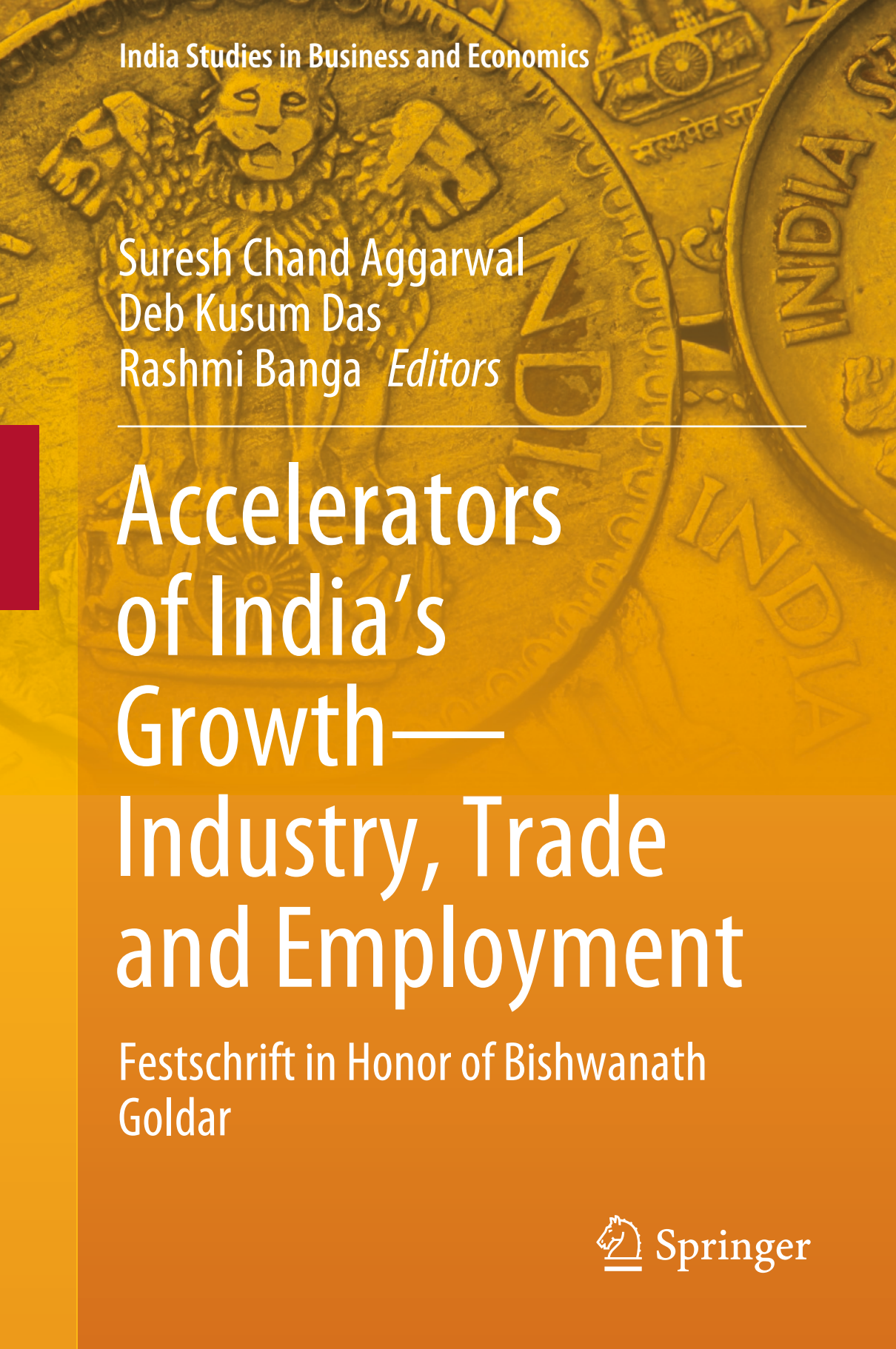
India Studies in Business and Economics
Suresh Chand Aggarwal
Deb Kusum Das
Rashmi Banga Editors
Accelerators of India's Growth—Industry, Trade and Employment
Festschrift in Honor of Bishwanath Goldar
Springer

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Editors

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About Professor Bishwanath Goldar

Professor Bishwanath Goldar studied at Delhi School of Economics (DSE) for his Masters and Ph.D. He taught Economics at the Shri Ram College of Commerce from 1971 to 1979 and then joined the Institute of Economic Growth. He was with the Institute of Economic Growth since 1979 and was Professor from 1996 till his retirement in 2014. He has worked as a Senior Fellow at the National Institute of Public Finance and Policy (NIPFP) during 1988–90 and as a Professor at the Indian Council for Research on International Economic Relations (ICRIER) during 2003–04. He also served as Professor at Jawahar Lal Nehru University (JNU) during 2012–13. He was a National Fellow of the Indian Council of Social Science Research (ICSSR), affiliated with IEG, for two years in 2015 and 2016. He has also been a Visiting Fellow at the Institute of Economic Research, Hitotsubashi University, Tokyo and the Institute of Developing Economies, Tokyo.

