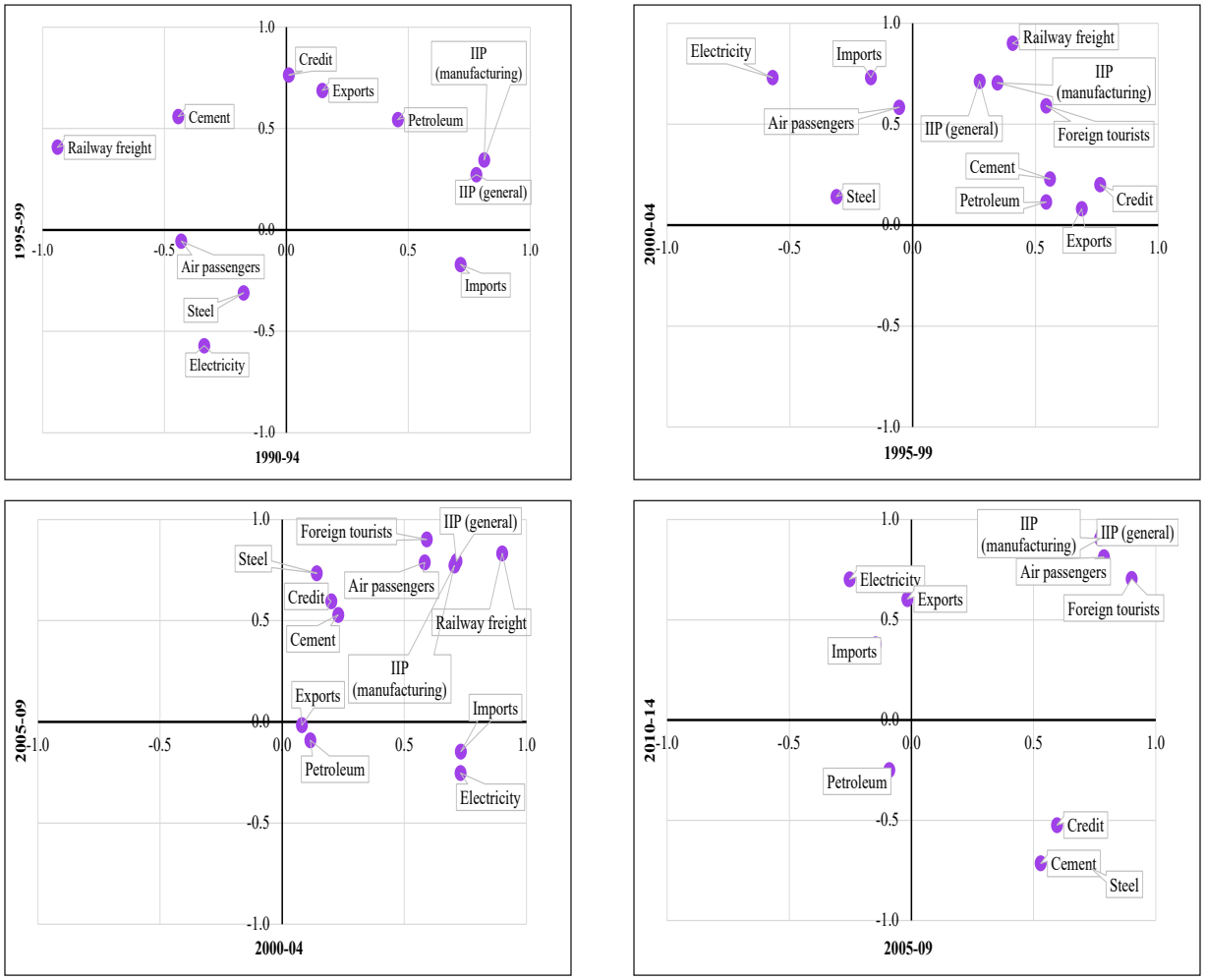
10.36 Had these indicators consistently displayed a positive relationship with GDP in the past, making a break from positive to negative only after the methodology revision in 2011, the diagnostic would have yielded a cause for concern. However, the correlations between these indicators and GDP growth have flipped signs in the past even when there were no methodology revisions.

10.37 For example, growth in electricity consumption was negatively correlated with real GDP growth in 1980-84, positively so in 1985-89, negatively so in 1990-99, positively so in 2000-04 and negatively so in 2005-09, flipping signs four times before 2011, the year of methodology revision. Similarly, real exports growth was negatively correlated with GDP growth in 1980-84, positively so in 1985-2004 and negatively so in 2005-09. Figure 9 plots the time-series values of these correlations. Clearly, negative correlations were not at all uncommon in the past. Figure 10 highlights this instability using the standard deviation of these correlations themselves.

Figure 8: Correlation between indicators and GDP growth historically



[5] The procedure is in line with Subramanian (2019), who plots the correlations in two periods: 2001-11 and 2012-16. The indicators used in Subramanian (2019) are the growth rates of the following: electricity consumption, 2-wheeler sales, commercial vehicle sales, tractor sales, airline passenger traffic, foreign tourist arrivals, railway freight traffic, index of industrial production, index of industrial production (manufacturing), index of industrial production (consumer goods), petroleum consumption, cement, steel, overall real credit, real credit to industry, exports of goods and services, and imports of goods and services.



Sources: GDP growth from IMF World Economic Outlook (matches the series used in Subramanian (2019)), sectoral indicators from World Bank WDI database, RBI, and respective Union Ministry databases.

Note: Correlations are computed between the real growth rate in the respective indicator and the real GDP growth rate.

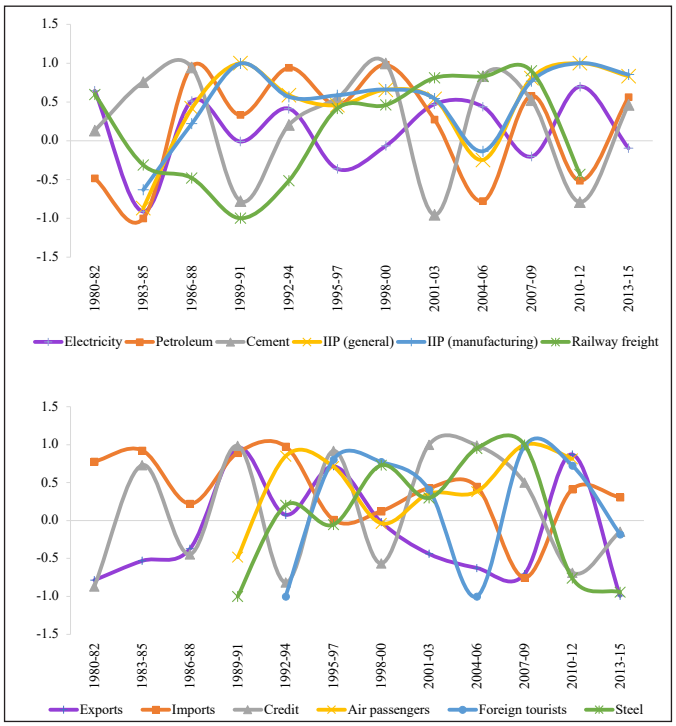
Table 7: Evidence that correlation of sectoral indicator growth with GDP growth has flipped signs many times historically

	Sign of correlation between sectoral indicator growth and GDP growth						
Indicator	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14
Exports	–	+	+	+	+	–	+
Imports	+	+	+	–	+	–	+
Credit	+	–	+	+	+	+	–
Electricity	–	+	–	–	+	–	+
Petroleum	–	+	+	+	+	–	–
Railway freight	+	–	–	+	+	+	
Cement	+	+	–	+	+	+	–
Steel			–	–	+	+	–

Sources: GDP growth from IMF World Economic Outlook (matches the series in Subramanian (2019)), sectoral indicators from World Bank WDI database, RBI, and respective Union Ministry databases.

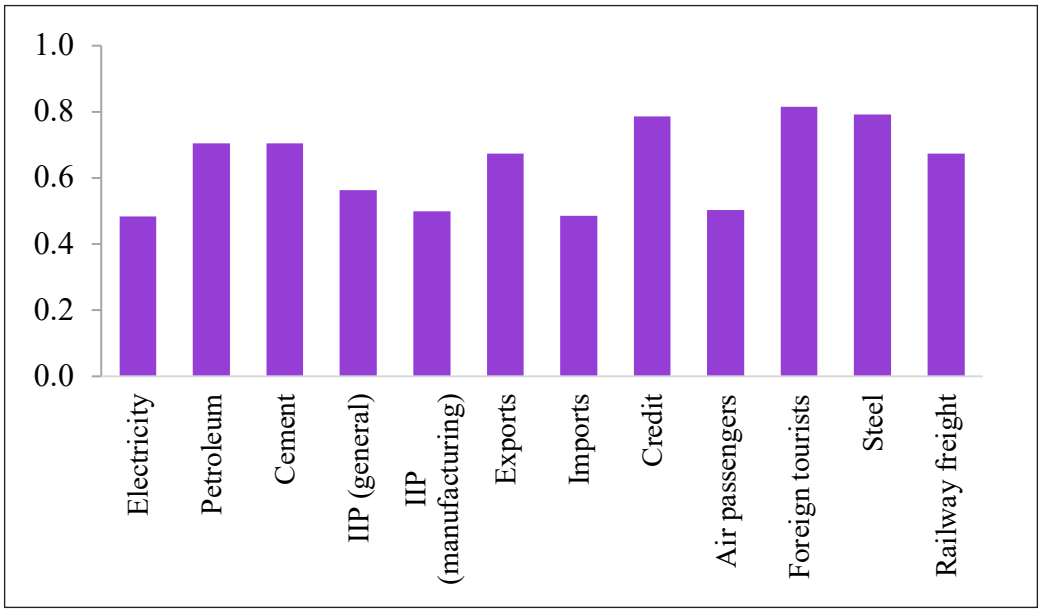
Note: Highlighted cells indicate flipping of signs of the correlations before the GDP methodology revision in 2011.

Figure 9: Variation in the correlation between sectoral indicators and GDP growth over time



Sources: GDP growth from IMF World Economic Outlook (matches the series used in Subramanian (2019)), sectoral indicators from World Bank WDI database, RBI, and respective Union Ministry databases.

Figure 10: High volatility in the correlations between indicators and GDP growth



Sources: GDP growth from IMF World Economic Outlook (matches the series in Subramanian (2019)), sectoral indicators from World Bank WDI database, RBI, and respective Union Ministry databases.

Note: For each sector, the correlation between annual sectoral growth and GDP growth was computed in each of twelve 3-year periods: 1980-82, 1983-85, and so on until 2013-15. The chart above depicts the standard deviation of these twelve correlations.

Table 8: GDP growth explained by Subramanian (2019) indicators pre-change: India and other countries

	India	Middle-income countries		All countries	
	I	II	III	IV	V
Export Growth Rate	-0.2009	0.0631**	0.0431	0.0661***	0.0398**
	(-0.7939)	(2.1967)	(1.4057)	(3.8160)	(2.3403)
Import Growth Rate	0.0870	0.1080***	0.0747**	0.1054***	0.0750***
	(0.4671)	(4.1062)	(2.3428)	(6.4254)	(4.4388)
Credit Growth Rate	0.2077	0.0598***	0.0419***	0.0618***	0.0392***
	(0.7735)	(5.2346)	(4.2707)	(6.6422)	(4.8548)
Constant	0.0661**	0.0286***	0.0312***	0.0225***	0.0254***
	(2.6757)	(10.8528)	(7.6420)	(9.9046)	(6.9846)
Observations	10	364	364	872	872
R^2	**0.1054**	**0.4125**	**0.5813**	**0.3934**	**0.6293**
Country FE	No	No	Yes	No	Yes
Year FE	No	No	Yes	No	Yes
Clustered by	No	Country	Country	Country	Country

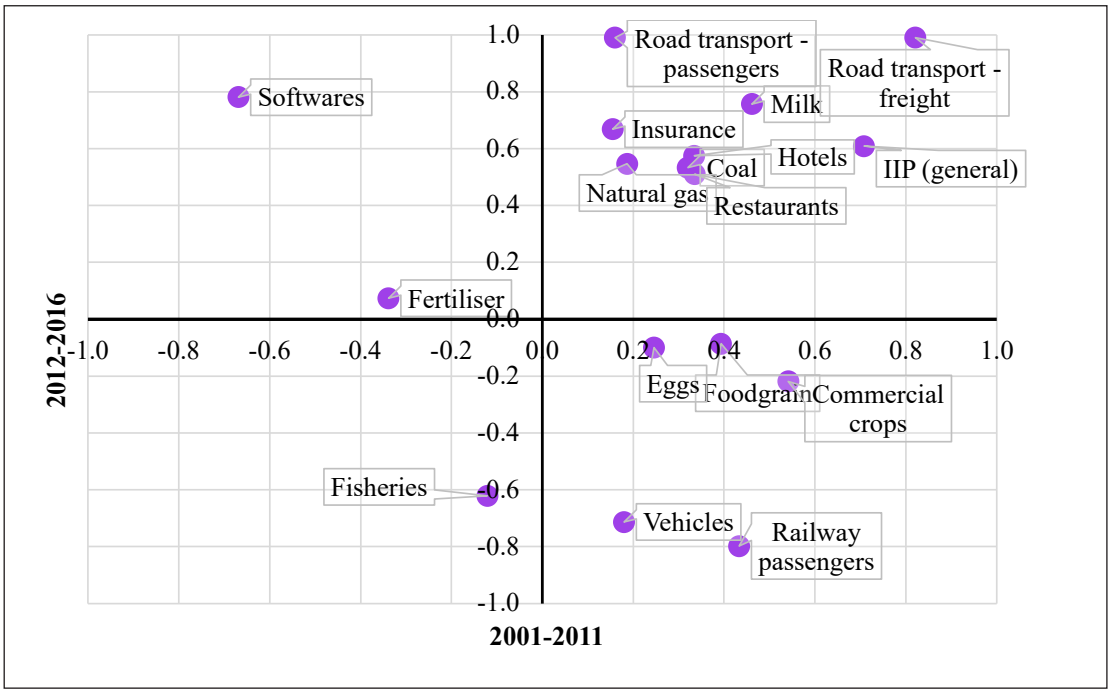
Note: Column I regresses India's GDP growth rate on its export, import and credit growth rate for the period 2002-11. Column II repeats the regression for all middle-income countries (excluding India) as per World Bank classification, and column IV repeats the regression for all countries (excluding India) in the sample. Columns III and V repeat the regressions in Columns II and IV respectively and additionally include country and year fixed effects. In Columns II through V, standard errors are robust and clustered by country. t-statistics are provided in parentheses. *, ** and *** denote significance levels of 10 per cent, 5 per cent and 1 per cent respectively.

10.38 Given that these indicators do not exhibit a stable relationship with GDP growth even before 2011, they are poorly equipped to diagnose mis-estimation post 2011. This result is more established formally as follows. To test the predictive power of these indicators prior to 2011, the real GDP growth rate was regressed on the real growth in imports, exports and credit for India. For comparison, the analysis repeats the regression for all middle-income countries, and finally repeat the regression for all countries in the sample. The analysis includes observations only from 2002 to 2011 so as to test the explanatory power of the indicators before the methodology revision. Table 8 presents results.

10.39 It is striking that none of the three indicators is statistically significant in explaining GDP growth in India before 2011, even as they assume significance for other countries. Further, only a paltry 10.5 per cent of the variation in Indian GDP growth is explained by these indicators. In contrast, the R^2 for other countries ranges from 40 per cent to 63 per cent. The results confirm the inability of these indicators to explain Indian GDP growth even before 2011. The pattern of GDP growth in India is far more complex than what a few indicators of economic activity can predict, and therefore, asserting a mis-estimation based on these indicators alone is inappropriate.

10.40 In its June 2019 report, the Economic Advisory Council to the Prime Minister highlighted the importance of agriculture- and services-based indicators in the diagnostic process (Economic Advisory Council to the Prime Minister, 2019). Therefore, a correlation chart is plotted below with an alternative set of indicators, this time including indicators from the agriculture and services sectors.

Figure 11: Most agriculture- and services- related indicators correlate positively with GDP growth in 2001-11 and 2012-16



Sources: GDP growth from IMF World Economic Outlook (matches the series in Subramanian (2019)), sectoral indicators from World Bank WDI database, RBI, and respective Union Ministry databases.

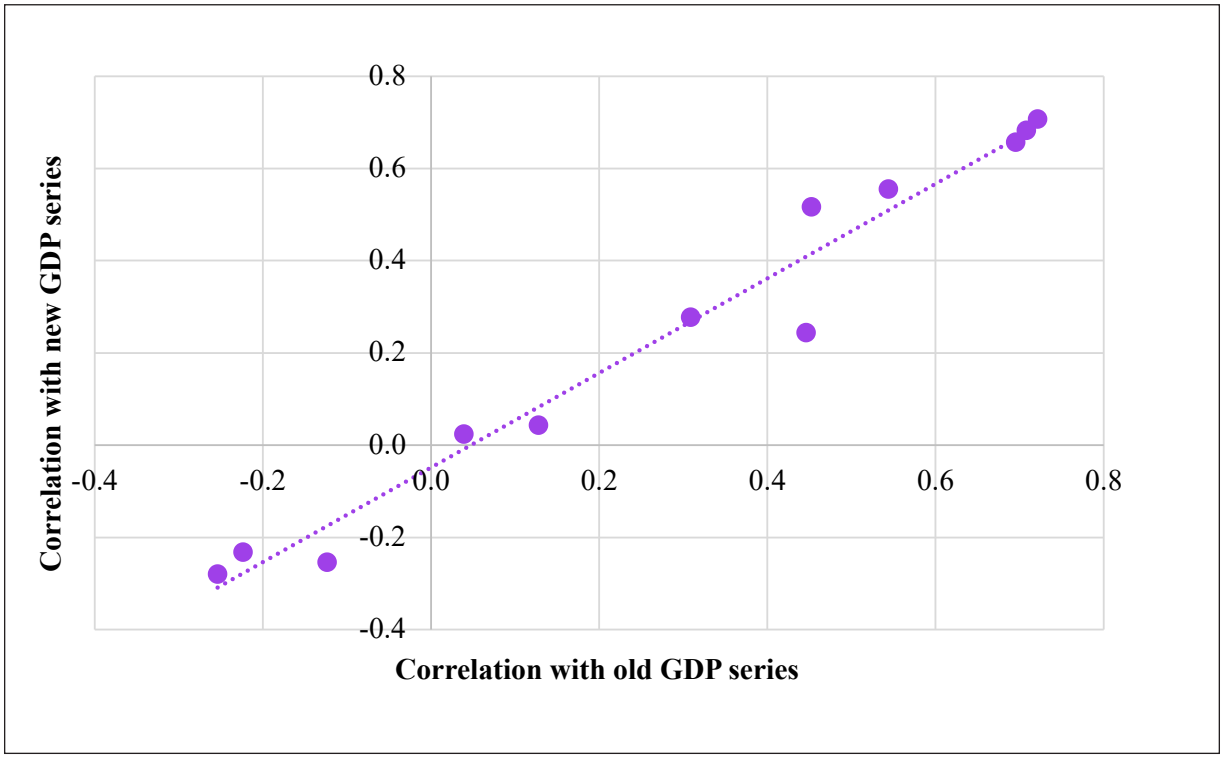
Note: Indicators are defined as follows. Agriculture sector indicators include the annual growth rates in production of foodgrains, commercial crops, fisheries, milk and eggs. Manufacturing sector indicators include the annual growth rates in the production of coal, natural gas, N and P205 fertiliser, and IIP (general). Service sector indicators include the annual growth rates in the following: number of originating passengers on the Indian Railways, weight of freight per km moved on Indian roadways, number passengers per km moved on Indian roadways, number of hotel rooms, gross insurance premiums paid, software sales, and spending on restaurants and hotels.

