

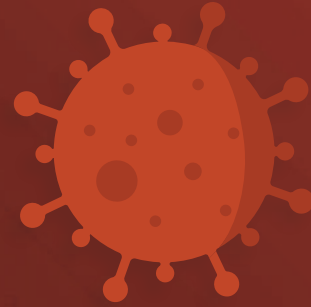
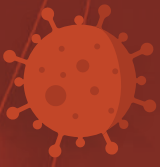


IEG INSIGHTS 2020

FIGHTING COVID-19

ASSESSMENTS
AND REFLECTIONS

MAY 2020



Citation

IEG Insights 2020

Fighting COVID-19:
Assessments and Reflection,
Insitute of Economic Growth

IEG INSIGHTS 2020

FIGHTING
COVID-19

ASSESSMENTS
AND REFLECTIONS



TABLE OF CONTENTS

LIST OF TABLES	vii
LIST OF FIGURES.....	ix
ACKNOWLEDGMENT.....	xi

01	INTRODUCTION	1
	<i>Ajit Mishra</i>	
02	GROWTH SCENARIOS DURING COVID-19 PANDEMIC	4
	<i>Manoj Panda</i>	
03	FALLOUT OF COVID-19 ON INDIAN ECONOMY	13
	<i>Pravakar Sahoo and Ashwani</i>	
04	RELYING ON SERENDIPITY IS NOT ENOUGH: FIXING THE HEALTH SYSTEM IN INDIA FOR FUTURE PANDEMICS	29
	<i>Indrani Gupta</i>	
05	COVID-19 IN INDIA: EPIDEMIC GROWTH AND IMPACT ON MATERNAL AND CHILD HEALTH	38
	<i>William Joe, Abhishek, Rakesh Kumar, Sunil Rajpal and S V Subramanian</i>	
06	AGRICULTURE DURING THE PANDEMIC: PROBLEMS AND PROSPECTS	47
	<i>C.S.C. Sekhar</i>	
07	MIGRATION AND DEVELOPMENT OF RURAL REGIONS	54
	<i>Brajesh Jha</i>	
08	SUSTAINABLE RECOVERY WITH JOBS AND MORE: THIS IS A PANDEMIC, NOT A WAR	61
	<i>Purnamita Dasgupta and Oindrila De</i>	
09	WHY SOCIAL DISTANCING FAILED IN INDIA AND WHAT NEEDS TO BE DONE	70
	<i>Suresh Sharma and Johnny K D</i>	
10	UNTANGLING ENTANGLED POLICY MISHAPS: HOW TO MAKE POLICIES DURING A PANDEMIC MORE EFFECTIVE	76
	<i>Mausumi Das and Sabyasachi Kar</i>	

LIST OF TABLES

Chapter 02

Table 2.1: Pre-pandemic and post-pandemic GVA in 2020-21 (GVA numbers in Rs. Crore at 2018-19 prices).....	7
Table 2.2: Income Loss Factors.....	7
Table 2.3: Effect of Rs. 1000 crore rise in various demand components.....	8
Table 2.4: Post-pandemic Scenario with Fiscal Stimulus of 3% of GDP.....	10

Chapter 03

Table 3.1: India's Trade with Top Partners.....	19
---	----

Chapter 04

Table 4.1: Key health systems indicators for countries most impacted by COVID-19.....	32
Table 4.2: Treatment sought at type of facilities by ownership, NSS 75th round.....	33
Table 4.3: Government health expenditure, selected states (2017-18 Actuals).....	37

Chapter 05

Table 5.1: COVID-19 cases and CFR (unstandardized), India, May 9, 2020.....	40
Table 5.2: Elasticity estimates for COVID-19 lab-tests and confirmed cases, India.....	41
Table 5.3: Infection peak and full recovery time based on SEIR model simulations.....	43
Table 5.4: Estimated maternal and child deaths attributable to COVID-19 induced disruptions.....	44
Table 5.5: COVID-19 disruptions and potential impact on maternal and child undernutrition among the poor (lowest wealth quintile, NFHS), India.....	45

Chapter 07

Table 7.1. Distribution of Internal Migrants by last usual place of residence for each component of migration streams.....	59
---	----

LIST OF FIGURES

Chapter 03

Figure 3.1: Quarterly Growth Rate in GVA Across Sectors (YoY, %)	14
Figure 3.2: Estimated GVA in 2020 over 2019 (NAS data)	15
Figure 3.3: COVID Impact: GVA 2020 over 2019 (%)	16
Figure 3.4: Quarterly Growth Rate in GVA (NAS data)	16
Figure 3.5A: Decline in Total GVA by Sectors (%)	17
Figure 3.5B: Decline in GVA within Respective Sectors (%)	17
Figure 3.6: Decline (%) in Manufacturing Sector NVA	18
Figure 3.7: NVA (%) Loss for Top 10 Industries (Scenario B)	18
Figure 3.8A: Decline (%) in India's Exports and Imports (as compared to 2019)	20
Figure 3.8B: Loss as % of Exports and Imports of 2020	20
Figure 3.9: Quarterly Growth in India's Exports and Imports (YoY, %)	21
Figure 3.10: Potential Fall in Exports and Imports across Sectors Scenario D (% of Total)	22
Figure 3.11: Decline in Exports and Imports (% using Realized Values*)	22
Figure 3.12: Growth rate of MSME GVA (%)	23
Figure 3.13: Decline (%) in GVA of MSME Sector	23

Chapter 04

Figure 4.1: Tests per 1000 over 7-15 June, 2020	30
Figure 4.2: Average medical expenditure per hospitalisation case	33
Figure 4.3: In-position manpower as a percentage of required manpower	34
Figure 4.4: Public Health Expenditure as a % of GDP (Centre & States combined)	36

Chapter 05

Figure 5.1: COVID-19 daily new cases and cumulative cases in India, Mar 1 to May 17, 2020	39
Figure 5.2: Gender-differentials in COVID-19 CFR, India, May 11, 2020	41

Chapter 06

Figure 6.1: Monthly Income of Agriculture Households in Some States.....	57
--	----

Chapter 08

Figure 8.1: Phases of the Transition.....	64
Figure 8.2: Actual vs. Reduced Workforce under Lockdown (%).....	67

Chapter 09

Figure 9.1: Room type of slum household in India.....	71
---	----

ACKNOWLEDGMENT

The COVID- crisis has touched all of us like no other crisis before. Beginning with the faculty meeting we had on 14th April to discuss how as researchers we could contribute, it has truly been a team effort by members of the Institute. Encouraged by our experience and keeping in line with our stated goal of pursuing excellence, we have started the IEG Insights 2020 series with this compilation on Fighting COVID-19.

The support from the computing and research teams has been excellent. Special mention must go to Mr. Atif Amin, Ms Pranava Kadaliya, Ms Nirmal and Mr. Parag Sharma for their assistance at every stage of the project. We would also like to thank our Chairman, Mr. Tarun Das for his constant support and encouragement.

– **Ajit Mishra**
Director, IEG

1

CHAPTER

INTRODUCTION

Ajit Mishra

Recently, there was a news item saying that China was planning to evacuate its citizens from India due to the rapidly spreading Coronavirus infection in India. This was barely three months after India had evacuated its citizens from China. Beyond the simple irony, this also signifies the rapid pace at which this pandemic has spread over the globe in three to four months. In between, several countries including Italy, Spain, the United Kingdom, the USA and Russia have been severely affected. India reported its first coronavirus infection on 30 January 2020, and on the eve of the lockdown, the total number of confirmed infected individuals stood at 571 (on 24th March). To contain the spread early, India went for a complete nation-wide lockdown from 25 March till 14 April, to be extended subsequently on three occasions. Against the backdrop of an inadequate health care system and very high population density in the major cities, early containment through a lockdown was a justifiable option. But the lockdown, ranked as most severe by many, had several far reaching consequences. While it enabled the State to prepare in terms of hospital beds, testing kits and other medical supplies and equipment, the economic and social consequences are huge.

Colleagues at the Institute took up the very difficult task of making assessments and reflecting on the whole exercise. Their task was made harder because for infectious diseases the situation is very dynamic and data quickly becomes obsolete. Also, there is paucity of data on other non-health indicators. The present volume collects together analyses of the impact of the pandemic and concomitant lockdown in the short-run, which will be followed up by further work as events unfold.

Manoj Panda (Chapter 1) looks at the impact of lockdown on aggregate economic activity and national income. Lockdown means cessation of economic activity on a massive scale and a consequent loss in income for many. This loss in income gets translated into further loss in income through interconnectedness in the economy. Using the most recent input-output table, he estimates the aggregate loss in Gross Value Added in 2020-21. A conservative estimate, according to his calculations, is that GVA will contract by 2.7% in year 2020-21. This negative growth prediction is now shared by many, including the Central Bank. **Pravakar Sahoo and Ashwani (Chapter 2)**, consider the recent performances of the various sectors of the Indian economy and analyse the likely fallout of the lockdown on growth, manufacturing, trade and MSME sectors. Obviously, this fallout will depend on

several factors, including the duration and nature of lockdown and the rate of the recovery (extent of capacity utilization). Almost all scenarios suggest a negative growth for 2020-21, with the worst case being a negative growth of 7.2%.

Indrani Gupta (Chapter 3) looks at the health sector and examines how India was grossly under-prepared to meet the challenges of this pandemic. Despite several past scares and limited outbreaks (i.e. SARS, H1N1), India has not done enough to build a resilient health care system. With government spending on health hovering around 1%, it is no surprise that India does badly in terms of several health system indicators such as the number of doctors, nurses and hospital beds per population. She draws attention to the public-private sector gaps in terms of costs, quality and public preferences, which is important at this juncture since the public sector is supposed to be leading the fight. India got lucky during previous outbreaks, and we might still escape without heavy losses if the mortality stays low, but lessons learnt should not be ignored. The issue of case mortality is analyzed by **William Joe, Abhishek, Rakesh Kumar, Sunil Rajpal and S.V. Subramanian (Chapter 4)**, where they estimate the standardized death rate to be 3.1% for COVID-19 case, considerably low compared to other countries. However, we should not be looking at the direct mortality impact only; reallocation of resources and logistical difficulties during the lockdown meant that many non-COVID patients also bear the brunt of the pandemic. They present preliminary estimates of the impact on child and parental mortality and potential impact on (under)nutrition amongst the poor.

The other issues which are receiving most attention during this lockdown pertain to Agriculture and Labour. Home to nearly 1.38 billion people, India relies heavily on its agriculture for food security and employment. As **C.S.C. Sekhar (Chapter 5)** points out, production, procurement and stock levels of foodgrains seem fine, but same cannot be said about rural income. Farmers have been faced with reduced income due to falling prices for some (i.e. sugar) commodities and supply chain issues and agriculture labour is going to be much poorer. Rural non-farm income has also taken a hit due to closure of construction activities. Besides pointing out the need for a mix of policies to boost rural income and demand, he emphasizes the need to look at the future of the agriculture sector in India. Any analysis or narrative of the COVID-19 crisis in India will remain incomplete without a close look at the human tragedy associated with migrant labour returning to their native places. It was well known that rural-urban migration has not remained confined to the same state and inter-state migration has increased substantially over the last years. **Brajesh Jha (Chapter 6)** looks at the issue of migration in the context of rural development. Better preparation and adequate policy to address the income shortfall of the migrant labour could have averted the largescale return of migrant labour but the crisis has highlighted the need to understand the reasons behind the staggering number of migrant labour population. He focuses on two key contributing factors: the gradual decline of agriculture as a viable occupation due to small size of average landholding and the slow pace of growth in non-farm sector in the rural areas.

It is not just the migrant labour, as **Purnamita Dasgupta and Oindrila De (Chapter 7)** show, a large section of the labour force is vulnerable. Even when the lockdown is lifted and economic activities resume, many would find themselves without jobs. This is

especially true for those without proper contract or social security. They also look at the short to medium run labour market dynamics such as changes in working environment (work from home), digitalization and automation. The pandemic may have a lasting impact on the labour market.

Good intentions do not necessarily lead to good policies. A policy can influence the outcome either by changing the environment in which people live and act, or by changing people's actions directly (through legal means) or indirectly through incentives. Especially in the latter case, a legal ban is no guarantee. Take the case of (social) distancing, which was universally accepted as a key to prevent transmission of the virus. As **Suresh Sharma (Chapter 8)** argues, such a policy was bound to fail in certain parts of India due to the predominance of slum dwelling. If distancing were to be successful in these congested areas, it required lot of planning and preparations, and not just a legal ban. **Mausumi Das and Sabyasachi Kar (Chapter 9)** analyse how policy mishaps can happen when individual's incentives and constraints are not taken into consideration at the policy design stage. Take the case of self-reporting and self-quarantine. How do you get people to self-report? As they discuss, it is not always in the interest (at least ex ante sense) of a healthy individual to report travel history or mild symptoms. The costs may seem to outweigh the benefits, at least in the Indian case where the social stigma attached to being tested positive for COVID is very high. This, in fact, was recognized by some policy makers, when States like Odisha introduced incentives for such self-reporting. It was the first state to incentivize the quarantine scheme with an offer of INR 15,000 for a 14-day period.

We are just into the phase called Unlock I where many activities are being allowed as the process of phased relaxations continue. Needless to say, it will be a while before normalcy returns. This compilation is the beginning of a series of reports and papers to result from ongoing research on COVID-19.

GROWTH SCENARIOS DURING COVID-19 PANDEMIC

Manoj Panda

2.1. Introduction

An attempt has been made to (a) calculate the likely direct effect of the lockdown on the GDP, (b) estimate the output and income effects associated with demand injection in different sectors of the economy, and (c) discuss the size and design of a possible fiscal stimulus package to partially offset the adverse growth effect on the economy.

The outbreak of the coronavirus COVID-19 in early 2020 first in China and its subsequent rapid spread to other countries has led to unprecedented closure of normal activities in India as well as in other major economies. The IMF alerted towards end-March, 2020 that the world economy had entered a virus-driven recession. As of end April, lockdown in India has continued for 5 weeks and extended further for another 2 weeks. Factories, offices, shops, schools, and transport services are closed to contain the spread of the virus. Certain activities are being gradually permitted in districts free of the virus. No doubt lockdown of about 2 months would have severe adverse effect on the Indian economy in 2020-21.

Prior to the occurrence of the COVID-19 pandemic, GDP had been estimated to grow at 5% in 2019-20 and there was an optimism that the economy will witness a higher growth rate close to 6% in 2020-21. The budget presented on February 1, 2020, had planned for a substantial rise in capital expenditure in the infrastructure sector and provided a small fiscal stimulus in the form of income tax relief and withdrawal of dividend distribution tax amounting to 0.3% of GDP.

This note makes an attempt to (a) estimate the likely direct effect of the lockdown on the GDP, (b) estimate the output and income effects associated with demand injection in different sectors of the economy, and (c) discuss the size and design of a fiscal stimulus package to partially offset the adverse growth effect on the economy.

Regarding objective (a), the direct effect of the lockdown on the economy will depend on the extent of income loss by the factors of production in different sectors. Admittedly, exact information on the extent of income loss is not available. The required information will relate to various transactions such as wages, salaries and rents paid, profits earned and so on. Consider an IT company: if employees working from home are being paid full salary, there is no income loss for the employees; further, if the output is sold as per contract, the expected profit of the company will not be affected or may even rise if cost on some contractual employment has been cut down without affecting productivity. On the other hand, if an airline without business pays salary to its employees during the lockdown, its operating surplus (profit) will get reduced leading to a contraction in GVA. Similarly, when farmers sell their produce below the normal price, an income loss will occur even if there

is no output loss. Based on available general information regarding the restrictions on operation in different sectors, one can only make a guess at this stage and explicitly state the assumptions regarding the extent of income loss.

We analyse objectives (b) and (c) using the input-output framework so that direct and indirect effects of change in demand of a sector are captured. This framework estimates output of a sector as a sum of intermediate demand and various components of final demand (FD) such as private consumption, government consumption, investment, and exports less imports. The intermediate input demand is estimated by assuming a linear relationship between inputs and output of a sector. The input-output coefficients represent production technology and are assumed to remain constant in the short run. Capturing the inter-sectoral linkages in a consistent manner is the main virtue of the input-output model (IO).

The input-output table (IOT) used here is for 2018-19 with the entire economy divided into 8 sectors. The IOT for 2018-19 prepared by us is given in Appendix I. We proceed as follows:

- We use the available information on final demand (FD) elements for 2019-20 to estimate sectoral output and gross value added (GVA) for 2019-20.
- Next, we construct a Pre-pandemic scenario for 2020-21, i.e., had there been no pandemic, what would have been the output and GVA levels. In a sense, this is a 'Base As Usual' (BAU) scenario for comparative static experiment of corona effect.
- The above is followed by a Post-pandemic scenario that calculates the income loss due to corona lockdown. Not unexpectedly, the estimates show a huge loss and an absolute fall in growth in 2020-21 over 2019-20.
- We then explore the magnitudes of the income effects for injecting demand in different sectors of the economy.
- Finally, we estimate the size of a demand stimulus package needed to arrest the fall in GDP.

The input output framework is used here so that inter-sectoral linkages due to change in demand of a sector are captured.

2.2. Tracking for 2019-20

The National Statistical Office (NSO) has released the Second Advance Estimate of National Accounts for 2019-20 on February 28, 2020, including the final expenditure figures on components such as consumption, investment, and exports. Using the component-wise real growth rate on the FD, we obtain the IO model estimate of output and GVA for 2019-20. The model estimate of GVA growth turns out to be 5.0% as against NSO's 4.9% reflecting a fairly good tracking of 2019-20 GVA by the model. In order to make an adjustment for the lockdown effect during the last week of FY 2019-20, we have made a pro-rata downward adjustment by 0.5% bringing down the GVA estimate to 4.5% for 2019-20.

2.3. Pre-pandemic and Post-pandemic Scenario for 2020-21

Keeping in mind 2019-20 growth and the stimulus implied in the budget presented in February 2020, the BAU scenario for 2020-21 has been constructed to produce an overall

GVA growth rate of 5.8% over the previous year. The sectoral details given in Table 2.1 shows growth rates to vary from 2.5% for food grains to 7.5% for other services including public administration and defence.

Next, in order to estimate the adverse effect of the pandemic on the GVA, the income loss factor assumed by us is given in Table 2.2. It varies from 15% in food grains to 95% in construction for 8 weeks period of lockdown in April and May. Consideration of 8 weeks period is a bit longer than the declared lockdown from April 1 to May 17 falling in FY 2020-21 keeping in mind that several activities cannot start immediately after May 17. The loss factor represents an average for the period since severity of lockdown has not been the same over the weeks and across the states.

Two growth scenarios have been developed to capture pre-pandemic and post-pandemic situations for the year 2020-21. Estimates made in May first half showed that, compared to the pre-pandemic scenario for FY 2020-21, the loss in total GVA due to lockdown turns out to be 8% implying a drop in GDP by 2.7% over the previous year.

Applying the loss factors on pre-pandemic GVA values for 2020-21, we estimate the post-pandemic scenario for 2020-21. The GVA values are reported in Table 2.1. Compared to the pre-pandemic scenario, the loss in total GVA due to lockdown turns out to be 8%. At the sectoral level, damage varies between 2.3% for food grains and 14.6% for construction. Compared to 2019-20, the post-pandemic scenario witnesses an absolute fall in GVA by 2.7%. Construction is likely to have the maximum drop in GVA at 10.8% followed by manufacturing at 9.3%. Income growth in food grains sector is just positive at 0.1%. 'Other services' which includes public administration and defence will grow at a positive rate of 2.5% in 2020-21. Note that these estimates of loss due to the pandemic does not consider possible policy stimulus discussed below.

Prediction of the path of the economy during 2020-21 in early May 2020 is obviously a difficult task given the likely complex dynamics in the spread of the pandemic. First, the duration and the nature of the lockdown remains uncertain. Second, several closed production units will take time to restart operation immediately after the lockdown due to labour and raw material constraints. Since output responds to demand in the IO model, the implied assumption is that intensity economic activities will remain similar for 10 months of the financial year on an average basis, if not on a monthly basis. Third, the international economic situation continues to remain volatile, and both exports and imports are likely to be severely affected during the first half of the year. GDP will be affected to the extent net exports (exports less imports) change. While demand contraction will take place on the exports front, imports reduction might signal better demand prospects for some domestic production lines.

No doubt the above estimate is an approximate one but gives an idea considering the most recent structure of the economy. Thus, to summarize our estimate of the effect of the lockdown on GDP, we may find the aggregate income level in the economy at the end of 2020-21 somewhere around where it was in the middle of 2019-20. Given the severity of the lockdown, the effect is rather moderate compared to many other countries (see, for example, IMF, 2020). This raises hope effectiveness of fiscal policy stimulus discussed below.

Table 2.1: Pre-pandemic and post-pandemic GVA in 2020-21
(GVA numbers in Rs. Crore at 2018-19 prices)

	2019-20	Pre-pandemic 2020-21		Post-pandemic 2020-21		
	GVA	GVA	Growth (%)	GVA	% Loss over 2020-21 pre-pandemic	Growth over 2019-20 (%)
1. Food grains	531579	544868	2.5	532294	-2.3	0.1
2. Other crops	1120355	1156206	3.2	1111737	-3.8	-0.8
3. Allied Agriculture	1337870	1384695	3.5	1320786	-4.6	-1.3
4. Natural Resources	393205	408933	4.0	371185	-9.2	-5.6
5. Manufacturing	3282874	3424037	4.3	2976278	-13.1	-9.3
6. Construction	1380425	1442544	4.5	1231710	-14.6	-10.8
7. Trade, hotels, transport and communication	3327186	3560089	7.0	3176695	-10.8	-4.5
8. Other services	6537766	7028099	7.5	6703725	-4.6	2.5
GVA	17911259	18949472	5.8	17424412	-8.0	-2.7

Table 2.2: Income Loss Factors

	Income loss factor	
	During 8 weeks of lockdown	Yearly basis
1. Food grains	0.15	0.0231
2. Other crops	0.25	0.0385
3. Allied Agriculture	0.30	0.0462
4. Natural Resources	0.60	0.0923
5. Manufacturing	0.85	0.1308
6. Construction	0.95	0.1462
7. Trade, hotels, transport and communication	0.70	0.1077
8. Other services (including public administration and defence)	0.30	0.0462

2.4. Policy Options

What then are some fiscal policy options? Many commentators have recently argued for different policies from very different perspectives. In this note, we are confined to some policy analysis within the IO framework for offsetting the adverse effect of the corona pandemic on the aggregate GVA. In particular, we examine the relative efficacy of additional expenditure in various sectors through a fiscal stimulus. We examine this by first obtaining the final demand vector implied by the post-pandemic situation. We then raise the FD by Rs. 1000 crores at a time to carry out a set of comparative static experiments. Results of the various counterfactuals obtained are summarized in Table 2.3.

An unit increase in investment demand has higher output effect than unit increase in consumption.

The first counterfactual experiment refers to an increase in *private consumption* basket by Rs. 1000 crores which is distributed across sectors in the same proportions as those in the IOT for 2018-19. The effect of this increase in consumption adds to the total final demand by the same amount. Output response takes place not only to meet the new final demand but also the input demand for produce of other sectors. The final effect is an output expansion by Rs. 1836 crore all sectors taken together and an income effect of Rs. 951 crore. The income effect is only about half of output effect because intermediate uses account for about half of total output in India.

The second experiment refers to an increase in *investment* demand: total Rs. 1000 crores with sectoral distribution as per IOT. The output effect in this experiment is larger at Rs. 2233 crore, but income effect is a bit lower at Rs. 910 crore. This is because investment rise has a large effect on machinery manufacturing demand which has a relatively smaller income effect per unit of output compared to other sectors.

While the above two experiments are on consumption or investment basket as a whole, the next set of experiments refer to increasing final demand of only one sector at a time. As may be seen from Table 2.3, enhancing food grains demand has the maximum effect on income closely followed by the other two agricultural sectors. Output effect is the maximum for manufacturing demand, but it has the least effect on income for reason stated above.

Table 2.3: Effect of Rs. 1000 crore rise in various demand components

	Output	Income	Income
	Effect	Effect	Per Unit Rise in Demand
Private consumption basket	1836	951	0.951
Investment basket	2233	910	0.910
Sectoral Final demand			
Food grains	1716	1029	1.029
other crops	1346	1011	1.011
Allied Agriculture	1369	1018	1.018
Natural Resources	1856	941	0.941
Manufacturing	2426	898	0.898
Construction	2196	912	0.912
Trade, hotels, transport and communication	1810	947	0.947
Other services	1523	969	0.969

Overall, the income effects per unit increase in final demand vary in a smaller range between 0.9 (manufacturing) and 1.03 (food grains) compared to the output effects which vary between 1.35 (other crops) and 2.43 (manufacturing). Why do we observe convergence of income effect of manufacturing and agriculture? Output effect of agriculture lies between 1350 and 1700 for a rise in demand for agricultural products by Rs. 1000 crore. It does not generate as much inter-industrial linkages as manufacturing for other sectors to expand, but it has high GVA-Output ratio of 0.67 to 0.82. Manufacturing, on the other hand, has

the strongest inter-sectoral linkages through the input chain and output effect is more than 2400 crore for demand rise of the same magnitude. But, its GVA-output ratio is only 0.26 and income effect turns out to be lower than that of agriculture. The differences in GVA per unit output explains why the income effects are close enough between agriculture and manufacturing even though output effects are so different.

2.5. Stimulus and Safety Net

Next, we turn to the question: what should be the size and composition of a stimulus package to arrest a fall of 2.7% in the GDP from the previous year? This is obviously a minimalist approach on the growth front. The above results on effects indicate that a fiscal stimulus of about 3% of GDP (Rs. 5.4 lakh crore at 2018-19 prices or about 6 lakh crore at current prices) could help in arresting the likely negative GDP growth and may turn it just positive. We note some critical factors on the composition of the stimulus package. First, health expenditure, which has already been enhanced, would need further increase during the year. State governments would have to meet most of the increased health expenditure to build up health infrastructure. Second, a proper safety net mechanism must be introduced for the wage earners who have lost jobs due to the lockdown or would not be able to get jobs post-pandemic for some time. Safety net may include expansion of MGNREGA, health care and direct income transfer, apart from a universal food grains distribution utilizing the huge public food stocks. A large number of semi-skilled unemployed youth could also be employed, with a short training course, for monitoring and reporting the health status of households on a regular basis during the year in both rural and urban areas. Households in the low-income group would be spending a good part of their income on agricultural produce and to that extent the GVA effect of this component of the stimulus would be larger. Third, start construction activities which are labour intensive and can gradually reduce the demand for direct cash help. As the IOT indicates more than half of gross fixed capital formation expenditure creates demand in the construction sector. Thus, it will not be a good idea to postpone investment expenditure during the current FY as advocated in some circles.

Based on above considerations, the last scenario for 2020-21 we construct involves a *fiscal* stimulus package that may involve (a) 1.5% of GDP on household consumption basket, (b) 1% of GDP on public investment, and (c) 0.5% of GDP on health care. This counterfactual is carried out on the post-pandemic scenario discussed above. Since component (a) is meant for the wage earners and other lower-income groups, we have assumed that the additional consumption basket will be tilted towards agricultural produce by 20% away from non-agriculture. The results presented in Table 2.4 do indicate that a fiscal stimulus of 3% of GDP could potentially arrest the fall in GDP due to lockdown till mid-May and turn it marginally positive.

A fiscal stimulus package of 3% of GDP consisting of safety net, health care and public investment could help to offset the fall in GDP by about 3 percentage points.

Table 2.4: Post-pandemic Scenario with Fiscal Stimulus of 3% of GDP

	Output 2020-21	GVA 2020-21	GVA change over 2019-20 (%)
Food grains	809919	546157	2.74
other crops	1412915	1163703	3.87
Allied Agriculture	1707839	1377751	2.98
Natural Resources	696411	395572	0.60
Manufacturing	11855518	3064969	-6.64
Construction	3498290	1273830	-7.72
Trade, Hotels, transport and communication	5755272	3244276	-2.49
Other services	9711563	6866986	5.04
Total	35447728	17933244	0.12

2.6. Conclusion

The unprecedented Covid-19 pandemic has completely changed the economic growth scenario for 2020-21 in the Indian economy. As of early May 2020, the path of the economy during the financial year remains very uncertain. In this note, we have attempted to construct some growth scenarios using an input-output framework. The loss in GVA due to the lockdown during March 25-May 17, 2020 is estimated to be 8% in 2020-21 compared to a pre-pandemic normal scenario. Aggregate GVA is likely to fall by 2.7% in 2020-21 over that in 2019-20. A stimulus package of 3% of GDP consisting of safety net, health care and investment could arrest the fall in GVA for 2020-21. Needless to state: the longer the lockdown would be beyond May 17, the larger would be the size the stimulus to arrest the fall.

Lastly, we may note that economic growth is the outcome of a complex set of interactions of supply and demand factors. This exercise does not consider possible supply constraints in the post-pandemic scenario. The industrial sector is particularly concerned about labour shortage and availability of adequate working capital after the lockdown. The RBI has been quick to inject adequate liquidity into the system to meet the emerging challenges by reducing the repo, reverse repo rates and cash reserve ratio and relaxing burden of loan payment by enterprises. Adequate consideration of the supply side constraints would be important in reviving the normal flow of economic activities and realise the potential demand driven growth considered in this paper.