Professor Goldar specializes in industrial economics, environmental Economics, and international trade and foreign investment. He has supervised a vast number of research scholars for their Ph.D. on different aspects of industry, trade, and FDI. Most of his research has been on productivity and employment in Indian industries, price-cost margin and competitiveness of Indian manufacturing industry, export

performance of Industrial firms, effective protection of Indian industries, impact of trade reforms on the performance of industrial firms, and foreign direct investment in India. He has also undertaken studies on pollution of river water in India and on the environmental aspects of Indian industries including studies on energy efficiency in Indian industrial firms and the impact of environmental performance of industrial firms on their stock prices. He has published a number of books and more than 100 research papers and reports in reputed International and National Journals and has also disseminated his research through newspapers and by participating in numerous national and international conferences and seminars.

Professor Goldar has also been associated from the very beginning with the India KLEMS project funded by RBI to create a productivity data base for the Indian Economy, where he has been guiding research on Productivity in the Indian Economy. The entire team has immensely benefitted from his strong grip on the data on Indian Economy. The research output of the KLEMS project has been presented by him (and other team members) in many International Conferences.

He has been associated with a number of important official committees, and is currently the Chairman of the Standing Committee of Industrial Statistics (NSO). He has been a member of the National Statistical Commission. He has also been on the editorial advisory board of many reputed Journals. For his outstanding career and contribution to the discipline, he was conferred the Distinguished Alumnae Award by DSE in Feb 2018. This book is a humble tribute to his academic excellence and to his leadership in research on industry, trade and employment.

Foreword

This volume of essays contributed by several eminent scholars with long professional association with Prof. Bishwanath Goldar is a fitting tribute to him. Professor Goldar by the dint of his academic commitment and research contributions in various fields of economic research has been a great source of inspiration to younger scholars all over India and even abroad. The title of this volume aptly reflects the broad areas in which Prof. Goldar distinguished himself.

I have known Prof. Bishwanath Goldar for about five decades. He was one of my brightest and most diligent students in the M.A. Economics programme at the Delhi School of Economics during 1969–71. He worked with me and late Prof. Mrinal Datta Chaudhuri for his Ph.D. on Productivity Growth in Indian Industry in the 1970s at the DSE. It gives me immense pleasure to pay my compliments to him on the occasion of his friends and students bringing out a festschrift volume in his honour.

However, I must admit that in the task of attempting to depict his academic profile, I cannot do justice to the richness and range of his academic achievements in this very short account. His academic output is stupendous spanning diverse areas and using various methodologies. His areas of specialization have included industrial economics, empirics of international trade, environmental economics, productivity measurement and analysis, Indian Official Statistical System, and applied econometrics. He has authored more than one hundred research papers, coedited several books, and supervised dozens of Ph.D. and M.Phil. theses.

Professor Goldar has been either the chairperson or a member of many high-powered committees appointed by the Government of India. His advice has been in great demand.

I would like to focus on Prof. Goldar's important role in and the valuable contributions to the India KLEMS research project headed by me first at ICRIER and later at the Centre for Development Economics (CDE) at DSE during the past one decade, with financial support from the RBI and technical advice from CSO. With his intimate knowledge of the Indian Official Statistical System, he has guided the research team in the construction of data sets on outputs and five KLEMS inputs at the disaggregate industry level from the year 1980–81 onwards. After the

construction of the data sets year after year, Prof. Goldar and other members of the team have authored analytical papers and presented them at internal workshops and international conferences.

I personally owe a great deal to Prof. Goldar for his advice and help.

I wish to conclude by thanking the organizers of this volume for their noble initiative.

K. L. Krishna
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Preface

This volume was conceived to honour our long-standing friend, co-author, guide and mentor Bishwanath Goldar, who has mentored and inspired not only the three of us but a whole lot of researchers in India and aboard through his outstanding contribution to the literature in economics and to productivity in particular.

It was a very pleasant experience to identify and get contributions from the authors to this volume, as all of them were quite enthusiastic and committed to contribute. The contributions to this volume have come from his students, and many colleagues with whom he has worked and interacted over the years. The themes selected for this volume—industry, trade, and employment—cover widely the areas of research which Prof. Goldar has over the years engaged.

Indian economy has faced many challenges since the global meltdown of 2008, but these challenges have become more serious since 2011–2012 when the average growth rate has fallen and there is a negligible growth in employment. The "jobless" growth is accompanied by farm distress in agriculture and a stagnant manufacturing sector (especially the unorganized manufacturing sector). The pressure on fiscal deficit and falling growth in exports has further added to the challenges of growth. The changes in technology are also putting pressure on employment and income. The questions are being raised about the growth in GDP, in employment, in investment, and in exports and FDI. In such a scenario, there is a need to understand these challenges and identify the accelerators of growth and the policies and strategies which need to be followed to face them. The collection of the research papers in this volume have attempted to analyse and answer some of the issues facing the Indian economy today.

We owe our gratitude to all the contributors of this volume who not only readily agreed to be part of this volume but contributed the original research papers, which has enriched this publication. We would also like to thank Nupoor Singh and Ravivarman Selvaraj from Springer and their entire team for supporting this volume and making it possible to bring it out at the earliest.