As shown in Figure 11, many indicators were positively correlated with GDP both before and after the methodology revision (notwithstanding the fact that correlations of this kind tend to be inherently unstable and are only naïve predictors of GDP, as argued earlier).

10.41 Given that the correlation between the sectoral indicators of economic activity and GDP growth has been unstable historically, a more useful diagnostic is a comparison of a given indicator's correlation with the old GDP series and the same indicator's correlation with the new GDP series. A divergence in the two values would indicate a problem with the new methodology. However, as Figure 12 shows unequivocally, the indicator's relationship with GDP is broadly unchanged after the methodology revision.

10.42 Figure 12 also suggests that if, instead of 2011, 2010 or 2012 was used as the separating line to catch flips in correlations, the chapter would have arrived at identical results as with 2011 as the separating line. Indeed, a study by Vaidya Nathan (2019) finds, "When we split the data in the paper one year before or after — as pre-2010 and post-2010, or pre-2012 and post-2012 — we get identical results of both flipping and negative correlations," showing that there is nothing sacrosanct about the year of methodology revision, 2011.

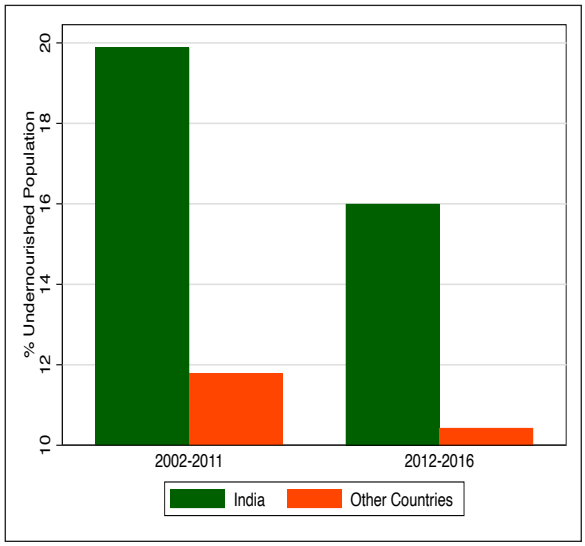
Figure 12: Relationship of indicators with previous GDP series similar to that with the new series

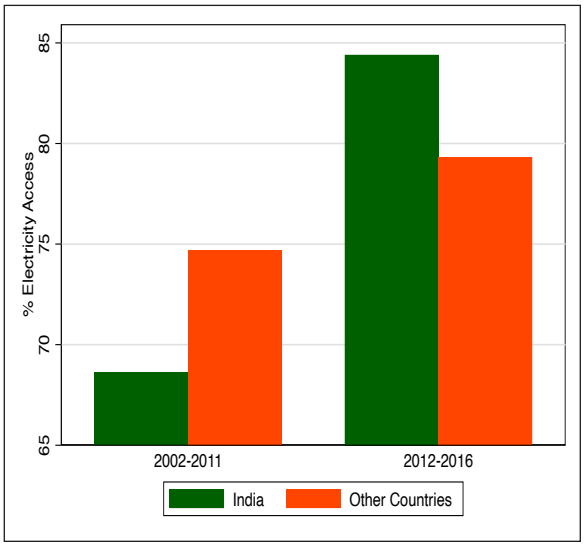


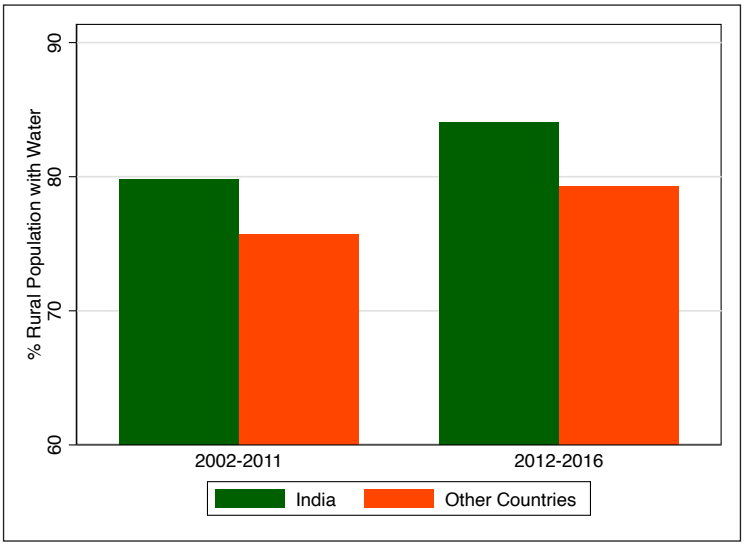
Sources: GDP growth from IMF World Economic Outlook (matches the series in Subramanian (2019)), sectoral indicators from World Bank WDI database, RBI, and respective Union Ministry databases.

Note: Correlation between real sectoral growth and real GDP growth was computed using first the GDP growth under the old methodology with 2004-05 base, then with the GDP growth under the new methodology with 2011-12 base. Both old and new series are available for the years 2001-2011.

Figure 13: Social development indicators







Source: Purnanandam (2019)

10.43 The analysis in the chapter clearly shows that the evidence in favour of an overstated Indian GDP disappears completely in a correctly specified econometric model. At the same time, more work is needed to fully understand the determinants of India's growth rate over time. As an illustrative exercise, however, it must be acknowledged that the exact pattern of India's GDP and how it evolves over time is far from clear. Much more study is required on this important phenomenon. Figure 13 shows a few potential determinants, derived from Purnanandam (2019). India has made impressive improvements in several social development indicators, such as access to nutrition and electricity, that might explain the higher growth rate in Indian GDP in the post-change period. However, it must be acknowledged that the exact pattern of India's GDP and how it evolves over time is far from clear. Much more study is required on this important phenomenon.

CONCLUSION

10.44 This chapter considers the important issue of the accuracy of India's GDP estimation. The level and growth of a country's GDP informs several critical policy initiatives as it is a barometer of the economy's size and health. It is also a pre-eminent driver of investment. Therefore, it is important that GDP is measured as accurately as possible. Recently, there has been much debate and discussion among scholars, policymakers and citizens alike on whether India's GDP is estimated correctly.

10.45 If the evidence of a mis-estimation is credible and robust, a radical upheaval of the estimation methodology should follow. However, given the cost of such a massive undertaking, it is important to be certain that there is a need to revisit the estimation methodology. In that spirit, the chapter carefully examines the evidence, leveraging existing scholarly literature and econometric methods to study whether India's GDP growth is higher than it would have been had its estimation methodology not been revised in 2011. Using a cross-country, generalized difference-in-difference model with fixed effects, the analysis demonstrate the lack of any concrete evidence in favour of a misestimated Indian GDP.

10.46 The larger point made by this chapter needs to be understood by synergistically viewing its findings with the micro-level evidence in Chapter 2, which examines new firm creation in the formal sector across

504 districts in India. Two observations are critical. First, the granular evidence shows that a 10 per cent increase in new firm creation increases district-level GDP growth by 1.8 per cent. As the pace of new firm creation in the formal sector accelerated significantly more after 2014, the resultant impact on district-level growth and thereby country-level growth must be accounted for in any analysis. Along these lines, Purnanandam (2019) shows that India's improvement in indicators such as access to nutrition and electricity might explain the higher growth rate in Indian GDP post the methodological change. Second, granular evidence on new firm creation shows that new firm creation in the Service sector is far greater than that in manufacturing, infrastructure or agriculture. This micro-level evidence squares up fully with the well-known macro fact on the relative importance of the Services sector in the Indian economy. The need to invest in ramping up India's statistical infrastructure is undoubted. In this context, the setting up of the 28-member Standing Committee on Economic Statistics (SCES) headed by India's former Chief Statistician is important. Nevertheless, carefully constructed evidence in the Survey must be taken on board when assessing the quality of Indian data.

CHAPTER AT A GLANCE

- GDP growth is a critical variable for decision-making by investors as well as policymakers. Therefore, the recent debate about whether India's GDP is correctly estimated following the revision in estimation methodology in 2011 is extremely significant.
- As countries differ in several observed and unobserved ways, cross-country comparisons have to be undertaken with care to separate out the effect of other confounding factors and isolate the effect of the methodology revision alone on GDP growth estimates.
- The models that incorrectly over-estimate GDP growth by 2.7 per cent for India post-2011 also mis-estimate GDP growth over the same time period for 51 other countries out of 95 countries in the sample. Several advanced economies such as UK, Germany and Singapore turn out to have their GDPs misestimated when the econometric model is incompletely specified.
- Correctly specified models that account for all unobserved differences among countries as well as differential trends in GDP growth across countries fail to find any misestimation of growth in India or other countries.
- Concerns of a misestimated Indian GDP are unsubstantiated by the data and are thus unfounded. More broadly, carefully constructed evidence in the Survey, especially that in this chapter combined with micro-level evidence in Chapter 2, must be taken on board when assessing the quality of Indian data.

REFERENCES

Bhalla, S. S. 2019. "Arvind Subramanian's method suggests Germany overestimates GDP the most." *Financal Express*. June 22, 2019. https://www.financialexpress.com/opinion/arvind-subramanians-method-suggests-germany-overestimates-gdp-the-most/1615118/

Cameron, A. C., & Miller, D. L. 2015. "A Practitioner's Guide to Cluster-Robust Inference". *The Journal of Human Resources*, 50(2), 317-372.

Cameron, A. C., Gelbach, J. B., & Miller, D. L. 2008. "Bootstrap-Based Improvements for Inference with Clustered Errors." The Review of Economics and Statistics, 90(3), 414-427.

Government of India. Economic Advisory Council to the Prime Minister. 2019. GDP estimation in India- Perspectives and Facts. by Bibek Debroy, Rathin Roy, Surjit Bhalla, Charan Singh and Arvind Virmani. New Delhi: Government of India.

Goyal, A., & Kumar, A. 2019. "Indian Growth is Not Overestimated: Mr. Subramanian You Got it Wrong." WP-2019-019, Indira Gandhi Institute of Development Research.

Goyal, A., & Kumar, A. 2019. "Measuring Indian GDP: Arvind Subramanian Can't Be Taken Seriously." *Bloomberg Quint*. June 20, 2019. https://www.bloombergquint.com/opinion/measuring-indian-gdp-arvind-subramanian-cant-be-taken-seriously

Mazumdar, R. 2019. "World's Fastest-Growing Economy May Not Be So Fast After All." *Bloomberg*. June 11, 2019 https://www.bloomberg.com/news/articles/2019-06-11/world-s-fastest-growing-economy-may-not-be-so-fast-after-all

Nag, A., & Mazumdar, R. 2019. "India Has Been Accused of Overstating Its Growth Statistics." *Bloomberg*. July 25, 2019 https://www.bloomberg.com/news/articles/2019-07-24/india-has-been-accused-of-overstating-its-growth-statistics

Panagariya, A. 2019. "View: Why Arvind Subramanian's GDP over-estimation argument is flawed." *The Economic Times*. June 26, 2019. https://economictimes.indiatimes.com/news/economy/indicators/view-why-arvind-subramanians-gdp-over-estimation-argument-is-flawed/articleshow/69949029.cms?from=mdr

Press Trust of India. 2019. "CEA rejects Arvind Subramanian claims, says hard to create wrong narrative." *Livemint*. July 4, 2019. https://www.livemint.com/budget/economic-survey/cea-rejects-arvind-subramanian-claims-says-hard-to-create-wrong-narrative-1562246329862.html

Purnanandam, A. 2019. "Is India's GDP Growth Rate Really Overstated? A Note." Stephen M. Ross School of Business, University of Michigan, Ann Arbor, Michigan. July 22, 2019.

Roy, R., & Sapre, A. 2019. "GDP over-estimation argument is flawed." *The Hindu BusinessLine*. June 19, 2019. https://www.thehindubusinessline.com/opinion/gdp-over-estimation-argument-is-flawed/article28066659.ece#

Shrivastava, R. 2019. "PM's economic council rejects Arvind Subramanian's claims on GDP growth over-estimation." *India Today*. June 20, 2019. https://www.indiatoday.in/india/story/arvind-subramanian-gst-over-estimation-pm-economic-panel-rebuttal-1552636-2019-06-20

Subramanian, A. 2019 "India's GDP Mis-estimation: Likelihood, Magnitudes, Mechanisms, and Implications." Faculty Working Papers No 354. Center for International Development at Harvard University, Cambridge, MA. June, 2019.

Subramanian, A. 2019. "Validating India's GDP Growth Estimates." Faculty Working Paper No. 357. Center for International Development at Harvard University, Cambridge, MA. July, 2019.

The Wire. 2019. " 'Right Data, Wrong Conclusions': Modi's Economic Council Rebuts Subramanian's GDP Paper." *The Wire*. June 19, 2019. https://thewire.in/economy/arvind-subramanian-pmeac-india-gdp

Vaidya Nathan, K. 2019. "View: What's wrong with Arvind Subramanian's GDP math." *The Economic Times*. June 17, 2019. https://economictimes.indiatimes.com/news/economy/indicators/view-whats-wrong-with-arvind-subramanians-gdp-math/articleshow/69816811.cms?from=mdr

Thalinomics: The Economics of a Plate of Food in India

11
CHAPTER

उपनःपितवाचरशिवःशिवाभिरूतिभिः ।
मयोभुरद्विषेण्यःसखासुशेवोअद्वयाः ॥

Come hitherward to us, O Food, auspicious with auspicious help,
Health-bringing, not unkind, a dear and guileless friend.

-Rig Veda

Though economics affects the common lives of people in tangible ways, this fact often remains unnoticed. What better way to make economics relate to the common person than something that s(he) encounters every day – a plate of food? Enter "Thalinomics: The economics of a plate of food in India" – an attempt to quantify what a common person pays for a Thali across India. Has a Thali become more or less affordable? Has inflation in the price of a Thali increased or decreased? Is the inflation the same for a vegetarian Thali as for a non-vegetarian one? Is the inflation in the price of a Thali different across different states and regions in India? Which components account for the changes in the price of a Thali – the cereals, vegetables, pulses or the cost of fuel required for its preparation? Questions that can engage a dinner-table conversation in Lutyens Delhi or in a road-side Dhaba in the hinterland can now be answered and positions taken on either side of a "healthy" debate. Using the dietary guidelines for Indians (NIN, 2011), the price of Thalis are constructed. Price data from the Consumer Price Index for Industrial Workers for around 80 centres in 25 States/UTs from April 2006 to October 2019 is used. Both across India and the four regions – North, South, East and West – it is found that the absolute prices of a vegetarian Thali have decreased significantly since 2015-16 though the price has increased in 2019. As a result, an average household of five individuals that eats two vegetarian Thalis a day gained around ₹10887 on average per year while a non-vegetarian household gained ₹11787, on average, per year. Using the annual earnings of an average industrial worker, it is found that affordability of vegetarian Thalis improved 29 per cent from 2006-07 to 2019-20 while that for non-vegetarian Thalis improved by 18 per cent.

INTRODUCTION

11.1 Though economics affects each one of us in our everyday lives, this fact often remains unnoticed by the common man or woman. Economists possibly owe themselves this predicament; after all, broody, technical conversations on "heteroscedasticity" can frighten away even the most diligent and intelligent. Can we relate economics to the common person's life every day? Through the chapter on the "Behavioural Economics

of Nudge", the Economic Survey 2018-19 made a humble attempt to understand humans as humans, not self-interested automatons, so that a common person can relate to his/her idiosyncrasies and use that easy prism to understand behavioural change as an instrument of economic policy. What better way to continue this modest endeavour of forcing economics to relate to the common man than use something that s(he) encounters every day – a plate of food?

11.2 Enter "Thalinomics: The economics of a plate of food in India" – an attempt to quantify what a common person pays for a Thali across India. Has a Thali become more or less affordable? Has inflation in the price of a Thali increased or decreased? Is the inflation the same for a vegetarian Thali as for a non-vegetarian one? Is the inflation in the price of a Thali different across different states and regions in India? Which components account for the changes in the price of a Thali – the cereals, vegetables, pulses or the cost of fuel required for its preparation? Questions that can engage a dinner-table conversation in Lutyens Delhi or in a road-side Dhaba in the hinterland can now be answered and positions taken on either side of a "healthy" debate.

11.3 As food is a necessity, a rapid rise in the price of a Thali has the most direct and conspicuous effect on the common man. Indeed, food and beverages constitute around 45.9 per cent in the Consumer Price Index-Combined. The most effective way, therefore, to communicate the trends in prices to the common man is through the cost incurred in putting together one complete, homemade meal – the Indian Thali.

11.4 Given its enormous diversity, India has very diverse cuisines with variety of food items, which is a delicious mix of variety of vegetables, cereals, fruits, and spices that grow across the country. Indian traditional diet has always been a healthy mix of vegetables and cereals along with fish, meat and eggs. Thali prices are constructed for 25 States/UTs taking into account the prices for cereals (rice or wheat), sabzi (vegetables plus other ingredients), dal (pulses with other ingredients) as well as the cost of fuel that goes into making a meal in a household (Box 1). Two types of Thalis are analysed: a vegetarian Thali and a non-vegetarian one. A vegetarian Thali comprises of a serving of cereals, sabzi and dal and the non-vegetarian Thali comprises of cereals, sabzi and a non-vegetarian component. The evolution of prices of these two Thalis during the period from 2006-07 to October, 2019-20 is analysed.

11.5 Both across India and the four regions – North, South, East and West – we find that the absolute prices of a vegetarian Thali have decreased since 2015-16 though it increased during 2019. This is owing to significant moderation in the prices of vegetables and dal from 2015-16 when compared to the previous trend of increasing prices. In fact, the increase in prices of both components has contributed to the increase in the Thali price during 2019-20 (April - October) as well. If the prices of a vegetarian Thali had followed the trend obtained till 2015-16, an average household comprising of five individuals[1] would have had to spend ₹10887 more on average per year for eating minimum two healthy Thalis a day. In other words, after 2015-16, the average household gained ₹10887 per year on average from the moderation in Thali prices. Similarly, an average household that eats minimum two healthy non-vegetarian Thalis per day gained around ₹11787 on average during the same period. As another benchmark, we examine an industrial worker's ability to pay for two Thalis a day for his/her household of five individuals.

[1] The assumption of five individuals per household is based on the fact that the average household in India has 4.8 individuals (Census, 2011).

Using this measure, we find that affordability of vegetarian Thalis has improved over the time period from 2006-07 to 2019-20 by 29 per cent and that for non-vegetarian Thalis by 18 per cent. Note that though non-vegetarian Thalis are costlier than the vegetarian Thalis, the gains and therefore the affordability stem from the trends prevailing in the respective Thali till 2015-16.

Box 1: Construction of the Thali Prices

Thalis were constructed using average monthly price data (used for preparation of Consumer Price Index-Industrial Workers (CPI-IW)) for the period April 2006 to October 2019 from Labour Bureau, Government of India, for 78 centres in 25 States/UTs. Average monthly prices of various commodities are averages of the open market prices of specified variety of an item prevailing in the selected outlets in the selected markets in a given centre. For rationed items, the prices for the centres are weighted average prices, the weights being the proportion of the quantity available through Public Distribution System and quantity procured from the open market in different centres in relation to base year (2001) requirements of an average working class family.