Post Script: After this paper was written in the first week May, the lockdown got extended further till the end of May and several restrictions continue in June while unlocking of the economy. Current pandemic situation indicates that it will take several months for the economy to get back to normal. A conservative estimate points towards a fall in GDP by 7-8% in 2020-21 over the previous year. Government has announced a stimulus package of about 10% of GDP, but bulk of it consists of monetary stimulus necessary for meeting credit flow to industry when demand picks up. It has also announced some major reform measures for agriculture and SMEs to raise efficiency in the medium term. The fiscal policy package announced till mid-June may offset only about 1.5 percentage point fall in GDP and the economy might witness sliding down of GDP by at least 5-6%.

Appendix 1: Input-Output Table for Indian Economy 2018-19

An input-output table for 2015-16 for 131 sectors based on supply and use tables by NSO has been prepared by R. Chadha, M. R. Saluja and G. Sivmani (available at <https://www.brookings.edu/wp-content/uploads/2020/01/Input-Output-Transactions-Table.pdf>). In constructing the input-output table below, we have (a) aggregated the Chadha et. al table to 8 sectors, (b) updated the transaction matrix for relative price changes between 2015-16 and 2018-19, and (c) incorporated the GVA and final demand information contained in the press release by the NSO, MOSPI in February, 2020.

Intermediate Flows

(Numbers in rupees crore at 2018-19 prices)

Sectors	Food-grains	Other crops	Allied Agriculture	Natural Resources	Manufacturing	Construction	Trade, Hotels, transport	Other Services
Food grains	29573	8590	33903	0	370911	79	32836	37896
Other crops	1089	36740	116426	0	288521	20595	57422	6022
Allied Agriculture	39884	61750	14931	0	341826	145582	167174	44439
Natural Resources	0	0	6549	8116	1394385	94422	33971	0
Manufacturing	97108	67608	44562	165601	4272063	1066932	981139	765226
Construction	7135	13632	889	531	111080	25	52225	110041
Trade, Hotels, transport and communication	77292	38040	128056	42131	1276097	501844	498470	355640
Other services	35477	32167	6160	60775	510029	340296	454948	1083180
NIT (product)	-36587	-23971	-38123	18933	679398	177709	154131	131755
GVA	519674	1095264	1307908	389322	3223180	1344279	3142620	6117714
Total Output	770645	1329820	1621263	685408	12467490	3691762	5574937	8651913

Final Demand

Sectors	PFCE	GFCE	GFCF	CIS	EXP	Valuables	Imp	Output
Food grains	241075	0	0	13278	4250	0	1746	770645
other crops	784989	0	0	0	32197	0	14181	1329820
Allied Agriculture	810303	0	9921	0	29010	0	43558	1621263
Natural Resources	3330	0	0	10576	16287	0	882228	685408
Manufacturing	3300658	0	1806943	187386	2218031	195311	2701078	12467490
Construction	0	0	3301467	95421	10242	0	10926	3691762
Trade, Hotels, transport and communication	2236886	0	173006	0	383535	4873	140932	5574937
Other services	3491481	2104235	201983	0	1072742	0	741562	8651913

FALLOUT OF COVID-19 ON INDIAN ECONOMY

Pravakar Sahoo and Ashwani

We make a preliminary assessment of COVID-19 on the Indian economy by analyzing its fallout on growth, manufacturing, trade and MSME sector. The impact of the Pandemic across sectors and in different scenarios of complete, extended and partial lockdown and at different levels of capacity utilisation is massive on the Indian economy. India's economy may barely manage to have a positive growth of half a percent in the most optimistic scenario but also faces the possibility of a 3% to 7% negative growth in the worst-case scenarios for the calendar year 2020. The impact is going to be severe on trade, manufacturing and MSME sectors. The economy is heading towards recession and the situation demands systematic, well-targeted and aggressive fiscal-monetary stimulus measures.

Note: This article is part of the bigger paper titled "COVID-19 AND INDIAN ECONOMY: Impact on Growth, Manufacturing, Trade and MSME Sector" published as Institute of Economic Growth (IEG) working paper, No. 390, May 2020. We request readers to refer to the IEG WWP-390 (http://www.iegindia.org/upload/profile_publication/doc-180520_134114wppf390.pdf) for more detailed analysis. The views expressed here are those of authors and do not reflect the views of the organizations they belong to.

3.1. Introduction

The Corona Pandemic has probably given the biggest blow to the World economy over the last 100 years. Almost half of the world population is under lockdown without having a medical solution to the Coronavirus and economic activity across countries has either stalled or significantly decelerated taking away millions of livelihoods. India, being a densely populated country with inadequate medical facilities, was left with no option but to follow the policy of lockdown. The world economy is heading for a recession and India is no exception. The current pandemic is working its way through a highly globalized world with interconnected production networks and financial markets. The fallout of COVID-19 on the Indian economy is going to be huge because of its own lockdown, which was necessary,

and also because of India's integration with the rest of the world. Here is a modest attempt to explore the likely fallout of the lockdown owing to the Pandemic on India's Gross Value Added (GVA), manufacturing, trade and MSME sector.

3.2. Impact on Growth

Corona Pandemic hit the Indian economy when it was at its lowest point of growth trajectory over the last six years due to lack of aggregate demand - consumption, private investment and exports were witnessing deceleration over the last few years. When all were expecting a turnaround in the economy, the Corona Pandemic has given a knocking punch, affecting economic activity across the sectors and added a supply shock to the economy. The quarterly growth (YoY) of Gross Value Added (GVA) has been consistently declining (Figure 3.1) since first quarter of 2018 (around 8% in Q1 in 2018 to 4.5 in Q4 2019¹). Mining and quarrying witnessed the highest fall in recent quarters followed by manufacturing and construction sector.

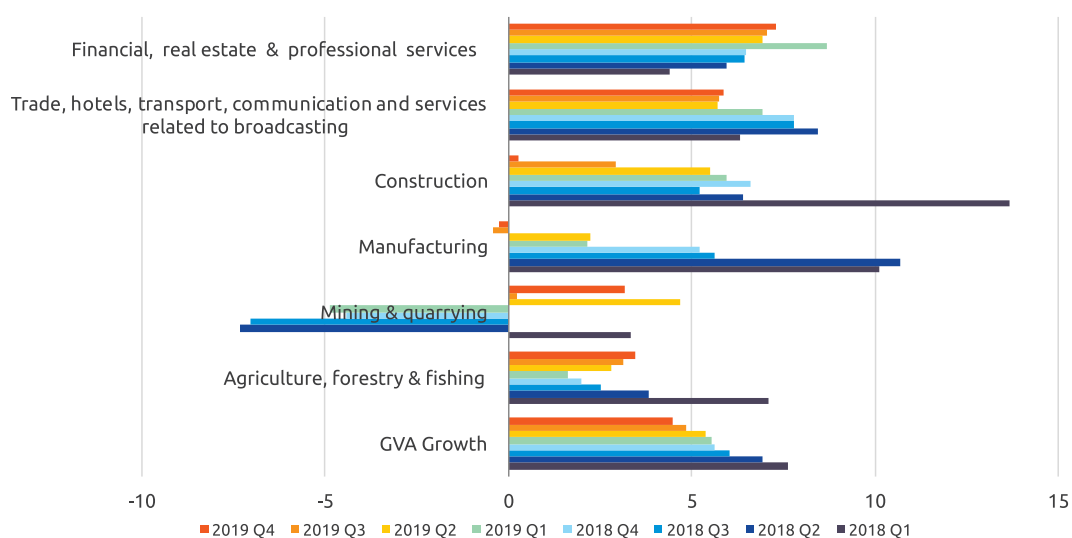


Figure 3.1: Quarterly Growth Rate in GVA Across Sectors (YoY, %)

Source: Authors' Computations from NAS Data

Indian economy already at its lowest point of growth trajectory due to lack of aggregate demand - consumption, private investment and exports, the Corona Pandemic has given a knocking punch.

Here we make a preliminary assessment of the impact of Corona pandemic on India's GVA, manufacturing sector, international trade and MSME sector under two broad outlines. First, the situation where there is a quick turnaround after the lockdown period and the economy experiences a vertical recovery (V-shape). Second, the economy experiences a U-shape recovery where the effects of the lockdown prolong for a longer period of time till September 2020. In the case of V-shape recovery, we make two hypothetical scenarios - Scenario A and Scenario B. In Scenario A, we assume resumption of normal level of economic activities post 40 days lockdown i.e. after 3rd May 2020². In scenario B, we

1 We consider calendar year for the impact assessment on GVA and trade.

2 During the first two phases of lockdown period i.e. 40 days from March 24th to 3rd May 2020, we presume no economic activity except agriculture, utilities and public sector. In fact, here we assumed 50% more capacity utilization for Public and Defense (PAD) services. The analysis with normal behavior of PAD services, please see IEG WP -390. http://www.iegindia.org/upload/profile_publication/doc-180520_134114wppf390.pdf

consider complete lockdown up to 3rd May and 50% capacity utilization of the economy till 31st May 2020. Similarly, we have two hypothetical scenarios – C and D – in case of U-shape recovery. In case of scenario C, we assume 70 % of capacity utilization by 30th of June in addition to 50% capacity utilization from 3rd May to 31st May. In scenario D, normalcy level is assumed in three phases- 50% by end of May, 70 % by June and 90% by September 2020.³

The impact of the Corona outbreak and subsequent lockdown on GVA⁴ at aggregate as well as sector-wise for the calendar year 2020 over previous year is reported in Figure 3.2 (see Appendix for detailed calculation). In case of vertical recovery under scenario A & B, the estimated GVA is estimated to grow at 2.95% and 0.43% respectively. We believe that scenario B (0.43% growth for 2020) is the most likely scenario. The fall in GVA is estimated at -1.37 % and -2.96% for 2020 compared to 2019 under scenarios C and D, if we experience a U-shaped recovery. Across all the scenarios, the highest decline is estimated in the mining sector (13-22 %), followed by manufacturing and construction sectors (6 -15 %, each), trade, hotels and transport services (4-12 %) and financial services (2-10 %). However, in case of a more pessimistic environment where there is no overutilization of public administration and services sector (PAD), the deceleration would be in the range of 1.3 % in Scenario A to 7.2 % under scenario D. In the most likely scenario B, the deceleration can be 3.8 % in year 2020. (Figure 3.3)

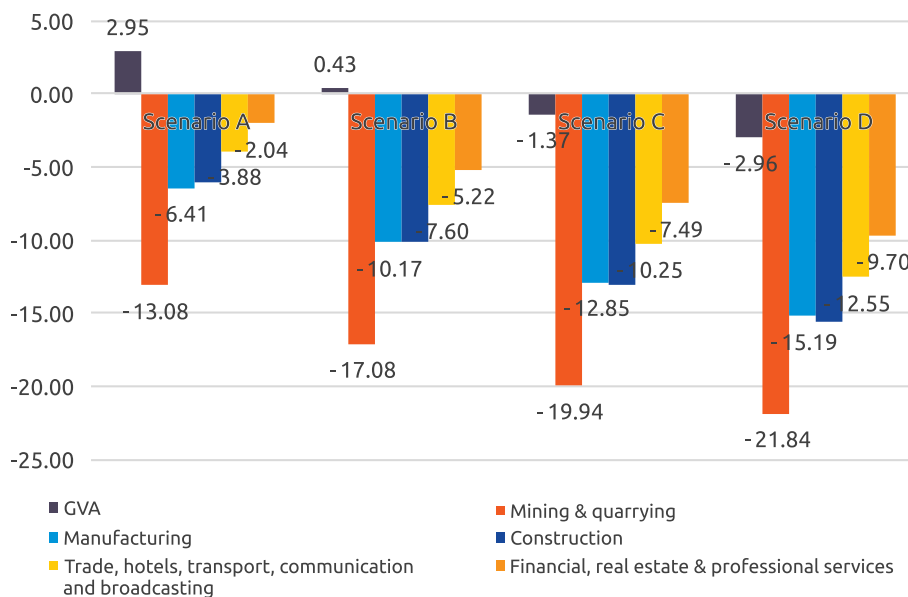


Figure 3.2: Estimated GVA in 2020 over 2019 (NAS data)

Figure 3.4 presents the estimated quarterly growth rate (Y-o-Y) of real GVA⁵. Indian economy had 5% growth rate for the calendar year 2019 but the growth is expected to decelerate in the second quarter of 2020, to the tune of 13 percent under Scenario A and around 30 % under scenario D.

3 It is apprehended that 10% of firms would remain severely affected with the epidemic and require much higher time for returning to normalcy.
 4 GVA based on constant prices of 2011-12.
 5 With 50% over utilization of PAD services. The Fig 5A and 5B analysis are also with the assumption of 50% over capacity utilization of PAD services. For the impact with normal PAD services, please see Sahoo and Ashwani, (2020), IEG working paper No. 390.

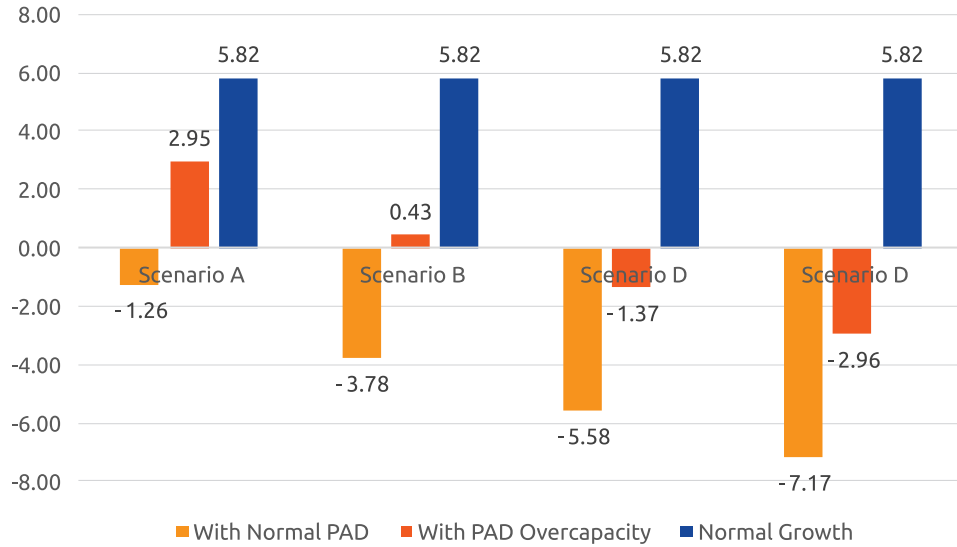


Figure 3.3: COVID Impact: GVA 2020 over 2019 (%)

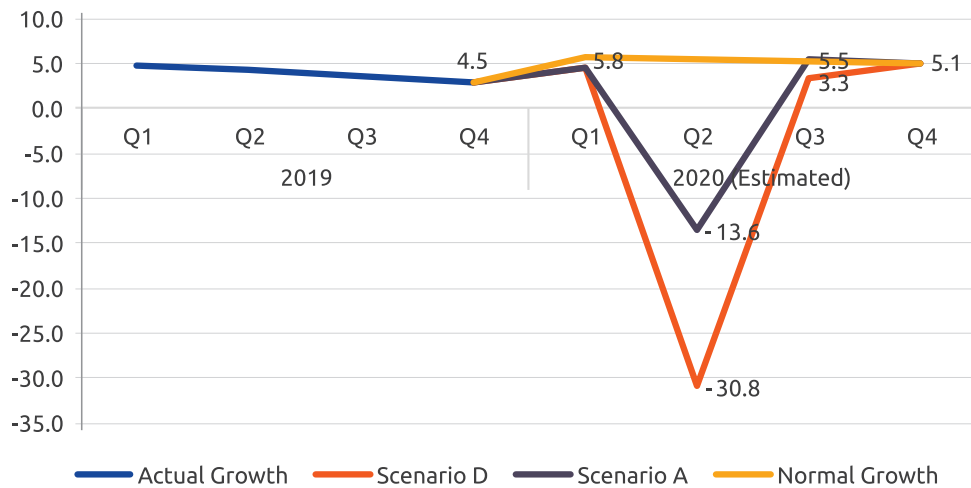


Figure 3.4: Quarterly Growth Rate in GVA (NAS data)

India's economy may barely manage to have a positive growth of half a percent in the realistic scenario but also faces the possibility of a 3% to 7% negative growth in the worst-case scenarios for the calendar year 2020.

The highest decline is estimated in the mining sector, followed by manufacturing and construction sectors, trade, hotels and transport services and financial services

Figure 3.5A and 3.5B present the percentage fall in total GVA by sectors and percentage fall in the respective sectors' GVA for 2020 under different scenarios respectively. In case of V-shape recovery (Scenario A and B), the total estimated GVA loss by these sectors is 6.5% and 8.8% respectively while under U-shaped recovery (scenario C and D) the loss would be around 10.44% and 11.88% respectively for year 2020 (Figure 3.5A). Across the scenarios (A to D), the share of decline of sectors in total GVA varies in the range of 1.9% to 3.4% for trade, hotels and restaurant, 1.7% to 3.1% for manufacturing, 1.7% to 3.2% for financial real estate and professional services and, 0.8% to 1.5% for construction and 0.3% to 0.5% for mining and quarrying. In terms of expected fall in respective sectors' GVA (Figure 3.5B), following are the ranges starting from scenario A to D viz., 11.8% to 20.7% for mining and quarrying sector; 11% to 20% for construction; 10% to 18.8% for manufacturing; 10% to 18% for trade and hotels services and 8% to 15% for finance, real estate and professional services.

6 This fall is with respect to the corresponding sector's GVA of 2020.

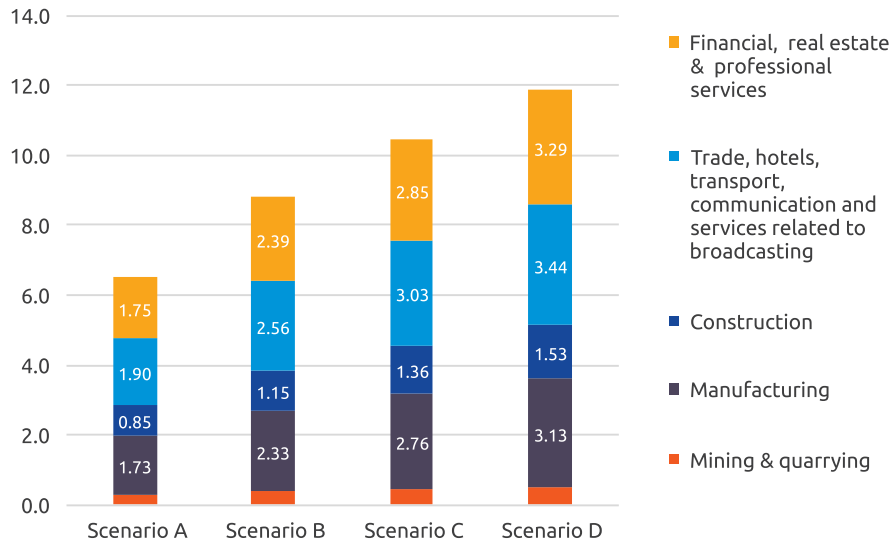


Figure 3.5A: Decline in Total GVA by Sectors (%)

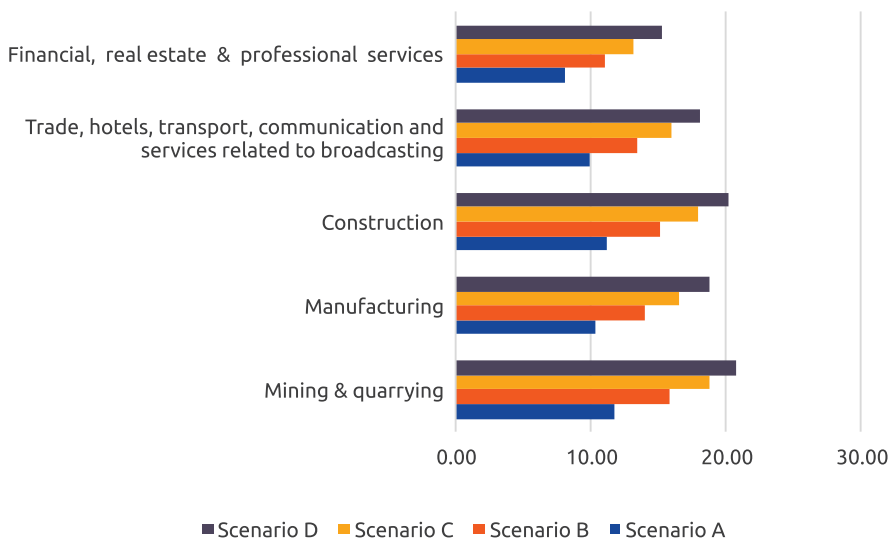


Figure 3.5B: Decline in GVA within Respective Sectors (%)

Source: Authors' computations based on NAS Data

3.3. Impact on Manufacturing

Next, we explore the economic loss to the industries due to the epidemic using Annual Survey of Industries (ASI) data for the registered manufacturing sector. The economic loss is calculated (see appendix for details) by adding wage cost and fixed cost - interest and rent expenses - to Net Value Added (NVA) of the respective industry. The estimated deceleration⁷, in terms of economic cost, to the NVA for all industries is 5.5 % in the best-case scenario and 19.8% in the worst-case scenario (Figure 3.6). The loss in industrial NVA as percentage of the base NVA for all industries is estimated at 13.5 %-27.8 %. Interestingly the top 10 industries which contribute around two-thirds of the total industrial NVA, bear the loss in NVA in the range of 11.1 % to 19.6 % of the total NVA of base year.

The estimated deceleration, in terms of economic cost, to the NVA for all industries is 5.5 % in the best case scenario and 19.8% in the worst-case scenario.

7 As compared to the previous benchmark period of average NVA of 2014-17.

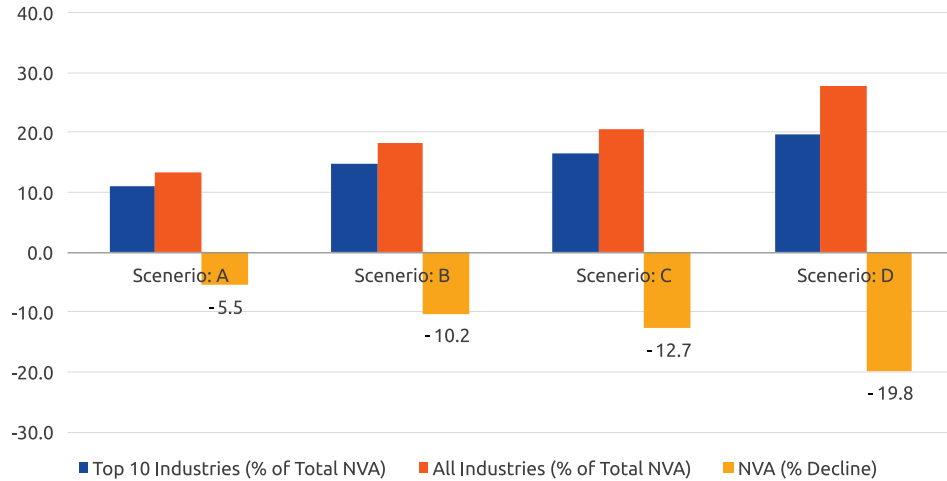


Figure 3.6: Decline (%) in Manufacturing Sector NVA

Source: Authors' computations based on ASI Data

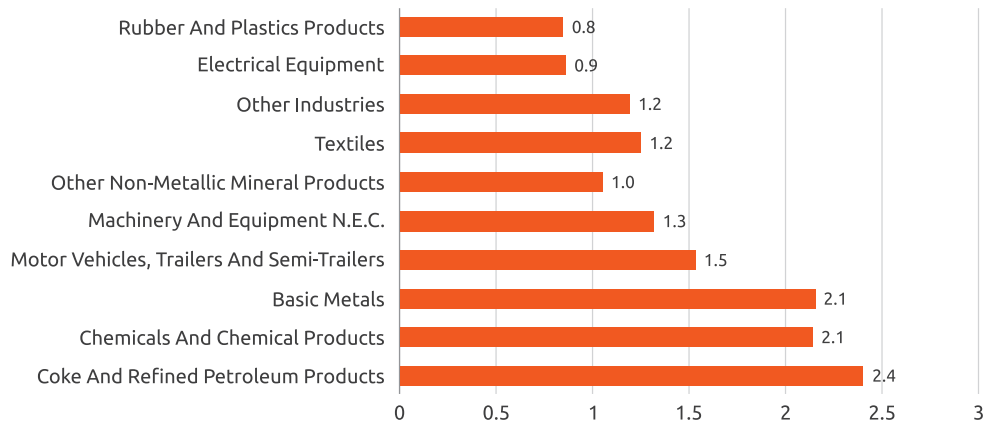


Figure 3.7: NVA (%) Loss for Top 10 Industries (Scenario B)

Source: Authors' computations based on ASI Data

There are many problems and disruptions to the whole chain of domestic production network and manufacturing will take few months to come back to normalcy.

Top ten industries contribute 65% of the total Industrial sector NVA, absorb 55% of all industrial workers (55%) and bear significant fixed cost- around 70 % of total interest and rent costs of all industries. The composition of loss across top 10 industries under scenario B is reported in Figure 3.7, where we find that highest loss is estimated for coke and refined petroleum products (2.4%), followed by basic metals and chemical products (2.1% each), motor vehicles (1.5%), machinery and equipment (1.3%), textile (1.2%), among others. Therefore, these industries require immediate attention.

3.4. Impact on Trade

Corona Pandemic has given a big blow to India's already slowing trade, especially exports. India is mainly reliant on EU, USA, China and South-East Asian countries, collectively accounted for two-thirds of India's exports and imports respectively (Table 3.1). India's trade has much exposure to severely affected COVID-19 countries (USA, EU and China) accounted for two-fifth of exports and one-third of import shares. Most notable, USA and China both accounted for one-fifth of India's exports and imports.

Table 3.1: India's Trade with Top Partners

Country	Average (2018-2019 to 2019-2020 (Apr-Jan))		Shares in India's Total (%)	
	Exports	Imports	Exports	Imports
EU	57.8	50.38	19.46	10.93
U S A	48.56	33.03	16.35	7.2
China	15.59	64.13	5.25	13.98
Rest of Asia ⁸	81.55	147.99	27.45	32.27
Total	203.5	295.53	68.51	64.38
India's Total	297.03	458.61		

Source: Authors Compilation from Export-Import Database.

Similar to GVA analysis, we try to assess the expected loss of India's exports and imports under two situations. First, we assume a scenario of normal world trade and carry out impact under the hypothetical four scenarios (A to D). Second, we try to account for the expected fall in world trade due to the epidemic and then calculate loss to trade (Scenario E). As per the WTO estimation, global trade is expected to plunge in the range of 13-32 % under optimistic and pessimistic scenario, respectively. To account for the second issue, we take the global financial crisis as the reference point and the percentage decline in exports and imports are taken as the basis to evaluate the possible fall in India's trade.⁹ (Please see appendix for detailed calculation). In terms of percentage of loss compared to year 2019 for scenarios A to D, it is estimated that India's exports are going to decline by 13.7 % to 20.8% in 2020. The respective imports decline ranges from 17.3% to 25% (Figure 3.8A). In scenario E, considering the U-shape recovery similar to GFC, the potential fall in exports and imports in 2020 compared to 2019 are 19.8% and 31% respectively. In terms of loss as percentage of absolute value for 2020, exports are going to lose by 9.4 % to 16.8 % and imports in the range of 10.6 % to 18.9 % (Figure 3.8B). In scenario E, the potential fall in exports and imports (as % of 2020) is estimated at 15 % and 23.6 %, respectively.¹⁰

India's has much trade exposure with severely affected COVID-19 countries as USA, EU and China accounted for two-fifth of exports and one-third of import shares.

The quarterly growth rate of India's exports and imports became negative in 2019 from positive growth of 10 % and 15 %, respectively, in the year 2018. The first quarter of 2020 witnessed a significant fall in India's trade - exports falling by 11 % and imports by 9 % - due to the Corona outbreak. We estimate the potential impact on trade for the remaining quarters of 2020 – Figure 3.9A and 3.9B (see appendix for details). Under scenario A, exports and imports are expected to decline by 37% and 35% respectively in the second quarter of 2020, which is the most sensitive period due to complete lockdown. This fall may extend to around 60% for both exports and imports if the economy experiences partial lockdown till mid-2020 and assuming 90% capacity utilization till September 2020. In case of U-shape recovery, the imports growth (YoY) may reach the minimum level of 30 % in Q2 and can continue to decline by nearly 20% till the end of 2020. However, exports can be hit harder as they are estimated to fall by 30% in Q2 and around 40% in the subsequent quarters.

⁹ During global financial crisis, quarterly growth plummeted to lowest level of around 30 % during 2009-10q1 with average fall of exports and imports around 20 percent during 2008-9q3 to 2009-10q2. The detailed graph is not presented for brevity.

¹⁰ For the year 2009, world trade declined in real or volume terms by 12.2 per cent. Because of significant price declines, especially for primary commodities such as petroleum and minerals, the decline in dollar terms was 23 per cent.