New Delhi, India — Suresh Chand Aggarwal
New Delhi, India — Deb Kusum Das
Geneva, Switzerland — Rashmi Banga

Introduction

India has faced many challenges in the past two decades but has been able to sustain its growth even when the global economy was turbulent. Many policies, strategies, and initiatives have supported India's growth in the past. Industrial growth along with growth in services supported the overall growth of the economy. However, growth in the last two years and especially the Q4 of 2018–2019 has slowed down considerably and the unemployment rate, as revealed by the latest PLFS is at an all-time high. Since 2011–2012, the growth in GDP has not been accompanied by subsequent growth in the employment. Some of the reasons for the slowdown could be external shocks, like BREXIT, competitive protectionism, slowdown in world trade but domestic factors like farm distress, fiscal deficit stress, slowdown in the growth of personal consumption and slow investment and export growth may also have contributed to it. The economic challenges before the nation today are to recover from the slowdown and generate employment, as the medium and the long-term prospects for India are bright. Efforts are on by the policy makers in India to usher in policies aimed at faster and inclusive growth. Efforts are on to design policies which could address the problem of low agriculture productivity, boost export growth, attract more FDI, generate employment, improve the skills of labour, and have more equitable growth.

This volume is a collection of distinguished papers which have attempted to identify the growth accelerators of India and have suggested policies and strategies to make India's growth sustainable and inclusive. The broad themes covered in the volume are related to India's Industrial Growth: Opportunities and Challenges, Role of Trade and FDI as India's Growth Accelerators: Opportunities and Challenges, and Growth accompanied with Employment Generation: Challenges and Way Forward. A brief overview of the chapters follows.

Part: India's Industrial Growth: Opportunities and Challenges

The pace and level of India's industrial development has been a challenge for policy makers for several decades. The share of manufacturing value added in GDP has remained consistently low, and manufacturing products remain less integrated with the world markets due to issues of international competitiveness. In terms of employment generation, the large presence of informal firms in manufacturing leads to very small share of job creation by formal manufacturing. In addition, several other factors constrain manufacturing growth—the inability of labour-intensive firms to lead India's export growth, low penetration into global value chains, and contractualization of employment. The government has introduced several policy directives to enhance the pace of industrialization especially with schemes like "Make in India" as well as "Skill India". The objective behind such programmes is to increase both sectoral shares and job creation by manufacturing firms. However, key drivers for improving both domestic and international competitiveness of the industrial sector in India continue to pose several challenges to increasing the productivity of the sector. Some of these, which need immediate attention, are infrastructure, digitalization including ICT, macroeconomic stability, and availability of skill workforce.

The essays presented in this part aim to address some of these issues. Issues such as technology, productivity, value chains, environment, and expenditure for the industrial sector are some of the pertinent challenges that remain to be addressed if India is to emerge as a manufacturing hub in its industrialization programme. The first chapter by N. S. Siddharthan considers the Paradigm Changes in Technology and Employment. The chapter starts with the Schumpeterian concept of creative destruction resulting in turmoil consequent to paradigm shifts in technology. Unlike trajectory changes in technology, paradigm changes are not incremental changes and they could destroy and replace the existing technologies and products—the rapid increase in the introduction of robots in manufacturing in the Asian countries led by China. The author argues that the ongoing digital and genomics revolutions are knowledge-based and knowledge-intensive wherein human capital plays a crucial role. Technology and knowledge transfers through foreign direct investments will work only in the presence of highly skilled workforce. In the case of India, the states that enjoyed better human capital in terms of education and health enjoyed higher growth rates of employment and productivity. The chapter concludes by outlining the opportunities for India and discusses likely advantages India would have when the quantum computers are introduced in future, opening opportunities for participation in hardware and software. Opportunities that could emerge in solar energy in particular when products like quantum dots and paper-thin solar cells are introduced in future.

The second chapter by Pilu Chandra Das and Deb Kusum Das provides an overview of the manufacturing sector with respect to productivity and employment. Using neoclassical growth accounting technique and the India KLEMS data set, the

authors examine the manufacturing performance at the aggregate level as well as 13 disaggregated industries and present an industry-level perspective on the manufacturing performance. Labour productivity growth, total productivity growth, and the sources of growth are documented for the period 2000–2016 and the two sub-periods, thereby allowing a comparison between two distinct phases of Indian economy—before global financial crisis (2000–2007) and financial crisis period (2008–2016). The chapter shows wide variation across industries and over time with respect to both labour and total factor productivity. While the high rates of growth of labour productivity are observed across different industries, the TFP growth remains low for the entire period as well as for both sub-periods.

The chapter by Atsushi Kato and Atsushi Fukumi addresses the question of the state's role for industrialization especially the political economy of state government expenditures allocated to industrialization. An investigation has been done of why some governments do not institute public policy conducive to industrialization from the viewpoint of the balance of political power between the agricultural and industrial sectors. The political influence of the agricultural sector can limit the allocation of expenditures conducive to industrialization, resulting in the stagnation of regional state economies. More specifically, the degree of the political power of rural elites tends to reduce the allocation of development expenditures favourable to the industrial sector at the state level in India. The chapter concludes albeit weaker that as the political influence of urban elites increases, expenditures for the industrial sector tend to increase. There is some sort of battle over the allocation of government expenditures between rural and urban elites, and rural elites may exert an influence that limits the allocation of government expenditures conducive to industrialization. In that sense, the political influence of rural elites can be harmful to economic development in a broad sense.