Two types of Thali were considered for the analysis: a vegetarian Thali and a non-vegetarian Thali. The quantities of constituents required for preparation of a Thali were based on the dietary guidelines prescribed for Indians (NIN, 2011). We have taken the requirements for an adult male engaged in heavy work. Therefore, the estimated prices are likely to overestimate the cost of a meal to the average household than underestimate it. We have taken the quantities for cereals, vegetables, pulses and non-vegetarian items for each Thali assuming that atleast two full meals would be consumed in a day such that the daily dietary requirements for these elements would be met. Vegetarian Thali consists of a serving of cereals (300 grams), vegetables (150 grams) and pulses (60 grams). Two cereals have been taken: rice and wheat. Potato, onion, tomato have been taken as the staple vegetables and brinjal, cabbage, cauliflower and lady's finger have been taken as the additional vegetables, broadly covering all the seasons, pan-India availability and general consumption. For dals, arhar, gram dal, masur dal, moong dal and urad dal have been taken. Other commodities include spices and condiments used in preparation of the vegetable and dal recipes. Mustard oil, groundnut oil, and coconut oil have been taken, depending on the state-wise differences in the type of oil used for cooking. For non-vegetarian dish, prices of eggs, fish (fresh) and goat meat have been taken, which are generally consumed across regions as well as religions. In the case of non-vegetarian Thali, dal is replaced by non-vegetarian component (60 grams); rest of the components remain unchanged. For fuel, cooking gas prices as well as firewood prices have been taken for which the data is available consistently. As such, the quantities of the items should not affect the analysis as the weights of the components could be scaled in any direction, and still the direction of price changes would remain the same.

Weighted price for each serving of the cereals (300 grams) is based on the quantity weights of rice and wheat in each State based on the data from NSS 68th Round Household Consumer Expenditure Survey. Average monthly consumption, each of rice and wheat, per capita, have been calculated from the household survey data for each State. Similarly, weighted prices of portions of vegetables as well as dals have been calculated based on the same data. Similar exercise was also done for non-vegetarian food. Fuel consumption per meal is calculated by dividing the total quantity, respectively, of LPG and firewood consumed in a month for a household by the average number of meals prepared at home obtained from the NSS 68th Round data. This is then used to calculate the weighted average price of fuel for one meal.

The weights from the Consumer Expenditure Survey are used along with the prices data to arrive at the weighted prices of the main components. 'Other ingredients' weightage is based on standardised recipes used to prepare the Thalis (Table A).

Table A: Other Ingredients

Component of Thali	Other Ingredients
Sabzi	0.2 grams of turmeric, 0.5 grams of chilies-dry, 1 gram of salt, 0.5 grams of coriander, 10 grams of cooking oil
Dal	0.2 grams of turmeric, 0.2 gram of salt, 0.2 grams of chilies-dry, 1 gram of zeera/mustard seeds, 10 grams of oil
Non-Vegetarian	0.1 grams of turmeric, 0.2 grams of chilies-dry, 0.5 gram of salt, 0.2 grams of coriander, 0.1 gram of mixed spices, 0.5 gram ginger, 0.5 gram garlic, 15 grams of onion, 12 grams of tomato, 10 grams of cooking oil

The Thali prices represent the total money spent in preparing all the constituents of the respective Thalis. State-wise calculations are based on the recipe, components and weights to arrive at the state-wise prices of Thalis. Region-wise and All-India level Thalis have been constructed by taking weighted average of Thali prices in each state using the state-wise population as the weight.

THALI PRICES

11.6 The year 2015-16 can be considered as a year when there was a shift in the dynamics of Thali prices. Many reform measures were introduced during the period of analysis to enhance the productivity of the agricultural sector as well as efficiency and effectiveness of agricultural markets for better and more transparent price discovery (Table 1). This is reflected in a slowdown in the prices of Thalis at the All-India level (Figure 1). For the analysis, data from 2006-07 has been taken so that 10 years of data is available to analyse the price trend before 2015-16.

Table1: Some Major Initiatives for Enhancing Productivity of Agriculture and Efficiency of Agricultural Markets

Sl. No.	Name of Scheme	Description
1	Pradhan Mantri Annadata Aay SanraksHan Abhiyan (PM-AASHA)	PM-AASHA, launched in 2018, covers three sub-scheme i.e. Price Support Scheme (PSS), Price Deficiency Payment Scheme (PDPS) and pilot of Private Procurement & Stockist Scheme (PDPS). Under PSS, physical procurement of pulses, oilseeds and Copra is done by Central Nodal Agencies with proactive role of State governments. PDPS covers all oilseeds for which MSP is notified. Under this, direct payment of the difference between the MSP and the selling/modal price is made to pre-registered farmers selling his produce in the notified market yard through a transparent auction process.
2	Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) - Per Drop More Crop	PMKSY was implemented in the year 2015-16. It focuses on enhancing water use efficiency through expansion of cultivable area under assured irrigation, improve on-farm water use efficiency to reduce wastage of water, enhance the adoption of precision-irrigation and other water saving technologies, enhance recharge of aquifers and introduce sustainable water conservation practices.

3	Pradhan Mantri Fasal Bima Yojana (PMFBY)	PMFBY was introduced in 2015-16 to provide better insurance coverage for agricultural crops and thereby mitigate risk. A total of 69.9 lakh farmers have benefited from PMFBY. The scheme aims to provide comprehensive insurance coverage to farmers.
4	Soil Health Card	Soil Health Card scheme was introduced in the year 2014-15 to assist State Governments to issue soil health cards to all farmers in the country. Soil health card provides farmers information on the nutrient status of their soil along with recommendation on appropriate dosage of nutrients to be used for their soil conditions.
5	e-National Agricultural Market (e-NAM)	e-NAM is an online trading platform for agricultural commodities for transparent price discovery. So far, 585 wholesale regulated markets in 16 States and 2 UTs have connected to e-NAM.
6	National Food Security Mission (NFSM)	National Food Security Mission has been implemented since 2007-08. It was redesigned in 2014-15 to increase the production of rice, wheat, pulses and coarse cereals.
7	National Food Security Act (NFSA)	The National Food Security Act was enacted in July, 2013 and rolled out in 2014. The Act legally entitles 67 per cent of the population (75 per cent in rural areas and 50 per cent in urban areas) to receive highly subsidized food grains. Under the Act, food grain is allocated @ 5 kg per person per month for priority households category and @ 35 kg per family per month for AAY families at highly subsidized prices of ₹ 1/-, ₹ 2/- and ₹ 3/- per kg for nutri-cereals, wheat and rice respectively. Coverage under the Act is based on the population figures of Census, 2011. The Act is being implemented in all 36 States/UTs and covers about 81.35 core persons.

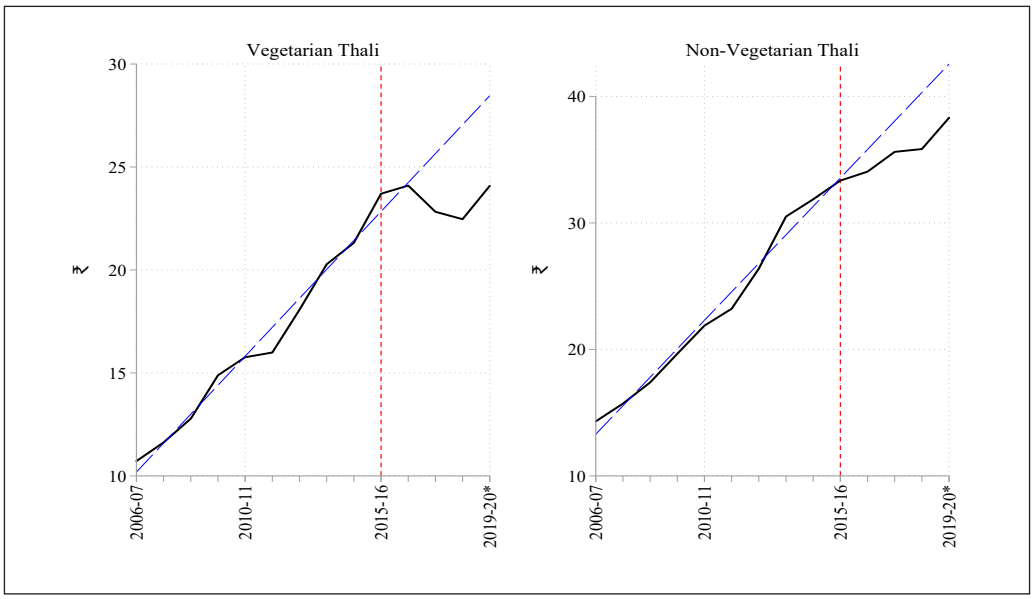
Source: Ministry of Agriculture and Farmers' Welfare, Ministry of Consumer Affairs, Food & Public Distribution

11.7 We can see what would have been the case if the prices had continued to increase at the previous rate by fitting a linear trend for ten years before 2015-16 and projecting the prices from that particular year onwards. This projection provides a counterfactual estimate of what the prices would have been if the policies described in Table 1 had not been implemented. Comparing this with the actual prices, we can calculate the nominal gain that the consumers of the Thali have achieved due to the agricultural policy programmes since 2015.

11.8 In figure 1, the year 2015-16 is shown by the red dotted vertical line. The blue dashed line is the linear fit till 2015-16 and projected further for five years till 2019. For the years after 2015-16, we calculate the gap between the projected line, which is the counterfactual, and the actual prices. At the All-India level, for the vegetarian Thali, post 2015-16, there was an average gain of around ₹3 per Thali (₹0.1 in 2016-17, ₹2.8 in 2017-18, ₹4.6 in 2018-19 and ₹4.4 in 2019-20) (Figure 1). This may seem to be a small number at first glance. However, it is a large decline in the cost of food to the households. To understand this, the gains have been estimated for a household comprising five individuals and each consuming two vegetarian Thalis a

day. Average yearly gain for this family, in nominal terms, for the periods subsequent to 2015-16, equals around ₹10887. The gain is, on average, 6.5 per cent of an individual worker's yearly wages (Table 2). For a non-vegetarian Thali, the gain per Thali was ₹1.8 in 2016-17, ₹2.4 in 2017-18, ₹4.5 in 2018-19 and ₹4.2 in 2019-20. The average yearly gain to the household consisting of 5 individuals would then be around ₹11787.

Figure 1: Thali Prices at All-India Level



Source: Survey calculations
Note: The blue dashed line represents the linear trend till 2015-16 and thereafter projection. Red dotted vertical line represents 2015-16,
*: April-October, 2019

Table 2: All-India Annualised Gain to a Household of Five Individuals with Two Meals a Day

Year	Gain in ₹	As a proportion of annual earnings of a worker (in per cent)	Gain in ₹	As a proportion of annual earnings of a worker (in per cent)
	Vegetarian Thali		Non-vegetarian Thali	
2016-17	526.9	0.4	6408.2	4.3
2017-18	10304.3	6.5	8910.3	5.6
2018-19	16744.4	10	16318.2	9.7
2019-20*	15972.3	9	15511.5	8.7

Source: Survey calculations
Note: *: Calculations for 2019-20 based on prices for the period April-October, 2019

11.9 India, being a diverse country, it is important to look at the regional variation in the price trends. States in India have therefore been divided into four regions based on geographic location:

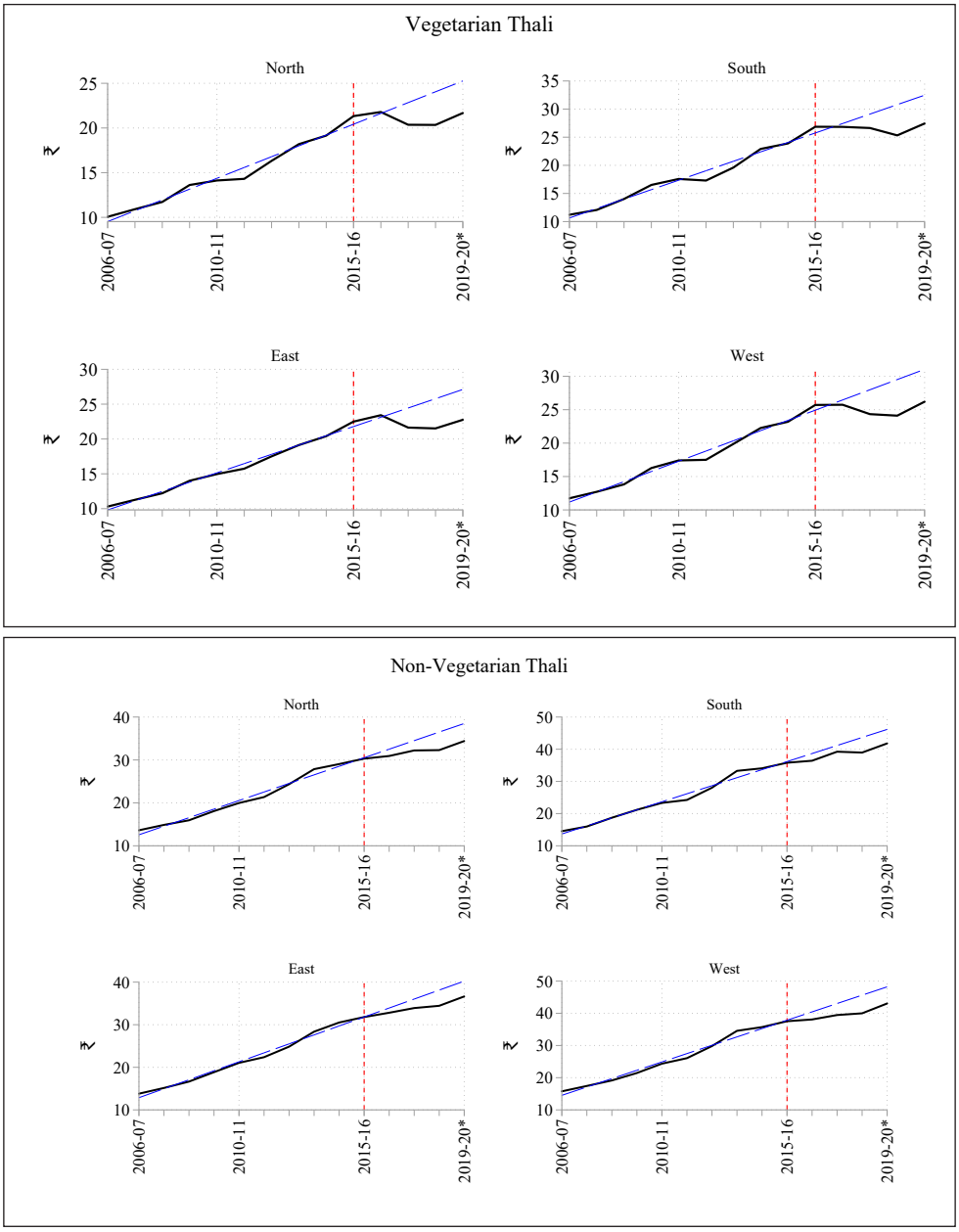
- Northern Region covers Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Punjab and Uttar Pradesh.
- Southern Region covers Karnataka,

Kerala, Puducherry, Tamil Nadu, Andhra Pradesh and Telangana.

- Eastern Region covers Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, Tripura and West Bengal.
- Western Region covers Goa, Gujarat, Rajasthan and Maharashtra.

11.10 Similar gains are observed across regions, with the exception of Northern Region and Eastern Region in 2016-17 in the case of vegetarian Thali (Figure 2 and Table 3). The highest gain in any year was in the Southern region for a vegetarian Thali in 2018-19 of around 12 per cent of annual earnings of a worker.

Figure 2: Thali Prices at Regional Level



Source: Survey calculations
Note: The blue dashed line represents the linear trend till 2015-16 and thereafter projection.
Red dotted vertical line represents 2015-16,
*: April-October, 2019

Table 3: Region-wise Nominal Gain to a Household of Five Individuals with Two Meals a Day

Year	Gain in ₹	As a proportion of annual earnings of a worker (in per cent)	Gain in ₹	As a proportion of annual earnings of a worker (in per cent)
Northern Region				
	Vegetarian Thali		***Non-Vegetarian Thali***	
2016-17	-578.7	-0.4	5,795.3	4.3
2017-18	9,055.1	6.2	8,348.0	5.8
2018-19	13,528.9	8.8	15,354.9	10
2019-20*	13,087.3	8	14,920.3	9.2
Southern Region				
	Vegetarian Thali		***Non-Vegetarian Thali***	
2016-17	2,166.1	1.5	8,169.5	5.7
2017-18	9,031.2	6	7,035.0	4.7
2018-19	19,935.9	12.4	17,118.1	10.7
2019-20*	18,361.6	10.8	15,865.5	9.3
Eastern Region				
	Vegetarian Thali		***Non-Vegetarian Thali***	
2016-17	-1,091.9	-0.7	4,044.1	2.6
2017-18	10,254.8	6.1	7,705.6	4.6
2018-19	15,558.5	8.8	13,454.7	7.6
2019-20*	15,886.0	8.5	13,123.8	7.1
Western Region				
	Vegetarian Thali		***Non-Vegetarian Thali***	
2016-17	2,612.9	1.6	8,632.2	5.1
2017-18	13,317.6	7.5	13,053.8	7.4
2018-19	19,724.3	10.5	20,563.7	10.9
2019-20*	17,661.4	8.9	18,885.2	9.5

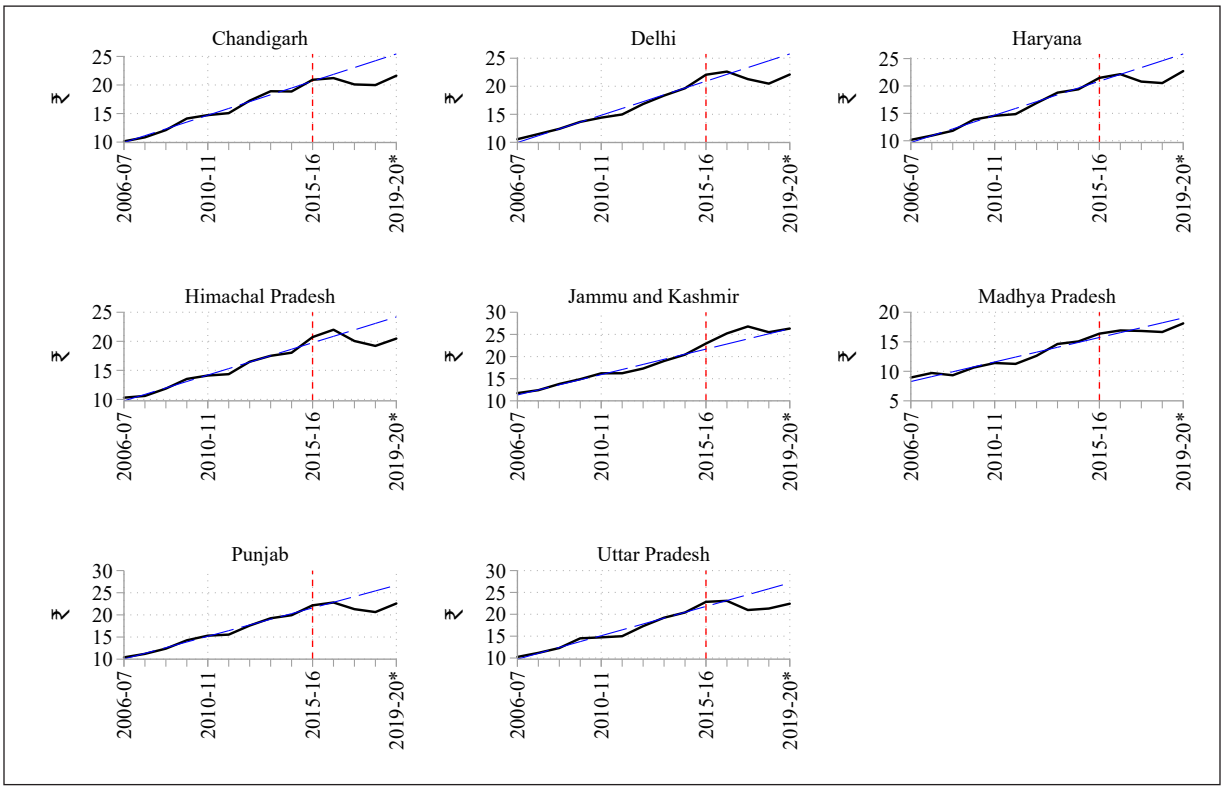
Source: Survey calculations
Note: *: Calculations for 2019-20 based on prices for the period April-October, 2019