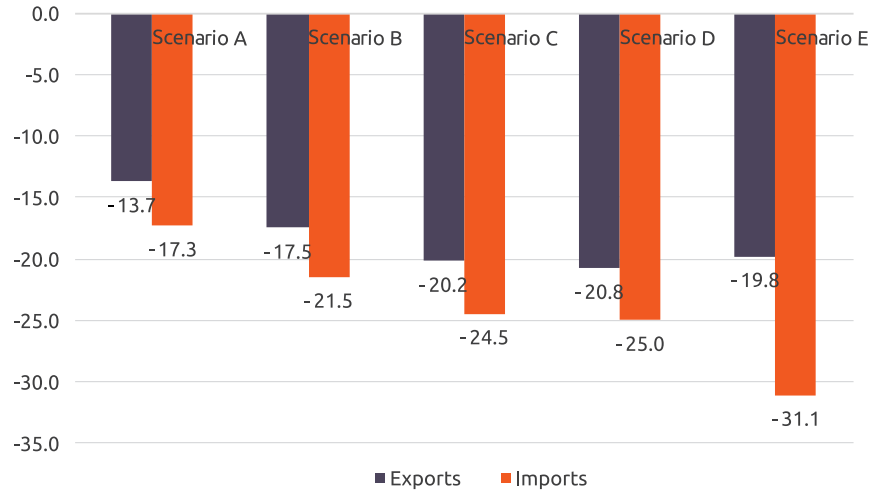


Figure 3.8A: Decline (%) in India's Exports and Imports (as compared to 2019)

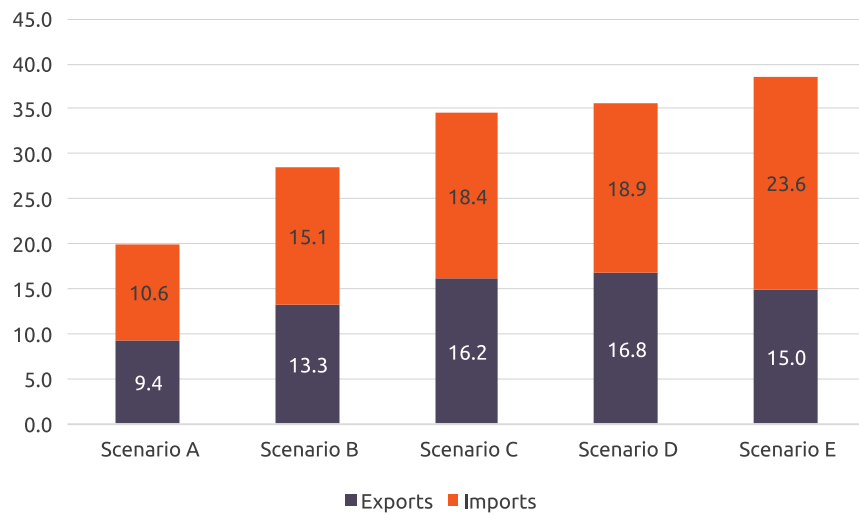


Figure 3.8B: Loss as % of Exports and Imports of 2020

Source: Authors' computations based on RBI Data

Due to Covid, it is estimated that India's exports are going to decline by 13.7% to 20.8% in 2020. The respective imports decline ranges from 17.3% to 25%. Amid supply chain disruptions, the forward linkage sectors such as automobiles, electronics, pharmaceuticals, machines and equipments, computer appliances, aircraft, etc. are at vulnerable position.

With regard to percentage decline in exports and imports across commodities, it is estimated that products such as petroleum, chemical, machinery, electronics and plastic and rubber would suffer a loss higher than the national average of 20 percent (see Figure 3.10). The top 10 principal commodities comprise around 90% of India's exports and imports, respectively. The biggest fall in imports will be experienced by petroleum products, chemical products, machinery, base metals, ores and minerals (Figure 3.10B). India has strong intermediate input usage demand and accordingly the forward linkage sectors such as automobiles, electronics, pharmaceuticals, machines and equipments, computer appliances, aircraft, etc. would bear significant loss due to the epidemic.



Figure 3.9: Quarterly Growth in India's Exports and Imports (YoY, %)

Source: Authors' computations based on RBI Data



Figure 3.10A

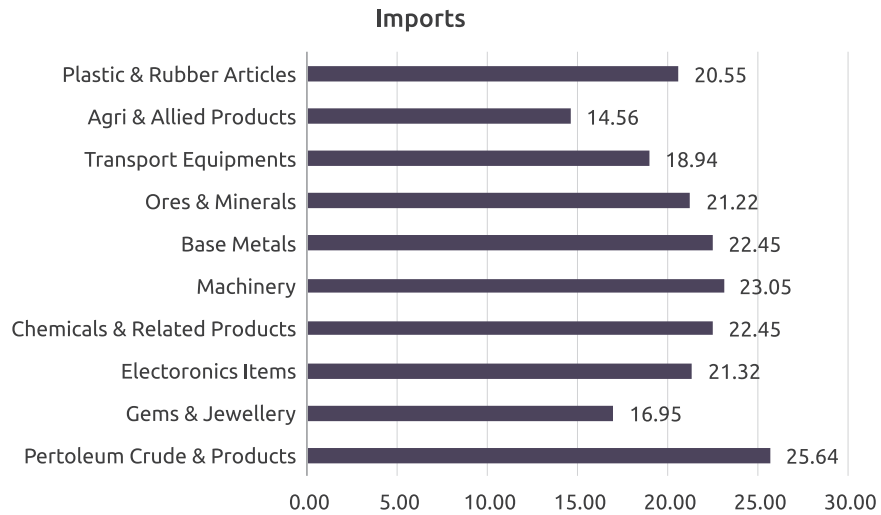


Figure 3.10B

Figure 3.10: Potential Fall in Exports and Imports across Sectors Scenario D (% of Total)

Source: Authors' computations based on RBI Data



Figure 3.11: Decline in Exports and Imports (% using Realized Values*)

Source: Authors' Computations based on Export-Import Database.

Note: *Using the average values of FY 2019 and FY 2020 as base.

Figure 3.11 presents the percentage decline in India's total exports and imports under given hypothetical scenarios. The fall is measured while considering the actual values of average exports and imports of India during FY 2019 and 2020 (April to January Values). The magnitude of the impact on exports and imports is similar to what has been derived using the estimated values for the calendar year 2020 in the previous section.

3.5. Impact on MSME Sector

We compute the estimated loss in MSME sector using the latest available data of MSME GVA¹¹ for the year 2016-17. The impact on the MSME sector is based on a two-step process.

11 We convert the nominal GVA into real terms by using the GVA deflator based on price level of 2011-12.

First we compute the GVA for manufacturing and services sectors by applying shares in the number of total establishments under the two segments (mfg and svcs) as weights. After computing the GVA of these two sectors we find the percentage share of each in the national manufacturing and services GVA. Then we compute the loss by apportioning the percentage decline in these two sectors obtained in the first section. The aggregate impact on MSME is computed through weighted average of MSMEs' manufacturing and services sectors' losses. It is evident from the figure that the GVA of MSME sector has grown more than 7 percent during 2015-17 and taking the triennium average ending in FY 17, the MSME sector would have grown with the rate 6.74 percent in the normal case scenario. However, with COVID-19, the growth can come down to the level of 3.14 under the most likely scenario B and can go down further to 1.7% in case of pessimistic scenarios (Figure 3.12). As per estimation, India's MSME sector can expect a decline of 2.1% under scenario A and this loss can increase to 5.7 % in case of scenario D. The loss is more skewed in the manufacturing sector, to the tune of 3.5 %, in scenario A and 8.3 % in scenario D. MSMEs dealing in trade and other services activities can bear the decline in GVA in the range of 1.4 % to 4.5 % (Figure 3.13).

As per estimation, India's MSME sector can expect a decline of 2.1% under optimistic scenario and this loss can increase to 5.7 % in case of worst scenario.

Both MSME manufacturing GVA and services GVA will shrink but Manufacturing GVA is going to be more affected.

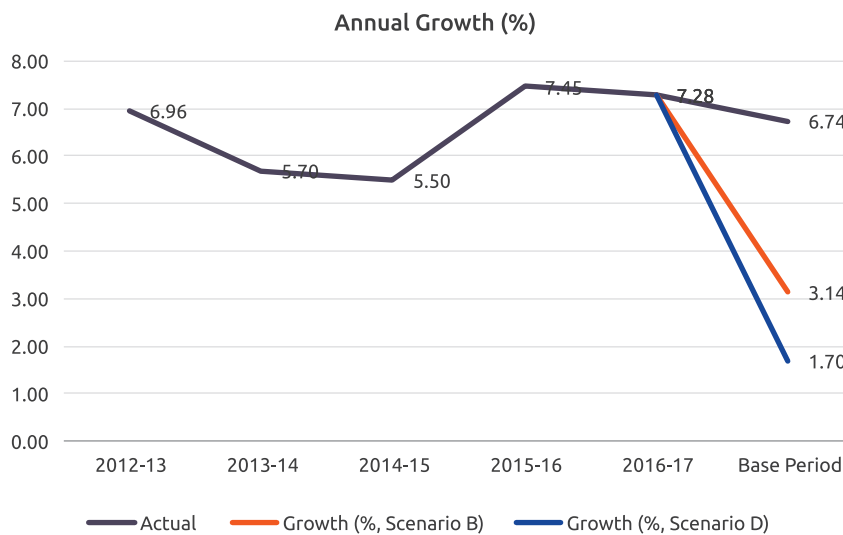


Figure 3.12: Growth rate of MSME GVA (%)

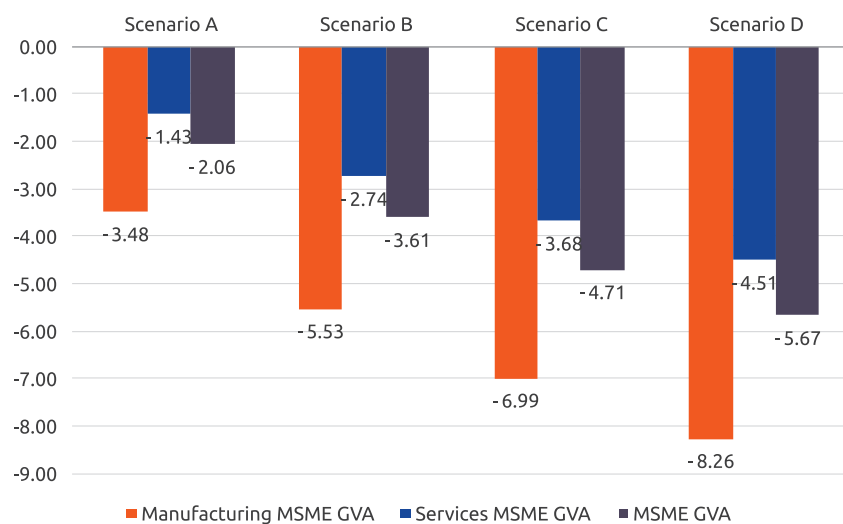


Figure 3.13: Decline (%) in GVA of MSME Sector

Source: Authors' computations based on MSME Annual Report 2018-19, Ministry of MSME

The lockdown affected these small firms via domestic demand and supply side. The sudden collapse of trade also affects MSME sector. India's top exports including labour-intensive products, starting from Gems and jewellery to garments/apparel or seafood, are mainly supplied by the MSME sector. Similarly, the lockdown affected imports of raw materials and intermediates which affect the supply chain of MSME sector. Therefore, COVID-19 is going to affect MSME sector and millions employed in this sector. In fact, if the situation gets worse and prolongs for a few months, many small and tiny firms may cease to exist as it would be difficult for them to survive and hold onto their men and machines.

3.6. Conclusion and Policy Suggestions

The impact of COVID-19 Pandemic is going to be severe on GVA, trade, manufacturing and MSME sectors.

Our assessment is that the Indian economy may have 0.4% growth this calendar year 2020 in the most realistic scenario and negative growth of around 3 % in the worst-case scenario. The most affected sector is going to be the mining sector followed by manufacturing; construction; trade, hotels and transport services, and financial services. The manufacturing sector may shrink by 5.5-20 percent from best-case to worst-case scenario, respectively. In manufacturing, some of the most affected industries are likely to be metals & chemical products, motor vehicles, machinery and equipment, textiles etc. India's exports are expected to decline in the range of 13.7 % to 20.8% in 2020 whereas imports decline ranges from 17.3 % to 25 %. With regard to percentage decline in exports and imports across commodities, products such as petroleum products, chemical products, machinery, electronics, plastics and rubber would suffer the most. India's MSME sector can expect a decline of 2.15 % in the best-case scenario to 5.89 % in the worst-case scenario. The MSMEs in manufacturing sector would suffer the most. It is evident from the analysis that the impact of the Pandemic across sectors and in different scenarios of complete, extended and partial lockdown and at different levels of capacity utilisation is massive on the Indian economy. The impact is particularly severe on trade, manufacturing and the MSME sector which contribute substantially to India's employment and growth.

Given the expected fallout of COVID-19 on Indian economy, the government should not worry about the fiscal rule and go all out in adopting counter cyclical fiscal measures to incentivise firms and ensure that the stimulus measures are well directed at some of the worst affected sectors like manufacturing, construction, travel, transportation, tourism, hotel etc.

Given the extent of economic fallout, the government of India has announced a series of economic packages to give stimulus to the economy. The first economic package of Rs 1.7 lakh crore (0.8% of GDP) was announced immediately after lockdown to address the immediate basic needs of the majority. Then the central bank announced a series of measures such as reducing policy rates to enhance liquidity in the market, to the tune of 3.2% of the GDP (Rs. 6.5 lakh crores). Finally, the big economic package of around Rs 13 lakh crores (6 % of GDP) was announced on 12th of May details of which were elaborated subsequently. The focus of the package has been on labourers, farmers, taxpayers, MSME, cottage industries etc. The economic package also includes the sectors such as agriculture, taxation, infrastructure, human resource and the financial system which would attract investment and revive demand in the economy. Moreover, the package focused on labour, liquidity and laws along with wide-ranging reforms to boost the economy.

The stimulus measures so far are around 10% of the GDP which is a welcome step when the economy has come to a standstill. Given the estimated fallout of COVID-19 on Indian economy, the government should not worry about the fiscal rule and go all out in adopting counter cyclical fiscal measures to stop things from going bad to worse. It is time for big initiatives to help firms which not only depend on the domestic economy but also

on international trade. The government also needs to ensure that the stimulus measures are well directed at some of the worst affected sectors like manufacturing, construction, travel, transportation, tourism, hotel etc. Firms in worst-affected sectors are suffering due to shut down of factories, collapse of global demand, cancellations of orders, delays in shipments etc. Therefore, these firms need support in the form of interest-free working capital to cover their wage cost and fixed cost (rent and interest) to survive during these tough times. The economic package has given credit guarantee but its now time to boost demand so that there is credit uptake. MSME sector is labour intensive and the lifeline of India's manufacturing and trade, and the sector is badly affected by the disruptions to both supply and demand mainly due to domestic and international lockdowns. Apart from credit and other financial incentives, the need of the hour is to help firms, business and economic activity to get back on operational mode. The economic impact of Corona pandemic is huge, and it would need a humongous effort on the part of the government, industry, civil society and all key stakeholders to ensure that the Indian economy recovers sufficiently and soon.

Most suffered firms including MSME sector need support in the form enhanced access of credit and other financial incentives in terms of interest-free working capital to cover their wage cost and fixed cost (rent and interest).

APPENDIX

Assessment of Impact on Gross Value Added (GVA): We use real GVA based on 2011-12 prices which is available till Q3 of FY 2019-20 at the aggregate level as well as broader categories viz. agriculture; mining and quarrying; manufacturing; electricity, gas, water supply and other utilities; construction; trade, hotels, transport, communication and services related to broadcasting; financial, real estate & professional services and public administration, defense & other services. First, we take quarter-wise data for calendar year 2019 (from January to December) and compute the quarterly growth rate (YoY) for each sector as well as aggregate GVA for calendar years 2018 and 2019. Then we estimate the quarter-wise GVA for each sector as well as aggregate GVA for the year 2020 with Q1 ending in March and Q4 ending in December 2020 by taking the average of past two years (2018 and 2019) quarterly growth (YoY) for each sector. From the estimated values of 2020, we exclude three sectors completely from the computation due to the lockdown. These sectors are agriculture; electricity, gas and water supply and public administration, defense and other services. Rather, we assume that there is 50% overutilization of sector public administration, defense and other services (due to overtime use of public department for health services, law & order etc).

For the mining and quarrying and construction sector, we assume complete lockdown. As per NAS, manufacturing GVA is composed into two heads - corporate and household. In corporate manufacturing, there are various sub-sectors including the manufacture of food products, beverages & tobacco and manufacture of pharmaceuticals; medicinal chemicals and botanical products. Here we assume that these two sectors- corporate manufacturing plus the household manufacturing were operative amid lockdown. We have quarterly GVA for trade, hotels, transport, communication and services related to broadcasting. Here the communication and services related to broadcasting have around 9.3 % share (average of FY 2015-18) in overall GVA of the trade, hotels, transport, communication and services sector. Hence this sub-sector is excluded from loss computation. Under broader sectors

financial, real estate & professional services, we are assuming that banks and insurance services are working at 50% of their capacity level and rest sub-sector financial services are inoperative. In real estate & professional services, we assume 50 % operation of ICT, Scientific, R&D and other administrative services.

After excluding the contribution of these above sub-sectors, we compute the loss for each sector under four hypothetical scenarios. Scenario A considers the impact of lockdown for 40 days (7 days of Q1 and 33 days of Q2) assuming normal level of economic activity post 3rd May 2020. In scenario B, we consider complete lockdown up to 3rd May and 50% capacity utilization of the economy till 31st May. In Scenario C, in addition to scenario B, we assume the capacity utilization level of 70 % till 30th June and normal level thereafter. Under scenario D, where normalcy level is assumed in three phases- 50% by end of May 2020 (same as of scenario B), 70 % by June (same as of Scenario C) and 90% by September 2020 assuming that 10 % sectors which are adversely affected will take much time for their resumption.

After computing the loss for each quarter for every sector, we add-on the total loss of the corresponding sector and further add up across sectors to find the total estimated loss in GVA. Here we utilize three criteria to estimate the impact assessment. First we compute the percentage decline in GVA at the aggregate level while comparing the GVA of 2020 (after loss) with the actual GVA of 2019. This process is done for sectoral level also to find the potential decline (%) in GVA for the sectors as compared to previous year 2019. Second we exclude the loss of GVA for each quarter of 2020 and compute the quarterly growth rate (YoY basis) in aggregate GVA under all scenarios. Third we find the loss of each sector as well as aggregate level out of the total estimated GVA of 2020. It helps us to find the potential loss in the share of each sector in the total GVA of 2020. At the same time, we compute the ratio of loss of each sector in 2020 as percentage of estimated GVA of respective sector for year 2020.

Assessment of Impact on Manufacturing Sector: In order to find the impact at the industry level, we rely on ASI data for registered manufacturing firms. Here we take the average values of NVA for FY 2016, FY 2017 and FY 2018¹² as base values for estimation. We have the wage expenses as well as fixed cost components viz. interest and rent expenses across industries. First, we compute the loss for each scenario using the base NVA of each industry. Then we also compute the cost component (wages as well as fixed cost, assuming these costs to remain with the firm even if without operation amid lockdown) and calculate the cost for each scenario for each industry. Here we have excluded two industries- food products and the pharmaceutical products. We add on the loss of NVA to the cost during lockdown for a particular scenario, and thereby compute the total loss for each industry. Then we take the average NVA of FY 2014, 2015 and 2016 as the previous base of NVA to compute the percentage decline in the NVA of each industry. Here we calculate the decline (%) while comparing the average NVA of 2014-17. We also compute the percentage share of loss of each industry in total NVA of all the industries of base reference value (i.e. 2015-18 NVA) which helps us to find the decline in shares of each industry in the new output level. Besides, we compute the loss of each industry as

¹² FY 2017-18 is the latest data available from ASI.

percentage of their respective NVA during 2015-18. For effective presentation we select the top 15 industries and show the percentage loss in the total NVA of all industries. It helps us to find out the top losing industry in the manufacturing sector.

Assessment of Impact on Trade: We compute the loss of trade in two formats. First, we describe the exposure of India's exports and imports with severe COVID-19 affected countries. Secondly we compute following the similar practice as of GVA loss computation with minor change.

We are given the values of exports and imports till the first quarter of the calendar year 2020. Here we estimate the exports and imports from Q2 to Q4 for year 2020 by applying the quarterly growth (YoY) of past year 2019. Then we compute the loss for Q2 and Q3 under scenarios A, B, C and D. We don't compute the loss for Q1 of 2020 as the data has already been released wherein significant decline is observed due to COVID-19. In case of Scenario A, we would be having the loss in exports and imports for only second quarter. With this loss of Q2 we compute the percentage of overall exports/imports for the year 2020. Similarly, we calculate the loss of exports for the remaining scenarios. We follow this approach for all the scenarios except scenario E. In fact, all the scenarios A-D are relevant from India's trade perspective. However, it is equally important to see the impact on trade when world trade is also experiencing a massive decline. In order to account for the issue, we take the hypothetical scenario E wherein the percentage decline in quarterly trade during the global financial crisis is taken as the reference point assuming that the corresponding decline was tuned to the fall in global trade. Exports saw the highest decline of 31.9% in 2009-10 Q1 and imports of 31.7% in the next quarter. We consider the lowest decline as weight factor for Q1 of 2020 and then give the highest decline as weight to the Q2 and then apply the weights in declining order to the subsequent quarters (Q3 and Q4) of 2020. Then the loss in exports is computed with the weighted average of exports of Q1-Q4 of 2020. A similar exercise is performed for imports while taking the percentage decline in imports of corresponding period of GFC.

The loss in exports is presented three-folds. One is the percentage decline in exports/imports as compared to the level of 2019, and second is the export/import loss as percentage of estimated exports/imports of 2020. Besides, we calculate the quarterly growth rate (YoY) for 2020 and compare with the growth of corresponding quarter of previous years (2018 and 2019).

Similar to the manufacturing sector wherein we identify the highest loss bearing industries, we calculate the potential loss across principal commodities to know the most sensitive sectors of international trade amid COVID-19 Pandemic. Here we take the average values of exports/imports of 2018-19 and 2019-20 (both from April to January) as base values for loss computation. While applying the lockdown of 33 days on the base year values across principal commodities, we compute the nominal loss for each commodity and finally to all commodities. After computing the loss, we follow three approaches for presentation of impact assessment- loss of each commodity in exports/imports as percentage of aggregate exports/imports of 2020 (India level). We compute the aggregate loss in exports/imports as % of total exports/imports of 2020 and call it national level loss in exports/imports.

Then we compute the loss in exports/imports as percentage of the exports/imports of respective commodity. The commodities bearing the loss higher than the national average are most sensitive from trade perspective amid the COVID Pandemic.

Assessment of Impact on MSME Sector: We compute the estimated loss in MSME sector using the latest data of MSME GVA for the year 2016-17. The impact on MSME sector is based on a two-step process. First, we compute the GVA for manufacturing and services sector by applying as weights shares of the number of total establishments under the two segments (manufacturing and services). After computing the GVA of these two sectors we find the percentage share of each in the national manufacturing and services GVA. Then using the estimated values of percentage decline of these two sectors computed using the quarterly data for 2020 in the first section, we compute the corresponding decline for MSME. The aggregate impact on MSME is computed through weighted average of MSMEs' manufacturing and services sectors' losses.

RELYING ON SERENDIPITY IS NOT ENOUGH: FIXING THE HEALTH SYSTEM IN INDIA FOR FUTURE PANDEMICS

4

CHAPTER

Indrani Gupta

A lot has been written about the state of India's health sector even before COVID-19 hit the global world and India. However, the discussions and debates - often restricted among health sector experts and researchers - have now brought out in the open some key issues plaguing India's health sector that have impacted the way we have responded to the pandemic.

There have been many major decisions and announcements by the government since the pandemic began, and various departments and teams of the government have been engaged round-the-clock in combating the pandemic, including the country's medical personnel, sanitation workers and many others, whose services have been essential and central to our fight against containment of COVID-19. While sincerely acknowledging their contributions, it is important to self-assess and analyse the challenges the country faced - and is still facing - as far as the health sector is concerned, and what, if anything, can be learnt from this catastrophe, in case another such unfortunate pandemic or disaster comes our way.

With rapid increases in COVID-19 testing over the last several weeks to almost 6 million by the middle of June, the ratio of positive cases to total tests has also increased steadily. With the testing criteria widened, this is to be expected. However, there is yet to be a decline in this ratio¹. As for deaths from COVID-19, the government data indicates it is less than 3 percent. Others have argued that the methodology could be incorrect, and the death rate could be higher at about 5 percent, though still somewhat lower than the global 7.6 percent². The earlier view that India has a low burden of infections is no longer valid, but there are significant variations and uneven occurrences of cases across the country, adding to the puzzle. The pandemic is still unfolding, and India's cases are now fourth highest in the world. With the lockdown being gradually removed, cases have seen a surge, with Maharashtra, Tamil Nadu, Delhi and Gujarat remaining the most affected states in terms of total confirmed cases. Reports indicate increasing cases in rural areas as well due to the influx of return migrants. Despite the government's position on community transmission, experts seem to suggest that the virus is spreading into populations where

Health emergencies such as COVID-19 will impact on health outcomes by adversely affecting health-seeking behaviour of the general population.

¹ <https://indianexpress.com/article/opinion/coronavirus-testing-india-numbers-6434215/>

² <https://www.outlookindia.com/website/story/india-news-indias-covid-19-death-rate-could-be-higher-than-the-us-govt-advisory-firm/353801>

the source of infection cannot be tracked down³. Overall, the situation remains grim, and cities like Delhi and Mumbai are grappling with severe shortages of hospital beds, equipment and personnel.

There are a few facts that need to be recalled about the health sector response in India.

Low testing was initially mainly out of compulsion because of shortages of testing kits and low capacities of government laboratories – both in numbers and ability to analyse the samples. After a hit and trial with Chinese test kits, India decided to depend on domestic test kits and is now procuring a majority of test kits from domestic manufacturers. It can now test more than 1.5 lakh sample a day and plans to increase testing further. The government has also enlisted private laboratories for testing. Currently, 674 government and 250⁴ private laboratories have been enlisted for COVID-19 testing, resulting in a very rapid improvement in the testing situation.

Despite recent increases in testing rates, India is far behind other countries in its tests per 1,000 population. The testing rates of selected countries that have been hard hit by the pandemic are presented below in Figure 4.1 and bear this out. If testing does reach the levels achieved in these countries, it is frightening to even contemplate what might emerge on the other side.

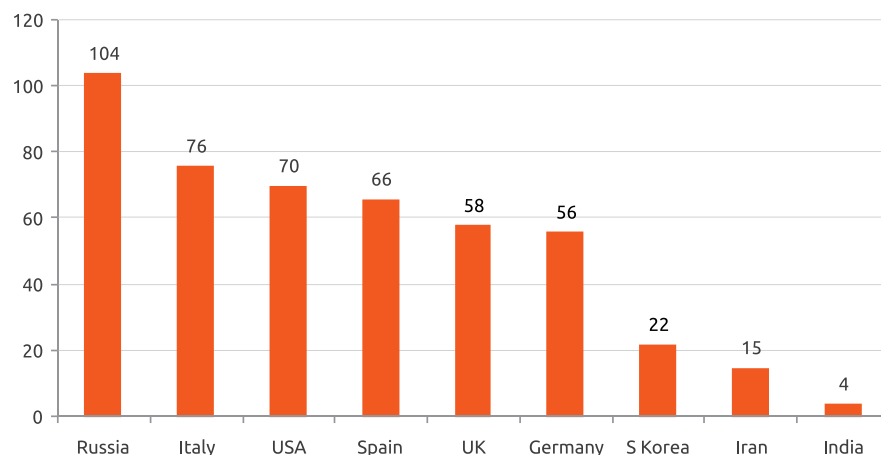


Figure 4.1: Tests per 1000 over 7-15 June, 2020

Source: Our World in Data

India's health system is not prepared to handle pandemics and epidemics.

An equally important but less articulated reason for low testing- despite significant improvement in testing capacity - has been our inadequate health infrastructure, which is unable to handle the high volume of COVID-19 cases. The pandemic has once again brought out the long overdue but critical task that India faces: strengthening the health system.

Infectious diseases and outbreaks need a resilient public health system, particularly a strong surveillance mechanism, adequate health personnel, sufficient medical supplies and preventive equipment and continuous training. A resilient health system has been defined

³ <https://www.hindustantimes.com/india-news/community-transmission-of-covid-19-on-in-many-parts-of-india-icmr-survey-not-reflective-of-current-reality-experts/story-LZZbgWBIMvLgs3JZQvsYNL.html>

⁴ https://www.icmr.gov.in/pdf/covid/labs/COVID_Testing_Labs_16062020.pdf

as “the capacity of health actors, institutions, and populations to prepare for and effectively respond to crises; maintain core functions when a crisis hits; and, informed by lessons learnt during the crisis, reorganize if conditions require it”⁵.