The role of international trade in driving productivity and growth has been widely analysed in the context of India, particularly in the formal manufacturing sector. However, with the rapid increase in the global production fragmentation, the rise of global value chains and its implication for manufacturing sectors in India remains unexplored due to low levels of penetration of manufactured products in the world markets. Abdul A. Erumban in his chapter documents the involvement of India in the global value chain by 27 individual sectors—both manufacturing and non-manufacturing—consisting of the entire economy—both formal (organized) and informal. The study shows some interesting observations: (1) the foreign content in domestic production is highest in the manufacturing sector, and this has increased over the years. Even though market services stay second, the foreign share in domestic production in this sector has not been growing in recent years. (2) Regarding the presence of Indian content in foreign production, we observe that the global textile sector has the highest relative proportion of Indian input, although its relative contribution to India's GDP is not the highest, and is further declining. Overall, the chapter provides estimates of foreign content in domestic production in Indian industries, Indian content in the production of global industries, and the reliance of income generated in Indian industries on foreign demand.

The last chapter in this part addresses the issues of the environment and its implication for development in particular. The study by Purnamita Dasgupta and Chetana Chaudhuri looks at the usage of electricity and the economic opportunity that it creates for the population by improving social infrastructure and increases productivity. In this study, they examine the relationship between economic growth and electricity consumption and make projections in electricity demand based on evidence from international experience. Drawing upon insights from international experience, the study estimates this relationship for India. Several observations are noted from the paper—ensuring energy access for all, energy security and energy efficiency have been India's policy focus along with the target of achieving sustainable development goals. Demand forecast for electricity sector is a necessary requirement for efficient management of the energy system and preparedness of the system to ensure economic growth and sustainable development. In the light of the above findings, it becomes clear that it is important for India to continuously augment its electricity generation in order to resolve access issues at all levels. The authors in conclusion highlight some of the recent developments in the policy arena, which can help in taking forward the Indian electricity sector, such that the transition towards an upper middle-income country is smooth.

Overall, the different chapters which comprise this part provide an array of issues which continue to be important for India's industrialization attempts even after more than two decades of policy reforms. Paradigm shifts in technology (genomics and digital technologies including artificial intelligence, robotics, and cloud computing), fragmentation of production and consequences for India's integration into global value chains, inability of manufacturing firms to improve their productivity, lack of convergence between rural and urban sectors, and changes in environment all continue to challenge India's industrialization programme especially with respect to manufacturing sector's inability to drive the engine of economic growth in India and thereby generating jobs and improving standard of living.

Part: Role of Trade and FDI as India's Growth Accelerators: Opportunities and Challenges

Trade and foreign direct investments have always been considered as important accelerators of growth in developing countries, and India has relied heavily on these accelerators. The reforms undertaken in early 1990s aimed at boosting India's exports, imports, and inward foreign direct investments with the expectation that these accelerators will boost the productivity of Indian firms and lead to higher growth, employment, and incomes. Since then India has implemented targeted policies aimed at maintaining a healthy balance of trade along with increasing both inward and outward FDI. It is important to examine whether India has succeeded in boosting foreign trade and FDI in the post-reform period and whether these accelerators have been able to increase productivity and growth in India. The advent

of the fourth digital industrial revolution has also brought in new challenges for trade and investments in India. To what extent will India be able to sustain its competitive advantage in foreign trade and FDI and what policies need to be put in place is also an issue which needs to be deliberated. With these objectives, this part of the volume focuses on India's performance, potential, and challenges in the areas of foreign trade.

Chapter "India's Merchandise Exports in a Comparative Asian Perspective" contributed by Veeramani and Aerath examines the policy interventions needed with respect to international trade in order to concretize the role of international trade as an accelerator for India's growth. The chapter highlights that India's merchandise exports recorded a very strong growth rate of 20% per annum in the period 1991–2000, but from 2000–2012, the growth rate logged a negative growth rate of 7.95 per annum. Consequently, in the period 2001–2015, India's merchandise imports grew faster than its exports leading to a rising current account deficit. The reason why India has not been able to sustain its commendable export performance of the period 1991–2000, according to the authors, lies in the composition of India's exports. Despite being a labour-abundant and capital-scarce country, the fast-growing exports from India are either skilled labour intensive or capital intensive. This has locked out India from vertically integrated global supply chains in many manufacturing industries and increased its exports to relatively poorer regions (such as Africa) giving India a comparative advantage in these countries. However, this has come with a cost of losing market shares in the richer countries.