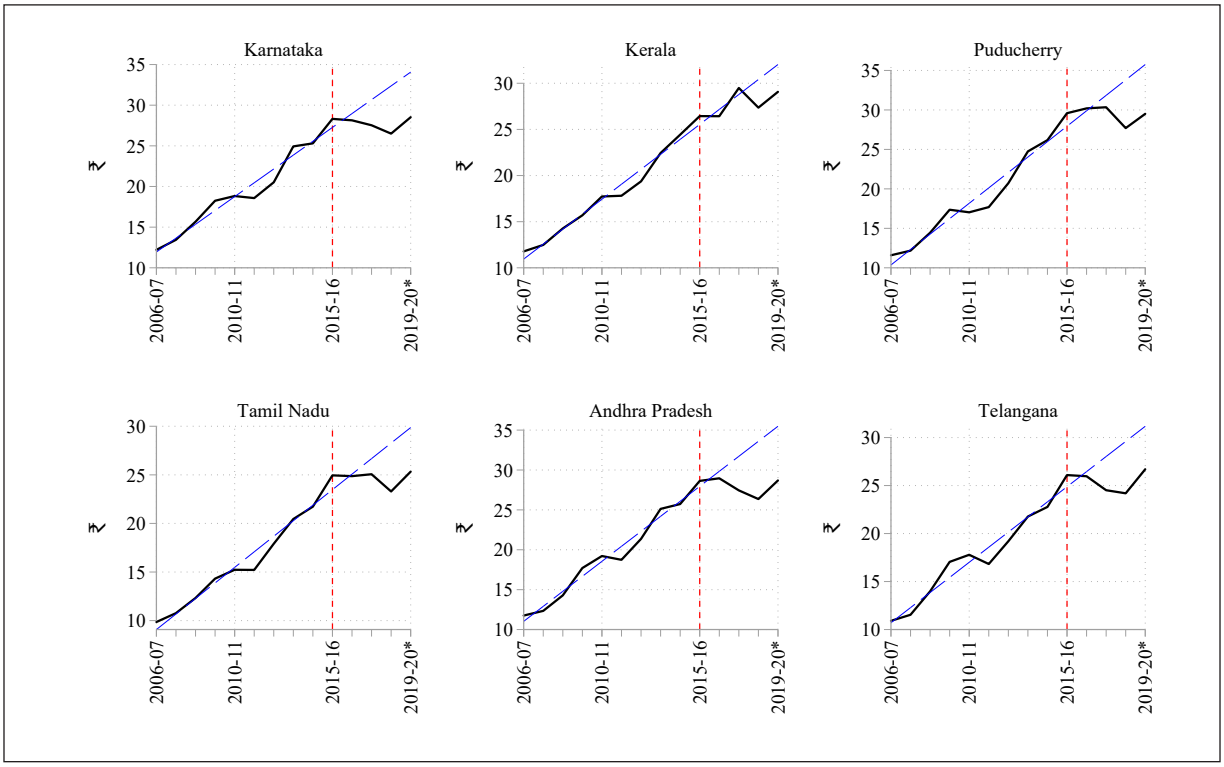
Figures 3 and 4 show the state-wise prices of Thalis. We find a similar trend.

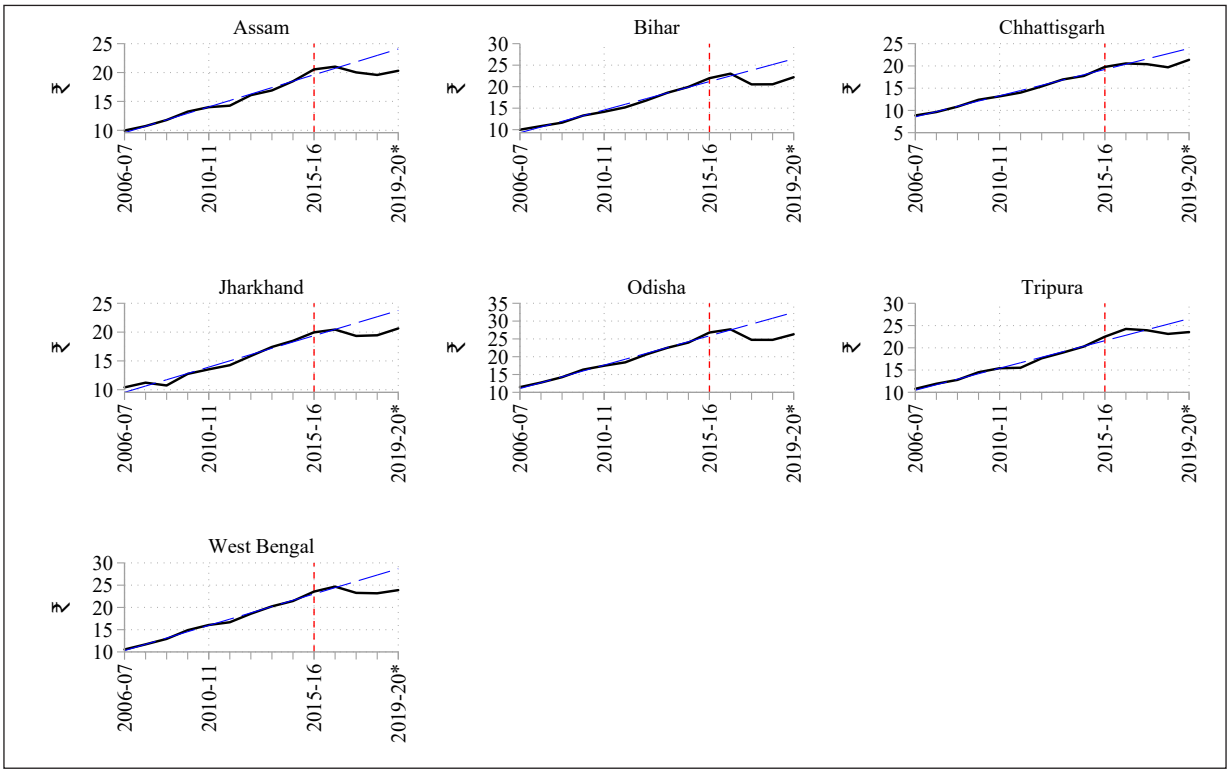
AFFORDABILITY OF THALIS

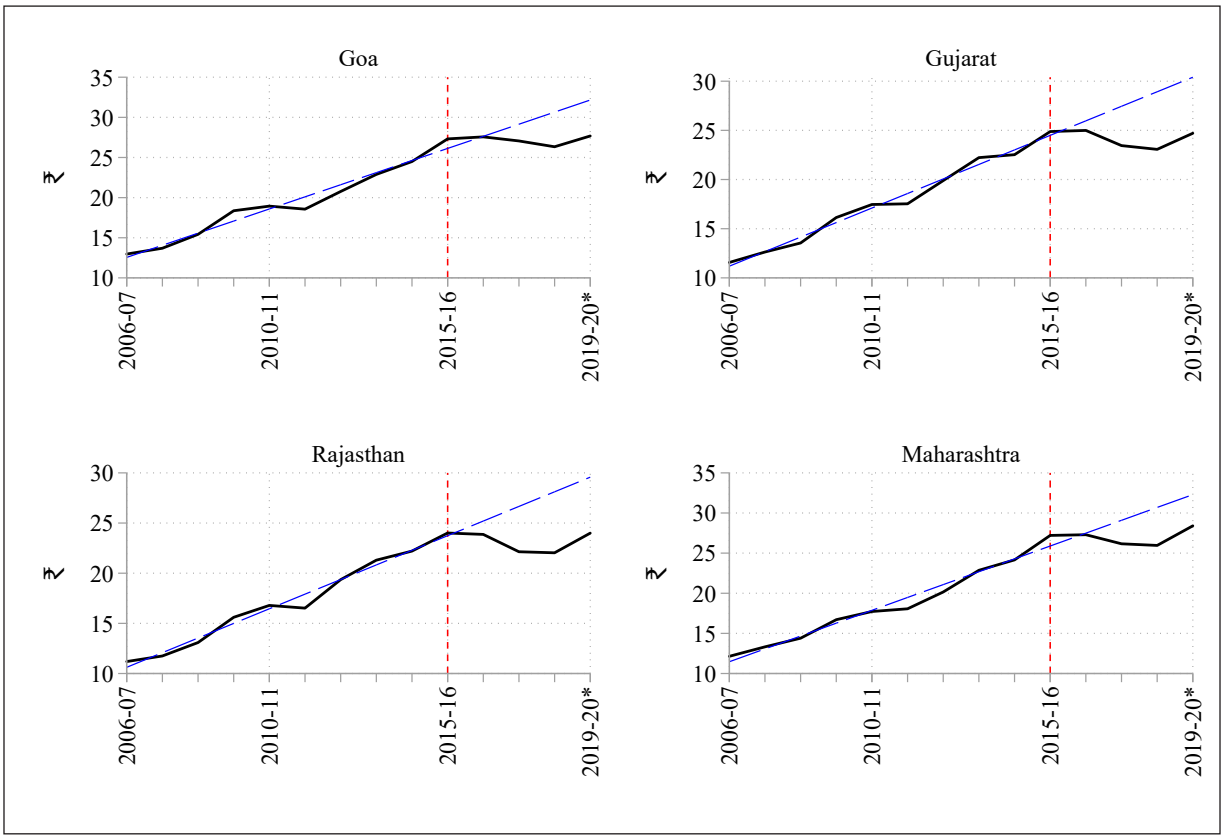
11.11 While the price of a Thali indicates the cost of consuming a healthy plate of food, knowing whether prices are increasing or decreasing is not sufficient to infer whether the common person is better-off or worse-off. What is also important to see is how have the earnings of the individual changed during the same period of time compared to the prices of a Thali. In order to do this, we can look at what share of his/her daily wages does a worker require to acquire two Thalis a day for his/her household members. If this metric decreases over time, we can conclude that the individual is better-off. On the other hand, if this metric increases, we can infer the contrary. This metric is constructed