In India, the state of Kerala comes closest to this definition of resilience; instead of waiting for the Centre’s directions, Kerala moved swiftly to contain the pandemic by screening all arrivals, tracing contacts and adopting a robust testing strategy. It also shut down educational institutions and entertainment centres and banned large gatherings including religious ones⁶. The COVID-19 alert was issued as early as on January 18, much before the Central government announced the lockdown; by that time, many had been put in isolation and quarantine and 30,000 healthcare workers had already been deployed⁷. The ICMR termed this the “Kerala model” for testing and containment strategies⁸.

But does the rest of the country have resilient health systems with all the 6 WHO-defined building blocks in robust condition: service delivery, health workforce, information, medical products, vaccines & technologies, financing and leadership/governance? The evidence, unfortunately, indicates it does not.

In the case of infectious disease, even a day’s delay can result in unnecessary infections and deaths, and continuous supply of medical devices and other supplies is critical. During the crisis, shortages of essential medical supplies and personal protective equipment (PPE) have been reported, especially from the hardest hit cities, as also an increasing number of health workers getting infected due to lack of PPE. When the pandemic started, India had almost zero capacity for producing PPE. In two months, domestic capacity did increase to 4.5 lakh PPE suits daily. As for ventilators for critical patients, according to a government source, a total of 19,398 ventilators are available right now in the government sector, and the government has ordered 60,884 ventilators because the current situation requires 75,000 ventilators⁹. A recent report states that combining public and private sectors, 47,000 ventilators are available and the PM-CARES fund has enabled availability of 50,000 ventilators now¹⁰. Domestic production of ventilators has been stepped up and some are being brought in to the country from USA as well¹¹. A recent study by a team of researchers from CDDEP and Princeton University has brought out sharply the shortages in beds, ICU beds and ventilators in the context of COVID¹².

For other medical supplies, India has had to depend on countries like the UAE, which has sent 7 metric tonnes of the supplies¹³. The medical device industry depends on imports

COVID-19 gives India an opportunity to prioritize health by massively increasing investment in the health sector on a sustained basis.

5 [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31156-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31156-3/fulltext)

6 <https://www.thehindu.com/opinion/editorial/the-mark-of-zero-on-containment-of-covid-19-cases-in-kerala/article31512638.ece>

7 <https://www.project-syndicate.org/commentary/kerala-model-for-beating-covid-19-by-shashi-tharoor-2020-05>

8 <https://economictimes.indiatimes.com/news/politics-and-nation/icmr-lauds-keralas-containment-strategy-for-covid-19/articleshow/75510869.cms?from=mdr>

9 <https://timesofindia.indiatimes.com/business/india-business/covid-19-govt-orders-60884-ventilators-of-which-59884-to-be-made-by-domestic-firms/articleshow/75494999.cms>

10 <https://theprint.in/india/48000-ventilators-in-70-years-50000-with-pm-cares-govt-on-how-fund-is-being-utilised/442252/>

11 <https://www.thehindu.com/news/national/covid-19-bel-to-make-30000-ventilators-within-two-months-defence-ministry/article31377555.ece>

12 https://cddep.org/wp-content/uploads/2020/04/State-wise-estimates-of-current-beds-and-ventilators_24Apr2020.pdf

13 <https://health.economictimes.indiatimes.com/news/industry/uae-sends-7-metric-tonnes-of-medical-supplies-to-boost-indias-covid-19-fight/75514166>

to the extent of almost 80% for its requirements¹⁴ and there remains a paucity of Indian players in the manufacture of high-end medical devices, indicating a major constraint for meeting unanticipated demand. There are indications that the responsible department - Department of Pharmaceuticals under the Ministry of Chemical and Fertilizers – had recognized (and possibly planned for) greater focus on increasing production capacity of medical supplies within the country. Now that there is evidence of domestic production being increased for some products, it is puzzling why this could not have been happened earlier by removing any technical or other barriers that may have impeded expansion of Indian production capabilities. Also, with newer guidelines on specifications of PPE and other devices laid down by the government, there seems to be a tradeoff between quality and time, posing a further challenge¹⁵.

As for health personnel and services, Table 4.1 below presents some statistics on physicians, nurses & midwives, and hospital per 1,000 population. The countries selected are some of the worse-hit countries from COVID-19 as well as a few middle-income countries. India's indicators of health personnel and hospital beds are much below those of other countries, including MIC countries like Iran, Turkey and South Africa. India is struggling to meet even the WHO norms of physicians which is 1 per 1,000 population.

The last column reflects the prioritization of health, gleaned from how much the government spends out of its GDP on health. Here India is at the bottom of the list, and we return to this point later in this paper.

Table 4.1: Key health systems indicators for countries most impacted by COVID-19

Country	Physicians /1000	Nurses & midwives /1000	Hospital beds /1000	Govt health spending as % of GDP
China	1.8	2.3	4.2	2.9
Spain	3.9	5.5	3.0	6.3
Italy	4.0	5.9	3.4	6.5
France	3.2	11.5	6.5	8.7
Germany	4.2	13.2	8.3	8.7
UK	2.8	8.3	2.8	7.7
South Korea	2.4	7.0	11.5	4.4
Turkey	1.8	2.7	2.7	3.3
Iran	1.6	2.6	1.5	4.4
South Africa	0.9	1.3	2.8	4.4
India	0.8	2.1	0.7	1.0

Source: World Bank Data Bank

Note: the data pertains to the latest available estimates and differs across countries

While there are indications that COVID-19 patients are mostly being treated at public sector hospitals initially, with tests and cases going up, public sector facilities have been unable to deal with the additional burden. This is very clear from the case of Mumbai

¹⁴ <https://pharmaceuticals.gov.in/sites/default/files/Annual%20Report%202019-20.pdf>

¹⁵ <https://fit.thequint.com/coronavirus/india-may-be-making-2-lakh-ppes-but-quality-issues-remain>

and Delhi, where shortage of beds and staff have become a critical bottleneck in the cities' response to COVID-19¹⁶. Private sector hospitals have been roped in and there are reports also indicate that Delhi is planning to keep hotels and dharmshalas ready for COVID-19 patients who cannot be accommodated in elsewhere¹⁷.

The inability of public sector health care to cater to patients is evidenced by the fact that these facilities are much less used by patients in the country. As Table 4.2 – based on the most recent National Sample Survey¹⁸ (NSS) data indicates - patients visit mostly private facilities and providers. This is more pronounced for non-hospitalisation episodes with a reference period of last 15 days, with only 1/3rd of the patients visiting a government provider; whereas slightly more than half of all patients seek private hospitalization. In many of the EAG states like Bihar and Uttar Pradesh, the share of government hospitals in hospital visits is much lower (38 and 28 percentage respectively).

Table 4.2: Treatment sought at type of facilities by ownership, NSS 75th round

Type of care	Public facilities/ consultations	Private facilities/ consultations	Charitable/ Trust/NGO
Ailments, last 15 days	30	66	4
Hospitalisation	42	55	3

Clearly affordability cannot be the basis of preferring private providers. Figure 4.2 indicates straightaway why out-of-pocket expenditures are so high in India; private hospitals are several times more expensive than government hospitals, and despite this, patients visit private providers.

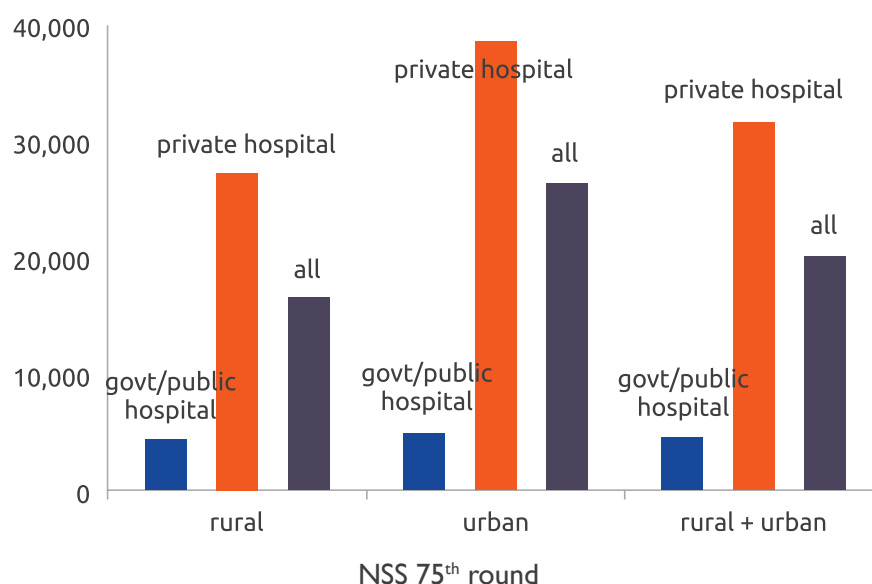


Figure 4.2: Average medical expenditure per hospitalisation case

¹⁶ <https://science.thewire.in/health/mumbai-coronavirus-hospital-beds-staff-shortage/>

¹⁷ <https://www.hindustantimes.com/delhi-news/delhi-to-get-2-000-oxygen-concentrators-may-change-norms-to-buy-more-ppes/story-wTfLjdSCBF0FNFQOVeKZPI.html>

¹⁸ MoSPI. NSS 75th Round: Key Indicators of Social Consumption in India: Health.

Despite the elaborate public health infrastructure visualised by policymakers of independent India and implemented subsequently - meant to launch a model of government-financed and government-provided healthcare in the country - evidence indicates that access to public health facilities in India has been a source of constant concern¹⁴ due to inadequate numbers of such facilities, lack of quality, dearth of doctors and poor infrastructure^{15,16}. Enough evidence exists to indicate that private providers are present where there are no public facilities. Unfortunately, due to lack of data, it is difficult to discuss the quality question, but unregulated private sector does not give confidence about the quality either.

A recent analysis¹⁹ based on National Rural Health Statistics of the Ministry of Health and Family Welfare corroborates the infrastructure and personnel gaps.

In terms of infrastructure, the highest shortage in the country is observed of Community Health Centres (30%) followed by Primary Health Centres (22%) and Sub-centres (19%) respectively. Seventy nine percent of Sub-centre shortages and 69% of shortages in PHC and CHC, were in EAG states in 2017, especially Bihar, Jharkhand and Madhya Pradesh.

As for health personnel, the Indian Public Health Standards (IPHS) lay down norms of each category of personnel. As per IPHS norms for manpower, there should be 1 doctor per PHC and 4 specialists per CHC. EAG (non-EAG) states have 0.82 (1.27) doctors per PHC and only 0.67 (0.81) specialists at CHCs, indicating that the EAG states are not being able to meet the norms for most of the categories. Figure 4.3 presents these shortages in EAG and non-EAG states for some other types of personnel and indicates that there are significant shortages in pharmacists, lab technicians and radiographers in CHCs, and these gaps are worse for the EAG states.

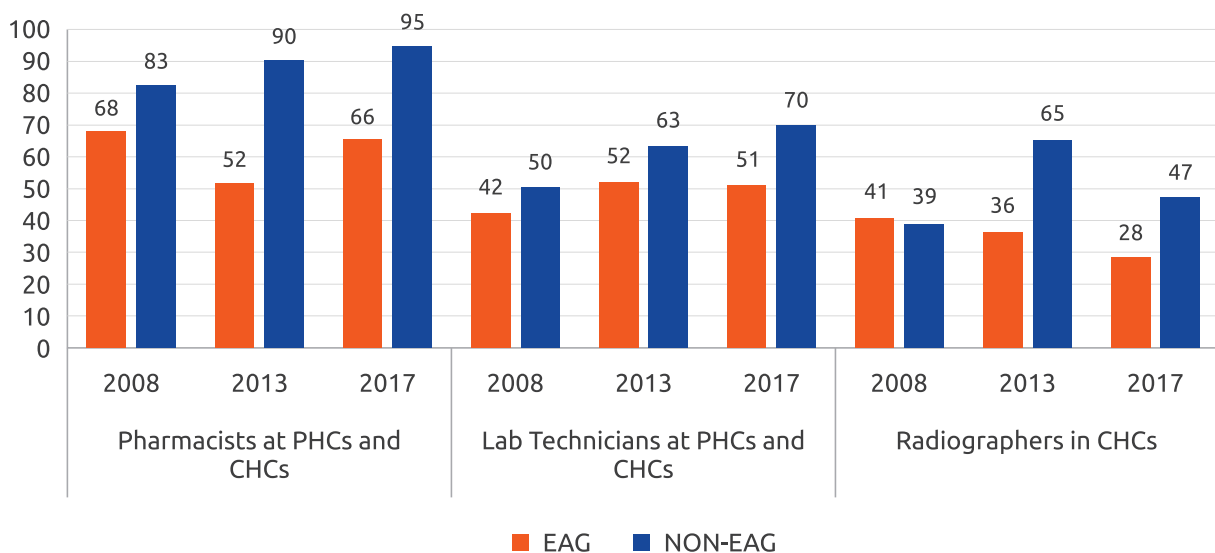


Figure 4.3: In-position manpower as a percentage of required manpower

The National Health Profile 2019 indicates that there are only 25,778 hospitals in the government sector in the entire country. If one adds hospitals run by the railways, ESIC and others, the total number of government hospitals still remains less than 30,000 for a population of 1.3 billion.

19 Gupta and Ramandeep (2019). Rolling out Universal Health Coverage: How ready is India's health system? Mimeo.

We observed that India does not meet WHO standards for hospital beds per 1,000 population from Table I. There are only about 7,20,000 government beds in the system and adding additional availability in railways and others, maybe a total of 7,50,000 government beds. At a 3% rate of hospitalization based on NSS latest round, there would be more than 40 million people accessing hospitals in a year, or on average 3.3 million in a month would require hospitalization. As the NSS data shows, about half of these individuals – or about 1.6 million or 16 lakhs - would have been hospitalized in a government hospital, indicating a substantial demand for beds in government hospitals. If the increased tests throw up increased number of symptomatic cases requiring hospitalizations, there will have to be some way of accommodating these individuals across these many beds. Hospitalisations for COVID-19 do not seem to be of short durations, and can often take at least 2 weeks, making turnover lower than usual. There are already numerous reports on shortage of beds for COVID patients, but the important point is that there is likely to be shortage for other patients too, especially since the government has decided to keep aside beds for COVID patients.

This shortage leads to a very unfortunate trade-off between COVID-19 and other non-COVID patients. Admittedly, some of these people will overlap with the population most vulnerable to complications from COVID-19. The NSS 2017-18 health data indicates that those aged 60 and above had the highest treatment seeking behaviour – for OPD as well as hospitalisations – indicating that the elderly are going to be impacted the most. The shortage of hospital and hospital beds would mean that many with non-COVID illnesses would forego hospitalisation and many would also switch to private providers, incurring out-of-pocket expenditures. There are already reports of patients suffering from cancer, diabetes, heart diseases etc not being able to get treatment due to the lockdown. It is not clear how many are being forced to avail treatment at private facilities with substantial financial burden, since these facilities are closer home and may be accessible even during lockdown.

Apart from hospital and hospital beds, services of medical personnel are being stretched. Additional medical staff, including doctors, nurses, technicians, sanitation workers etc are being deployed for the COVID-19 situation. The infection rate among health care workers is also increasing. Shortage of staff to begin with, coupled with diversion of staff to COVID care and infection among medical staff is likely to impact on care for non-COVID patients.

A quick note about overall impact on out-of-pocket spending (OOPS): there are already reports of high OOPS for COVID patients accessing private hospitals, with hospitals charging exorbitant amounts for PPE and other consumables – which can be as much as half of the total bill - and insurance companies refusing to cover such costs²⁰. With a majority of Indians without health coverage, out-of-pocket expenditure during COVID-19 is almost certainly going to rise. It is too early to assess the benefits of PM's Jan Arogya Yojana for poor COVID-19 patients, but reports seem to indicate that the access has been low so far²¹.

Coming to the last but most important point on health financing. The low level of health financing has been an old story and a constant one – nothing seems to change it over the years. With COVID-19, there have been substantial allocations on the health system to

The public health cadre in the country needs strengthening.

20 <https://www.indiatoday.in/india/story/coronavirus-treatment-cost-private-hospitals-ppe-n95-masks-india-1683567-2020-05-30>

21 <https://www.thehindu.com/news/national/only-2132-availed-or-being-treated-for-covid-19-under-ab-pmjay/article31635083.ece>

enable the health sector to respond with some minimum efficiency. The question is, could this not have happened gradually over the years? Adequate health finances is the first step towards prioritization of the health sector and demonstrates political will.

The total health expenditure as a percentage of GDP in the country was 3.8% of GDP in 2016-17, according to the latest National Health Accounts²². Of this, only 32% is government health expenditure, the remaining being mostly expenditure incurred by households as out-of-pocket expenditure (58.7%). Overall, government health financing out of GDP has remained around 1 percent over the years (Figure 4.4). The share of the central government in government health expenditure is about 1/3rd, indicating that the bulk of the financing of COVID-19 prevention and treatment will necessarily be dealt with at the state level.

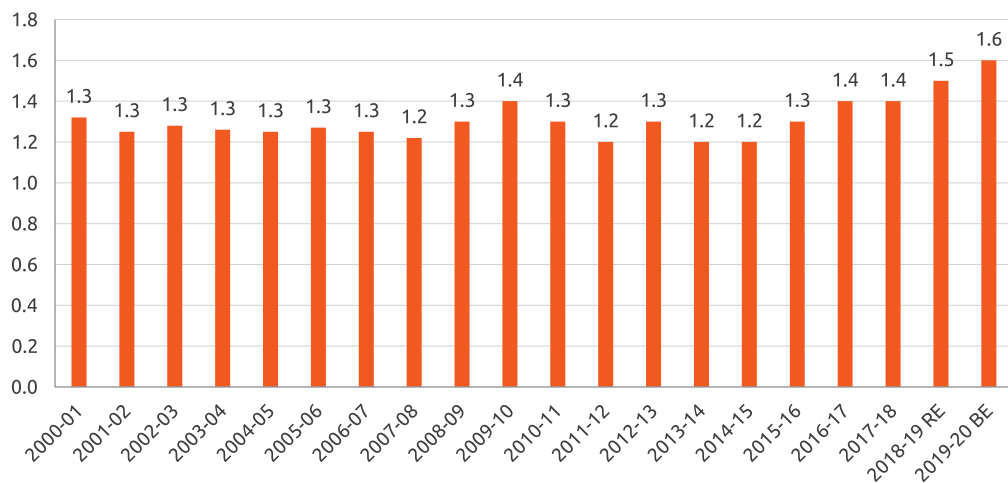


Figure 4.4: Public Health Expenditure as a % of GDP (Centre & States combined)

Source: Economic Surveys

Given the figures of total government health finances, it stands to reason that state health finances could not be much better, since the major share of total health finances come from the states. Table 4.3 presents the share of government health expenditure in GSDP of EAG and non-EAG states and also some selected states for 2015-16, obtained from RBI data.

The governments of non-EAG states are spending much less than 1% of their GSDP on health; this number is slightly better for EAG states at 1.2%, though per capita expenditure is very low for this group. North eastern states are doing much better, and spending almost 2.5% of their state incomes on health and spending substantially more per capita. If we look at some of the states hard hit by COVID like Maharashtra, Delhi and Tamil Nadu - less than 1% of GSDP is being spent on the health sector. Kerala spends the most in this group, though still less than 1% of GSDP. Delhi's per capita expenditure is higher than that of other states, followed by Kerala. Higher spending is necessary but not sufficient for better outcomes - as indicated by Kerala's success with the pandemic, which is also due to a better managed health system.

Of the meagre funds that the Indian government spends on health, the share of *public health* in total expenditure for states, excluding UTs, was less than 11% in 2015-16, with significant

22 <http://nhsrcindia.org/sites/default/files/FINAL%20National%20Health%20Accounts%202016-17%20Nov%202019-for%20Web.pdf>

variation across states. This includes prevention & control of diseases, all the national disease programmes, vaccination, public health laboratories etc. This is the category that is most important in the context of an outbreak. Also, India is still missing a strong public health cadre^{23,24} a critical component for tackling disease outbreaks seriously.

Table 4.3: Government health expenditure, selected states (2017-18 Actuals)

States	Per capita public health expenditure	Health expenditure as % of GDP
EAG	927	1.2
Non-EAG	1292	0.7
North eastern states	3121	2.5
<i>Selected states</i>		
Bihar	585	1.3
Uttar Pradesh	758	1.2
Kerala	1802	0.9
Maharashtra	996	0.5
Gujarat	1326	0.6
Delhi	2131	0.7
Tamil Nadu	1493	0.7

There have been many instances of outbreaks like the SARS, H1N1 and Ebola in the world. Each time lessons in health sector preparedness have emerged, but unfortunately, India has not taken steps to put a resilient system in place. Evidence of action would have been an increase in total health finances, not redistributing existing finances over a greater number of schemes and programmes.

Of course, with the crisis raging, the government has put in significant amounts of resources into the health system; however, responding to a crisis with ad hoc solutions to systemic issues plaguing the health sector over decades can only postpone the much-needed health sector reforms that India needs. Our extremely committed cadre of health workers who are working round the clock in the country at great risks to themselves, deserve a more conducive system that does not constantly trigger worries about shortage of medical supplies, protective equipment, beds and larger teams. Countries like South Korea and Germany have demonstrated that it is possible to respond more effectively with a robust health system in place. Kerala also is an example that the rest of the country should analyse to see what lessons can be learnt and replicated in other states.

The COVID crisis is a wake-up call for the country to initiate a series of urgent measures to address the serious gaps in the health sector, beginning with a substantial and permanent leap in the health financing level, plugging the personnel and infrastructure gaps, improving efficiency through other required administrative restructuring and other similar reforms. The Centre's leadership and collaboration with the states would be critical in the federal structure of the country. In the meantime, one can only hope that India turns the corner soon and sees the flattening of the COVID curve that is much awaited.

23 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5112964/>

24 <https://apps.who.int/iris/handle/10665/329499>

COVID-19 IN INDIA: EPIDEMIC GROWTH AND IMPACT ON MATERNAL AND CHILD HEALTH

*William Joe, Abhishek, Rakesh Kumar, Sunil Rajpal and
S V Subramanian*

5.1. Introduction

As of May 20, 2020, with over 106,000 confirmed cases¹, India has 11th highest share in the global burden of COVID-19. Figure 5.1 presents the disconcerting upward trajectory of daily new cases as well as the cumulative number of COVID-19 infections in India. The three vertical lines denote the lockdown² – Phase 1 (24 Mar – 14 Apr, 2020), Phase 2 (15 Apr – 3 May, 2020) and Phase 3 (4 May – 17 May, 2020). A curve-fitting exercise reveals that since Mar 1, 2020 COVID-19 outbreak has witnessed an exponential growth of 6.4% per day. The exponential growth was very high at 12.9% during the first phase of lockdown but has declined to 6.5% and 5.4% during the second and third phases, respectively.

The reduced growth rate, nevertheless, gets translated into large and ever-increasing number of infections per day. The geo-spatial dispersion of COVID-19 is also an emerging concern. Two important aspects of the spread are: a) heavy concentration in Western India (major urban centres) and b) increasing transmission to Eastern India, particularly West Bengal and Bihar. It is noted that about two-thirds of the COVID-19 cases and deaths are concentrated in 13 urban agglomerations³ with more than half of the cases from Ahmedabad, Delhi and Mumbai.

The progress of the epidemic is monitored through concepts such as doubling time and percentage of recovered cases. These crude indicators, however, may not offer much assistance in understanding the course of the epidemic. For instance, at the initial stages, the number of cases is low and hence the doubling time is usually shorter. Whereas, in later stages, the doubling time may increase but it does not necessarily imply slowdown of the epidemic. For example, the COVID-19 cases in India doubled from 1019 to 2059 in 4 days (29 Mar to 1 Apr, 2020) whereas it took 11 days (23 Apr to 3 May, 2020) for a two-fold increase in cases from 21373 to 42546 and 13 days (5 May to 18 May, 2020) to increase from 49405 to 100327. Similarly, recovery rate⁴ or percentage of recovered persons, by

¹ Based on <https://coronavirus.jhu.edu/map.html> (accessed on May 20, 2020)

² It may be noted that lockdown is further extended as Phase 4 (18 May – 31 May, 2020).

³ <https://timesofindia.indiatimes.com/india/13-urban-sprawls-account-for-2/3rd-of-indias-cases-deaths/articleshow/75524643.cms>

⁴ The recovery rate is sometimes erroneously computed as a percentage of total recovered persons (at time t) to total number of confirmed cases (at time t).

and large, tracks the number of COVID-19 cases with a lag of about 18-20 days (as per data). As such, with COVID-19 fatality of over 3%, the recovery rate is expected to be around 96% but can vary with age-sex specifics as well as infectivity parameters.

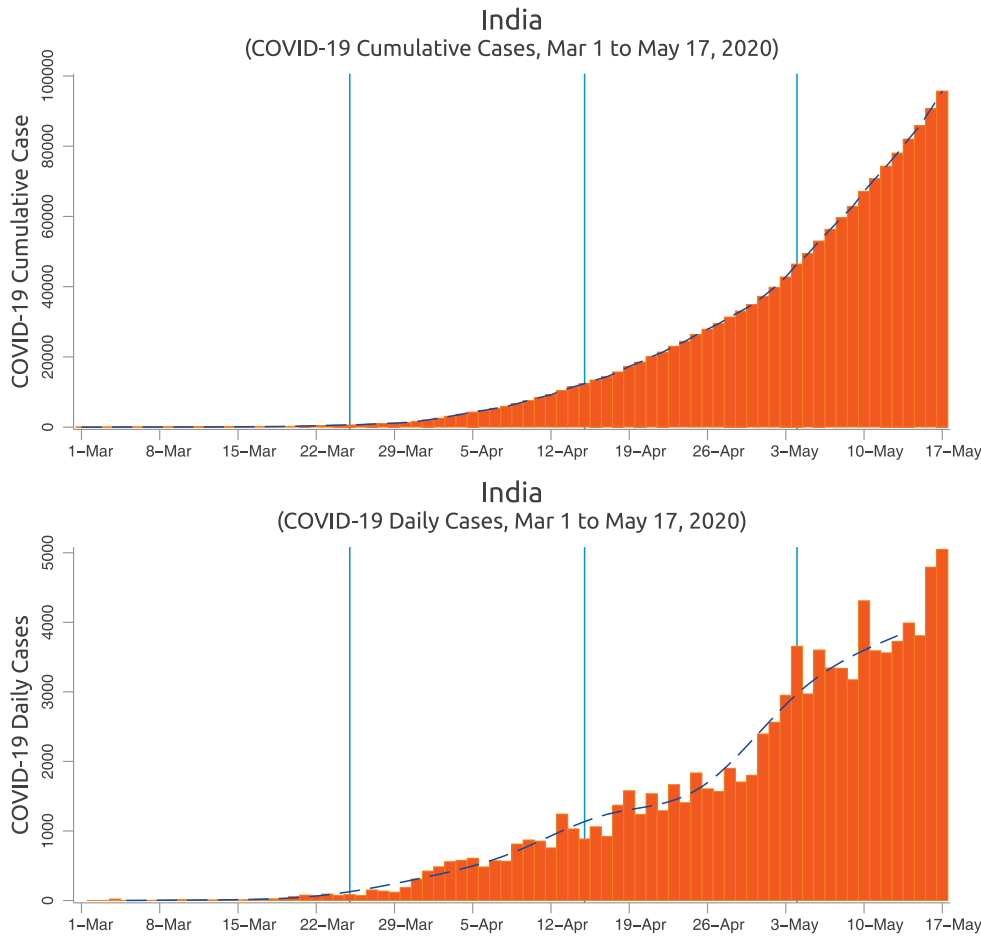


Figure 5.1: COVID-19 daily new cases and cumulative cases in India, Mar 1 to May 17, 2020

Source: Authors based on <https://www.COVID19india.org/> (accessed on May 19, 2020)

5.2. Case Fatality Rate (CFR)

The case fatality rate⁵ is defined as the percentage of confirmed deaths in total confirmed cases. Obviously, the CFR strongly relies on data quality, completeness and official confirmation on testing and positive cases. All of these are important concerns in resource-poor settings and is likely to underestimate the scale of the epidemic. Besides, the CFR is sensitive to age-sex specifics, co-morbidity conditions, and health care conditions. Notwithstanding the limitations, Table 5.1 provides the CFR estimates for India as per the available data from on <https://www.COVID19india.org/> (accessed on May 11, 2020). It may be noted that the age-related information was available for 11% of total confirmed cases and 24% of total death cases. The age-sex distribution of total confirmed and death cases is, therefore, adjusted by age-sex distribution of reported cases.

COVID-19 Case Fatality Rate (CFR) is sensitive to age-sex specifics, co-morbidity conditions, and health care conditions. All of these are important concerns in resource-poor settings.

⁵ The concept of Infection Fatality Rate is more useful and is defined as the total number of infection-related deaths divided by the total number of cases. However, the true number of cases is seldom known because of inadequate testing and potential asymptomatic cases.