Using a much-disaggregated data, i.e. HS 8-digit on bilateral exports from Directorate General of Commercial Intelligence and Statistics (DGCI&S), Government of India for the period 2000–2015, the authors undertake analysis of India's exports to 155 partner countries. Based on the method proposed by Hummels and Klenow (2005), the authors estimate export penetration of India in its partner countries, where export penetration can be expressed as the product of extensive margin (new trading relationships) and intensive margins (increase in trade of existing relationships). The results show that India's export penetration rate has declined significantly in high-income countries in the period 2000–2015. This can be attributed mainly to the negative growth rate (-3.5%) of intensive margin, implying that the lack of specialization and intensification, rather than a lack of product diversification is primarily responsible for a significant decline in India's export penetration rate in high-income countries. Thus, specialization out of the traditional labour-intensive products led to a general loss of India's export potential in advanced country markets. The analysis suggests that India can reap rich dividends by adopting policies aimed at accelerating export growth at the intensive margin and expand its export relationships with the traditional developed country partners. However, this would necessitate India's greater participation in the vertically integrated global supply chains and a realignment of its specialization in labour-intensive processes and product lines. To this end, the authors suggest that it is important to make the labour markets more flexible, promote investment in

physical infrastructure, remove market distortions, and reduce the administrative costs on business.

Chapter "Digitalization and India's Losing Export Competitiveness" of this volume, contributed by Banga and Banga, examines the impact of growing digitalization on India's exports. Corroborating the export trends highlighted by Veeramani and Aerath, the authors highlight that the average annual growth rate of India's merchandise exports had been impressive at 21% in the period 2003–2010, but it declined to 5.5% in the period 2011–2017. While it can be argued that the global slowdown may have led to this slide in the average annual growth rate of exports, the average annual growth of India's share in global exports also experienced a drastic fall from 8.4% in the period 2003–2010 to 3.1% in the period 2011–2017. India's share in global exports declined in some of its traditional exports like textile fibres (1.1%), plastic materials (0.4%), leather manufacturers (0.6%), non-metallic minerals n.e.s (2.3%), and crude chemicals (2.7%). To investigate this further, the authors estimate the Revealed Comparative Advantage of India's exports in different sectors and products and find that out of 15 broad sectors, India lost its comparative advantage in nine sectors and most of these sectors are India's top traditional exports like textiles and clothing, footwear, food products, and chemicals. Most of India's traditional export products are also found to be losing their comparative advantage including precious stones, spices, jewellery, cotton, tea, fabrics, clothing articles, and leather.

The chapter examines to what extent the advent of Industry 4.0 is responsible for India's declining export competitiveness. An analysis is undertaken both at the sector level and at the firm level. Rise in digital content in manufacturing exports is identified as one of the factors which increase the export competitiveness in Industry 4.0. At the sectoral level, two estimates are used, i.e. consumption of digital services (computer programing and information services and telecommunication services) in the production of manufactured products, and value added by digital services in exports of manufactured products in India as compared to other identified developed and developing countries in the period 2000–2014.

Using the National Input–Output Tables, a comparison of digital services used as an input in manufacturing output show that it has increased in developed countries like USA and the UK, while it has declined in most of the developing countries. However, India has experienced a rise in this ratio. Further, using Leontief's decomposition and input–output data from the World Input–Output Dataset, the authors find that in 2014, the share of manufacturing exports in total value added by digital services in India's exports was only 9%. The corresponding figure for other countries is much higher at 78% in Turkey, 60% in China, 57% in Indonesia, and 54% in Brazil. The authors argue that value added by digital services is an important estimate of digital content in the country's manufacturing exports and also an indicator of digital competitiveness of manufacturing exports. A closer look at the share of sectors in value added by digital services to India's exports reveals that digital services not only contributed very little value added to India's manufacturing exports; the share of most manufacturing sectors was found to be less than 1%. Most of the value added by digital services was contributed to exports of

computer programing and telecommunication services, which together accounted for 88% of total value added contributed to total exports. This lopsided value addition by digital services to manufacturing exports in India has had serious implication on its export competitiveness in the digital era.

At the firm level, the chapter empirically estimates the impact of increasing digital assets on export intensity of Indian manufacturing firms in the period 2000–2015, using panel data methodologies of System GMM and Random Effects Tobit. Firm-level empirical results confirm the important role of digitalization as a driver of export competitiveness in Indian manufacturing firms. System GMM and Tobit results reveal that as the share of digital assets in overall plant and machinery increases in a firm, its export intensity rises, other things constant. The authors emphasize that there is an urgent need for targeted policies and strategies for increasing digitalization of India's exportable sectors, particularly of traditional exports like textiles and clothing and leather and leather products, as these sectors generate large-scale employment for low-skilled workers.

Chapter "Firm-Level Productivity and Exports: *The Case of Manufacturing Sector in India*", contributed by Narayanan and Sahu, also undertakes the analysis for the period 2003–2015, focusing on the total factor productivity (TFP) differentials between exporting and non-exporting firms and investigates if exports have contributed to the TFP differentials. The methodology adopted in the chapter compares the entire distribution of productivity as against the marginal movements in the TFP, which fills an important gap in the literature on TFP in India. TFP is estimated using Levinsohn and Petrin (2003) approach of estimating production function using intermediate inputs. Two hypotheses are put forward: firstly, the productivity distribution of exporting firms, entering exporters and continuing exporters, dominates the productivity distribution of non-exporting firms; the productivity growth between exporting and non-exporting firms is statistically different and increases for those firms that are already in the export market after a new export firm enters the market.