Figure 3: State-wise Thali Prices of Vegetarian Thali



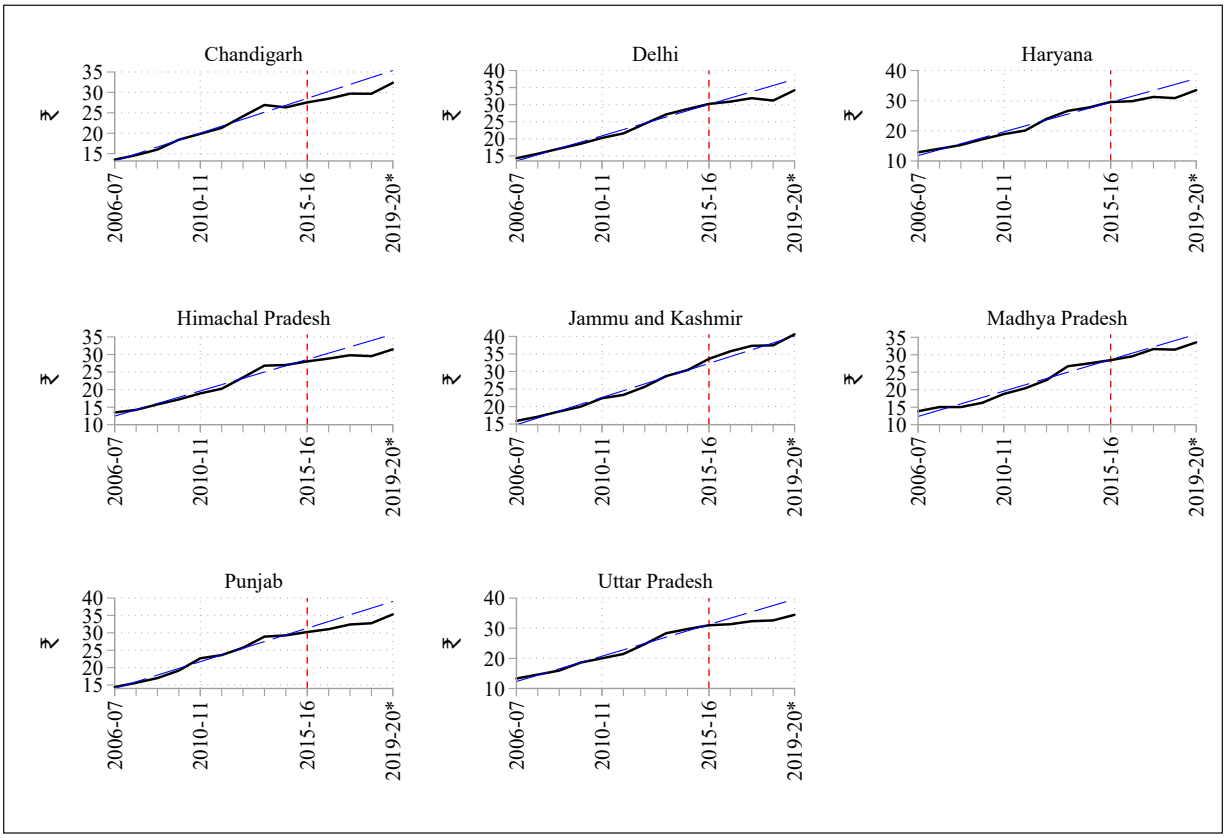


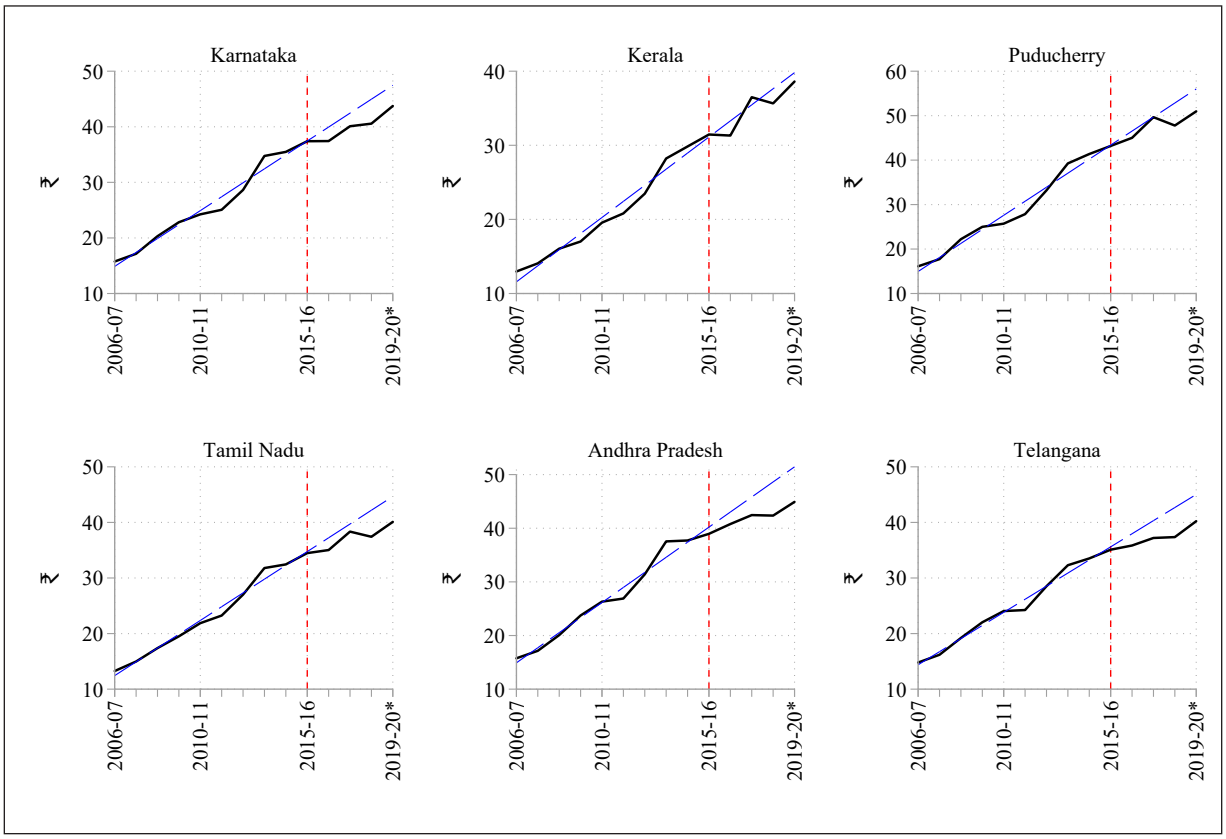


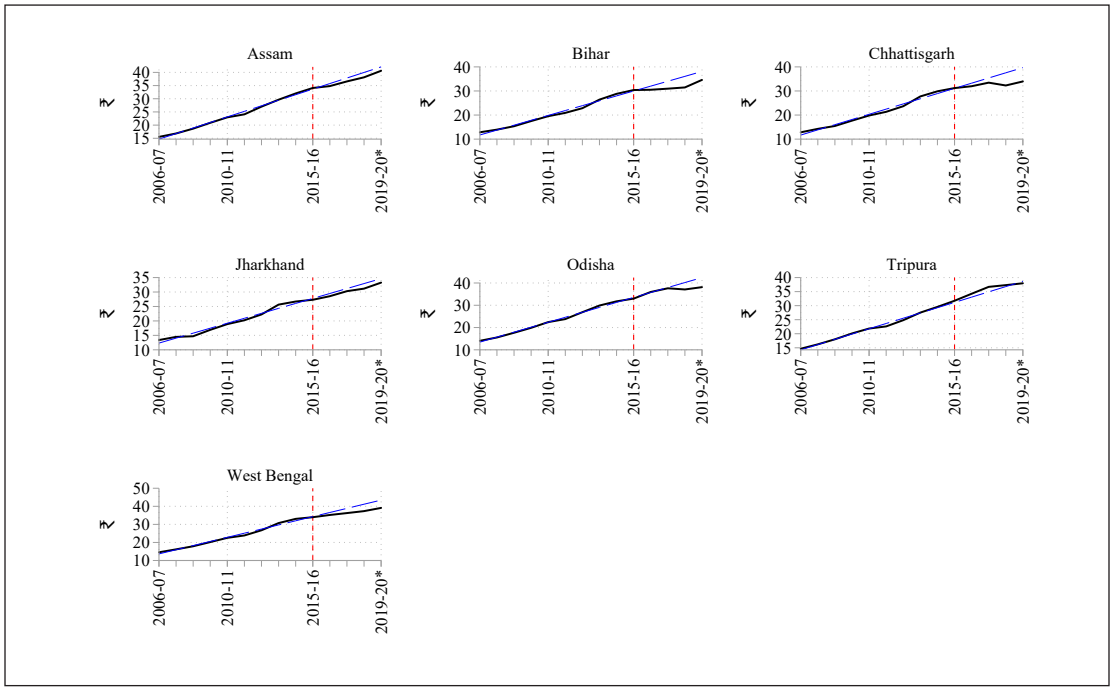


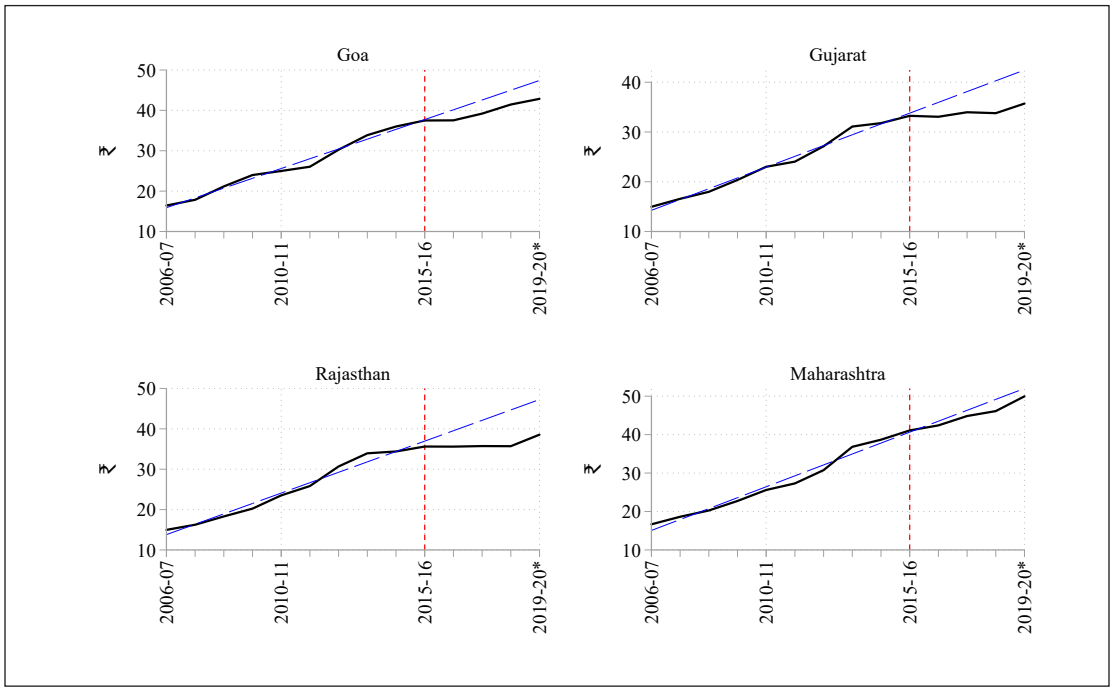
Source: Survey calculations
Note: The blue dashed line represents the linear trend till 2015-16 and thereafter projection. Red dotted vertical line represents 2015-16,
*: April-October, 2019

Figure 4: Statewise Prices of Non-Vegetarian Thali









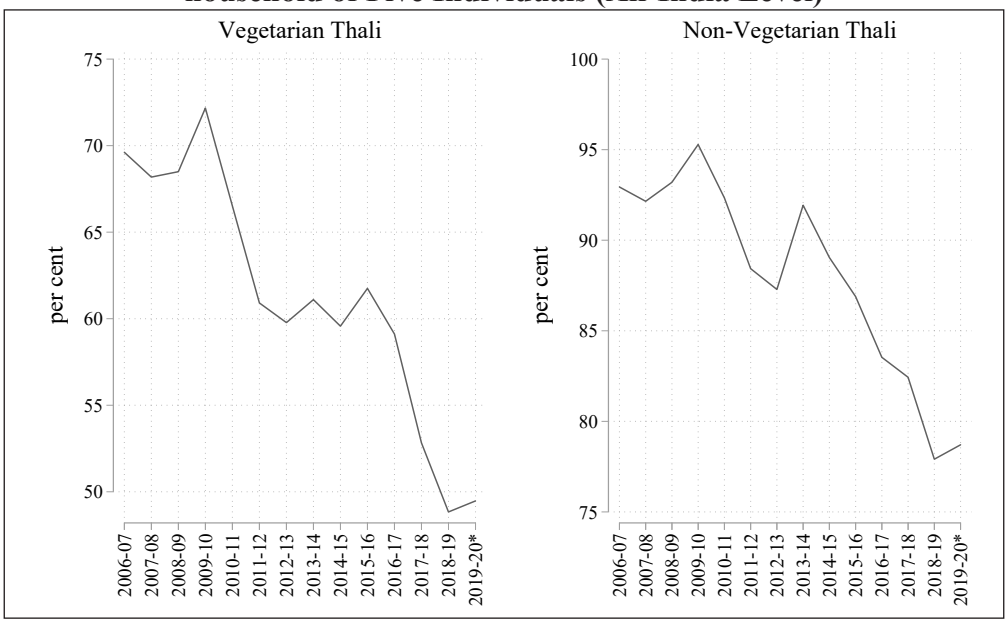
Source: Survey calculations
Note: The blue dashed line represents the linear trend till 2015-16 and thereafter projection. Red dotted vertical line represents 2015-16,
*: April-October, 2019

by dividing the price of two Thalis in that year for five individuals by the daily wage derived from Annual Survey of Industries data (available till 2017-18 and extrapolated till 2019-20 based on the trend). ASI data is used for wages because the prices of food items have been taken from data collected for construction of CPI-IW. For the time-period covered in the analysis, ASI gives an annual estimate of wages of workers engaged in the

organized manufacturing sector. The annual wages of workers are arrived at by dividing the total wages to workers by the number of workers. We divide this annual wage per worker by 365 to arrive at the daily wage for a worker. From Figure 5, it is observed that the affordability of Thalis has increased over the years. In terms of vegetarian Thali, it is found that, an individual who would have spent around 70 per cent of his/her daily wage on two Thalis for a household of five in 2006-07 is able to afford same number of Thalis from around 50 per cent of his daily wage in 2019-20 (April to October). Similarly, the affordability of non-vegetarian Thalis has also increased with the share of wages required decreasing from around 93 per cent to around 79 per cent between 2006-07 and 2019-20 (April to October).

11.12 In 2019-20 (April-October, 2019), the most affordable Thali was in Jharkhand; two vegetarian Thalis for a household of five in Jharkhand required about 25 per cent of a worker's daily wage (Figure 6). Non-vegetarian Thali was also most affordable in Jharkhand (Figure 7). Comparing between 2006-07 and 2019-20 (April-October), vegetarian Thali has become more affordable in all states under consideration. In the case of non-vegetarian Thali, affordability has increased during this period in all states except Bihar and Maharashtra, where it has shown a marginal decline.

Figure 5: Share of a Day's Wage of a Worker Needed to Afford Two Thalis for a household of Five Individuals (All-India Level)

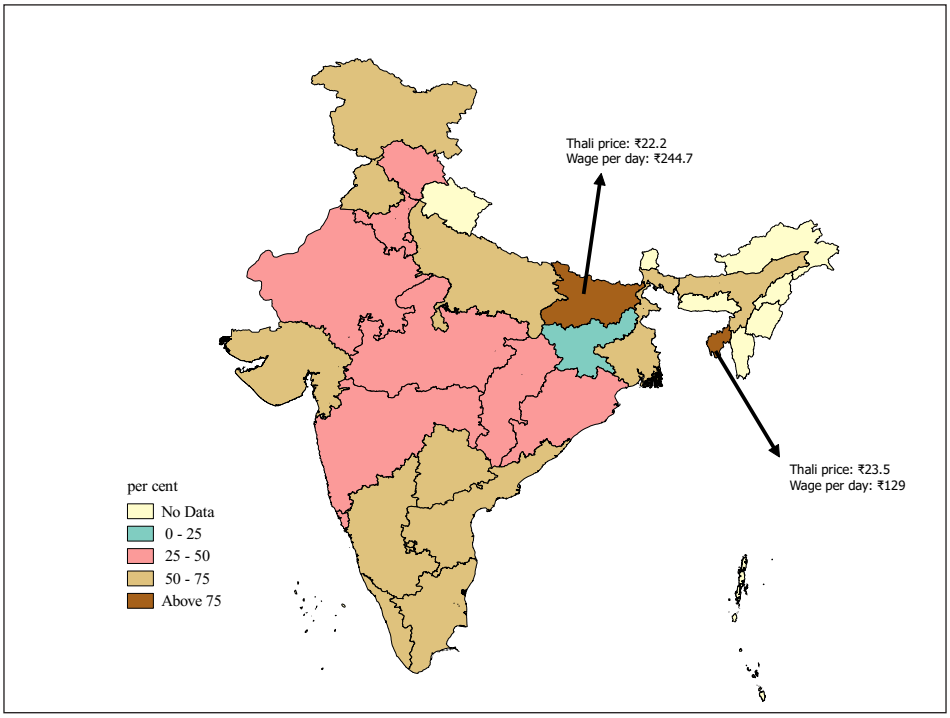


Source: Survey calculations
Note: *: Calculations for 2019-20 based on prices for the period April-October, 2019

PRICE TRENDS OF THALI COMPONENTS

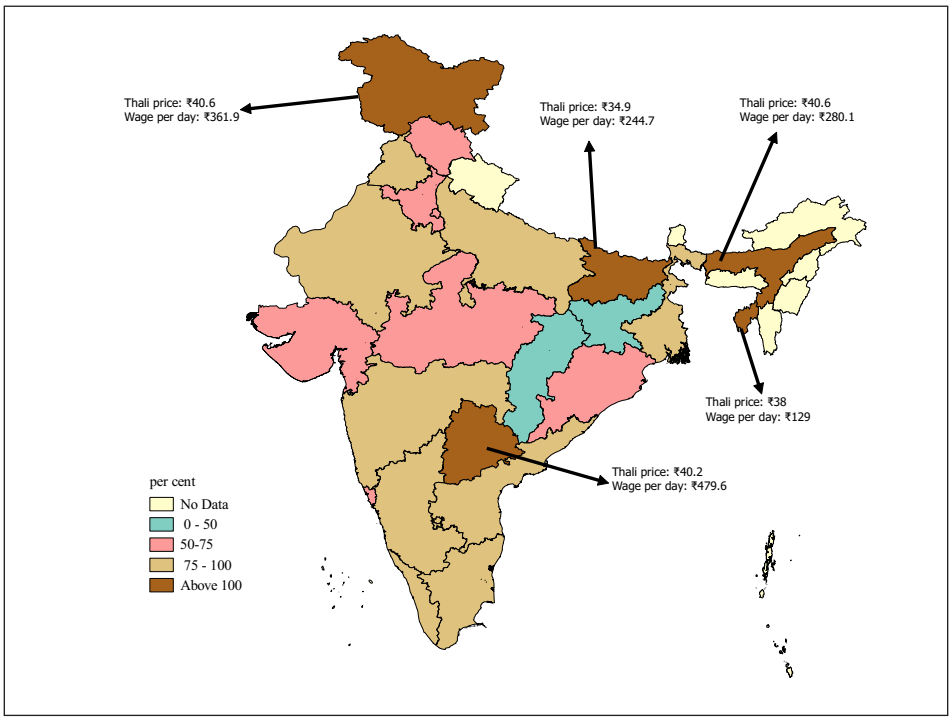
11.13 Given the national and regional trends in the prices of Thalis, it would be insightful to see what components of Thalis have contributed to the observed trends in prices of Thalis. It is observed that, at the all-India level, prices of almost all the components have been mostly lower compared to the projected prices since 2015-16 (Figure 8). Dal prices remained elevated till 2016-17,

Figure 6: Share of a Day's Wage of a Worker Needed to Afford Two Vegetarian Thalis for a Household of Five Individuals (All-India Level) in 2019-20*



Source: Survey calculations;
Note: *: April to October, 2019

Figure 7: Share of a Day's Wage of a Worker Needed to Afford Two Non-Vegetarian Thalis for a Household of Five Individuals(2019-20*)



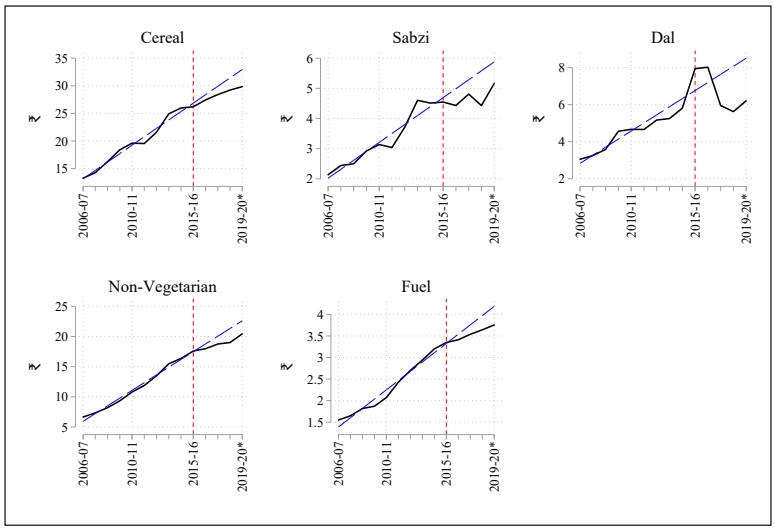
Source: Survey calculations;
Note: *: April to October, 2019

subsequent to which, a large decline was witnessed. Similar pattern is visible across the country (Figures 9-12). While in the other regions, Sabzi prices have remained clearly below the projected prices, in the Southern region, the variation has been greater and, in general, the Sabzi prices have been higher.

THALI INFLATION

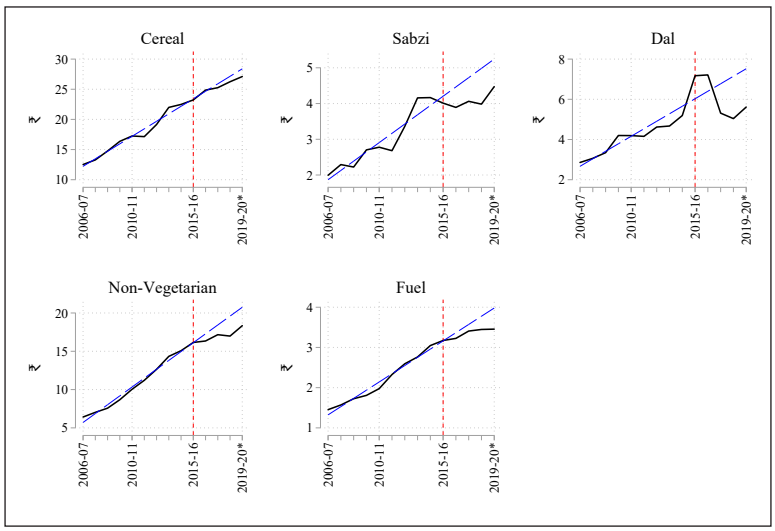
11.14 Thali inflation (year-on-year growth in Thali prices), which remained elevated during the initial part of the period of our analysis, has shown significant reduction. As Figure 13 shows clearly, the increase in the rate of inflation in vegetarian and

Figure 8: All-India Prices of Thali Constituents



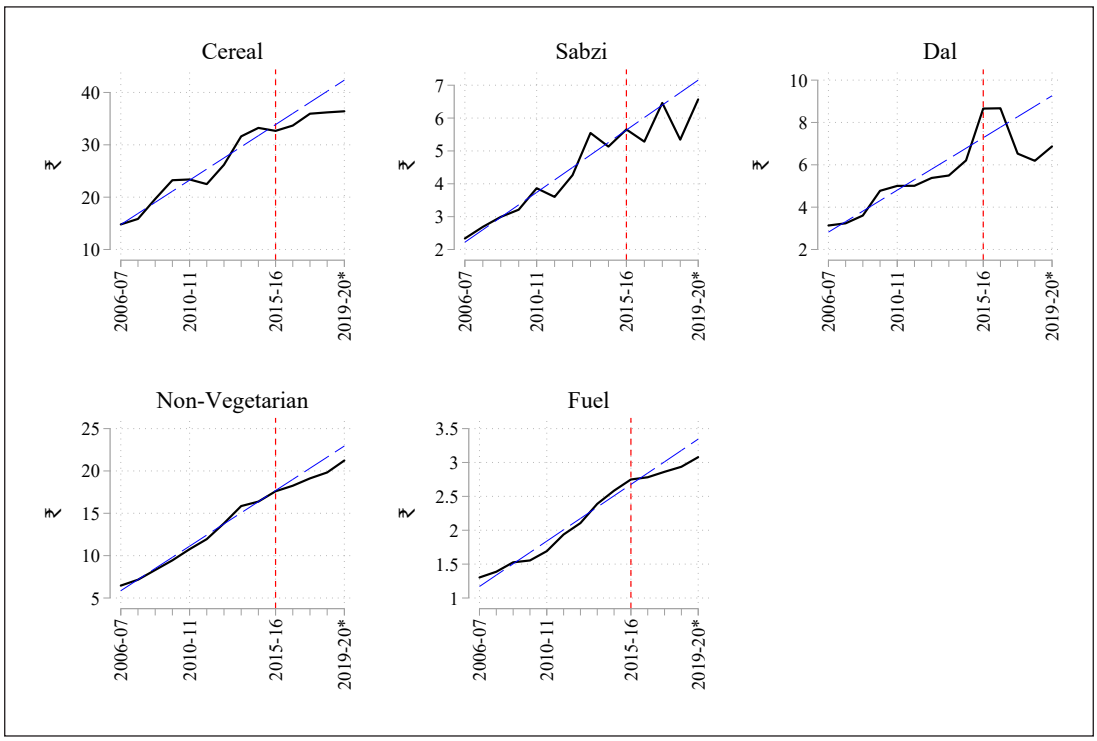
Source: Survey calculations
Note: Cereal prices are for 1 kg of cereal, other components prices are for a serving
*:April - October, 2019