The overall CFR for the reported cases is 6.9% but it is estimated to be 3.3% for the distribution-adjusted cases. The adjusted CFR estimates follow a ‘Nike-Swoosh’ across age groups confirming that the risk of mortality is high among under-five children, then it declines among young adults and thereafter further increases among older adults. The CFR is particularly high among the elderly aged 60 and above. In fact, the risk of death is one-in-four for those aged 80+ years. Figure 5.2 also finds similar age-specific pattern in CFR for males and females. The CFR among males is higher than females for most of the age groups. However, it is important to consider the completeness of the data and case reporting to arrive at conclusions regarding these vital parameters. Moreover, further standardization is necessary to interpret the CFR. For this purpose, we use the age-sex distribution of India’s population (2021) as per the NCP Population Projection Report (2019) and estimate the standardized death rate to be 3.1% for both males and females COVID-19 cases.

Table 5.1: COVID-19 cases and CFR (unstandardized), India, May 9, 2020

Age Group	Cases		Deaths		Case Fatality Rate	
	Reported	Adjusted	Reported	Adjusted	Reported	Adjusted
0 to 4 years	139	1240	7	30	5.0%	2.4%
5 to 19 years	802	7154	5	21	0.6%	0.3%
20 to 29 years	1759	15691	12	51	0.7%	0.3%
30 to 39 years	1775	15834	23	97	1.3%	0.6%
40 to 49 years	1385	12355	69	292	5.0%	2.4%
50 to 59 years	893	7966	135	572	15.1%	7.2%
60 to 69 years	553	4933	167	708	30.2%	14.3%
70 to 79 years	170	1516	76	322	44.7%	21.2%
80+ years	53	473	28	119	52.8%	25.1%
All	7529	67161	522	2212	6.9%	3.3%

Note: The standardized death rate is 3.1% and is estimated based on the age-sex distribution of India’s population (2021) as per the RGI’s Population Projection Report (2019)

Source: Authors based on <https://www.COVID19india.org/> (accessed on May 11, 2020)

5.3. COVID-19 Lab Testing

Test elasticity of absolute number of confirmed cases is positive and significant indicating that an increase in testing is associated with increased identification of confirmed cases.

Expanding COVID-19 testing is critical as only the lab-confirmed COVID-19 cases are counted and, presumably, prioritized for monitoring and surveillance. As of May 18, 2020, India has conducted over 2.3 million tests (fraction of repeat-tests) to detect COVID-19. The fact that increasing the frequency of tests is critical is established from Table 5.2. It is discernible that the test elasticity of absolute number of confirmed cases is positive and significant indicating that an increase in testing is associated with increased identification of confirmed cases. The conclusion holds even after adjusting for underlying exponential trend. This also corresponds with the need for scaling up testing facilities throughout the country, especially in areas with detected positive cases.

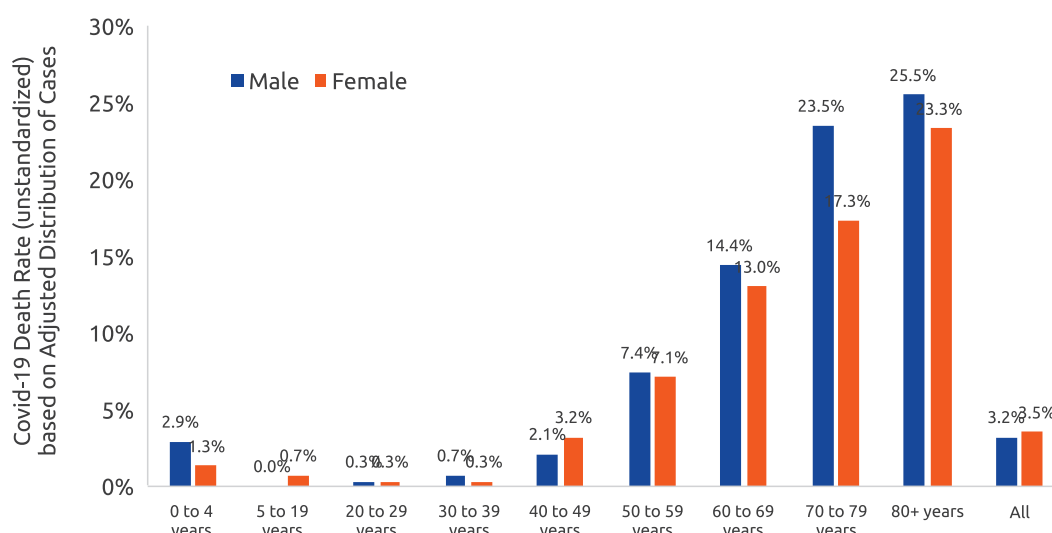


Figure 5.2: Gender-differentials in COVID-19 CFR, India, May 11, 2020

Note: The population age-sex structure based standardized CFR on May 11, 2020 is 3.1% for both males and females. The age-sex distribution of India's population (2021) as per the NCP Population Projection Report (2019) is used for standardization.

Source: Authors based on <https://www.COVID19india.org/> (accessed on May 11, 2020)

Table 5.2: Elasticity estimates for COVID-19 lab-tests and confirmed cases, India

	Model 1	Model 2	Model 3	Model 4
Ln(Lab-tests)	1.13*** (0.019)	1.73*** (0.111)	1.38*** (0.093)	0.58*** (0.166)
Time trend	—	-0.05*** (0.010)	-0.02** (0.009)	0.112*** (0.026)
Lockdown (Phase 1)	—	—	0.55*** (0.069)	0.25*** (0.079)
Lockdown (Phase 2)	—	—	0.27** (0.116)	-0.004 (0.106)
Lockdown (Phase 3)	—	—	0.19 (0.151)	0.013 (0.125)
Time trend squared	—	—	—	-0.001*** (0.0002)
N	58	58	58	58

Note: The analysis is based on data for the time-period Mar 13 to May 18, 2020 (58 observations). The dependent variable is natural logarithm of COVID-19 cases. All the three OLS regression models include an intercept term.

*** denotes significance at 1% and 5%, respectively.

Source: Authors based on <https://www.COVID19india.org/> (accessed on May 19, 2020)

A state-level analysis (not reported here) finds that Maharashtra, Tamil Nadu, Rajasthan and Andhra Pradesh have conducted the highest number of tests. The association of tests and confirmed cases is rather steep for Maharashtra, Gujarat, Madhya Pradesh, Delhi and Telangana indicating the need for continued expansion of tests until a flattening of the

test-confirmation association is noted. Tamil Nadu, Rajasthan, Uttar Pradesh and Karnataka also display a positive association between tests and cases. However, the number of cases per unit of tests is smaller than in the above set of states. Interestingly, Bihar has more or less similar test and case profile as that of Kerala but with the increasing tendency of return migration from urban-to-rural areas, it is important to increase surveillance efforts and conduct community-based testing to understand potential asymptomatic carriers and undetected infections.

5.4. Theory of Epidemics and Lockdown Strategy

An atomistic individual-level partition of the population for quarantine is the fastest way to end the epidemic but in practice it may imply adoption of cluster-specific lockdown approach with smallest possible area and population.

Kermack and McKendrick (1927) offer vital insights on the potential spread of contagious epidemics⁶. The seminal work describes that two critical factors - infectivity rate and population density - determine the scale of the epidemic. Importantly, the concept of unit area – related to population density – has remained a less discussed aspect in strategic choices to curb the infectious spread of COVID-19. This work has motivated the development of compartment models of epidemiology. In particular, the population is segmented into compartments such as susceptible, exposed, infectious and recovered (SEIR) and various assumptions regarding the flow patterns between compartments are used to model how an epidemic can pan out and when it can end. The simplified compartment models often ignore factors such as infection relapse, mortality and migration but nevertheless offer vital insights for shaping policy response. In fact, an important theoretical insight is that “[a]n epidemic, in general, comes to an end, before the susceptible population has been exhausted”.

Here we follow the SEIR framework and present a simulation analysis on the epidemic outbreak, peak infection rate and the time required for the end of the epidemic. The SEIR model is represented by a system of non-linear equations and are solved using various methods, including the Euler method. Table 5.3 reports the results. The parameter β , describes the number of infecting contacts per day made by an infected person. If β decreases – say by social distancing or lockdown - then infections per day decrease and it provides space for enacting measures to flatten the curve soon. Parameter, σ , describes the percentage of the exposed population turning infectious whereas, γ , captures the recovery period. Parameter, σ , if reduced can provide an initial advantage for health system preparedness for responding to the epidemic. Parameter, γ , is also critical because a longer recovery period can lead to infectivity persistence and more chances of infections (hence treatment is critical). In these models all the susceptible population is infected before recovering⁷. The model parameters are linked to the concept⁸ of basic reproduction number, R_0 . Technically, R_0 , is defined as the product of three terms: a) infection per contact, b) contacts per unit of time and c) duration of recovery. Vaccine development is critical to reducing the probability of infection from contact. Similarly, measures such as social distancing can

6 Kermack, W. O., & McKendrick, A. G. (1927). A contribution to the mathematical theory of epidemics. Proceedings of The Royal Society of London. Series A, Containing papers of a mathematical and physical character, 115(772), 700-721.

7 It is, however, a well-established result in mathematical theory of epidemics that, in general, a fraction of the population escapes infection even though they remain susceptible.

8 The review by Heesterbeek and Dietz (1996) defines R_0 as the expected number of secondary cases produced by a typical infected individual during its entire infectious period, in a population consisting of susceptible only. See Heesterbeek, J. A. P., & Dietz, K. (1996). The concept of R_0 in epidemic theory. *Statistica Neerlandica*, 50(1), 89-110.

help reduce the number of contacts whereas treatment options can reduce the infectivity period.

Scenario 1 describes the case of a 10-person population with infectivity parameter of 1 per contact. In this free-mixing population, the peak cases of 7 is noted on the 10th day of the outbreak whereas the community requires 49 days to fully recover from the epidemic. Other scenarios describe the changing impact on peak number of cases and days for ending the epidemic. Three key insights from this simple simulation are as follows. First, irrespective of timing of the peak and infectivity, the epidemic is usually long-stretched and is essentially shaped by recovery parameter and the size of the susceptible population. Second, the health system should aim to decrease infectivity by restricting exposure of the susceptible population. Third, micro-planning of quarantine and containment zones of susceptible population is critical to reducing the length of the epidemic outbreak. An atomistic individual-level partition of the population for quarantine is the fastest way to end the epidemic but in practice it may imply adoption of cluster-specific lockdown approach with smallest possible area and population.

Table 5.3: Infection peak and full recovery time based on SEIR model simulations

Scenario	Susceptible	β	Active cases at peak	Timeline (in number of days)	
				To peak	To fully recover
1	10	1	7	10	49
2	10	4	8	6	46
3	20	1	13	12	60
4	20	4	15	7	56
5	50	1	31	14	74
6	50	4	36	8	69
7	100	1	62	15	85
8	100	4	72	8	79
9	500	1	309	19	111
10	500	4	354	10	103
11	1000	1	616	21	122
12	1000	4	710	10	113

Note: Simulation assumes γ parameter of 1/14 (a two-week recovery period) and σ parameter of 0.5 (50% of the infection-exposed persons turn infective every day).

5.5. Lockdown and Impact on Maternal and Child Health

India, home to over 1.35 billion people, is in lockdown mode since Mar 24, 2020. Maternal and child health services is a key area affected by COVID-19 disruptions. There are media reports indicating steep decline in maternal and child health care utilization. Although, CFR in India due to COVID-19 is being estimated to be about 3 percent but it could be a lot higher if indirect deaths due to disruption of essential health services are considered. We present preliminary estimates regarding potential loss of maternal and infant lives and impact on maternal and child undernutrition.

5.5.1. Maternal and Child Mortality

To estimate the impact on maternal and child deaths, we use the Lives Saved Tool (LiST) Module of the Spectrum software for demographic analysis (Avenir Health). LiST incorporates latest scientific evidence and data with impact pathways and parameters derived from globally accepted interventions related to pregnancy, delivery care, breastfeeding and other preventive measures. The impact on maternal and child deaths is developed based on alternative scenarios⁹. We assume three scenarios for coverage disruptions – low, medium and high. In the low-impact scenario we assume that the family planning services experience a 9.8% point reduction than the current levels. In medium and high impact scenario, we assume a further two-fold (18.8% point) and four-fold (39.3% point) reduction in these services. ANC, PNC and immunization services experience an 18.5%, 26.9% and 51.9% point reduction whereas curative care experiences 14.3%, 23.1% and 49.4% point reduction in these three low, medium and high scenarios, respectively.

We find that under the low-disruption scenario around 111 additional maternal deaths and 7177 under-five deaths can occur within a period of 3 months (Table 5.4). Around 300 maternal deaths and over 15000 child deaths can occur if the current disruptions have heavily impacted the utilization of maternal and child care services across the country. Importantly, the number of maternal and child deaths increase further if the disruptions continue beyond 3 months or are more severe. Newborns are particularly at higher risk of mortality.

Table 5.4: Estimated maternal and child deaths attributable to COVID-19 induced disruptions

Disruption Scenarios	3 months		6 months		12 months	
	Maternal	Child	Maternal	Child	Maternal	Child
Low	111	7177	222	14355	444	28709
Medium	168	10005	336	20010	671	40020
High	299	15797	597	31594	1194	63188

Source: Authors' estimates based on LiST Model, Spectrum Package

5.5.2. Maternal and Child Undernutrition

COVID-19 has rendered a catastrophic impact on the lives and livelihoods of millions of poor and deprived households in India. The economic impact of a prolonged lockdown is anticipated in terms of rapid deterioration in customary diets and eating patterns. This can further lead to noticeable increase in the prevalence of underweight and wasting among women and children and undo the gains from POSHAN Abhiyaan and similar other nutrition-sensitive policies and programmes. Importantly, the first 5 years of life are very crucial to determine the quality of life and productivity of the future workforce.

⁹ The assumptions are based on Robertson, T., Carter, E. D., Chou, V. B., Stegmuller, A., Jackson, B. D., Tam, Y., ... & Walker, N. (2020). Early Estimates of the Indirect Effects of the Coronavirus Pandemic on Maternal and Child Mortality in Low-and Middle-Income Countries. Available at SSRN 3576549.

Therefore, it is important to understand the potential impact of COVID-19 related disruptions on child anthropometric failure. In particular, we use National Family Health Survey (NFHS 2015-16) data to infer a potential increase in the burden of child underweight and wasting under two plausible scenarios of a) 2.5 percent and b) 5 percent relative decline in the WHO reference-based standardized anthropometric Z-scores¹⁰ of the children from the poorest 20% households. Similarly, we show increase in prevalence of maternal underweight captured through increase in low (<18.5 kg/m²) and severely low (<17.0 kg/m²) Body Mass Index (BMI) prevalence associated with 2.5% and 5% decrease in weight.

Table 5.5: COVID-19 disruptions and potential impact on maternal and child undernutrition among the poor (lowest wealth quintile, NFHS), India

Age group	Indicator	Percentage Point Increase in prevalence with		Absolute Increase (million) in prevalence with	
		2.5% Z-score Decline	5% Z-score Decline	2.5% Z-score Decline	5% Z-score Decline
Children (0 - 5 years)	Underweight	1.8	3.7	0.52	1.07
	Severe Underweight	1.8	3.4	0.52	0.98
Children (0 - 5 years)	Wasting	1.2	2.5	0.35	0.72
	Severe Wasting	0.8	1.5	0.23	0.43
Age group	Indicator	2.5% Weight Decline	5% Weight Decline	2.5% Weight Decline	5% Weight Decline
Pregnant & Lactating Women (15-49 years)	Low BMI	7.8	15.9	1.41	2.88
	Severely Low BMI	5.5	11.7	0.99	2.11
Women (15-49 years)	Low BMI	6.9	14.2	3.48	7.13
	Severely Low BMI	5.1	11.2	2.56	5.61

Source: Authors' estimates based on NFHS 2015-16 and NCP Population Projection Report (2019)

A 2.5% decline in the weight-for-age Z-score can lead to 1.8 percentage point increase in the prevalence of child underweight among the poorest 20% households (Table 5.5). In absolute terms, the impact translates to 0.52 million poor children becoming underweight. A moderate 5% decline in Z-score can lead to 3.7 percentage point increase in underweight prevalence among the poorest and translate into over one million additional underweight cases. These declines more or less correspond with the POSHAN targets for annual achievement. A similar 2.5% decline in weight-for-height Z-score can lead to 1.2 percentage point increase in wasting outcomes among the poor implying about 0.35 million additional cases of wasting. Importantly, the analysis suggests considerable impact on severe wasting or severe acute malnutrition (SAM).

A 2.5% weight reduction among women from the poorest households can lead to 7.8% and 6.9% points increase in the prevalence of low BMI among pregnant and lactating

¹⁰ WHO Multicentre Growth Reference Study Group. (2006). WHO Child Growth Standards based on length/height, weight and age. *Acta Paediatrica* (Oslo, Norway: 1992). Supplement, 450, 76.

women and those in the reproductive age group, respectively. Such high impact translates into 1.4 million and 3.5 million increment in low BMI cases in the country. With continued disruption of food and health system services the moderately extreme scenario of 5% reduction in weight can affect the nutrition status of more than 3 million pregnant and lactating women. Besides, such effects would have long terms repercussions for child health and development.

5.6. Concluding Remarks

Despite a slew of policy measures, India is yet to witness the peak of the COVID-19 curve. While social distancing and lockdown have reduced the intensity of the outbreak but extended lockdown can significantly elevate the risks to maternal and child health. Disruptions to health and livelihood can increase the prevalence of undernutrition among women and children and can undo all recent progress and achievements. It is therefore critical to address these challenges and restore health and economic system. Based on the analysis, the main recommendations are as follows:

- Enhance short-term nutritional supplement support for women and children, particularly the poor, through existing health, nutrition and social welfare programmes. Increase growth monitoring of severe and moderate acute malnutrition (SAM and MAM) cases.
- With the likelihood of undetected and asymptomatic infections, ensure segregation of health facilities and resources for maternal and child health care services and COVID-19 services.
- Ensure specific provisions for PPE kits and quarantine facilities for pregnant women and children. Provide timely information and messages for birth preparedness. Continue provisioning of all basic maternal and child health care services including immunization through dedicated health officials and community health workers.
- Resources should focus on cluster lockdown by ensuring effective quarantine support to reduce the period of COVID-19 outbreak in a given community. Quarantine groups should be very small and with a focus on providing individual-specific quarantine services.
- Scaling-up case tracing and testing is instrumental to boost public confidence. Significant resource allocations for these tasks as well as for universal (or random sample based) screening and/or testing in quarantined clusters is necessary to determine infectivity and asymptomatic infections. Adopt an axiom of testing that *for every active infection there exists at least one other undetected infection*.

Scaling-up case tracing and testing is instrumental to boost public confidence. Significant resource allocations for these tasks as well as for universal (or random sample based) screening and/or testing in quarantined clusters is necessary to determine infectivity and asymptomatic infections

AGRICULTURE DURING THE PANDEMIC: PROBLEMS AND PROSPECTS

6

CHAPTER

C.S.C. Sekhar

The COVID-19 pandemic will have a major impact on the global and Indian economies. In early April, the International Monetary Fund (IMF 2020) forecast a decline of 3 percent in the world GDP for 2020-21. Indian growth is projected to be slightly better at 1.9%. However, this forecast for India has since been downgraded to 0.2-0.5 percent by various rating agencies in their subsequent assessments and the picture is turning gloomier by the day. With close to 50 percent of the workforce engaged and with its linkages with other sectors, agriculture holds large implications for the overall economy. The present essay reviews the current status of agriculture in the country and the prospects for the future in the backdrop of the pandemic. We look at the various dimensions of agriculture – food supply & demand; storage and distribution; employment and incomes; international scenario and the government policies to deal with the crisis.

6.1. Supply Side

On the supply side, the production of staple cereals appears adequate. When the COVID-19 crisis struck the rabi harvesting was about to begin. The second advance estimates of the crop production (SAE) in mid-February had pegged the wheat output at 106.21 million tons while rabi rice to be 15.53 million tons. Projections by the states show higher production of wheat and rice in rabi than the SAE. However, with the subsequent lockdown there were genuine apprehensions about harvesting and procurement operations. However, these operations appear to be largely on track. More than 80 per cent of the wheat output has been harvested by April 26 and the procurement has been brisk with nearly one-third of the targeted procurement being completed by 30 April. This has become possible through some innovative measures by the central and state governments like extending procurement period by 15 days and staggering procurement; allowing farmers to sell and transport directly from registered warehouses and farmer producer organizations (FPOs); devising app-based transport aggregator services etc. The crop outlook for the upcoming kharif season is also positive with several encouraging pointers. A normal monsoon; start of sowing in almost all the states; good uptake of fertilizers and seeds are some of the positive signals that augur well for the kharif season.

There are sufficient grain stocks with Food Corporation of India (FCI). The grain stocks on 1 April were 56.9 million tons (24.7 wheat and 32.2. rice), which are nearly two and a

Robust rabi production, positive outlook for upcoming kharif season; brisk procurement and efficient distribution; adequate global stocks and output – all point to an adequate supply of staple cereals.

half times of the buffer stock norms (MoFC&PD, 2020). The expected procurement in the current season is about 52 million tons while the outgo on all the programs, including the recently announced free grains of 5 kg per person under PMGKAY, will be 27 million tons in the next three months. Hence, by the beginning of July, the stocks could reach a level of 82 million tons. The global inventories are also adequate. The current global stock-to-use ratios, excluding China, are close to their median level of the last two decades, and substantially higher than previous food crisis in 2008 (IFPRI, 2020). Harvests in several major producing countries in the next season are also expected to be satisfactory as per USDA's projections. However, the supply in international markets depends upon the trade policies of major exporting countries. 75 percent of the wheat and rice exports are concentrated. The United States, Canada, Russia, the EU and Ukraine together account for nearly 75% of the world wheat exports in 2019-20. The rice market is equally concentrated, with 75% of exports coming from the largest five exporters, and nearly 25% from India alone. Vietnam, which has a share of 16%, has already banned rice export quotations and reviewing its stocks. Similarly, Kazakhstan, which has a small share of 3% in global wheat market, has banned exports. If even few other exporting countries follow this trend, there could be a major disruption in the international food markets. Thus it is very important for coordinated action by countries on food trade.

Supply of perishables (fruits and vegetables), milk and sugar has been adversely affected by the supply chain disruptions due to lockdown, impacting the incomes of these producers.

Although the domestic supply of staple cereals is adequate, the same cannot be said about the high value food commodities (HVFCs) such as fruits & vegetables and eggs, meat and fish (EMF), which account for 56% of the total value of the output of agricultural and allied activities. Disruptions of the supply chain (during the lockdown period), which includes storage & distribution, processing and marketing, are affecting this sector in a major way. Marketing of perishables like watermelons, muskmelons, mangoes and marigold flowers suffered due to stoppage of transport networks and closure of cold storages and mandies. Sugar consumption declined due to the closure of hotels and restaurants and demand from bulk consumers. Poultry prices have plummeted due to COVID-19 fears. The chilly prices dropped by over 12 percent and 95 percent of the production in the two major states of Telangana and Andhra Pradesh is confined to cold storages. Urgent action is needed to smoothen the supply chains and help these farmers.

Summing up, an overall assessment of the supply side suggests that availability of foodgrains is adequate and not many problems are foreseen on this front. Production, procurement and stock levels appear satisfactory, despite constraints of labour and machinery. The crop outlook for the upcoming season is also upbeat. The food distribution to states is also on track. Global stocks are also adequate. However, the supply chain disruptions show adverse effects on the fruit and vegetable farmers.

6.2. Rural Incomes and Demand

Incomes of farmers of perishable crops and poultry products are going to be much lower due to the crop losses, storage problems and halt of transportation networks. The fall in prices due to lack of demand has further aggravated these problems. The farm labourers are certain to face much lower earnings, if any, because of the movement restrictions and lowered agricultural activity. Also, the complete halt in the construction sector, which absorbs majority of agricultural labour, will further aggravate the crisis. This huge negative

impact on rural incomes is likely to hit the economy hard, which is already reeling with demand contraction even before this crisis. Even the measures in the second stimulus package for agriculture (SSPA hereafter), announced on 15 May 2020, have made little provision to address these issues on the demand side.

Therefore a judicious mix of policies is urgently needed. The government has already announced frontloading of Rs 2000/- under PM-Kisan and payments have already been made to 7.47 crore beneficiaries (87%). This quantum of assistance is inadequate to cover the loss of income in the current rabi season and for meeting the expenses for the upcoming kharif season. Although the credit facility to PM-KISAN farmers announced in the SSPA may provide some relief, it will only cover the expenses for next season and there will be some time lag before the guidelines are evolved. Thus, the payment for the next quarter needs to be increased to Rs 6,000/- to meet the expenses for the next season. This hike in payment will result in an additional expenditure of Rs 34760 crores. Although several segments of the population have been provided support through Jandhan accounts, NSAP and other programs in the first and second stimulus packages announced by the government, one segment that has been left out is the agricultural labour. There are nearly 7.6 crores of active job cardholders under MGNREGA. A payment of Rs 2,000 should be made immediately to all these active job cardholders. As per the revised MGNREGA wage rate (Rs 202 per day), this is equivalent to wages for only 10 days to each worker and implies an expenditure of Rs 15200 crores. The third vulnerable section is the seasonal migrants. As per the available estimates, the number of temporary or seasonal migrants is about 1.36 crores (Keshri and Bhagat 2012). Although provision of free foodgrains to 8 crore migrants under SSPA, direct payments are also needed to tide over the actual and potential loss of incomes to these vulnerable sections. Thus, a payment of Rs 2,000/- to the migrants, as in the case of agricultural labour, would imply an additional expenditure of Rs 2,720 crores. All these payments – to farmers, rural labour and migrant workers – will imply a total expenditure of Rs 70060 crores, which constitutes 2.2 percent of AGDP and a mere 0.4 percent of the total GDP of the country (CSO, 2020)! This should not be a major burden on the exchequer.

These payments are extremely important because of the huge negative impact of COVID-19 on rural incomes, which will most likely hit the economy very hard that was already reeling under demand contraction even before the onset of this crisis. Also, these segments of population at the lower end of the economic spectrum have higher marginal propensity to consume (MPC), which is so crucial to kick start the economy.

In addition to direct cash payments, distribution of foodgrains is also essential. The current provision of free foodgrains of 5 kg per person per month under the Pradhan Mantri Garib Kalyan Ann Yojana (PMGKAY) needs to be continued for at least six months, if not more. With an estimated number of beneficiaries of 80 crores this will require 4 million tons of foodgrains per month. As per the latest reports, the government has already released more than 5 million tons to the states by the end of April and is in the process of releasing 12 million MT of food grain during April-June. The SSPA has announced provision of free foodgrains to 8 crore migrant population for two months. The timeframe may be increased to six months for migrants too.

Increasing assistance under PM-KISAN, providing direct cash payments to agricultural labour and migrant workers are urgently needed. Free provision of foodgrains under PMGKAY also needs to be continued for at least six more months

6.3. Likely Impact on Growth

The latest estimates of the GDP in agriculture & allied activities from Niti Aayog indicate a robust growth of 3% in 2020-21. Considering that agriculture recorded a decent growth of 3.7% in 2019-20, this achievement is remarkable indeed, when all the other sectors are reeling under the impact of lockdown. Niti Aayog also estimated that the better robust growth of agriculture could add 0.5 percent to the overall growth rate of GDP.

The main reason for this expected higher growth of agriculture is the high growth in production. However, higher agricultural growth need not automatically translate into higher farm incomes. The supply chain disruptions and movement restrictions, and the resultant lower incomes of farmers and agricultural labour could translate into a major demand contraction later in the rural economy. This, in turn, could have a serious deleterious effect on overall economic growth. Thus, the possible drag on the economy could emanate from the demand side.

6.4. Rethinking Rural Development

The crisis offers a unique opportunity to rethink our agriculture and rural development paradigm. The plight of lakhs of rural migrants stranded in major cities across India during the lockdown period is a grim reminder of the need for reassessing our rural development strategy. Migration is not a very effective solution to alleviate poverty. Evidence shows that 81 percent of the worldwide reduction in rural poverty can be attributed to improved conditions in rural areas and only 19 percent to migration (*World Development Report 2008*).

Agriculture remains one bright spot in India's gloomy growth story. The current crisis provides an excellent opportunity to usher in some much-needed reforms in the sector

By conservative estimates, temporary and seasonal migration for employment in India is about 13.6 million annually – seven times larger than permanent and semi-permanent migration (Keshri and Bhagat 2012). There are nearly 10 lakh landless households in India for whom wage labour is the predominant source of income (*NSSO, 2015*). In addition to the landless, wage labour is also a major source of income to 70 percent of the agricultural households that own less than one hectare. Nearly 35 percent of the rural income is derived from wages/salary and this proportion rises to 63% for the lowest land classes. Thus wage labour, together with agriculture (cultivation plus animal husbandry), is a major source of sustenance to a majority of the rural population. Thus, a holistic approach integrating the farm and non-farm employment, backed up by development of human capital for long-term development is needed.