The chapter draws the data from the Centre for Monitoring Indian Economy Prowess IQ database. The analysis is undertaken for an unbalanced panel of 54,139 firm-year observations. Using the nonparametric approach, the chapter ranks the distributions using stochastic dominance and their differences using Kolmogorov–Smirnov tests.

The results of the chapter show that exporting firms in India have a higher level of TFP as compared to the domestic firms, and however, the firms with higher TFP self-select to the export market. Further, the authors find that firms that are not able to have a higher level of productivity are forced to exit the export market, so the continuing exporters have higher TFP. Two important variables to consider when comparing export performances are the firm size and the age of the firm. The results show that the size of the firm plays an important and a greater role than the age of the firm. Thus, the firms that enter into exports market have higher TFP and are bigger in size.

Chapter "FDI and Export Spillovers: A Case Study of India", contributed by Mondal and Pant, focuses on an earlier period of 1994–2010 and estimates the contribution of FDI to exports of India. FDI can impact on export performance of domestic firms through the diffusion of information, knowledge and technology brought by the foreign firms. These spillover effects of FDI on the export performance of domestic firms can therefore take different forms of horizontal spillovers like information spillovers, competition spillovers, imitation spillovers, and skill spillovers and together can lead to the improved export performance of the domestic firms.

Using a panel data set on Indian manufacturing firms from 1994–2010 from PROWESS database provided by Centre for Monitoring Indian Economy (CMIE), the chapter estimates the FDI spillover effects on the export performance of the domestic firms. The impact of FDI on export spillover is estimated by examining two aspects of export performance of the domestic firm: (i) non-exporter firm's decision to export and (ii) export propensity of the exporting firms. To avoid the problem of self-selection and to capture these two activities of the domestic firms, the Heckman two-stage selection model (Heckman 1979) is used. This model treats the selection problem as the omitted variable problem. As the model takes into account firms' decision to enter the export market or not, it removes the problem associated with the selectivity bias that occurs when only the exporting firms are considered.

The export performance of domestic firms is captured through two activities, i.e. first, whether the decision of the non-exporter firms changes and second, how the export propensity of the self-selected exporting firms gets influenced by foreign activities. The results do not find any significant positive impact on foreign firms' domestic activities or export activities on export performance. Competition spillovers and skill spillovers from foreign firms are found to have a significant negative impact on the export propensity of domestic firms.

To examine whether these results are mainly driven by the initial periods of liberalization since the fact is that the domestic firms take few years to adjust to the new environment before they take advantages from foreign activities, the chapter undertakes separate analysis for two sub-periods: 1994–2001 and 2002–2010. The results show that the decision to export is not influenced by any of the activities of foreign firms in India during the period 1994–2001. FDI spillover, in fact, has a negative impact on the export performances of the domestic firms during 2002–2010. A plausible reason for this, according to the authors, seems to be that the exporting foreign firms were reluctant to share their knowledge about international markets with their domestic competitors. The positive impact of competition spillover in the period 2002–2010 reaffirms the competitive pressure from FDI on export performance of domestic firms. The authors conclude that the foreign firms were attracted to India as they could use the country as the export platform for the southern region of the globe, which obstructed the export decision of the domestic firms. They recommend that it is important to understand the motive of the foreign investment, while incentivizing foreign investments into the economy.

Chapter "Foreign Involvement and Firm Productivity: An Analysis for Indian Manufacturing, Service, Construction and Mining Sectors", contributed by Chawla, focuses on outward foreign direct investment (OFDI) from India and compares the total factor productivity (TFP) of firms that engage in OFDI and exports, to those which engage in exports, and domestic operations only. The analysis is undertaken not just for the manufacturing firms, but also includes firms that operate in services, construction, and mining sectors. For manufacturing firms, sunk costs/physical transport costs may result in only more productive firms investing abroad, while for service firms the decision to export versus undertaking outward investment is likely to be shaped by additional factors, including the need for direct communication with customers, difficulties in contracting foreign affiliates for non-routine activities, and the presence of near-zero transaction costs.

To examine the nature of productivity differentials across firm categories based on foreign involvement, the chapter uses firm-level data from the *Prowess* data set in the period 1995–2010 and deploys the nonparametric approach of first-order stochastic dominance (Kolmogorov–Smirnov test). An important methodological contribution of the study is the comparison of productivity measurement using the Levisohn and Petrin (2003) methodology and its modification proposed by Wooldridge (2009). In addition, the study applies modifications in the construction of real output, value added and input series used for estimating TFP, and uses different threshold categories for classifying foreign investors to check the validity of productivity rankings by firm categories.