Figure 9: Prices of Constituents – Northern region



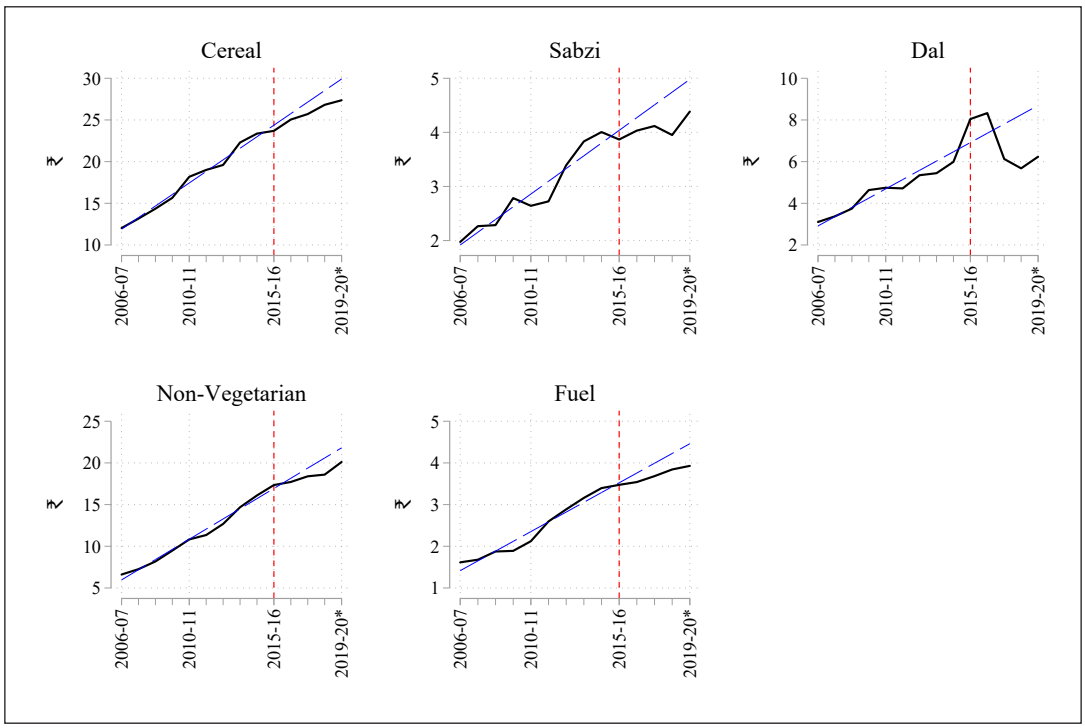
Source: Survey calculations
Note: Cereal prices are for 1 kg of cereal, other components prices are for a serving
*: April - October, 2019

Figure 10: Prices of Constituents – Southern Region



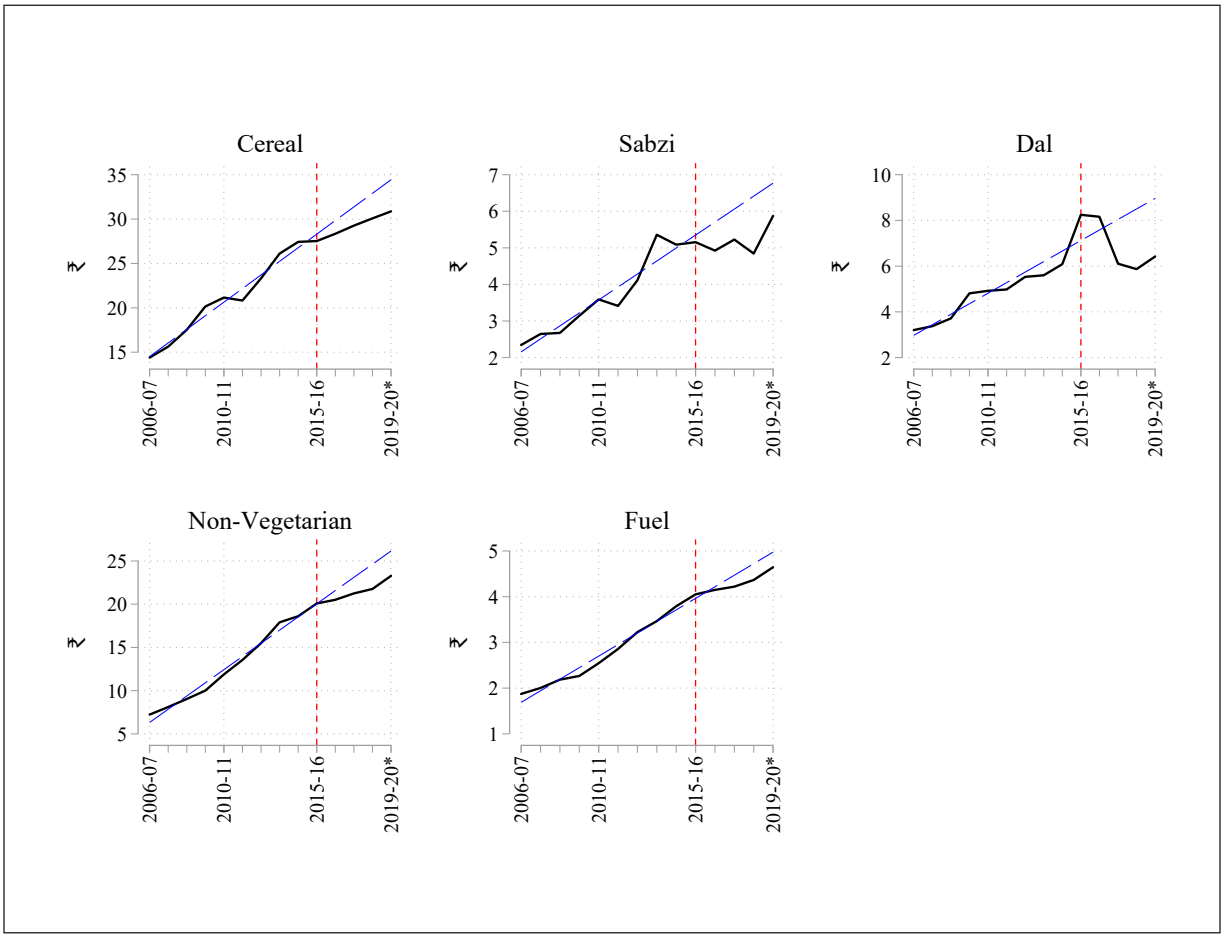
Source: Survey calculations
Note: Cereal prices are for 1 kg of cereal, other components prices are for a serving
*: April - October, 2019

Figure 11: Prices of Constituents – Eastern region



Source: Survey calculations
Note: Cereal prices are for 1 kg of cereal, other components prices are for a serving
*: April - October, 2019

Figure 12: Prices of Constituents – Western region



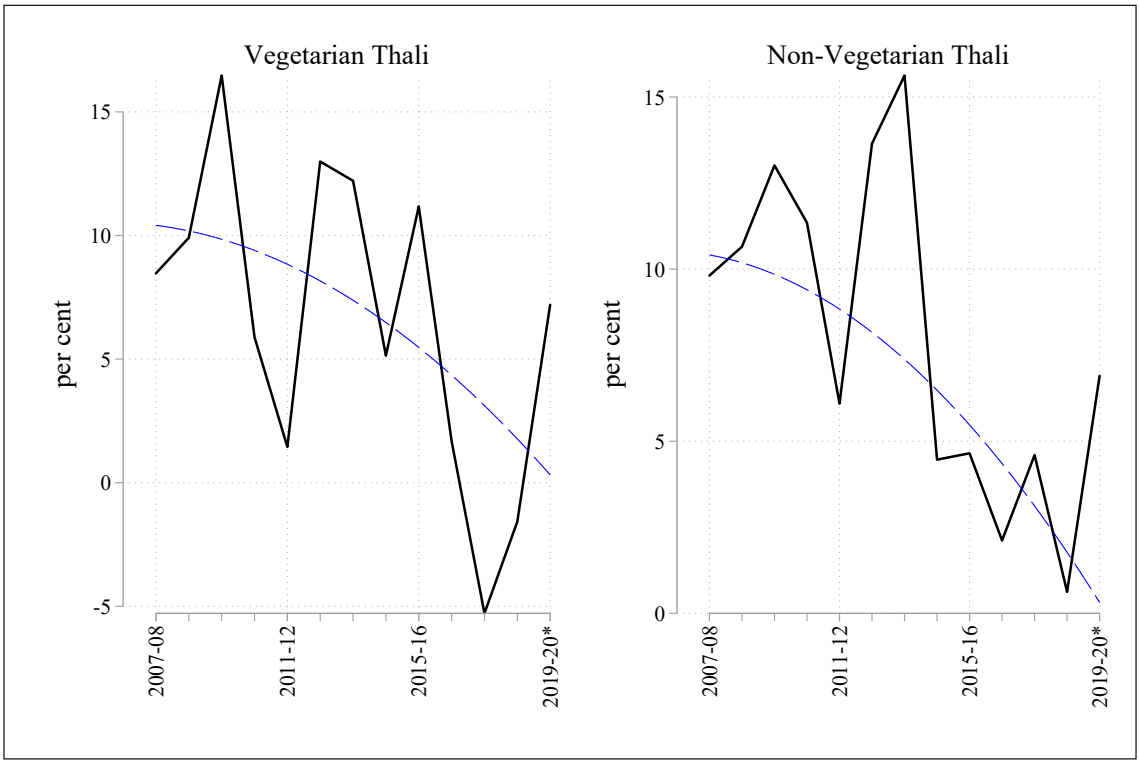
Source: Survey calculations
Note: Cereal prices are for 1 kg of cereal, other components prices are for a serving
*: April - October, 2019

non-vegetarian Thalis during 2019-20 is a temporary phenomenon that should revert back as has happened in earlier years. In the case of vegetarian Thali, inflation at the All-India level fell from the significantly high level, attained in 2015-16, to below zero level in the subsequent years. In the case of non-vegetarian Thali, inflation fell drastically after 2013-14 (Figure 13). It is observed that inflation has been declining over time in all components. While inflation in cereals have been declining at a steady rate throughout the period, the fall in inflation has accelerated in all other components except Sabzi (Figure 14). Across regions and States, a similar trend is seen in inflation with overall Thali inflation showing a downward trend (Figures 15 to 20). Over the last year, the rate of inflation for Dal, Sabzi and non-vegetarian components have increased.

VARIABILITY OF THALI PRICES

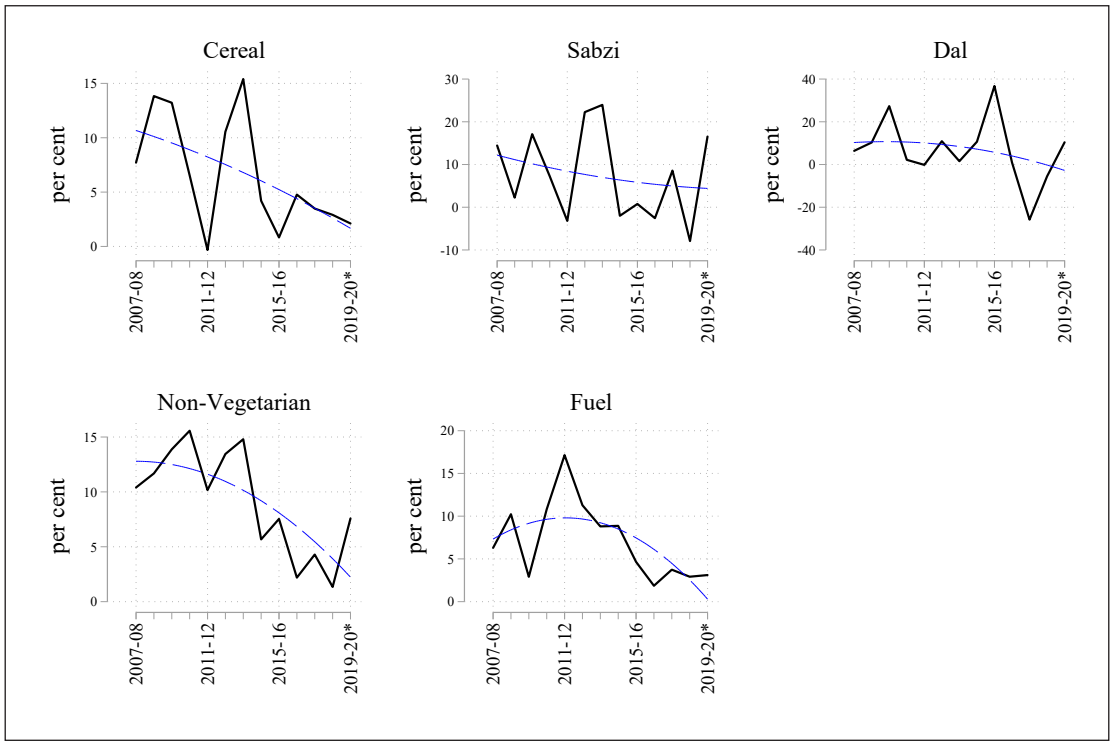
11.15 It is seen that over the years, there is no specific trend in the variability of Thali prices at the All-India level across months over the years (Figure 21). Similarly, in cases of variability across regions and across states, over time, there are no specific trends in the variability patterns (Figures 22 and 23).

Figure 13: All-India Inflation in Thali



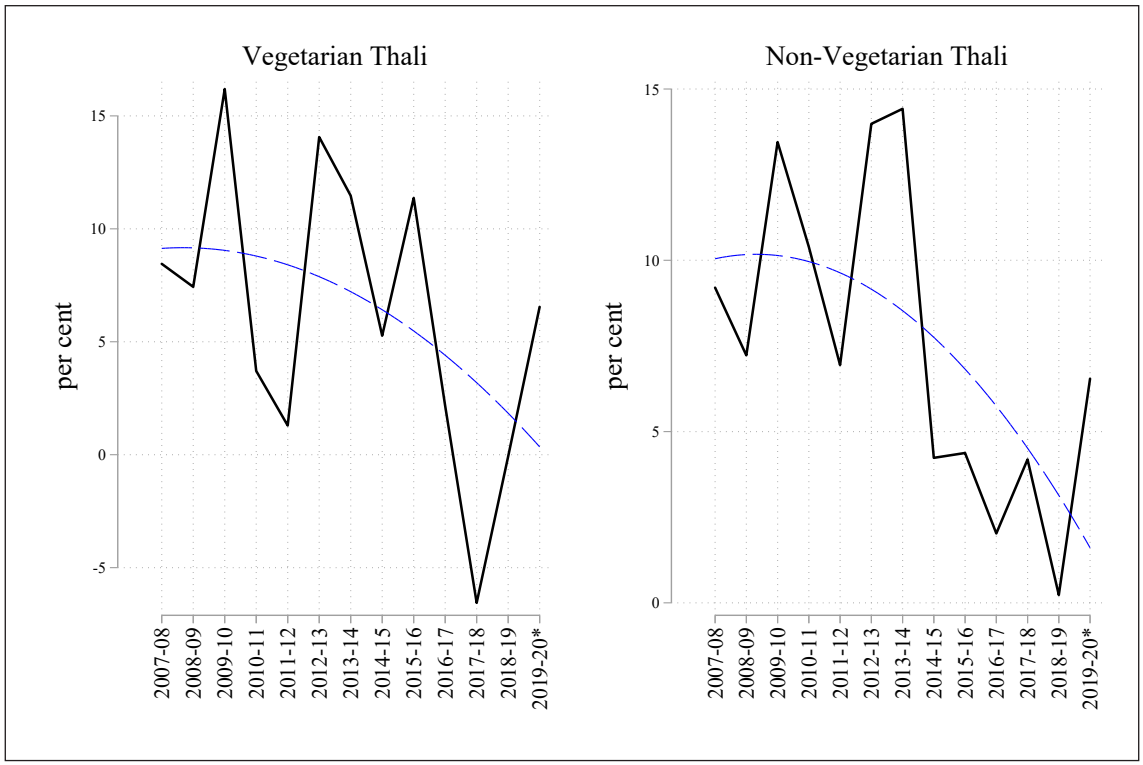
Source: Survey calculations
Note: *: April - October, 2019

Figure 14: All-India Inflation in Thali Components



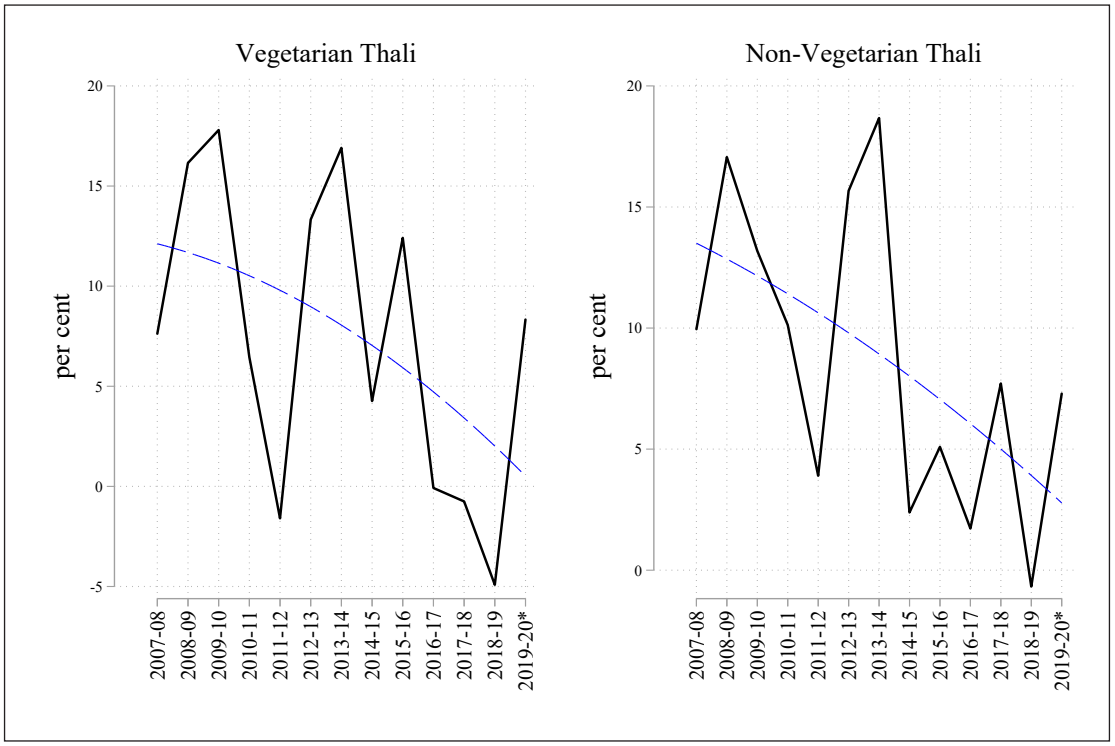
Source: Survey calculations
Note: *: April - October, 2019

Figure 15: Northern Region Inflation in Thali



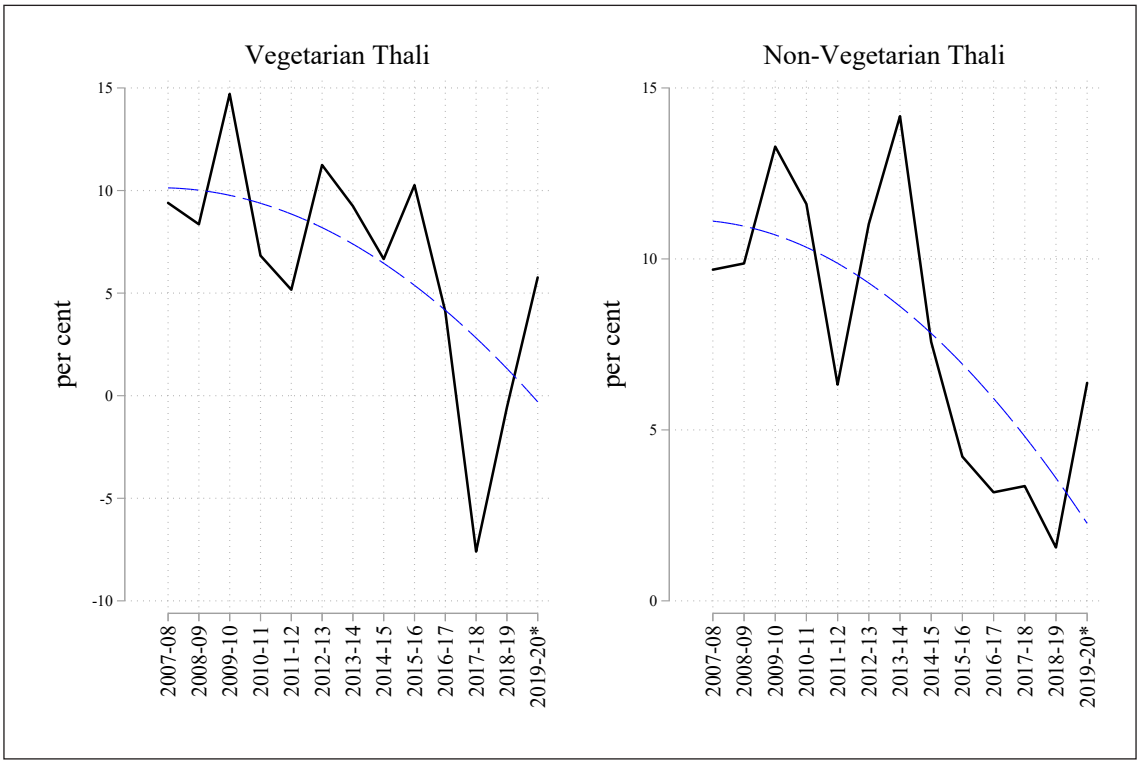
Source: Survey calculations
Note: *: April - October, 2019