Evolving such a strategy requires an understanding of the growth experiences of India as well as other countries at similar stages of development. Looking at the growth performance of agriculture in India, the share of agriculture in GDP fell sharply from 40% in the early 1960s to less than 15% in 2018-19. However, share in employment has only fallen from 73% to 49% during the corresponding period. This resulted in inter-sectoral differences in income and farming is increasingly perceived as unviable. Although these trends are not comfortable, these are not unique to India. These features have been witnessed in most developed countries and are currently being witnessed in many developing countries (*World Development Report 2008*). A turning point is reached when the annual per capita

income of a country reaches between USD 1600 to USD 9000 (Timmer 2009). This occurs through movement of labour out of agriculture, combined with increased investments in agriculture and mechanization. India is a long way off from this point of convergence. However, one encouraging fact is that this lack of convergence did not result in major increase in rural-urban gaps in poverty. One reason for this has been the emergence of rural non-farm sector (Himanshu et al. 2011). Construction, transportation and services were the main contributors to this, in turn driven by the rapid economic growth between 2004 and 2012. This increase in non-farm employment was not sufficient to stem the outmigration of rural labour force to urban regions. Even the construction sector suffered a major downturn in the last few years.

Therefore, agriculture remains the best bet for rural poverty alleviation in India and this also for three important reasons. The first reason is that, as per available empirical evidence, growth in agriculture is at least two times more effective in reducing poverty as compared to non-agriculture (*World Development Report 2008*). Secondly, the forward and backward linkages of agriculture are extremely critical for the overall growth of the economy. The third and the most important reason is that agriculture is the only sector (along with construction) which absorbs illiterate and semi-literate segments of the workforce (as labour) while non-farm sectors employ relatively better-skilled. **Therefore, agriculture remains crucial, to absorb the large mass of unskilled labour force.** Thus, the rural development strategy in India needs to be agriculture-centric. There are mainly four planks on which the rural development strategy may be based

1. Agriculture linked growth
2. Rural infrastructure
3. Rural industrialization and services sector
4. Human capital

In India, a long-term and integrated vision for agriculture and rural development is conspicuous by its absence. Agriculture and rural development are treated as two separate entities by two separate ministries. These ministries work independent of each other in planning and execution of their programs. Thus, an important first task would be to evolve integrated planning across the two ministries. The present policy changes in farm support, subsidies, rural development programs and the annual budget pronouncements are usually *ad-hoc*, based on immediate perceived needs. Ideally, all such policy decisions should evolve out of a long term plan for agriculture and rural development, which is prepared on the basis of the core objectives and resource constraints¹. Medium / short term action plans can then be drawn from this long-term plan. The rural infrastructure facilities such as rural roads, market yards, procurement centres, milk collection centres can be built by synergising the functions and resources of these ministries. Adequate attention to important aspects of human development, such as health, nutrition and education should be an integral part of this planning exercise.

An integrated, long-term, region-specific vision is needed for the holistic development of agriculture & rural economy and to stem the tide of outmigration.

¹ There are many international models to draw from. The Farm Acts (or Farm Bills) of the USA can be good starting point. Other countries like Vietnam, Israel follow similar integrated approach. The Farm Acts of the US, prepared for a period of five years, are omnibus plan documents covering agriculture, rural development, resource use & conservation, food & nutrition among others. A similar strategy is needed in India.

6.5. The Way Forward

Many policy initiatives are urgently needed to address the current crisis. Protection of lives, livelihoods and economy should be the priorities, in that order. A number of measures have been announced in the SSPA. Some of the notable measures of SSPA include removal of restrictions under Essential Commodities Act (ECA); enactment of a central law to allow inter-state trade; setting up of a one lakh crore fund for the improvement of farm-gate infrastructure for post-harvest operations; inclusion of all fruits and vegetables in *Operation Greens*; extension of two lakh crore credit to farmers of PM-KISAN, fishermen and animal husbandry; provision of Rs 30,000/- crores of additional refinancing facility by NABARD; several measures for animal husbandry, fisheries etc. All these are positive steps and could play a major role in the long-term growth of agriculture in the country, if implemented well. However, as can be seen, almost all these measures address the long-term supply-side issues. There are some immediate demand-side issues that need redressal, as has already been discussed. Also, some structural reforms in agriculture and rural development are also needed.

The following are some of the suggestions for the short and medium term.

The measures announced in the recent stimulus packages are in the right direction. These can be made more effective if supplemented with direct transfers in the short-run and with a few structural reforms in the long-run.

In the short-term (1-6 months), immediately upon lifting of lockdown, there is likely to be a sudden increase in economic activity that could result in ignoring the much-needed physical & social distancing, particularly by the poor labourers at the markets/mandies². This needs to be avoided and strict adherence to physical distancing, maintenance of hygiene and disinfecting the premises needs to be enforced at the mandies. The supply of inputs, labour and machinery for the upcoming kharif season needs to be ensured with adequate health safeguards. The facilities to sell and transport from approved warehouses and FPOs should be strengthened and extended to all regions. e-NAM has been extended to cover 1000 markets. This is a laudable step. Farmers, agricultural labour and seasonal migrants need to be provided with direct cash transfers, at least for the next six months. This will help them deal with the income losses incurred during the lockdown. In the absence of these payments, this labour force may rush back into activity, which may defeat the purpose of the lockdown. Provision of free foodgrains under PMGKAY needs to continue for at least six months, in addition to the regular NFSA food provisions.

In the medium term (six months to two years), a system of direct cash transfers to all the vulnerable sections and a robust system of food distribution needs to be put in place. This is in view of a possible second wave of the pandemic around November, as foreseen by some medical experts. A reliable system for the supply of agricultural inputs, labour and machinery need to be evolved. A more holistic approach to reduce outmigration by making agriculture the major plank of rural development needs to be evolved. Existing agriculture programs such as RKVY and NFSM should be dovetailed with major rural development programs like MNREGS and NRLM to create the much-needed synergy between agriculture and rural employment. This will help reduce outmigration of rural population for livelihood. The current crisis should be seen as an opportunity to explore

² The unfortunate death of a vegetable trader in Delhi's Azadpur mandi is a grim reminder that the effect of pandemic cannot be underestimated.

policy options other than the price and input based support to agriculture. A MSP based procurement system may continue for staple grains needed for public distribution. However, in case of non-staple crops, for which there is little or no procurement, a gradual move to a direct income-based support system may be explored. Such a system will ensure some minimum basic income to farmers without distorting the markets. The PM-KISAN needs to be improved for this purpose, taking the cost of cultivation into consideration.

References

CSO (2020), *Second advance Estimates of GVA at Basic Prices by Economic Activity*, CSO, 28 February, 2020

Himanshu, P., Mukhopadhyay, A. and Murgai, R. (2010) *Non-farm diversification and rural poverty decline: A perspective from Indian sample survey and village study data*, Asia Research Centre Working Paper 44, London School of Economics, UK.

IFPRI (2020), COVID-19: Trade restrictions are worst possible response to safeguard food security by Joseph Glauber, David Laborde, Will Martin and Rob Vos, 27 March, 2020

IMF (2020), *World Economic Outlook*, International Monetary Fund, April 2020

Keshri, Kunal and R B Bhagat (2012), 'Temporary and Seasonal Migration', *Economic & Political Weekly*, January 28, 2012, Vol XLVII No 4, pp. 81-88

MoF&PD, Gol (2020), *Food grains Bulletin, Various issues Monthly Summary*, March, 2020 Department of Food & Public Distribution; Ministry of Food, Consumer Affairs and Public Distribution, Gol

————— *Monthly Summary*, March, 2020 Department of Food & Public Distribution; Ministry of Food, Consumer Affairs and Public Distribution, Gol

NSSO (2016), *Income, Expenditure, Productive Assets and Indebtedness of Agricultural Households in India, NSSO 70 Round*

Timmer, C.P. (2009), *A world without agriculture: The structural transformation in historical perspective*, American Enterprise Institute, Washington, DC.

MIGRATION AND DEVELOPMENT OF RURAL REGIONS

Brajesh Jha

Around one third of the workforce in India is migrants, many of them are landholders, but their holding is too small to provide them enough income. They require off-farm income, but in dearth of suitable opportunities in their vicinity they migrate for employment. Policy planners should realize the magnanimity of the problem and devise favourable policy for development of rural regions in large parts of the country.

7.1. Introduction

A lock-down of the scale as was announced on March 23, 2020 was unprecedented in India; where about one-fifth of people are poor and a significant proportion (two-thirds as of 2009) live at an income of fewer than two dollars a day. The people affected most by such lockdowns are workers in the unorganised sector, some of whom have just emerged out of poverty and their chances of falling back to poverty (due to joblessness) increasing.¹ Many workers in the unorganised sector are migrants. They (migrants) are crucial for the development of certain regions, yet they are the most vulnerable among informal workers and their unrest is being reported from various parts of the country. This has brought into focus the issue of migrants. This brief attempts to understand reasons behind their unrest and the effect of the same on development. Subsequently, this brief discusses possible ways to address the issue of migrants, migration and development.

Accordingly, the paper has three sections, the next section (Section 7.2) illustrates the difficulties of migrants and the possible effect on development in their place of work. Subsequent section (Section 7.3) presents kinds of developments that have resulted in

¹ Previous literature shows that poor are more vulnerable to any shocks (economic and ecological). International Labour Organisation (ILO) in its report on 7th April says that around 30 percent of population will be pushed into poverty in India. (ILO 2020)

increase of migration especially the rural-urban kind. The final section (Section 7.4) discusses possibilities of improvement in conditions of the migrants and elements of migration-mitigating- development.

7.2. The Unrest of Migrants and Development

The faces of migrant labourers walking across the rail tracks or empty roads, carrying their meagre belongings has become part of the lockdown and India's fight against COVID-19. The helpless faces of migrants were visible all around as internal migrants account for about one-third of the workforce². Around three-fourths of the economy was closed following lockdown, most of the production units, barring food and health (essential items), were not in operation. Livelihoods of most of the workers, many of whom were migrants, was lost. Migrants are either casual or salary workers with hardly any social security benefits. They live in cities on a monthly income of less than Rs. 8,000. Many of them leave behind their immediate family members (parents and spouse) to add to family income at source. In a situation of joblessness, migrants will not be able to send remittances, making their stay futile. Therefore, they prefer to return to their villages, lest they may have to incur certain costs (rent and food).

By the time migrants could realise the effect of the lockdown on their livelihoods, transport to their villages had stopped. Their restlessness would have lessened had the process of lock-down been smoothened. The government assistance (financial package), apart from "free ration"³, should have preceded or at least announced with the lockdown. In a few days following the announcement, financial packages incorporated under different government schemes were announced by the central government. Availability of meals, two times a day, for needy persons was assured and state governments were advised to use funds earmarked for Disaster Relief. Although it brought some relief to poor and migrants, joblessness for such a long period, made them cash-starved. Despite these situations, a refusal to return to their villages made them restless.

Subsequently, after around forty days when transport for migrants to return to their villages was arranged, some criticised it as anti-development as this would adversely affect the development of their place of work. Ironically, this is the place where migrants were alienated some days back during the days of lockdown. Therefore such expectation does not behave. If migrants are not bonded labour, they (as per their wish) should be allowed to go back to their villages to forget the traumatic experience. The fear that development in urban areas will be affected as migrants will not return from their villages is unfounded as most of them (migrant workers) are 'distress' migrants. They would return to work, unless some surprising labour absorbing development happens around their village. The process of their return will be slow and staggered. The return would depend on their urgency to migrate and also on their experience in the workplace. Migrants' network would be helpful for their return.

Around one third of the workforce in India is migrants, many of them are landholders, but their holding is too small to provide them enough income.

2 The decennial census (2011) does not provide an estimate of migration with respect to work force, though it is 37 percent of population. Data from NSS 2007-8 shows that internal migrants account for 28.7 percent of the workforce. Migration has increased thereafter; some argue that the above figures underestimate the magnitude of migration.

3 Free ration is meaningless, as portability of ration card is not allowed.

The restricted economic activities during the period (due to COVID-19), may not miss migrants' absence. There is also a fear of the second wave of infection from COVID-19. A significant negative effect is unexpected, as migrants are not organised to voice their difficulties. A situation like the present shows that difficulties faced by migrants are boundless, hence, their restlessness is not uncommon. Though migration led development causes uncertainty, development in certain regions is highly dependent on migrant workers. Therefore, migrants require favourable policies and appreciation of their problems, this requires us to understand the consequences of development that has led to an increase in migration.

7.3. Development and Increase of Migration

Evidence suggests that the growth of the economy in the recent period has happened unequally—with a widening gap between agriculture and non-agriculture sectors, and rural and urban areas of India. The growth has also been concentrated in some pockets of India. The transition of Indian economy remains incomplete.⁴ The rate of urbanisation remains low at 31 percent, in a state like Bihar and Odisha it is as low as 11.3 and 16.7 percent respectively. There is also evidence of city-centric growth in Indian economy.

Literature suggests that divergence of growth in the economy and agriculture economy has increased among states. A pictorial presentation of farmer's income shows that in prosperous states (Punjab) it is more than five times that of poor states (Figure 7.1). Besides disparity of growth in agriculture, the individual size of farm holdings is also important. At the national level, 69 percent of agricultural holdings are less than one hectare (marginal). The state-wise variation in holdings is even wider. Many studies suggest that holdings of these sizes are not viable; therefore, they have to depend on other opportunities (farm or non-farm) for their livelihood.

The small holders require off-farm income, but in dearth of suitable opportunities in their vicinity, they migrate to distant places for employment.

It is expected that as the size of holding reduces the share of non-farm business in farmers' income should increase. The NSS situation assessment of farmers, however, reports that share of non-farm business in farmer's income has declined (from 11 to 8 percent) in the recent period (in 2013 over 2003). In addition to this decline, the low share of non-farm to average farmer's income is important.⁵ In states like Kerala and Tamil Nadu, the share of rural non-farm (RNF) income in farm income (FI) is significantly high at 22 and 15 percent, respectively. Interestingly, farmers in these states have hardly undertaken interstate migration for employment.

Hence, many landholders, in addition to landless labourers are resorting to migration. Migration also happens because of the uncertainty of weather. Easy transportation and communication further facilitate the process of migration.

4 The share of agriculture and non-agriculture sector in income and employment of country remains incommensurate. Agriculture accounts for merely 15 percent of income of total economy, while it accounts for around 45 percent of employment in the country.

5 The NSS assessment of farmers' situation does not present average farmers wage separately from agriculture and non-agriculture businesses. Therefore the figure provides an underestimate as the share does not include wage contribution from non-farm business.

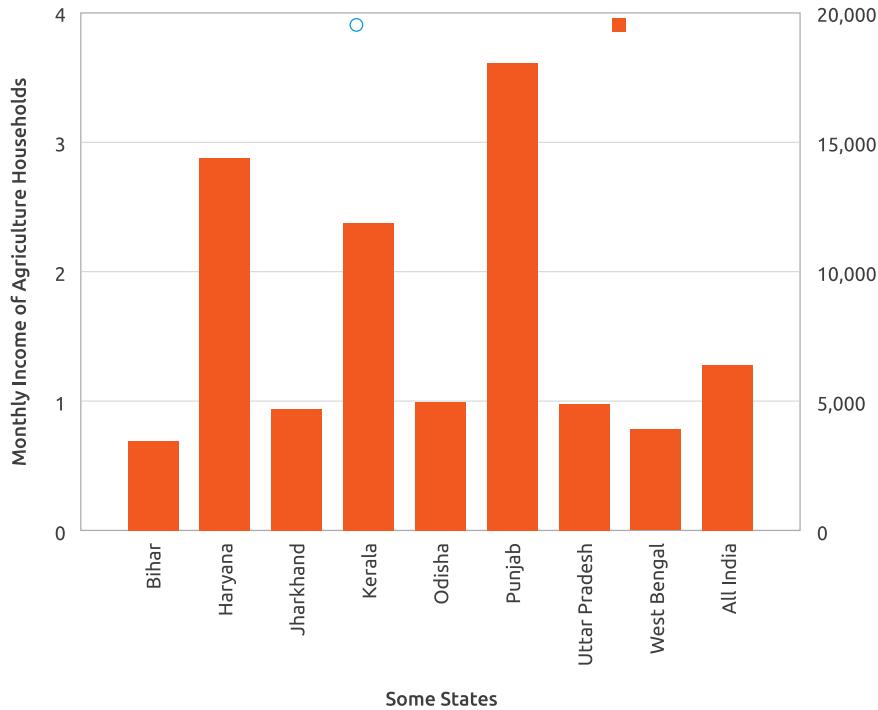


Figure 7.1: Monthly Income of Agriculture Households in Some States

7.4. Policy Suggestions for Development with Limited Migration

Consequences of such development are reflected in increased interstate migration in all streams, especially rural-urban (Table 7.1). In fact, development in certain states requires migratory labour. Though it causes different kinds of problems, the civic amenities related are well documented. Migration in such areas (destination) may be regulated as per the “carrying capacity” of the place. The migrants may be provided wage and rights equivalent to workers of that region. They may also be assured of social security benefits and portability of the same.

However, the current rate of growth of migration, especially the rural-urban kind needs to be arrested given the problems associated. This requires creation of increased farm and non-farm opportunities in rural areas (at source). Regarding the increase of farm opportunities in agriculture, there have been numerous studies including the recent one about “Doubling of Farmers Income” (Report of the Committee on Doubling Farmers Income 2019).⁶ This brief does not repeat these recommendations; however, the author feels that certain development issues have not been realized adequately. The small size of landholding is one such issue. Another issue is that an overwhelming number of farmers (landholders) are not willing to continue in agriculture.

As a matter of fact, the unsuitable (unviable) size of land has encouraged landowners (farmers) to migrate. In the absence of tenancy, this affects agriculture productivity in

⁶ This is a voluminous report which elaborates on road to development of agriculture which can increase farmers’ income.

several ways.⁷ The above case demands for a vibrant land lease market wherein right of lessee and lessor are protected. In this regard, the NITI Aayog had suggested a model land leasing act in 2016. The state governments should realize the damages on account of absence of tenancy and try to develop a vibrant land lease market by adopting the model Land Leasing Act of 2016.

The source states (Bihar, Jharkhand, Odisha) should also realise the potential of suitable training in increasing non-farm opportunities especially when an overwhelming proportion of landholders are not willing to continue farming. Quality training with adequate backup may encourage some farm households to start non-farm activities.

Policy planners should realize the magnanimity of the problem and devise favourable policy for development of rural regions in large parts of the country.

The opportunities in the non-farm sector for rural people in a large area of the country requires growth of manufacturing, besides productivity induced growth in agriculture. This presumes that other sectors (construction, trade, business and services) of economy would grow subsequently. With the initiation of Khadi and Village Industries Corporation (KVIC), reservation of Small Scale Industry (SSI) and facilities for a cluster's approach to development, there have been some efforts at decentralisation of manufacturing.⁸ However, with trade liberalization, the cost of production and economies of scale became important; and the rationale for manufacturing in rural vicinity is often lost in advocating for "mega clusters". As a result, manufacturing especially the rural kind stagnates.⁹ Jha (2011) argues for decentralization of manufacturing for growth of non-farm opportunity in rural vicinity. Box 1 illustrates it in brief.

The production requires a market where many farmers (of surrounding villages) interact for agricultural inputs, outputs and similar other services. They (farmers) also require institutions of various kinds (financial, educational). Therefore, the key to development of rural region depends on rural towns (small towns), and many vibrant towns, rather than cities are key to rural development.

In the post-COVID-19 scenario, a reorientation of international trade is being argued for; protectionist policies are on the rise. Our Prime Minister is also talking about "Atma Nirbhar Bharat". Therefore domestic production will be encouraged, which will finally result in growth of non-farm sector in the rural vicinity. This will definitely decelerate growth of rural-urban migration in the county. The recent budget also calls for identification of produce for each district, this may also result in decentralisation of economy.

This is an agenda for the development of rural regions in the post-COVID-19 scenario which may arrest migration. However, in the immediate future, policy planners should recognise the role of migrants in development works and provide social security in addition

7 Agriculture productivity is adversely affected as land holders are not in a position to look after their land. At times they opt for various sub-optimal ways, the IEG working paper No. 375, (Jha 2018) illustrates one. In alternate ways, in the absence of formal tenancy, operators (informal tenants) do not get the required access to credit and many similar productivity augmenting facilities.

8 The SSI as compared to similar other initiatives (MSME) had a rural bias. Many clusters were located in the outskirts of towns and cities, where villagers can commute on daily basis.

9 Distribution of rural workers in different sectors of economy shows that the share of manufacturing at 7.4 and 7.7 percent in 1999-00 and 2017-18 respectively has not improved in 18 years. (Jha 2020,).

to benefits received by informal workers. The states at source may also extend their helping hand in strengthening benefits to migrant (workers). With digitalisation, transfer of cash has emerged as an effective means of support, and an emergency like the present (COVID-19), should have triggered significant income transfer to migrants. The ration card and similar social benefits (if any) should immediately become portable.

Table 7.1. Distribution of Internal Migrants by last usual place of residence for each component of migration streams

Streams of Migration	1999-00 (55 th round)		2007-08 (64 th round)	
	Intra state	Inter state	Intra state	Interstate
Rural to rural	95.4	4.6	95.6	4.4
Rural to urban	80.3	19.6	74.8	25.2
Urban to rural	80.0	20.0	82.6	17.5
Urban to urban	80.1	19.9	77.1	22.9

Note: Intrastate in each of the reference year is aggregation of inter and intradistrict migration in a state. The intra and interstate sum up to 100 in each of the reference years.

Box 1. Decentralisation of Manufacturing for Increase of Non-Farm Opportunities.

The IEG Working Paper no. 310, argued for decentralization of industries and economy in the background of a report on National Commission for Enterprises in Unorganised Sector NCEUS (NCEUS, submitted in 2007). The IEG Working Paper suggested for micro-level clusters for primary resource-based-capital-intensive manufacturing activity in each district; and also a separate micro-level cluster for artisans' work. The rural vicinity has advantage in processing and manufacture of agriculture-based commodities, but has dearth of adequate infrastructure, governance, etc., hence, manufacturing of primary commodities is shifting away. The paper proposed for "clinics" as a private initiative to promote growth of decentralised industrial activities. (source: IEG working paper 310, Jha 2011)

References

Hindustan Times (2020). “Future will remember Value of Lockdown in India”, by Ramanan Laxminarayan, an english daily dated April 24, 2020 from Delhi, India.

Jha, Brajesh (2011). “Policy for Increasing Non-farm Employment for Farm households in India” IEG Working Paper 310, published by Institute of Economic Growth, Delhi, India.

Jha, Brajesh (2018). “Litchi Production and Marketing in Bihar, India” IEG Working Paper 375, published by Institute of Economic Growth, Delhi, India.

Jha, Brajesh (2020). “Farm Distress, Farmers Income and Role of Non-farm Business” by IEG Working Paper (forthcoming), published by Institute of Economic Growth, Delhi, India.

International Labour Organisation (ILO): ILO Monitor: COVID-19 and the World of Works. Second edition.

Ministry of Agriculture and Farmers Welfare (2018). Agricultural Statistics at a Glance 2018. published by MOAFW and Oxford, GOI, New Delhi.

Ministry of Agriculture and Farmers Welfare (2019). Report of the Committee on Doubling Farmers Income headed by Ashok Dalwai, submitted to NITI Aayog, GOI, New Delhi.

National Sample Survey Organisation (NSSO). Report on migration in India. Report no. 533, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

----- (2014) Key Indicators of Situation of Agricultural Households in India, NSS 70th Round, Ministry of Statistics and Programme Implementation, (GOI), New Delhi,

SUSTAINABLE RECOVERY WITH JOBS AND MORE: THIS IS A PANDEMIC, NOT A WAR

8

CHAPTER

Purnamita Dasgupta and Oindrila De

We reason that a path to recovery which explicitly builds in sustainability considerations will be more effective and desirable than one that parallels a post world-war II like focus solely on economic expansion, any which way.

We demonstrate that three distinct phases of infection risks and measures to tackle these, are associated with changes in economic activity in a manner that makes it abundantly clear that addressing what society values matters for planetary well-being; a sustainable transition on-boards societal values that gained pre-eminence during the pandemic such as decent jobs, clean air, better health care and workplace environments.

We analyse the empirics on a globally agreed key concern for recovery, namely jobs. First estimates suggest a 75% reduction in the active labour force in India during the first lockdown, increasing to 57% (at best) thereafter. Interestingly, even among non-farm sector employees, 40% (approximately 8.25 crore) were vulnerable to job and wage losses, not having any job contract, paid leave or social security benefits.

We conclude that a sustainable recovery means looking after our workforce. Creating confidence that the next pandemic or shock to the economy will not lead to a similar outcome for society, by ensuring job benefits and decent workplace environments.

8.1. Introduction

With continuing uncertainty on the end date for the cases of COVID-19 and in the face of mounting evidence on the accumulating costs to the economy, restrictions are being lifted to boost the functioning of various sectors. A sustainable transitions approach is useful in strategizing this road to recovery. We differ from those using the 'war' analogy

of 'fighting' a virus and make a case for adopting a 'sustainability' approach. Unlike the 1930's Depression or 2008's recession, this crisis deeply embeds the issue of human health, environment and ecological balance.

The pandemic has brought home the stark reality of how businesses are linked with community and social stability and is an urgent reminder of the necessity of mainstreaming businesses in sustainable transitions. One key aspect of the recovery is the labour force dynamics in the wake of the lockdown and its subsequent implications for the non-farm sectors. Jobs provide earnings and livelihoods (basic to life, humanitarian), enable social cohesion (dignity and self-respect) and contribute to economic recovery (GDP) as the labour force essential for increasing output. Indicative data analysis for the Indian economy is used in combination with learnings from international experience to gain insights on its role in transitioning to a sustainable phase.

8.2. Setting the Context: It is not a War

The complex challenges to recovery posed by the current pandemic do not lend themselves to warlike comparisons for several reasons. While some commonalities exist with military and disaster management (such as preparedness, mobilisation, sustainment, and so on), pandemic management principles explicitly recognise and incorporate the role and contribution of businesses (CHS 2019). Arguably, in both situations, the consumer faces a distorted market, characterised by supply-side shortages and unmet demand. The similarity ends there. Wartime economies have not suffered from the inadequacy of demand seen during this pandemic¹ and countries do not have the resources for a quick wartime boom economy type prescription, pulling the country out of high unemployment (for more concerns, see Higgs 1992).

Another resemblance is the very 'visible hand' of the Government/State, controlling almost all the economic activities. Again, the comparison ends there. There is very limited appropriation of the available production capacity², rather lockdowns and physical distancing norms lead to major supply disruptions for production and distribution, reduced incomes, job losses, and reduced demand in a downward spiral.³ Rather, massive information flows and co-ordination among countries, stakeholders and among states in India as they co-operate to manage the pandemic, makes this pandemic far more valuable than a war. We are not destroying an enemy outside but trying to clean our own junkyard with the help of each other.

The trajectory of cases and deaths both globally and in India, reveals that ensuring a better quality of life including better living conditions and health care in normal times is a critically

1 <https://www.theatlantic.com/international/archive/2020/04/lessons-wartime-economics-coronavirus-covid19/609439/>

2 The Indian government has invoked the Epidemic Diseases Act and the Disaster Management Act. Ordnance Clothing Factories (OCF) has been ordered by the Indian Government to make 300,000 PPEs. There are also enabling provisions in India which can be used for meeting specific needs such as under the provisions of the compulsory licensing and drug control pricing in the Indian pharma industry.

3 Even where such powers are invoked, the lockdown creates challenges. Although not required by law, the Ministry of Textiles and the Ministry of Home and Family Welfare have directed various domestic manufacturers to produce personal protective gears. Many of these firms are traditionally not involved in the design and production of such materials. Some others, though traditionally involved in pharmaceuticals and medical equipment are facing a sudden surge in demand.

important part of tackling the crisis. Kerala's example shows that a pre-existing strong and responsive health system is well able to manage the pandemic while two-thirds of the deaths in the country are reported to be among those suffering from socio-economic disadvantages. Arguably, higher the socio-economic status and capacity in the health system, lesser is the pressure for drastic measures to flatten the epidemic curve.

8.3. Going Forward: Sustainability is Paramount

Tackling the pandemic and its consequences effectively requires a transition, one that begs the question of how different we would like the future to be from where we were before it. Incorporating long-run sustainability in the recovery strategy is a lesson learned (Settele et al 2020). The components of a more sustainable world view would prioritise much more than economic recovery, to accommodate what citizens value. This could include more inclusivity, equity, job security, clean air and water, to name a few and, a call for more sustainable production and consumption. The pandemic and its fallouts, as it spares none in spreading across socio-economic divides, has brought home the increased scope for tele-medicine, e-commerce, higher digitisation, the contribution of decentralized and small-scale businesses, benefits of adopting clean technology, care services for neighbours and family, recycling and waste reduction, buildings and workplaces with decent living and workspaces, and adequate health care for all segments of society. The importance of community connect has been increasingly realized through the very restrictions that have limited these interactions. A business as usual roadmap to recovery, maybe necessary for a while (including higher payouts to migrants, loan waivers for farmers, disaster relief, and support to MSMEs from the public exchequer). An effective transition will require much more as we build back.