For *manufacturing* and *construction* sectors, the cross-sectional differences in TFP between outward investors that also export, pure exporters, and domestic firms are found to follow the Helpman, Melitz and Yeaple (2004) hypothesis of self-selection into foreign markets, i.e. firms with the highest productivity are more likely to invest abroad. The value-added specification, however, suggests an upward bias in the productivity advantage of internationally engaged firms, highlighting the importance of controlling the "value-added bias". Productivity differentials are also at times found to considerably vary by 2-digit industry/industry groups. In *services*, TFP comparisons show that pure export firms dominate the purely domestic firms, and overseas investors that also export dominate purely domestic firms, while in *mining*, only the dominance of pure export firms over purely domestic firms could be established for the latter half of the sample period.

It is further noted that productivity and other firm characteristics in OFDI firms that initially start small is similar to larger OFDI firms, suggesting that if financing is a constraint, the government could support a more liberal financial system that specifically aims at firms with initially small OFDI.

Part: Growth Accompanied with Employment Generation: Challenges and Way Forward

One of the most important concerns before the policy makers today is the issue of employment generation. Though India has been growing rapidly since 2004–2005, but employment growth has not followed the same pace. Many have even described the Indian growth during this period as the period of "jobless" growth. The latest data released by NSO of the Periodic labour Force Survey (PLFS) also shows unprecedented high unemployment rates in the economy during the period 2017–2018 and a fall in labour force participation rate, especially of rural women. Among the many reasons cited by experts for the situation are the failures of the Indian manufacturing sector to generate sufficient number of jobs despite the focus of the New Manufacturing Policy, and the impact of new technology on jobs, as capital intensity of production has been increasing. Certain other trends in employment have been noticed—the absolute fall in employment in agriculture and the shift of these workers mainly to the construction sector. The workers are thus shifting mainly from one low productivity sector to another low productivity sector. The growth in the regular workers has been very slow, and it is only the casual labour and the self-employed which have grown substantially over the period. Simultaneously, even in the small organized sector a growing trend of informalization of workers is taking place. Sub-contracting and outsourcing of jobs has become the new norm. As a result, there has been a substantial increase in the number of contractual workers without much social security and legal contracts. With the growth in digital economy and E-commerce, the scope for generating employment is shrinking in many industries, especially manufacturing. Also, there is a need and demand for new skill sets for the twenty-first-century jobs, which the new technology demands, but India is lacking. It is in this context that attention is to be paid to some of these issues facing labour today.

The chapter by Anant is a tribute to the contribution of Prof. Goldar to the measurement of "Labour Input" (LI) and value added by different types of workers in the informal sector in the national income estimation in India, especially since 2011–2012. He describes the different methodologies used in its estimation over the period and how an improvement in its measurement for the informal sector was suggested by Goldar in the revision of National Income Estimates with a base 2011–2012. Before the 2011–2012 base revision, the value added in the informal sector was based on estimates of value added per worker and the total LI, which were all considered as homogeneous as hired workers. However, for the 2011–2012 base revision LI was distinguished into different types of workers and their separate productivity (value added) was estimated, which is crucial in calculating their value added. The chapter is an important contribution towards a better understanding of the measurement of labour input from the perspective of national accounts estimation.

The potential of the organized manufacturing sector in creating "good jobs" in India is assessed by Singh and Mitra in their contribution "Who Creates Large

Number of Good Jobs in India's Organized Manufacturing? Small Versus Large and Start-Ups Versus Old", and a scorecard of the manufacturing firms is prepared by the authors on the basis of the size and age of the firm to gauge the potential of manufacturing firms for creating ample quality and sustainable jobs. Using the unit level data of ASI for the period 2011–2012 and 2012–2013, the authors observe that (i) it is the young firms which employ a large proportion of the workers in the total organized manufacturing in India, and as firms grow old, their employment share declines; (ii) it is the medium and large plants which create most of the new employment in the organized manufacturing sector in India; (iii) relatively more contract workers are hired in medium and ultra-large factories and lowest by start-ups, and however, wages paid by young firms are relatively better. Further, the wages decline as plants grow young and they are lowest in the older plants. However, beyond 10 years of age, wage increases as the factory gets older; and (iv) the employment is most diversified in medium-sized plants followed by small and large plants. Further, the highest concentration of employment is observed in the start-ups. In view of these observations, the authors have suggested that the policy for promoting employment in organized manufacturing in India should focus on the most dynamic group, i.e. middle-sized young factories, to generate largest number of new and sustainable jobs.

Through the latest available data and information, Sarkar and Sahu have tried to find the phenomenon and the reasons for increasing dualism in the Indian labour market. They observe that the labour market in India has been multifaceted and has been influenced by regional diversity, differences in rural/urban locations, status of workers, education and skill level, caste and religion, industry and institutional basis of labour regulation, etc. They find that though the share of self-employed workers is still the maximum, the share of regular job holders (often considered as better jobs) has increased after 1999–2000. However, the increments in regular jobs are mostly of contractual or informal types, which share several common characteristics with casual workers. The difference between regular jobs and casual jobs may be narrowing due to the faster growth of casual wage compared to regular wage (Mazumdar, Sarkar and Mehta 2017; Sarkar 2015). According to the authors, "these pattern and trends of nature and quality of employment in the country may suggest two simultaneous and contradictory processes: informalization or casualization of formal/regular employment as well as improvements in the wage level of low paid workers". The patterns of globalization and changes in technology seem to have impacted on the status of labour. The results of their analysis show that as a whole, across broad groups, wage differentials did not increase over time except for increasing gap within tertiary-educated regular wage workers. However, they find that the distribution of earnings of casual workers had also spread out over the years and the earnings of an increasing proportion of the casuals had come nearer the regulars and almost coincided with the latter in the year 2011–2012. They also find that the earnings structure of the informal sector worker and formal sector informal worker is becoming increasingly similar. In terms of wage rate, they find a clear trend of development of dual wage labour market with workers with social security benefits (regular formal sector formal workers) and workers without it (constituting