Figure 16: Southern Region Inflation in Thali



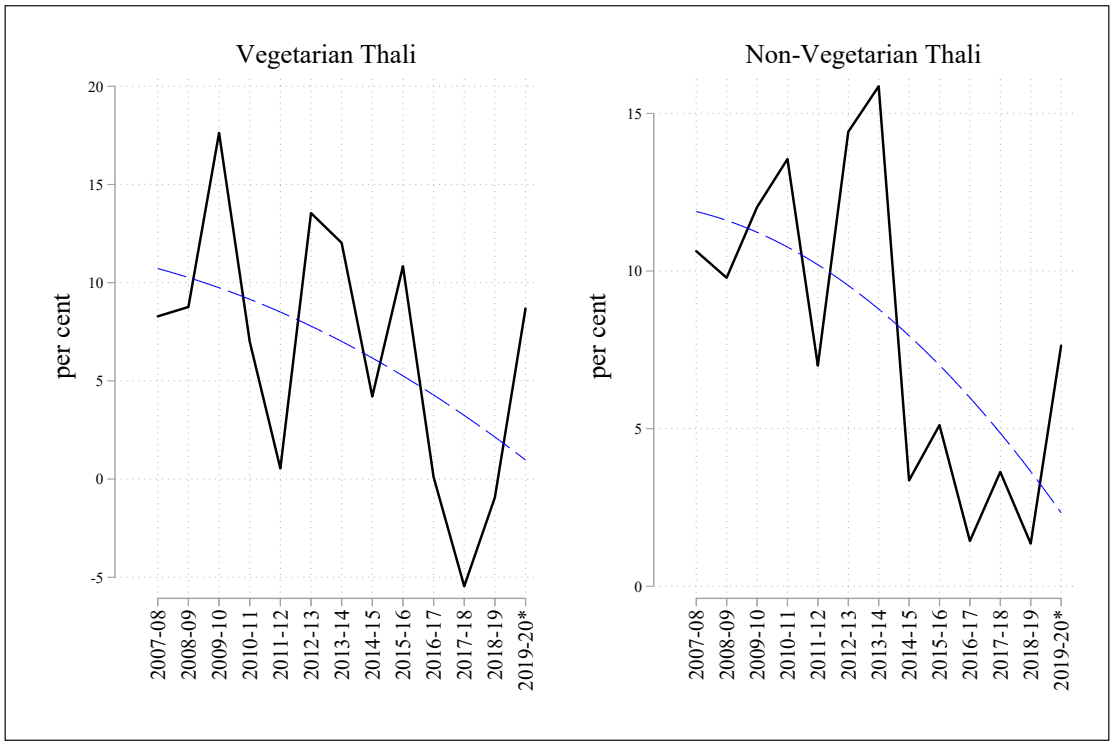
Source: Survey calculations
Note: *: April - October, 2019

Figure 17: Eastern Region Inflation in Thali



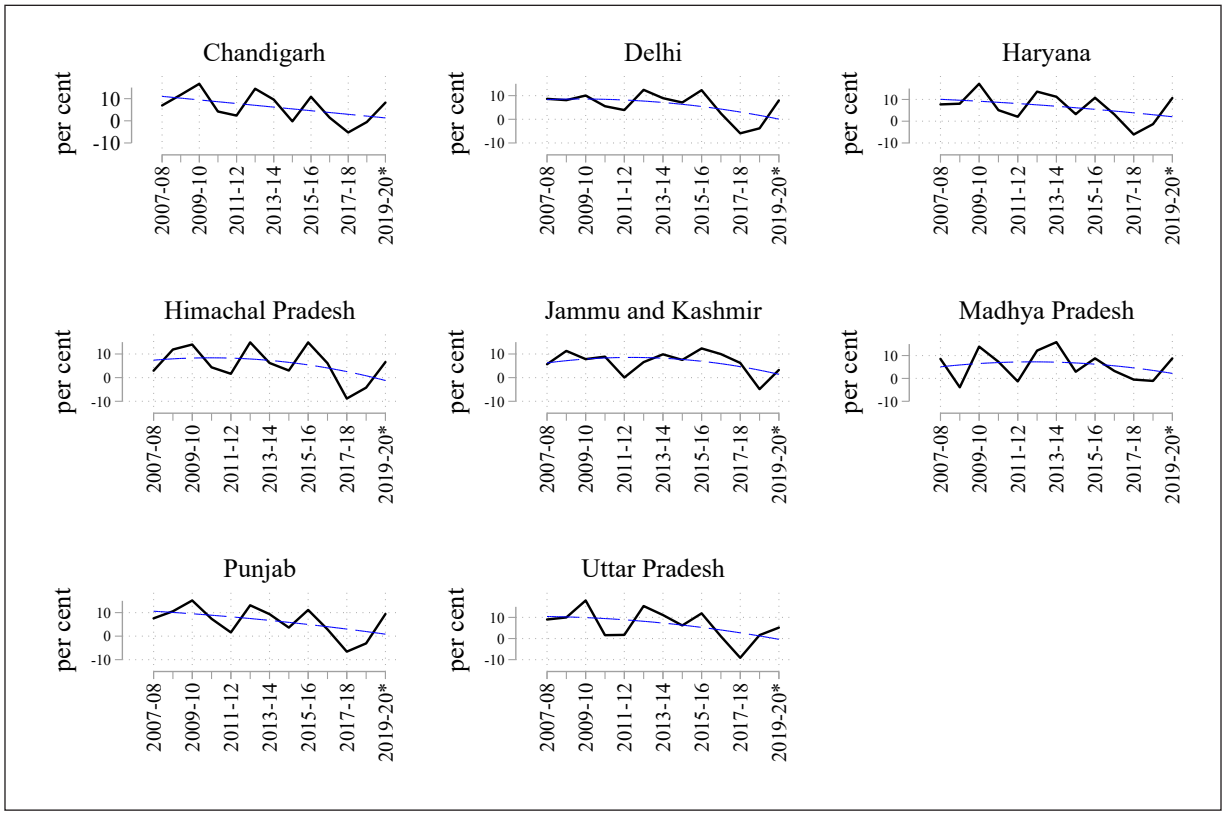
Source: Survey calculations
Note: *: April - October, 2019

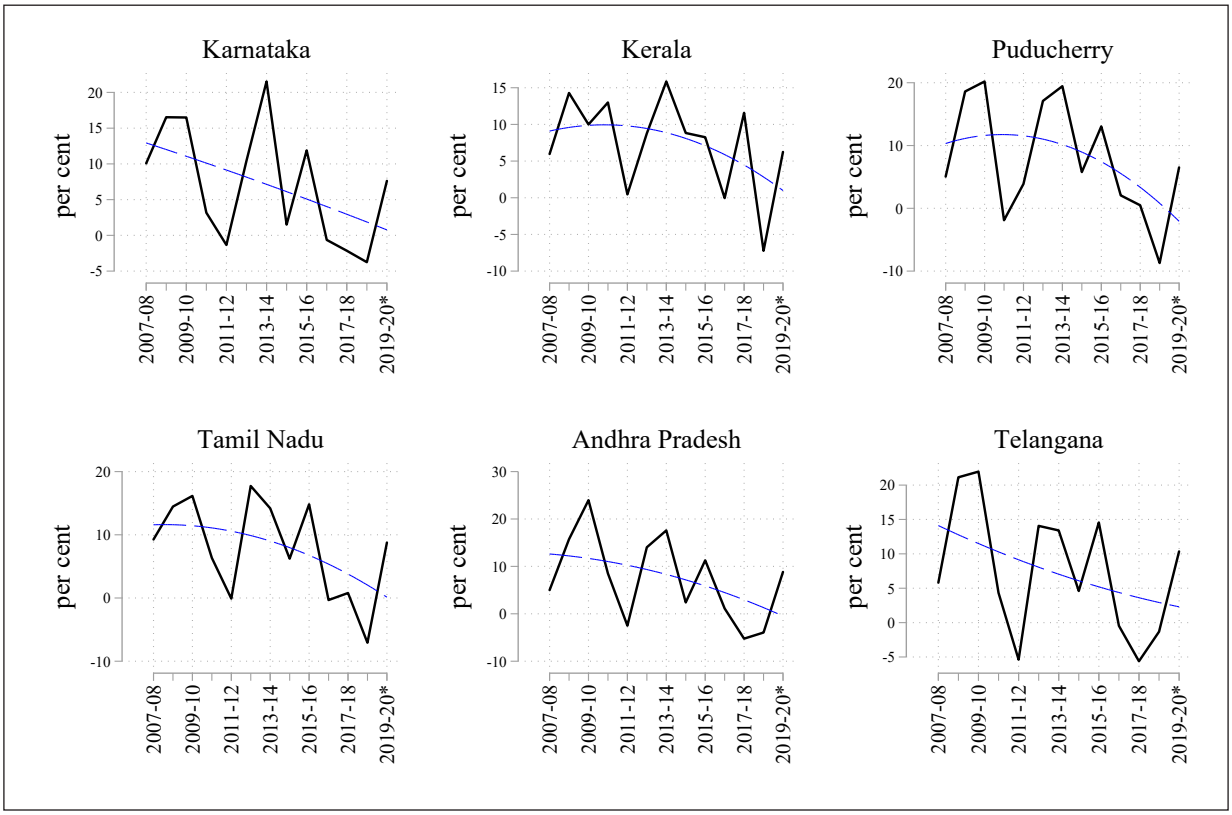
Figure 18: Western Region Inflation in Thali

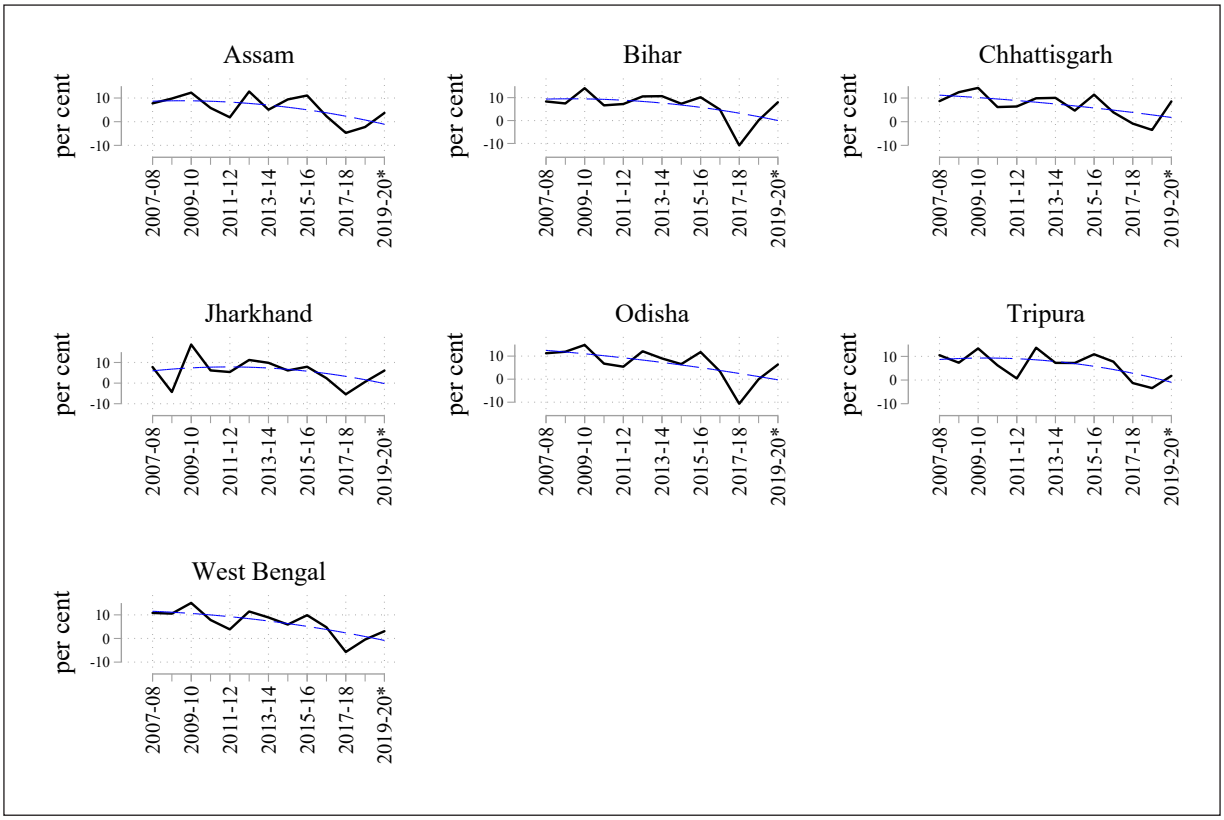


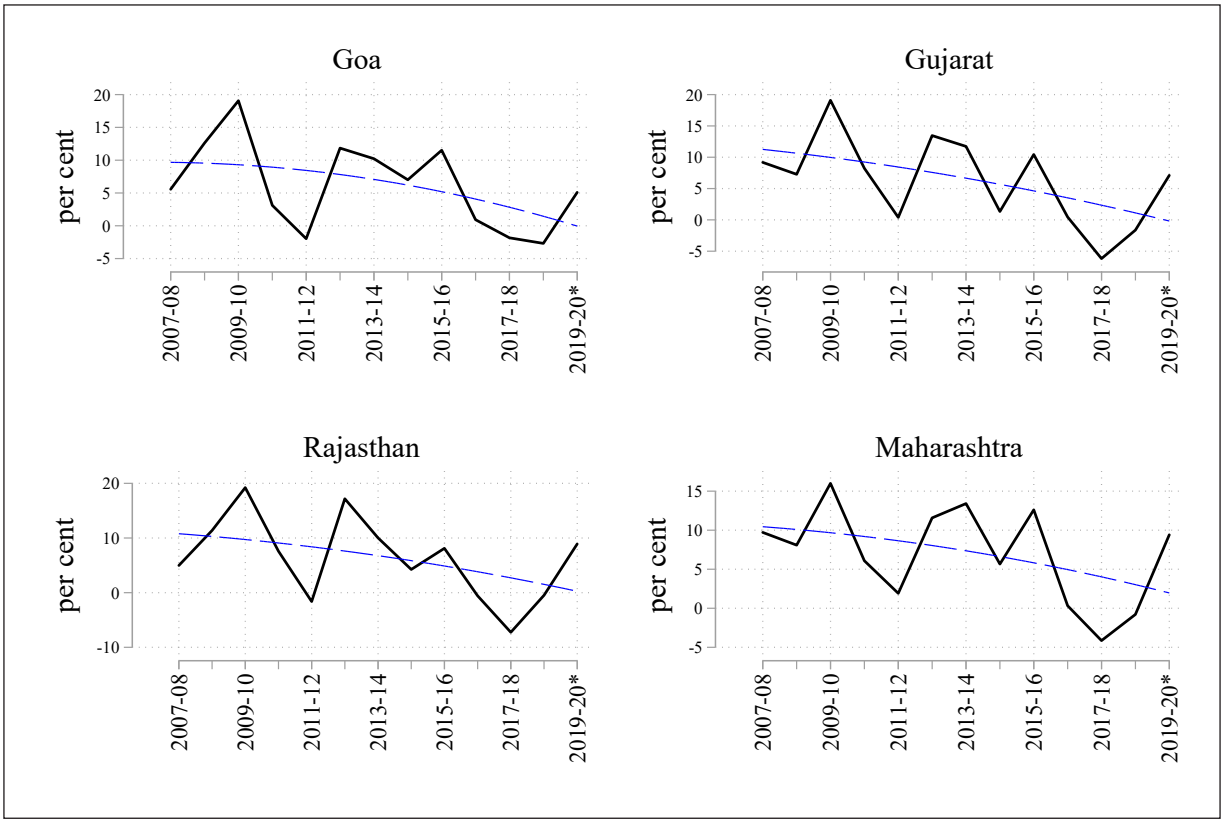
Source: Survey calculations
Note: *: April - October, 2019