A rich body of literature exists on the components of a transition that builds resilience, including the role of economic growth, inclusivity and equity. The global health agenda has to shift from an emphasis on disease-specifics alone to being inclusive of social, environmental, and economic determinants (Senkubuge et al 2014, CSDH 2008, IPSP 2018, Fluerbaey 2009, Stiglitz et al 2010, Allen et al 2020, Bynum 2008). The adoption of a one health approach as advocated by the WHO and others, recognises the interconnections between humans and nature and their shared environments and leads to better decisions for a range of economic actions including agriculture, food security, disaster preparedness, management of infectious diseases, and global trade and commerce to name a few (OHC 2020).

Figure 8.1 presents a conceptual framing of the possible linkages between changes in economic activity and transition to a sustainable phase, over three distinct phases of infection risk⁴. Some key markers for the transition from lockdown to sustainability are depicted, alongside the unfolding strategy which seeks to balance the risk of infection with the opening up of restrictions. Disruptions in economic activities are likely to continue till the next fiscal, as per most current projections. The arrows capture key process features while the circles depict socio-economic characteristics considered important for driving the economic activities at each stage.

⁴ The reproduction number (or R0) is used to represent depict the transmissibility and hence risk of infection, (Delamater et al 2019).

R0: The basic reproduction number, is used as an indicative metric of the transmissibility of infection

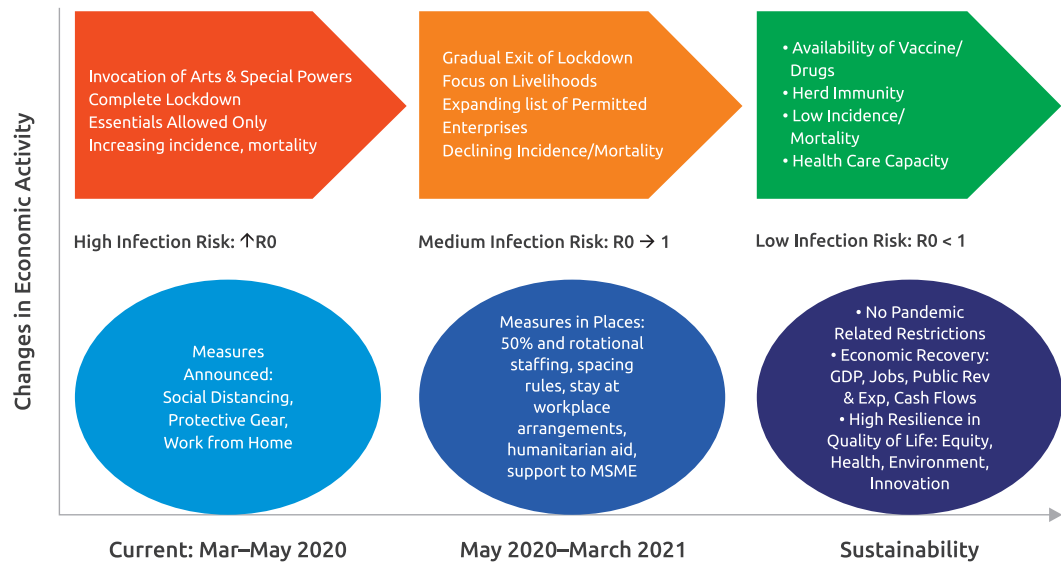


Figure 8.1: Phases of the Transition

We provide a few illustrations of how a sustainable recovery may look different from a revert to earlier economic activity for various sectors. One of the worst-hit sectors has been the tourism sector.⁵ Mass tourism, typically characterised by high-cost competitiveness, low margins and travel in peak season is destructive of natural habitats. Sustainable tourism emphasizes niche markets, emphasis on quality, smaller overheads and a diverse client base.

Both types have links with other sectors such as transport, catering and youth employment, and benefits for the local economy. Sustainable tourism, though probably at a smaller scale, is likely to be more resilient than mass tourism to external shocks.

Similarly, initial studies suggest that an increase in environmental factors, such as ambient air pollution and specifically particulate matter (PM2.5) can be associated with an increase in the severity of the health outcomes (e.g., ICU hospitalization and death) among individuals with COVID-19. In a post COVID world, prioritisation of clean technologies and renewed emphasis on the need for internalising externalities is imperative.

It is evident that social distancing measures are here to stay for some foreseeable future and the implications for business continuity need to be considered. These include impacts from stay-at-home recommendations where possible, closure or strict physical distancing norms in educational institutions, retail outlets in large shopping areas or malls, restaurants, cafes/bars, or sports clubs, measures for special populations (care homes) and mass gathering cancellations all of which have implications for sectoral income generation, jobs and profitability in the private sector. Early estimates indicate that combined industry level shocks from various measures to tackle the pandemic lead to a reduction of 5.6% in France's GDP (Barrot et al 2020). Similarly, the combined supply shock from the closure of non-essential industries and demand shock from reduced demand could reduce around 1/4th of the US economy's

⁵ <https://www.unwto.org/news/international-tourism-arrivals-could-fall-in-2020>.

value-added, 1/5th of its current employment and about 17% of its total wage income (Rio-Chanona et al 2020).

Businesses and sectors that have the potential to recover faster than others will gain relatively. For instance, IT and IT-enabled sectors could become a strength for India, with more possibilities of remote work options. This is unlike the case for tourism which is likely to take much longer.

8.4. Labour Market Dynamics Under Lockdown and Beyond

One of the crucial aspects of sustainable recovery is a well-functioning labour market which as it currently stands has been substantially impacted by the lockdown phases and will have to cope with new norms of social distancing and movement restrictions. Two important coping strategies being advocated universally for the workforce for managing the health risk are social distancing and working from home. Though working from home appeals as an effective strategy of reducing the infection risk (Fadinger and Schymik 2020), studies indicate that in reality there are limitations on the proportion of jobs that can be performed at home. For instance, occupational survey based data indicates the share to be 37% in the US ((Dingel and Neiman 2020) while the combined industry level shocks from administrative closures, closure of schools, colleges, and childcare facilities, and work from home activities lead to a drop of 52% in the active labour force in France (Barrot et al 2020).

A strong association between GDP per capita and percentage of jobs that can be performed at home across a number of countries indicates that in developing countries, these percentages are really low (Saltiel 2020, Dingel and Neiman 2020). Larger the share of agriculture and self-employment in the economy, lower the ability to work from home in poorer countries (Gottlieb et al 2020). A combination of having both high income and high-speed internet drives the propensity to stay at home and explains the inequality in people's ability to self-isolate (Chiou and Tucker 2020). At all India level (NSS 73rd round Enterprise survey, 2015-16) 5% of the unorganised sectors enterprises (with 10 or more workers) reported using computers and 4% of enterprises reported using the internet for entrepreneurial activities during the previous 365 days/ year of their operation. Given these statistics, digitisation and working from home for these enterprises will take time to fructify.

An idea about the extent of labour market disruptions during the initial 4 weeks of strict lockdown (24th March to 19th April) and subsequent 2 weeks of partial lockdown (20th April to 3rd May) can be obtained by examining data on sector-wise employment from the Periodic Labour Force Survey (PLFS Report, 2019 NSSO). The PLFS documents the latest and largescale pre-pandemic employment data. We use it to arrive at estimates about the likely reduction in active workforce in each sector arising from the Central Government's guidelines on sectoral restrictions and exemptions.⁶ On the basis of these quick estimates, we draw some inferences on the likely reduction in the workforce and postulates on the trajectory of recovery for the labour force in non-farm sectors of the economy.

⁶ Ministry of Home Affairs India: <https://www.mha.gov.in/> accessed on 30th April, 2020.

We use data on labour force employed in 19 non-farm sectors in accordance with National Industrial Classification (NIC)-2008 Section B -Section T).⁷ Estimates of employment used in the study are based on NSSO's usual activity status approach for the reference period of 365 days.⁸ Based on this definition, the distribution of employed persons in various sectors within the non-agriculture categories prior to the pandemic can be calculated. Over 20 crore workers are employed by usual activity status in the non-agriculture sectors. In terms of employment, the five largest sectors are manufacturing (21.72%), construction (20.89%) and wholesale and retail trade, repair of motor vehicles (18.06%), transport & storage (8.83%) and education (6.77%).

We subsequently explore the likely impacts of the exemptions and restrictions imposed on various sectors as documented in the guidelines issued by the Ministry of Home Affairs since the lockdown was announced on 24th March, 2020. MHA guidelines for managing the pandemic evolved from initially complete bans (e.g. hospitality, construction) and specific exemptions (e.g. food processing, petroleum and pharma products) to partial exemptions (e.g. freight movement for transport, equipment for agriculture) to a gradual lifting of restrictions for several sectors by April 20th (e.g. rural and urban situ construction, forestry) and further easing thereafter. Public administration, defence, social sectors (health care) were open while other offices were directed to work from home.

A few assumptions are made on the likely fall-outs. We assume that mining and most of the industrial units (manufacturing) that were exempted from the lockdown can at most work with 50% capacity under the imposition of the physical distancing guideline. However, for wholesale and retail trade of essential products (food, medicine etc.) such capacity reduction is not applied given the exemptions. We also assume that information and communication services are well equipped to work from home whereas education, which may have been continued over digital space is not well equipped to do so and faces disruptions outside major urban centres. Though exempted from lockdown, services that require movement of workers such as food delivery from restaurants, courier services, e-commerce were severely disrupted making the labour requirement fall to almost zero in the first two phases of the lockdown.

We decipher the size of the reduction in the active labour force consolidating the guidelines and above assumptions at the 3-digit level of disaggregation. The estimates for 19 non-farm sectors are presented in Figure 8.2. Overall, estimates suggest a 75% reduction in the active workforce at full lockdown, which improved to approximately 57% at the second lockdown due to opening up of rural construction and manufacturing units. It maybe cautioned though, that these numbers represent a best-case scenario, to the extent that it assumes that restrictions imposed on labour movements and supply chain disruptions have not impacted the engagement of the labour force.

7 Section A pertains to agriculture, forestry and fishing. We also omit Section U that pertains to extra-territorial organizations and bodies where the reported employment is zero. There are few reasons for omitting agriculture, forestry and fishing from this study. First, farming operation that consists of approximately 84% of Section A activities was exempted from the lockdown on 27th March followed by fishing on 10th April. Second, most of these activities can be performed with physical distancing and necessary precautions, therefore does not interfere with pandemic management now or even in the future. However, we are not suggesting that these sectors' workforce was not affected by the movement restrictions. We simply suggest that we will not be able to gauge its extent with the data at hand.

8 This is based on principal activity status (status on which the person spent relatively long time during the 365 days preceding the date of survey) and subsidiary activity status (some economic activity for 30 days or more during the reference period of 365 days preceding the date of survey in addition to his/her usual principal status)

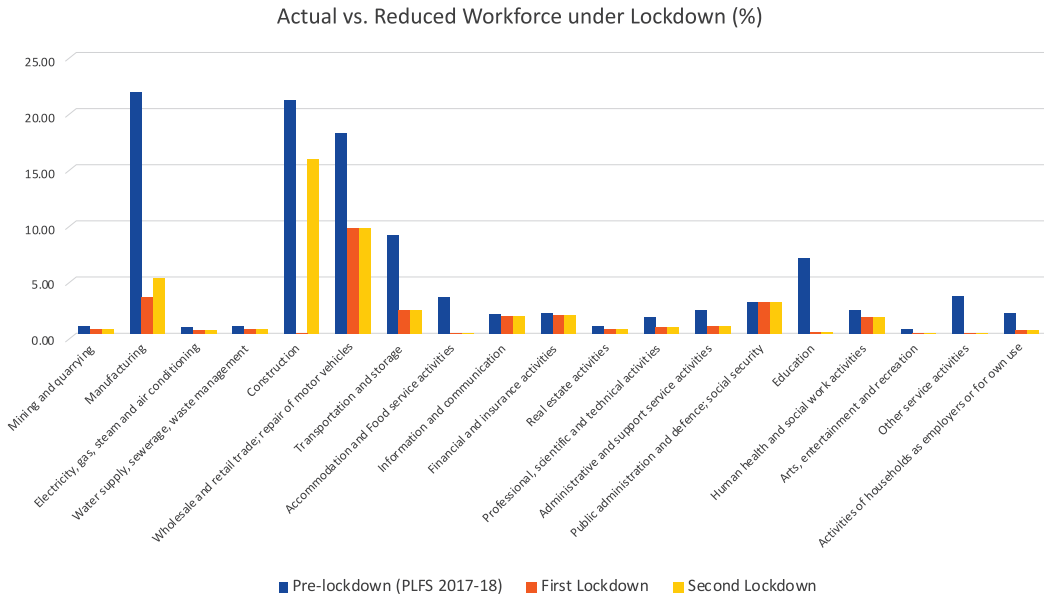


Figure 8.2: Actual vs. Reduced Workforce under Lockdown (%)

The primary objective of this exercise is to figure out what lies ahead. The longer the requirement for lockdowns in some areas and restrictions in others, larger will be the extent of idle labour (in the scenario that employers will not let off these workers during lockdown) making a large number of them still vulnerable to job losses after the exit. Our calculations combining the PLFS data on the pool of casual labour, with the conditions of employment for regular and salaried workers in the non-agricultural sector⁹, indicates that about 40% of all non-farm sector employees (estimated 8.25 crore) have neither a job contract nor paid leave or any social sector benefits such as PF and maternity benefits. This pool of workers is the most vulnerable to job and/or wage losses during a lockdown and beyond. Our estimates show that 56% of total urban non-farm sector casual labours are employed in construction sector only. Job losses can have spiralling effects on demand, while supply disruptions can cause bankruptcies causing more losses, beyond the first-order estimates presented here.

8.5. Concluding Thoughts

Our analysis establishes the vulnerability of our workforce during and after the lockdown periods. Preserving jobs as we exit the lockdown is of prime importance. The task is far from simple as it poses trade-offs between economic losses and pandemic related health losses at least while transmission rates of COVID are a concern. Joblessness among the contractual and daily wage workers could, among other cascading effects, also potentially lead to a reinforcing of health-related losses arising from lack of nutrition, other illnesses, and lack of affordability for essentials due to both falling incomes and availability. The implication is that resources now need to be directed towards encouraging enterprises that can ramp up the employment capacity and handhold these through government-supported measures. The lifting of restrictions on economic activities is in the right direction and reflects the fact that the list of essentials from even the end of the chain consumer's point of view also

⁹ Statement 19, 20 and 21, Periodic Labour Force Survey Report, 2019.

keeps expanding as the period of lockdown extends. The exit policy announced on 1st May and subsequent guidelines on 18th May are in line with economic recovery while actions by individual state governments to seal borders, re-define restrictions and permissions on the basis of geography. For business continuity and creating confidence among the community, socio-economic criteria, such as gainful employment and ensuring the supply chain have to play a prominent role as well. The need of the hour is to encourage enterprises that can minimize these trade-offs and maximize the synergies for recovery.

The first response of intensely focusing on direct support programmes (cash transfers, deferring loan payments, MNREGA) was a welcome imperative. The second stage response in the form of MSME loan guarantee and employee provident fund protection has started. The third phase is one of sustainability, where new investments and structures of governance actively recognise the need for building resilience for the future. Creating community-level stability and welfare matters for economic growth. Within an appropriate enabling environment, the private sector should be encouraged to contribute to building resilience.

Postscript: This essay is based on the authors analysis of currently available data and information in the public domain at the time of going to press. More details are available with the authors who are in the process of continuously updating and expanding upon the work.

References:

ADDP 2004. Executive Series, Preparedness and Mobilisation (Provisional), Australian Defence Doctrine Publication 00.2. https://www.defence.gov.au/adfwc/Documents/DoctrineLibrary/ADDP/ADDP_00_2_preparedness_and_mobilisation.pdf

Allen, D., Block, S., Cohen, J. et al. 2020. Roadmap to Pandemic Resilience. Edmond J. Safra Centre for Ethics, Harvard University.

Barrot, J.-N., Grassi, B. & Sauvagnat, J. (2020), 'Sectoral effects of social distancing', *COVID Economics* 3, 10 April 2020: 85-102 .

Bynum, B. 2008. The McKeown thesis. Volume 371, Issue 9613, 644-645. <https://www.thelancet.com/journals/lancet/article/PIIS0140673608602925/fulltext>

CHS 2019. Public-private cooperation for pandemic preparedness and response: A call to action. Event 201, A Global Pandemic Exercise. The Johns Hopkins Center for Health Security, World Economic Forum, and Bill & Melinda Gates Foundation. <https://www.centerforhealthsecurity.org/event201/recommendations.html>

CSDH 2008. Report of the Commission on Social Determinants of Health. WHO, 2005-2008. https://www.who.int/social_determinants/thecommission/finalreport/en/

del Rio-Chanona, R. M., Mealy, P., Pichler, A., Lafond, F., & Farmer, D. (2020). Supply and demand shocks in the COVID-19 pandemic: An industry and occupation perspective. *arXiv preprint arXiv:2004.06759*.

Delamater, P. L., Street, E. J., Leslie, T. F., Yang, Y. T., & Jacobsen, K. H. (2019). Complexity of the Basic Reproduction Number (R0). *Emerging infectious diseases*, 25(1), 1–4, <https://doi.org/10.3201/eid2501.171901>

Dingel, J. I. and Neiman, B. 2020. How many jobs can be done at home? NBER Working Paper No. 26948, April 2020. Cambridge, Massachusetts. <https://www.nber.org/papers/w26948>

Fleurbaey, M. (2009), Beyond GDP: The quest for a measure of social welfare, *Journal of Economic Literature*, 47(4), 1029–1075.

GoK. Aardram Project. Government of Kerala. <https://kerala.gov.in/aardram>; <https://www.thehindu.com/news/national/kerala/community-to-lead-aardram/article29746307.ece>

Gottlieb, C., Grobovšek, J., & Poschke, M. (2020). *Working from Home across Countries* (No. 07-2020).

Harald Fadinger and Jan Schymik, 2020. The costs and benefits of home office during the COVID-19 Pandemic: Evidence from infections and an input output model for Germany. *COVID Economics*. Centre for Economic Policy Research, Issue 9, 24 April 2020, pp 107-124. <https://cepr.org/sites/default/files/news/COVIDEconomics9.pdf>

Higgs, R. (1992). Wartime Prosperity? A Reassessment of the US Economy in the 1940s. *The Journal of Economic History*, 52(1), 41-60.

IPSP, 2018. Summary. Rethinking society for the 21st Century. Report of the International Panel on Social Progress. Cambridge University Press.

OHC. One Health Commission,

https://www.onehealthcommission.org/en/why_one_health/what_is_one_health/

Saltiel, F. (2020). Who can work from home in developing countries. *COVID Economics*, 7, 104-118.

Senkubuge, F., Modisenyane, M., & Bishaw, T. (2014). Strengthening health systems by health sector reforms. *Global health action*, 7, 23568. <https://doi.org/10.3402/gha.v7.23568>

Settele, J., Diaz, S., Brondizio E., and Daszak, P. 2020. COVID-19 Stimulus Measures Must Save Lives, Protect Livelihoods, and Safeguard Nature to Reduce the Risk of Future Pandemics. *IPBES Expert Guest Article*, 27 April 2020. <https://ipbes.net/COVID19stimulus>.

Stiglitz, Joseph E., Amartya Sen and Jean-Paul Fitoussi (2010). *Mismeasuring our Lives: Why GDP Does not Add Up* (New York: The New Press).

Vardavas, C. I., & Nikitara, K. (2020). COVID-19 and smoking: A systematic review of the evidence. *Tobacco induced diseases*, 18, 20. <https://doi.org/10.18332/tid/119324>.

WHY SOCIAL DISTANCING FAILED IN INDIA AND WHAT NEEDS TO BE DONE

Suresh Sharma and Johnny K D

9.1. Introduction

With the outbreak of the COVID-19 one-term which became very popular is 'Social Distancing'. Given that the world has no specific medicine to treat COVID-19, all countries adopted Social Distancing as the potential weapon to fight COVID-19. India also adopted the strategy of Social Distancing from mid-march in general and 24th march in particular with the announcement of the Nationwide Lockdown. According to Ministry Health and Family Welfare (MoHFW) Social Distancing is helpful in stopping or slowing down the rate and extent of disease transmission in a community. This further could lead to a decrease in spread, morbidity and mortality due to the disease.

In India, Social distancing is not a privilege everyone can afford. Poor in comparison to the rich does not have the luxury to practice social distancing. Priority of the poor is food and not social distancing.

The Social Distancing policy of the Government of India has failed miserably as we are now witnessing COVID-19 cases in large numbers from several slum localities across the country along with cases from other communities. The government of India has given the order to practice social distancing to the people of India as if social distancing is a privilege accorded to all. Given the large slum population in India, Social Distancing did not go right with the type of settlements that exist in India. The upper class and the middle class live in houses and in areas where social distancing could easily be executed. Majority of the India population, i.e. the poor people live either in small houses of urbanized villages or slums of urban centres. Therefore, India indeed required a lot more than just an announcement to practice Social Distancing.

The reality is that India is home to 1.3 billion people. According to the Census 2011, 2,613 slums accounted for 12.92 million slum households across the country. In total, 65.49 million people occupied these slum households. New Delhi had 15 per cent slum households, Kolkata had 30 per cent, Chennai had 29 per cent, and Bangalore had 9 per cent slum households. "A slum is a compact settlement with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions" (NSSO 2002).

The biggest worry for the government is how to keep COVID-19 away from the slums. The fear among the central and the state governments, that slums could become the hotspots of COVID-19, unfortunately, has come true. For example, slum locality in sector 8, Noida and Dharavi slum in Mumbai are now COVID-19 hotspots. This has

led to a direct impact on our healthcare system, which is now under tremendous pressure.

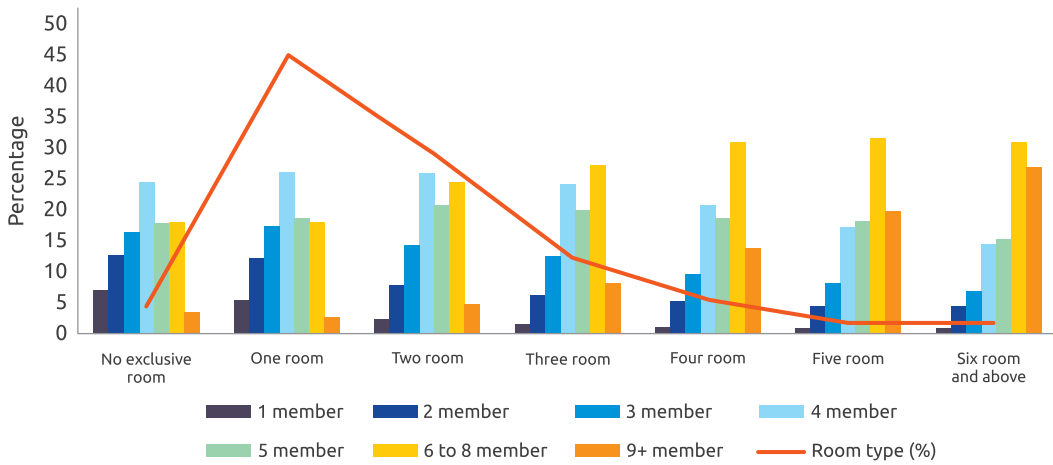


Figure 9.1: Room type of slum household in India

Source: Census of India 2011 – HH-4: Slum Households by ownership status of the census houses, size of the household and number of dwelling rooms

The above graph shows the average size of the houses in terms of the number of rooms in a single slum household of the slums of India. About 44.84 percent (6,165,484 households) of households in slums in India have only one room. In 25 per cent of the one-room households, four family members live. In around 20 per cent of one-room households, five family members live and in more than 15 per cent of one-room household, there are about 6 to 8 family members. If we further analyze the above graph, we understand how high the density is in Indian slums. The slums have extremely small houses. In the evening, houses in a slum are mostly congested as all the family members in a slum household join each other after finishing their duty at the workplace. The small one-room house is full in the evening. Now, when there is no work for them due to the lockdown, these slum dwellers have to spend all their time, be it at day time or in the night, in the small rooms of their houses.

In slums, people live in small houses, which are in close proximity to each other. The slum houses are so small that people prefer to spend most of their daytime in the narrow streets in front of their houses. In a single house, which generally has one dwelling room, an average of 4-5 people reside. Unlike the rich, they do not have access to leisure activities like watching movies on big screen televisions, access to online learning, watching videos on YouTube, etc. According to Census 2011, 30 per cent of the households do not have a television in their houses while 37 per cent do not have mobile phones in their households. They do not have work from home as well as they are generally unskilled workers engaged in work like sanitation, care work, construction sector, etc. which requires their physical presence in the workplace. Therefore, in times of lockdown when they do not have any work in their houses, they spend most of the time on slum streets, which goes against the idea of social distancing. But where else can they go? In the daytime, when the day is very warm and hot, they cannot sit inside the poorly ventilated small rooms, which are hotter than the slum streets. The streets in slums are interconnected, and in order to get

Social Distancing along with lockdown does not go right with the poor people living in slums, as they do not have access to leisure activities like watching TV, Using Smart phones, working from homes, etc. Only leisure activity they have is to sit and talk in a narrow street of slum locality. So crowding is inevitable in slums.

groceries and vegetables from retail shops, all the slum dwellers use narrow streets, which again goes against social distancing norms.¹

9.2. Crowding is Inevitable in Slums Even in Lockdown

Other challenges
poor people facing in the
COVID-19 times.

As per the data across the country, more and more COVID-19 positive cases are being reported from the slums of India. Slums of Mumbai and Noida are among the recent examples. Overcrowding is a major cause behind the increased COVID-19 cases in the slums of India. The population density in slums is much higher than in other areas of the cities. Poor nutrition and high prevalence of respiratory and other medical conditions among the slum population make them more susceptible to the COVID-19 infection. Now we are in the second phase of the Lockdown, and people in slums have no cash to buy essential food items. Most workers in slums are part of the informal sector; therefore, they have low wages and unprotected jobs. Many have reported that they have not received the salaries for the month of March and they do not expect their employers to pay them a salary for further months. Therefore, they are now at the mercy of the government's cash transfers and free ration distribution under the Public Distribution System (PDS). Many people in slums of Noida have reported that their ration cards have become invalid due to non-usage. Now very few people have a ration card and eligibility to get ration. Many who have nothing to eat and are in dire need of ration are not getting any ration. Whenever cooked food and dry rations are distributed, slum residents crowd the area to receive the ration. There is severe competition among the slum dwellers to receive ration as the ration is inadequate. In slums, some groups dominate others. These people have shops on the edges of the slum and are in direct contact with the government services involved in ration distribution. People who live inside the slum locality do not receive rations.

Slum people who face hunger will pay least attention to the social distancing policy. Their priority will be to arrange food for themselves and their family members.

On a national level, more than one-third of slum homes had no indoor toilets (Census 2011). As per Census 2011 data, about 18 per cent (2,599,106 households) of the households practice open defecation, and 15 per cent (2,074,469 households) of the households use public latrine. Lack of private toilet facility can make social distancing difficult.

According to Census 2011 data, about 43.27 per cent (5,949,724 households) households do not have a water source within their household premises. 31.89 per cent of households have a water source near their households premises while 11.39 per cent of households have to travel to faraway locations to fetch water. It is very hard to imagine how these people are arranging water when everything is locked down. Some slum localities in India are now facing extreme problems as some slums have been sealed as they have become new COVID-19 hotspots. As water is essential for life, the slum people will not stop going out to fetch water. In this situation, when the slum households are facing not just one crisis of COVID-19 but several others like water crisis, food crisis, etc., it would be difficult for them to comply with social distancing.

¹ As the author has observed: one leisure activity in the slums of the young and elderly is to tease policeman and run away. They think this is a good way to get over their boredom. However, this leads to injuries as some people fall while running in crowds, and some are injured by police's mild lathicharge.

Most slum dwellers are forced to take the pain of living in small rooms even as the India Meteorological Department warned that the months of March, April and May are “likely to be warmer than normal» in the Northwest, West, Central and parts of South India (Wire, Science April 2020). We have seen above how crowded the households are in the slums of India. Most houses have one room, and most houses have more than 4-5 members. In the evening, it is little easy to adjust as some family members could sleep on the roof of the house while some could sleep inside the house. But it is during the daytime that they face more difficulty as the houses in slums get too hot during the hot summer. To save themselves from warm houses most slum dwellers sit on the narrow streets of the slum in front of their houses.

9.3. Social Distancing Failed in Slums Because of Inadequate Preparedness by the Government

Central Government and State Governments should have been informed about the possibilities of the social distancing in India. Large slum population is an unfortunate reality of India. Some of the characteristics of the slums are that they are overcrowded, houses are unplanned and extremely small, population density is very high, etc. Given these features of a slum locality, our government should have done some kind of preparations to ensure social distancing in slum-like areas. The government should have shifted half the slum households to government schools or colleges until the lockdown period is over. The government should have distributed sanitizers and arranged hand wash facilities at various corners of the slum so that exposure to the virus would be minimized.

Around 6.5 crore people in India live in slums where social distancing is practically difficult to comply with and implementing it.