casual wage, regular informal sector and regular formal sector informal) workers. They conclude that the reason for the increasing dualism in the Indian labour market is the substantial increase in the youth labour force and feels that ineffective labour market institution in the formal sector and the absence of labour market institution in the informal sector have created a situation where unemployed youths with various level of education or skill are having similar reservation wage.

While it is believed that the new technology, which is easily accessible, is job replacing and converting more and more jobs in to informal jobs even in the formal sector, its impact on the earning distribution of the workforce is not much investigated. Kapoor in "Technology, Jobs and Inequality: Evidence from India's Manufacturing Sector" attempts to find out the impact of technology on income and wage inequality in India's organized manufacturing sector. Using enterprise-level data from the Annual Survey of Industries, she finds that the role of labour vis-à-vis capital has declined due to increased capital intensity of production which has benefitted those industries which rely more on skilled workers and capital as opposed to unskilled/low-skilled workers. The results show that during the period 2000–2001 and 2011–2012, the share of total emoluments paid to labour and the share of wages to workers in GVA has declined and even within the working class, inequalities have increased. The author finds that while the share of skilled labour (supervisory and managerial staff) in the total wage pie rose, that of unskilled labour (production workers) fell. However, she finds that the share of managerial and supervisory staff in total employment seems to have remained stagnant, while the share of contract workers in production workers has increased sharply over the last decade. Kapoor attributes the rising share of contract workers as also the reason for rising inequality. Her results also indicate the existence of capital-skill complementarity as firms with higher capital intensity employed a higher share of skilled workers and the wage differential between skilled and unskilled workers was higher in these firms. The author also observes a serious supply-side constraint in a large increase in the supply of educated workers, as a very small proportion of the total workers engaged in manufacturing have any technical education. Attempts are made to fill the gap through "Skill India" programme, but she cautions that an assembly line method of skill development will not be able to meet the skill requirements of future technological changes in the economy. According to her, the phenomenon of contractualization also poses a serious threat to the skilling challenge because workers are discouraged from acquiring skills as they feel that even though skilling-up may result in improved productivity, it may not translate into higher wages as firms will prefer to hire them as cheap contract labour.

In the chapter titled "Skills, Productivity and Employment: An Empirical Analysis of Selected Countries", Aggarwal has attempted to find the link between the supply of skilled labour, labour productivity, and employment for the aggregate economy and in the disaggregate industries for nine selected countries. He extends the same analysis to the organized and unorganized sector of the Indian economy to examine differences in the skill composition and the growth of productivity and employment between these sectors. Because of data limitations, his analysis is restricted to the period of 1995 to 2009 for international comparison and from

1999–2000 to 2011–2012 for the Indian economy. He notices that in a rapidly changing world with increased globalization, fast technical change, demographic transitions, migration and immigration have put pressure on the structure of skill requirements in most countries in recent decades. He examines the supply of three different types of skills—high skills, medium skills, and low skills and observes that generally, the share of high-skill employed persons has increased over the period of the study. It is also evident from his study that in the selected nine countries, the change in the share of high-skill workers is associated with a positive change in labour productivity and total employment with some exceptions. The share of high capital-intensive industries in the value added and employment has also witnessed an increase in the majority of the countries. The author also finds that the growth in employment of high-skill workers within high capital-intensive industries is positive in all the selected countries. The econometric analysis undertaken in the study also lends support to the positive association between the share of high-skill persons engaged and labour productivity. From the Indian organized and unorganized sector, the author finds evidence that the share of high-skill employed persons and the level of labour productivity are higher in the organized sector than the unorganized sector and a catching up of labour productivity by the unorganized sector is found. The study observed that while the share of high capital-intensive industries in value added has increased over the period of 1999 to 2011, its share in employment has declined, which could be possible due to the labour displacing nature of capital-intensive industries, a result similar to Kapoor in her study. One distinct feature observed within high capital-intensive industries is that while employment of all the three skill levels increased in the organized sector; it is only the low-skill employment which grew in the unorganized sector. Based on the evidence, the author argues that since there is a close association between skills of the person employed and the labour productivity, therefore the countries have to make serious efforts to improve the share of the (hours worked by) high-skill workers to both improve their labour productivity and thus economic growth; as well as to quickly adapt to the "fourth industrial revolution". The author recommends that in India government, intervention is required to promote the organized sector in the economy and also to improve the productivity of the unorganized sector. Efforts by individuals, firms and governments are required to minimize the mismatch in the demand and supply of skills by continuously updating the skills through education and training.

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Contents

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