Figure 19: State-wise Inflation in Vegetarian Thali Prices



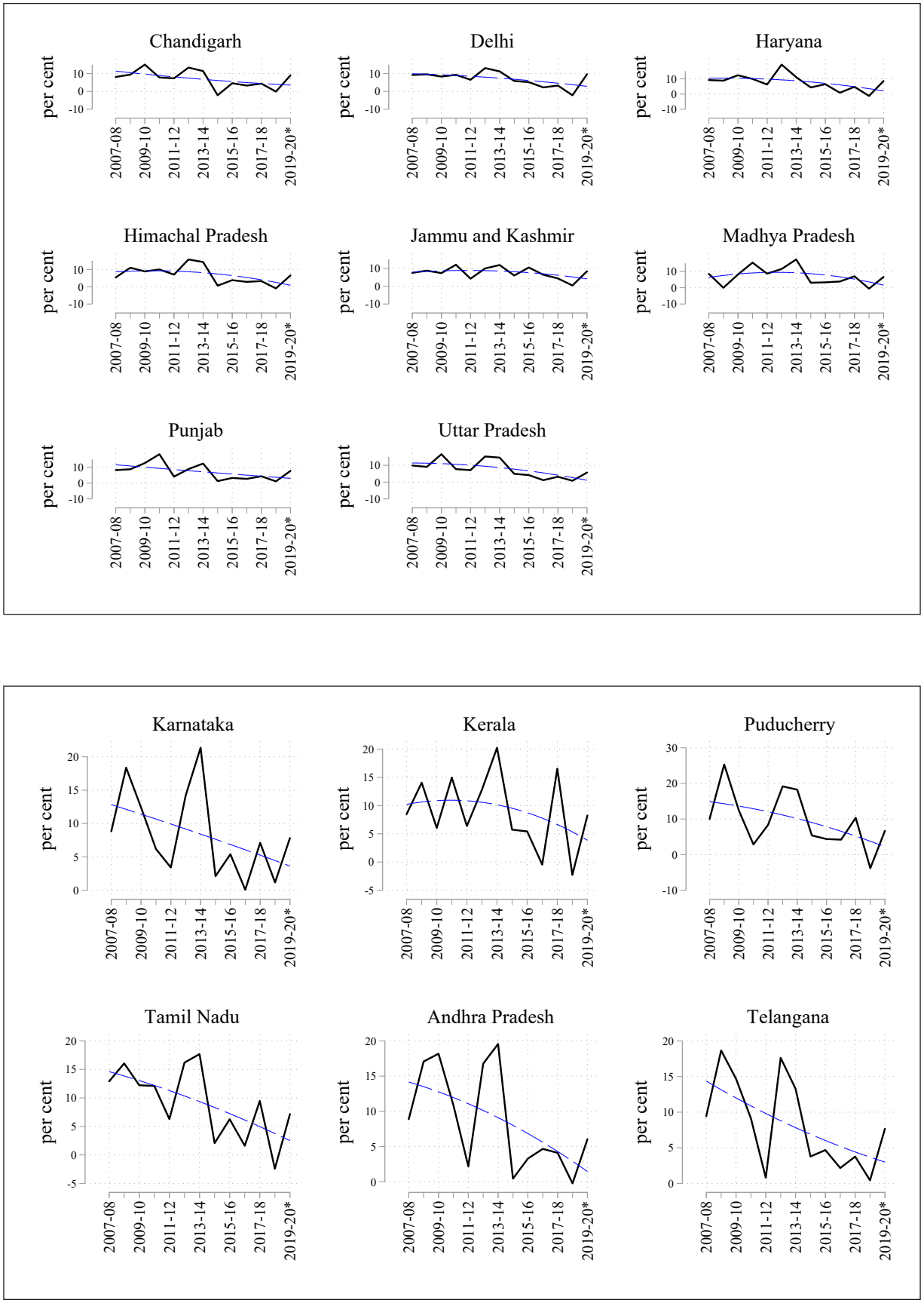


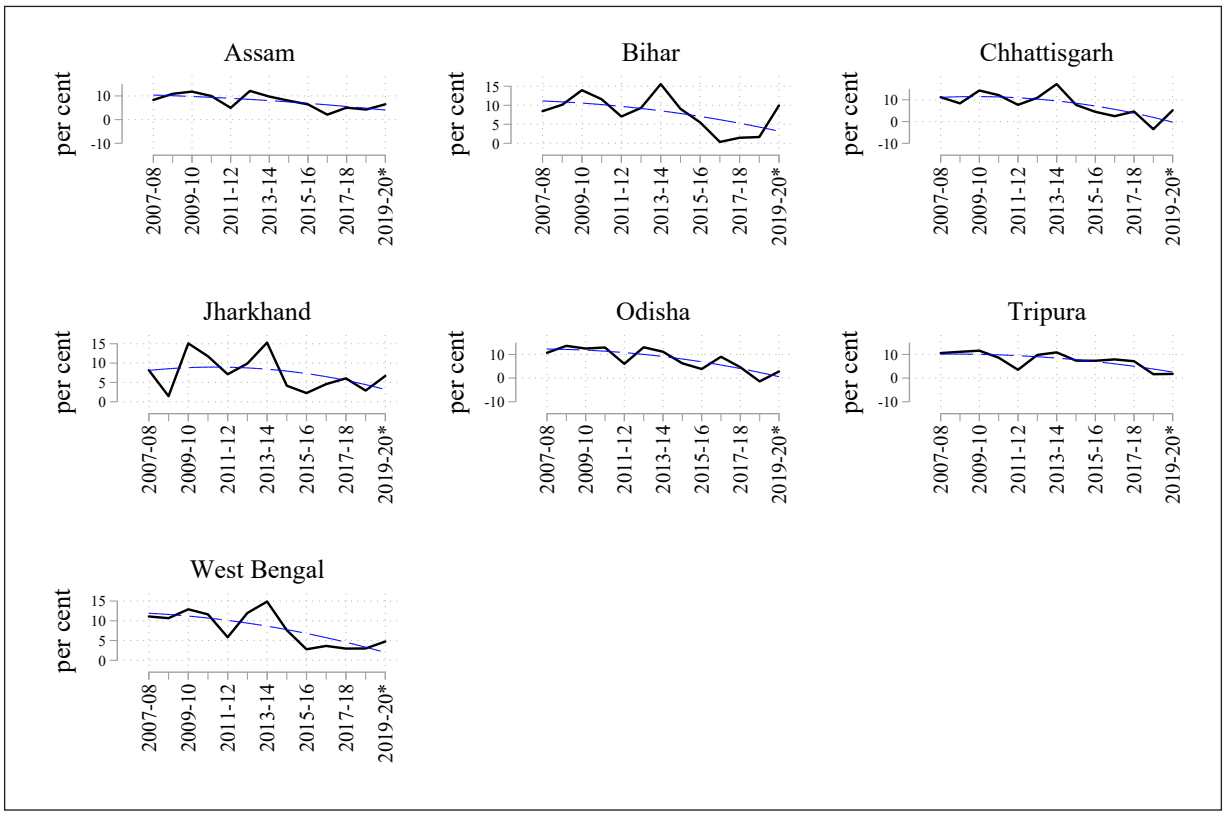


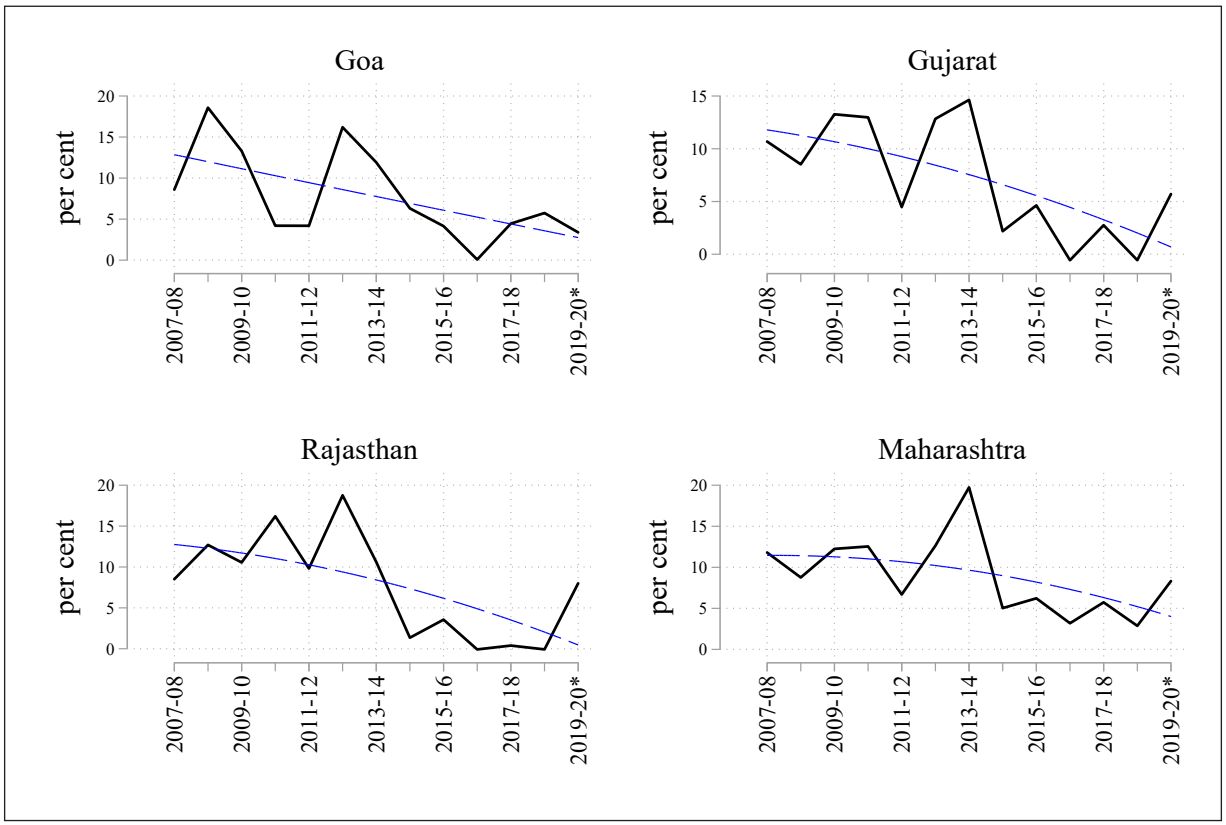


Source: Survey calculations
Note: *: April - October, 2019

Figure 20: State-wise Inflation in Non-Vegetarian Thali Prices

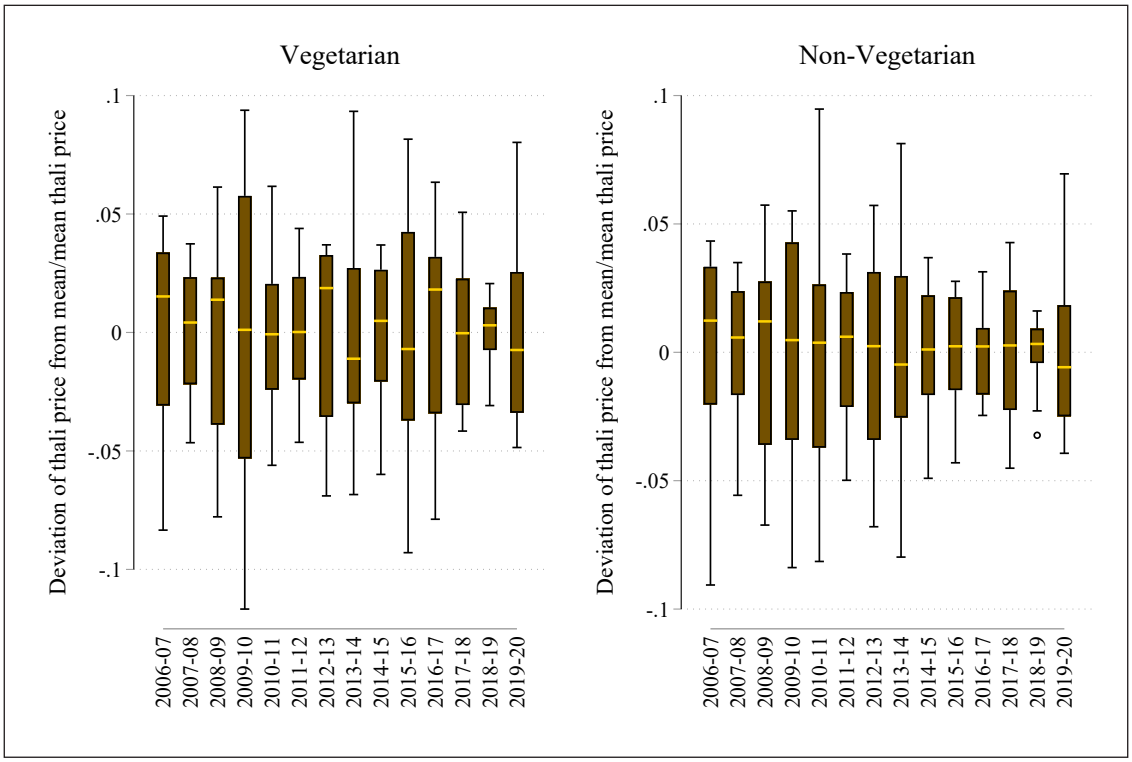






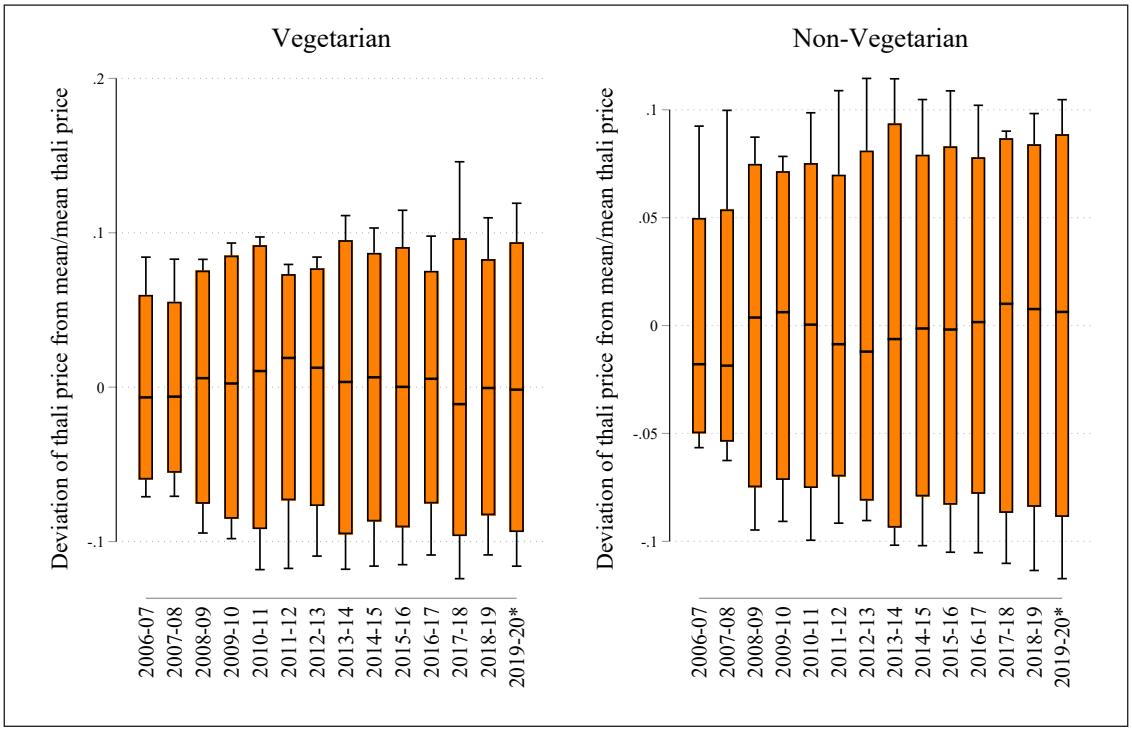
Source: Survey calculations
Note: *: April - October, 2019

Figure 21: Variability of Thali Prices Across Months at All-India Level, 2006-07 to 2019-20*



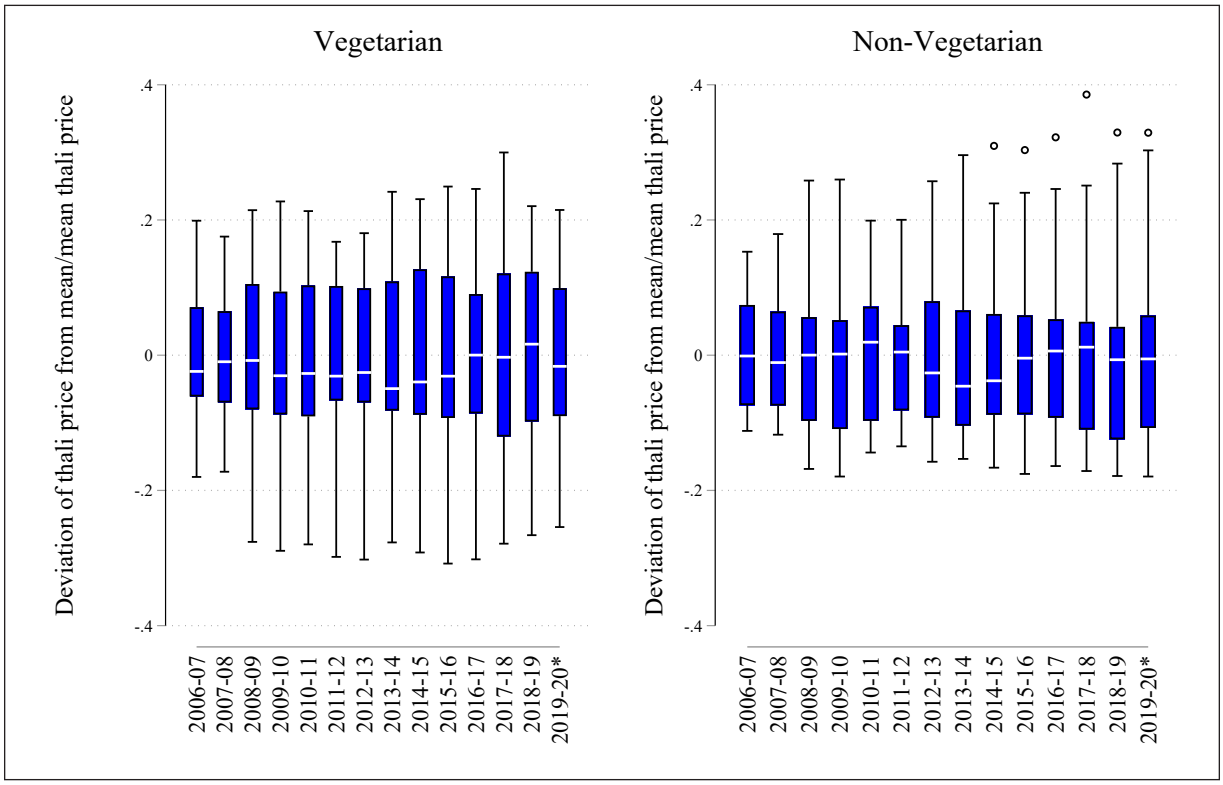
Source: Survey calculations
Note: *: April - October, 2019

Figure 22: Variability of Thali Prices Across Regions, 2006-07 to 2019-20



Source: Survey calculations
Note: *: April - October, 2019

Figure 23: Variability of Thali Prices Across States, 2006-07 to 2019-20



Source: Survey calculations
Note: *: April - October, 2019

CONCLUSION

11.16 Food is not just an end in itself but also an essential ingredient in the growth of human capital and therefore important for national wealth creation. 'Zero Hunger' has been agreed upon by nations of the world as a Sustainable Development Goal (SDG). This goal (SDG 2) is directly related to other SDGs such as Goal 1 (No poverty), Goal 4 (Quality Education), Goal 5 (Gender equality), Goal 12 (Responsible consumption and production), Goal 13 (Climate action) and Goal 15 (Life on Land).

11.17 In this chapter, the evolution of prices of food items have been looked at through the lens of Thalis during the period from 2006-07 to 2019-20 (April-October, 2019). It is found that at the all-India level as well as regional levels, moderation in prices of vegetarian Thali have been witnessed since 2015-16 though Thali prices have increased this year. This is owing to the sharp downward turn in the prices of vegetables and dal in contrast to the previous trend of increasing prices. In terms of the inflation in Thali prices and all the components, we find a distinct declining trend during the period under review. Affordability of Thalis vis-à-vis a day's pay of a worker has improved over time indicating improved welfare of the common person.

CHAPTER AT A GLANCE

- Thalinomics is an attempt to quantify what a common person pays for a Thali across India.
- Prices data from the Consumer Price Index for Industrial Workers for around 80 centres in 25 States/UTs from April 2006 to October 2019 have been used for the analysis.
- 2015-16 can be considered as a year when there was a shift in the dynamics of Thali prices. Many reform measures were introduced since 2014-15 to enhance the productivity of the agricultural sector as well as efficiency and effectiveness of agricultural markets for better and more transparent price discovery.
- Both across India and the four regions – North, South, East and West – we find that the absolute prices of a vegetarian Thali have decreased significantly since 2015-16, though the price has increased during 2019-20.
- After 2015-16, the average household gained ₹10887 on average per year from the moderation in prices in the case of vegetarian Thali. Similarly, an average household that consumes two non-vegetarian Thalis gained around ₹11787 on average per year during the same period.
- Using the annual earnings of an average industrial worker, we find that affordability of vegetarian Thalis improved 29 per cent from 2006-07 to 2019-20 while that for non-vegetarian Thalis improved by 18 per cent.

REFERENCES

NIN, *"Dietary Guidelines for Indians -- A Manual",* National Institute of Nutrition, Hyderabad, 2011.