9.4. Migration Crisis and Failure of Social Distancing

Migrants suffer from the double burden of being poor and migrants (R.B. Bhagat 2020). Both the entities ‘poor’ as well as ‘migrant’ are vulnerable in the urban space. Most of the migrant population lives in slums of various cities across states in the country. On 24th March 2020 Government took the decision to impose a nationwide lockdown in the country which created panic among the vulnerable migrant population. Soon after the lockdown was announced, workers now without access to employment, were rendered without food or shelter. We know that most government programmes meant for the poor do not reach them due to the governmental issues of identification. As a result, many poor people do not have ration cards. A large proportion of the migrant population is daily wage earners, so they feared that during lockdown how they would not be able to arrange food for themselves and their families. This panic amongst the migrants shows that they have no trust in the government, which led to large-scale movement of migrants towards their native villages. This movement of migrant workers also led to several deaths as they travelled back to their villages.

To avoid this situation government should have been conscious about the migrant population and their nature of occupation and livelihood. The better strategy would have been to arrange daily food or dry ration for them for the full period of the lockdown. Certainly, the government is unable to provide food to all the needy migrants, that is why there is increasing demand for travel to their native villages. Again, non-adherence to social distancing was seen when migrants gathered in thousands in bus stands and railway

stations. The government has enough food as per the FCI data. It just needs to ensure proper distribution of food to the needy.

9.5. Conclusion

Based on cross-country examples, what support is needed from the government in the slum localities – Some useful strategies of Social Distancing for the poor is been suggested in the article which could be adopted by the government.

Strategic interventions are required from the government's side to ensure full compliance with social distancing in the country. Right now, we do not have a better alternative than social distancing to contain COVID-19. Without understanding the specific needs of the slum dwellers and without considering them while making policies, measures like social distancing are impracticable and impossible. The government should work in close partnership with community organizations – such NGOs that works in slums, volunteers from the respective slum locality. We can take the example of slums in Brazil, groups within the slum locality have built hand-washing stalls at main entrances of the respective slum localities. Some reports state that in slums of South Africa people are obeying government instructions on social distancing. People are following instructions for handwashing and mask-wearing on a regular basis. Apart from this, people in South Africa's slums are mobilizing themselves to set up water stations for handwashing. However, in Kenya the focus is on raising awareness, training regarding handwashing and community mobilization (UN-Habitat 2020). Same strategies are possible in India, for that, the government of India needs to include slum dwellers during strategy making to contain the spread of COVID-19.

If widespread social distancing is to be ensured on a national level, the government should put more effort into distributing food, fuel, and cash to the people who have the least access to basic resources in this time of lockdown. This would be challenging in a country like India, where workers have no social safety nets. The government, in collaboration with the banks and technology companies, should devise innovative ways to transfer cash to the poor.

Every government policy has certain economic implications for certain societies. Before adopting those policies, the government should assess these policies against possible harms they may have on particular sections of the society. The government should ensure that the policy of social distancing should not do more harm to the poor than good. If poor die as a result of hunger and mental trauma, the government should ponder over their strategy of social distancing in the slums of India. The government should think of a better strategy of social distancing for the poor while at the same time ensuring enough food for them.

References

Census of India 2011: *Slum Households*

R.B. Bhagat, R. R. (2020). The COVID-19, Migration and Livelihood in India. *International Institute for Population Sciences*.

GOI. (2020). *Advisory on Social Distancing Measure in view of spread of COVID-19 disease*. Ministry of Health & Family Welfare.

<https://science.thewire.in/environment/lockdown-will-people-stay-indoors-as-temperatures-continue-to-rise/>

<https://www.nytimes.com/2020/04/08/opinion/coronavirus-slums.html>

<https://foreignpolicy.com/2020/04/10/poor-countries-social-distancing-coronavirus/>

<https://news.trust.org/item/20200424160516-cl4g5/>

UNTANGLING ENTANGLED POLICY MISHAPS: HOW TO MAKE POLICIES DURING A PANDEMIC MORE EFFECTIVE

Mausumi Das and Sabyasachi Kar

A number of economic and health policies adopted in the wake of the COVID-19 pandemic have been rendered partially or fully ineffective due to offsetting actions from private individuals, resulting in policy mishaps.

This chapter demonstrates that these policy mishaps are the result of not one, but several types of policy conundrums entangled with one another, creating a complex policy challenge.

It also provides a sketch of what a comprehensive policy package, that accounts for these multiple policy conundrums, should look like.

10.1. Introduction

During their colonial rule in India, the British government had once wanted to reduce Delhi's cobra population. Their chosen policy was to offer a reward for dead cobras. The citizens reacted to this policy by starting to breed cobras, kill them and then claim rewards. Soon the government realized that the policy was not working as they wanted it to, and removed the reward. Losing the incentive, the citizens released all their newly-bred cobras into the wild. Hence, Delhi's cobra population actually went up in the aftermath of the policy intervention. This story is the genesis of the term "cobra effect": unintended consequences of policies that are well-intentioned but overlook private motives.¹

As the COVID-19 pandemic ravages the world, governments in various countries are adopting a range of novel health policies as well as economic policies, in order to mitigate this crisis. In a number of cases, however, the reaction of private individuals to these policies is rendering them partially or fully ineffective, resulting in a policy mishap - much like the cobra effect. In India, the case that has attracted the most attention is the migration-on-foot, the attempt by a very large number of migrant labourers to walk back from urban

¹ The term was coined by German economist Horst Siebert (2001).

areas like Delhi to their villages that are thousands of kilometres away, in a midst of a general lockdown of the country. As we shall discuss later on, there have been other such policy mishaps as well.

In this piece we analyse some of these unintended policy consequences in India, using familiar conceptual tools from the public policy literature. The main contribution of this analysis is to demonstrate that these unintended policy consequences are the result of not one but several types of policy failures entangled with one another, creating a complex policy challenge. The purpose of this exercise is to learn from these experiences and design more effective policies during this ongoing pandemic.

Policies fail to attain their desired outcome if private individuals either do not fully comply with the policy or react in a way that undermines the objective of the policy. Such action can be explained either as fully rational behaviour of private individuals who are acting on self-interest based on the information available to them, or as idiosyncratic behaviour which violates the axiom of rationality (e.g., cognitive dissonance, bounded rationality, ambiguity aversion etc.). In this analysis, we focus on the conceptual frameworks that entail rational behaviour.

Admittedly, at the time of a life-threatening pandemic, agents' reaction might be driven by a combination of rational motives (based on a calculated risk-return trade off) and irrational motives (panic, fear). But if we understand the rational part of the reaction better, it will help us in framing suitable policies that address the "rational" and "irrational" parts of the problem separately.

In the public policy literature, there are several distinct theoretical mechanisms that explain policy failures. Each such mechanism underscores a different rational private motive for counteracting a policy. In real life, however, many of these private motives may get entangled together in generating a policy mishap. Our objective here is to carefully examine, and possibly untangle, the underlying mechanisms that led to some of the unintended policy fallouts. This exercise is useful for two reasons. First, if we find that there are indeed several motives simultaneously at work, then it would direct us towards a holistic approach towards policy making instead of a single-pronged policy approach. Secondly, a closer examination might reveal that some of the incentive problems are working at cross purposes, such that trying to mitigate one may aggravate the other. It is even conceivable that there does not exist any feasible policy combination that might mitigate all the problems. But that knowledge is also useful; it would allow the policymaker to carefully consider the trade-offs associated with one policy fallout vis-à-vis the other and make an informed decision.

We are aware that evaluating policy outcomes during pandemics using tools that are relevant for normal situations may have its limitations. The policy challenges posed by the COVID-19 pandemic are far more complex. In particular, the novel Coronavirus being a new pathogen, the exact nature of the epidemiological shock (the virulence and infectivity of the virus, its persistence and the associated disease dynamics) is unknown even to the policymaker. Hence designing optimal policies *ex-ante* is not feasible. There are bound to be some policy failures if the disease dynamics suddenly change in an unpredictable manner. Having accepted that unpredictability, one can only make contingency-dependent policies keeping in mind people's incentives. Indeed the future evolution of the disease

itself may depend on the success of a particular policy. It is therefore imperative that we first understand the part that is certain and known before we explore the probabilistic link between the current actions and future outcomes. The present work is a first step towards that goal.

The rest of the article is organised as follows. In the next section, we briefly review some on the existing theories that can guide us towards understanding policy failures. In section 3, we take up three policy experiments in the context of India's fight against COVID-19, which led to some unintended consequences. We identify the underlying mechanism for these policy failures. In section 4, we provide some rough sketch of what an alternative policy might have looked like. Section 5 concludes.

10.2. Theoretical Frameworks Explaining Policy Failures

The public policy literature provides a variety of conceptual frameworks where policy failures result from rational choices of private agents. A significant share of these models are based on a conflict of interest between these individuals and the government. Usually, in these cases, the government is motivated by a socially desirable outcome while private individuals are motivated by rational self-interest. There also exist alternative frameworks where there is no necessary conflict of interest between the government and the private agents; yet the socially desirable outcome may not be reached due to lack of coordination across the actions of agents. In what follows, we provide brief outlines of three well-known frameworks from the literature: (a) the 'time-inconsistency problems', (b) the 'asymmetric information problems', and (c) the 'coordination failure problems'. The first two entail a conflict of interest between the government and private individuals; the third one does not. We focus specifically on these three frameworks as they allow us to unravel the policy failure examples we take up in the next section.

a. Credibility of Policy Announcements Under the Time-inconsistency Problem

Consider a situation where private individuals take some actions based on the announcement of a certain government policy. In such a situation, the government could take advantage of the fact that the individuals have already committed to these actions, and adopt a completely different policy later on, which is more beneficial for the society. There is a clear conflict of interest in this case. It is in the interest of the government to switch from the initial policy to the new policy as that generates greater social welfare. However, this is not necessarily in the interest of the private individuals. If, in fact, the private individuals have access to information about the true intent of the government, then they would know that the latter has a reason to renege later on. In other words, the initial policy announcement will not be credible. Private individuals would, therefore, decide on their best course of action taking this information into account, and that would definitely make the government's policy less than effective. This is known as the time-inconsistency problem.² The private agents understand that the government's initial policy announcement is not going to be consistent over time and hence it is not in their interest to comply with it.

² These problems were first highlighted in the policy context by Kydland and Prescott (1977).

Effective policy designing, in this case, would entail finding suitable commitment devices that would make policies credible. Transparency in the policymaking process is also an integral part of credible policymaking.

b. Policy Implementation Problems Due to Asymmetric Information

In the ‘time-inconsistency’ problem, both the government and the private individuals have complete information about each other. But what happens if they do not? Policy ineffectiveness can also emerge due to information asymmetry between the private agents and the government, leading to the so-called ‘agency’ problems. Individuals may have private information that is relevant for the policy but this information is not accessible to the government freely. What would be the impact on policy outcome in a case like this, where the conflict of interest between the government and the private agents is compounded by asymmetric information? The conflict of interest would arise if complying with the policy is good for social welfare but it forces the individual either to incur a high private cost or forge high private gains. Clearly, in either of these two situations, the private individual would have strong incentives to not comply with the policy by exploiting the informational advantage.

The literature talks about two kinds of agency problems. In the first case, the private agents can take actions unobserved by the government, which would result in the problem of *moral hazard* or *hidden action*. In the second case, the agent has some private knowledge about her cost or valuation that is not taken into account by the government. This would result in the problem of *adverse selection* or *hidden knowledge*.³ Both cases would require the formulation of incentive-compatible policies that take care of the agency problem.

c. Coordination Failure in Policy Implementation

Consider a situation where, faced with a certain policy, an individual’s best response depends on how others are reacting to the policy. In particular, if the individual expects that others will choose a specific course of action, then it is in her best interest to follow exactly the same course of action. Such complementary of actions across individuals or groups may lead to the possibility of many alternative outcomes – some fulfilling the policy maker’s objective, some not.⁴ For example, suppose the government enacts a traffic policy that in a traffic roundabout, every car will give way to the cars coming from its right. Now, if a driver expects that other drivers will follow this policy, then it is also in her best interest to follow the same. However, if she believes that other drivers will not obey this rule, then she also has every reason to violate it; otherwise she will wait in the roundabout forever. The outcome in the first case is orderly traffic movement but the second case leads to chaos. While the first outcome is both socially and privately more desirable, it may not be reached unless there are some additional policies geared towards promoting coordination among agents.

³ See Laffont and Martimort (2002).

⁴ Existence of multiple, self-reinforcing beliefs resulting in multiple optimal outcomes is known in the literature as ‘multiple equilibria’. These outcomes can be ranked in terms of their social desirability. Situations where the economy ends up in an outcome that is least desirable are called ‘coordination failures’. Cooper and John (1988) discuss many macro applications of the concept of multiple equilibria and the associated coordination failures.

10.3. Policy Analysis in the Context of COVID-19

In this section, we focus on some of the recent policies in the context of the COVID-19 outbreak that seemingly failed to attain their desired outcome. We first examine whether they can be explained in terms of the well-understood theoretical mechanisms of policy failures discussed in the previous section. Our main argument however, is that these policies were vulnerable to more than one of these mechanisms of policy failures concurrently, and this made them far more complicated to solve. We finally suggest some policy corrections that address these multiple challenges simultaneously. In the spirit of ‘second-best policies’, we do not claim that these policy corrections would solve these problems completely, but would surely minimise them.

a. The Lockdown Policy and Reverse Migration

We start with the most debated example of policy ineffectiveness in India in this period: the reverse migration during the lockdown. The lockdown policy required everybody to stay at home and all economic activities (except the essentials) suspended for the next twenty one days. Within a day, a large exodus of migrant workers started from metropolitan areas, initially mainly from Delhi, but later on from other cities and industrial areas as well. This reverse migration exposed these workers to extreme health risks⁵. It also made them vulnerable to the risk of COVID-19 infection on the road as well as becoming carriers of the virus back to their villages. This significantly compromised the lockdown policy.

There were surely numerous reasons for this exodus, some rational while others were not. We argue here that a significant part of this policy ineffectiveness can be explained by the rational behaviour of these migrants. Part of the problem arose from the time-inconsistency of the policy announcement. More specifically, a lockdown that would be restricted to twenty one days was not credible. It was clear that the government was gravely concerned about the crisis and checking the contagion was its topmost priority at that time. Also, other country experiences like the Wuhan lockdown in China and the Italian and Iranian situation where the pandemic blew up, seemed to indicate indefinite lockdowns in these situations. Given this information, it was rational for the migrant workers to expect that the lockdown will be extended far beyond twenty one days (which did eventually happen) and they would run out of money and food. The limited resources that these labourers had might have been sufficient for twenty one days but not if the lockdown extended indefinitely. This is what the first-hand account of a migrant published in *The Hindu* says:⁶

“...we decided we should somehow leave at nightfall the next day. The lockdown may be long and conditions may worsen. While there was no dearth of necessities at my sister’s house for now, there was no telling what would happen if the lockdown continued...”

Thus, given the lack of credibility of the limited duration of the lockdown, there was a time-inconsistency problem and hence attempting to return to their villages was the rational option for the migrants.

⁵ Indeed, some of them died on the way.

⁶ Details here: <https://www.thehindu.com/news/national/other-states/a-tailors-long-journey-from-jaipur-to-farrukhabad-to-be-with-family/article31547263.ece>

However, that was not all. As usually happens in real life phenomena, the problem of time-inconsistency also became intertwined with a policy coordination failure. While declaring the lockdown, the government also asked employers to continue to pay their employees their wages. Anecdotally, however, this did not happen, primarily because the lockdown resulted in many employers not having the working capital to pay the labourers. Many of these migrants were also wage labourers attached to labour-contractors who suddenly found themselves out of any employment because the contractors had 'disappeared'. This was a classic case of policy coordination failure. Successful lockdown policy needed both the employers to pay wages and the labourers to stay put. If they could find the resources to sustain themselves, staying put would have been in the best interest of both the labourers and their employers. Instead, we experienced the inferior outcome where neither happened. All of this made the reverse migration a rational decision.

b. RBI's Policies to Boost Liquidity and the Response by the Banks

Our second example is the RBI's monetary policy initiatives to counter the economic impact of the COVID-19 outbreak. These included bringing down interest rates significantly and injecting a substantial amount of additional liquidity into the banking system.⁷ The primary objective of all these measures was to facilitate easy bank loans to the sectors which are negatively affected by the lockdown policy. Yet, till date, bank loans are not forthcoming for the micro, small and medium enterprises (MSMEs), which have been the worst hit. This clearly undermines the RBI's policy measures.

What explains this apparent failure of the easy credit policy to reach the sector where it is needed most urgently? We argue that one of the major factors behind this is the time-inconsistency of the RBI's policy. It appears that banks are reluctant to make fresh loans to the MSMEs, many of which are already classified as special mentioned accounts 2 (SMA-2) as of March 1, i.e., loan repayments for these accounts have been overdue for a period of 61-90 days.⁸ Under the pre-existing rules, if the interest and the principal amount of a loan are overdue for more than 90 days, it is classified as a Non-Performing Asset (NPA). Now recall that the NPA crisis that plagued the banking sector two years back brought in its wake a stringent capital adequacy requirement imposed by the RBI. This has resulted in a significant increase in the risk aversion parameter of the PSU banks.⁹ Given their apprehension about stricter measures by RBI in future regarding NPAs, the banks do not find the current easy credit policy of the RBI credible. It is in their best interest to be conservative and withhold credit to the MSME sector that is perceived to be more risky. Thus the emergency measure undertaken by RBI is likely to be met with limited success.

There is also an element of policy coordination failure behind this outcome. It may be noted that while the bank loans could prop up the firms from the supply side, a strong demand-

7 Details can be found here: <https://m.economictimes.com/news/economy/finance/rbi-to-infuse-rs-3-74-lakh-cr-liquidity-into-financial-system/articleshow/74841618.cms>

8 For example, see this report: https://www.business-standard.com/article/finance/covid-19-impact-psbs-flag-concerns-over-bad-loans-of-rs-50-000-cr-in-march-120041601888_1.html

9 For details, see here: http://economictimes.indiatimes.com/https://economictimes.indiatimes.com/cibil/articles/the-npa-crisis-3-of-4/becreditsavvy_show/61835992.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

side boost would simultaneously be needed to make the firms profitable. Given the fragile condition of the private sector, it is the government that is expected to provide that boost through a fiscal stimulus. Thus, there is a complementarity between the government's fiscal stimulus on the demand side and bank loans on the supply side in driving a healthy MSME sector. However, the initial response of the government from the fiscal side has been quite conservative, with very limited direct stimulus being announced till date. This, in turn, makes the banks non-lending to the MSME sector a rational decision.

c. The Self-reporting Policy for Potential COVID-19 Patients and Numerous Cases of Non-reporting

Our third example discusses the policy of self-reporting that was adopted for the identification of potential COVID-19 patients and carriers. Initially, this involved individuals reporting their history of foreign travel, particularly to global hotspots. Later on, when the epidemic had spread locally, it involved self-reporting in case there were symptoms of the disease. This policy has seen some hiccups as a number of cases came up where individuals have attempted to hide their travel history and symptoms. This is potentially quite dangerous as these cases could blow up the epidemic despite the best efforts of the government.¹⁰

It is not difficult to recognise an 'agency' problem in the policy of identification based on self-reporting since there is a clear case of asymmetric information here between the government and private individuals. The individuals have private information on their travel history and symptoms that is not freely available to the government. There is also a conflict of interest implicit here, which may not be so obvious at first glance. Complying with the policy is good for social welfare and hence in the interest of the government. But compliance would force the individuals to incur a high private cost, especially if they were tested and found to be carrying the disease. In such a case they stood to lose, at least temporarily, in terms of their livelihoods as well as social acceptability (stigma, fear of adverse reaction from neighbours etc.) To be sure, there is also a potential private benefit to reporting: if they were indeed infected, then reporting would enable them to avail treatment. However, it is well known that most infected people will develop only mild to moderate illness and recover without hospitalization. Hence the expected cost of reporting is likely to outweigh its benefit. Non-reporting would be a rational choice in such a case.

The fear of social ostracization, which added to the cost of reporting, also reveals an underlying coordination failure problem. If every individual believed that others would

¹⁰ Some media reporting of the non-reporting by individuals:

1. <https://indianexpress.com/article/india/two-who-attended-tablighi-jamaat-events-did-not-report-booked-for-attempt-to-murder-6352183/>
2. <https://economictimes.indiatimes.com/news/politics-and-nation/rail-official-suspended-for-hiding-her-coronavirus-positive-son-in-guest-house/articleshow/74726818.cms?from=mdr>
3. <https://economictimes.indiatimes.com/news/politics-and-nation/five-more-people-from-kerala-test-positive-for-coronavirus/articleshow/74534888.cms?from=mdr>
4. <https://www.indiatoday.in/india/story/after-woman-hides-coronavirus-infection-agra-officials-warn-of-strong-penal-action-1656109-2020-03-16>
5. <https://www.indiatoday.in/india/story/covid19-man-booked-for-hiding-travel-history-uttarakhand-1666984-2020-04-14>

treat the disease like any other disease, then there would be no social stigma and people would be more willing to report their condition truthfully. If they believed otherwise, then social stigma would persist. Hiding one's symptoms (until it becomes critical) would then become a rational choice.

10.4. How Policies Need to be Designed: An Example

If the policy mishaps are indeed the result of multiple entangled policy failure mechanisms, how can we design policies to untangle them? Here, we attempt to describe such a policy for one of the examples discussed above – the reverse migration.

Let us first grapple with the coordination failure problem associated with the reverse migration described earlier. In the literature, the solution to the coordination failure problem is to incentivize the agents to not choose the poor option. Since the employers are the most critical agents in the case of reverse migration (in the sense that their act of paying the wages can solve the problem) one has to create an incentive for them to pay the wages to the labourers despite not making any money during the lockdown. A possible solution could be an upfront loan from the government to the employers that could be used to pay for wages during the declared lockdown period. The loan could be made more attractive by making it interest-free and payable over a reasonably long period. Since employers would want their labourers to be available for work after the twenty-one-day lockdown, they would find it incentive compatible to pay the labourers from such a program during the lockdown, so that they do not go back to their villages. This would also save the government from the onerous task of reaching out to individual labourers in the urban informal sector who are not currently registered in any databases, in case they wanted to pay them directly.

There is, however, a strong reason why this might not work. Specifically, there could now be a time-inconsistency problem from the employer's point of view. A loan may be the most cost-effective option for the employer if the lockdown is restricted to twenty one days. However, just like the labourers, the employers may also not find the extent of the lockdown to be credible for the reasons described earlier. With the possibility of an extended lockdown, the loan may no longer be a viable option for them. What is the prescribed solution to such time-inconsistency problems in the relevant literature? The literature suggests that discretionary policy changes in future are not credible but rule-based policies are. This standard prescription, however, is not very useful for a lockdown policy during the pandemic. After all, the objective and the extent of the lockdown depend on multiple factors (economic, health-related as well as the disease-related) and it is almost impossible for any government to stick to a rule that has been declared at the beginning of the period. The next-best policy would be to clearly communicate the objectives of the lockdown and be upfront about the underlying uncertainty. These announcements would be credible to all economic agents as there are no reasons for the government to change its position on these later on. This however, would not solve the employer's problem as she would now have to consider taking a loan of unknown proportions (depending on the extent of the lockdown). The only way this would be incentive compatible for her is if the government gave a guaranty of writing it off if the employer was unable to pay it back. The credibility of this would be strengthened if a part of this loan was transferred to the

employer at the beginning of the lockdown. In terms of logistics, this would mean that employers would have to register with a government authority and ask for a loan that is proportional to the number of her employees.

This process of self-reporting by employers with the government is however vulnerable to yet another policy failure mechanism, namely, asymmetric information and the associated agency problem. This happens because the employers know the number of employees who work for her but the government has no such information, and this would incentivize employers to provide the government with grossly inflated employment numbers. If the government has a limited budget for this policy, such inflated numbers would not only lead to corruption but also effectively pay the wages of a far lesser number of labourers, making the policy of preventing the reverse migration less effective. How does one get rid of this agency problem now? The literature related to asymmetric information suggests that this problem can be mitigated to a large extent by randomly investigating a small number of cases and using punitive measures against errant employers like the cancellation of their business licenses etc.

To sum up, a more effective policy package for the lockdown would include (i) an attractive loan to the employers that can be used specifically to pay wages, (ii) possibility of waiving the loan in case the lockdown is extended and the employer is not able to pay it back, (iii) a part of the loan as an advance in order to impart credibility to the policy, and (iv) adding a process of random investigation and stiff penalties for the self-reported claims by employers who applied for the loan.

Our analysis here illustrates that when motives of several private individuals get entangled together, as is usually the case with any economic activity, a single policy targeted towards a specific goal is unlikely to work. One needs a multi-pronged policy where each arm of the policy caters to a different incentive problem. In such a scenario, designing an appropriate policy is a non-trivial exercise even during normal times. At the time of a pandemic, the process becomes even harder, since the standard policy prescriptions often do not work due to the inherent uncertainty associated with the disease.

10.5. Conclusion

In this paper we have argued that apparently prudent policies may fail to deliver unless they are carefully designed, taking into consideration private individuals' motives and their expectations. We have discussed some examples of policy mishaps in the context of COVID-19, where the policies were found to be vulnerable to multiple entangled policy failure mechanisms. Finally, we have attempted to show how a second-best policy package could be designed to tackle such challenges.

The policy challenges of COVID-19 are far from over. As the lockdown is gradually lifted and the economy scrambles back to some form of regularity, there will be newer problems, requiring innovative policy solutions. Avoiding policy mishaps would require policy designs that create the right incentives. Going forward, the examples discussed here may serve as great learning opportunities, guiding us in formulating more credible, well-coordinated, incentive-compatible policies.

References

Cooper, Russel and Andrew John (1988): "Coordinating Coordination Failures in Keynesian Models", *The Quarterly Journal of Economics*, Vol. 103, No. 3, pp. 441-463.

Kydland, Finn E. and Edward C. Prescott (1977): "Rules Rather than Discretion: The Inconsistency of Optimal Plans", *Journal of Political Economy*, Vol. 85, No. 3, pp. 473-492.

Laffont, Jean-Jacques and David Martimort (2002): "*The Theory of Incentives: The Principal-Agent Model*", The Princeton University Press.

Siebert, Horst (2001): "*Der Kobra- Effekt. Wie man Irrwege der Wirtschaftspolitik vermeidet*".

ABOUT IEG

The Institute of Economic Growth (IEG) is an autonomous, multidisciplinary Centre for advanced research and training. Widely recognized as a Centre of excellence, it is one of India's leading academic institutions in the fields of economic and social development. Established in 1952, its faculty of about 23 social scientists (economists, demographers and sociologists) and a large body of supporting research staff focus on emerging and often cutting-edge areas of social and policy concern. Many past and current faculty members are internationally renowned and award-winning scholars.

IEG's research falls into nine broad themes: Agriculture and rural development, environment and resource economics; globalization and trade; industry, labour and welfare; macro-economic policy and modeling; population and development; health policy; and social change and social structure. In addition, the Institute organizes regular training programmes for the trainee officers of the Indian Economic Service and occasional courses for officers of the Indian Statistical Service, NABARD, and university teachers. The Institute's faculty members also

supervise doctoral students from India and abroad, provide regular policy inputs, and engage with government, civil society and international organisations. Over the years IEG has hosted many renowned international scholars, including Nobel Laureates Elinor Ostrom and Amartya Sen, and others such as Ronald Dore, Yujiro Hayami, Jan Breman and Nicolas Stern.

Founded in 1952 by the eminent economist V.K.R.V. Rao, IEG's faculty, Board of Directors and Trustees have included a wide range of distinguished intellectuals and policy makers, including V.T. Krishnamachari, C.D. Deshmukh, P.N. Dhar, A.M. Khusro, Dharm Narain, C. Rangarajan, C.H. Hanumantha Rao, Nitin Desai, T.N. Madan, P.C. Joshi and Bimal Jalan. Several former faculty members have served as members of the Planning Commission or on the Prime Minister's Panel of Economic Advisors. Former Prime Minister Manmohan Singh has had a long association with the Institute, initially as Chairman of the Board (1972-1982) and since 1992 as President of the IEG Society. Mr. Tarun Das is the Chairman and Prof. Ajit Mishra is the Director of the Institute.



List of Contributors

<i>Ajit Mishra</i>	ajitm@iegindia.org
<i>Manoj Panda</i>	manoj@iegindia.org
<i>Pravakar Sahoo and Ashwani</i>	pravakar@iegindia.org
<i>Indrani Gupta</i>	indrani@iegindia.org
<i>William Joe, Abhishek, Rakesh Kumar, Sunil Rajpal and S V Subramanian</i>	william@iegindia.org
<i>C.S.C. Sekhar</i>	csekhar@iegindia.org
<i>Brajesh Jha</i>	brajesh@iegindia.org
<i>Purnamita Dasgupta and Oindrila De</i>	pdg@iegindia.org oindrila@iegindia.org
<i>Suresh Sharma and Johny K D</i>	suresh@iegindia.org
<i>Mausumi Das and Sabyasachi Kar</i>	mausumi@econdse.org skar@iegindia.org

INSTITUTE OF ECONOMIC GROWTH

University Enclave

University of Delhi (North Campus)

Delhi 110 007, India



Fax: +91-11-27667410

Phone: +91-11-27666364

Website: www.iegindia.org

Email: system@iegindia.org

