Article

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Journal of Development Economics and **Management Research Studies (JDMS),** ***A Peer Reviewed Open Access International Journal***
ISSN: 2582 5119 (Online)
05(05), 20-25, July-September, 2020

Understanding Economic Epidemiology of COVID-19 in Indian Context

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Abstract

COVID 19 (SARS-CoV-2) declared by the World Health Organization as pandemic, is causing not only the health distress but economic depression as well. By now it has engulfed more than 190 countries shocking the global economy through many channels to all these countries leading to a global recession. Indian health officials confirmed the presence of the virus for the first time on 30th January in Kerala, since then the number has been increasing, and influencing the society and economy. Moreover, after announcement of lockdown in entire country at least till 17th May 2020, economy of India is being influenced significantly and heavily and consequently the public health and vice versa. In this brief write-up, an attempt has been made to understand the Economic Epidemiology of COVID-19 in Indian context

Keywords: Epidemiology, Economic Shocks, Economic Cost of Covid-19

Pandemic Economics

Extraordinary crisis like pandemic of COVID-19 cannot be solved by general rules of economics as these rules are viable in peace, prosperity and normal conditions. Understanding the report of IMF on growth rate of infected economy, it is now clear that extraordinary situation can be resolved only by extraordinary decisions. Here Governments should take decision with the same momentum as of the spread of corona virus in the world. And one cannot depend on market mechanism to use optimize allocation of resources for efficient production and distribution. Government cannot evaluate the situation on the basis of cost-benefit analysis approach between health shocks and economic shocks. One cannot imagine even trade-off between life and livelihood because without healthy population there cannot be a healthy economy. In our opinion, Governments cannot waste time neither to

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check about the distribution channels working perfectly or not; nor to gather information about who need money and reaching out to those or not. As situations changes rapidly, so the responses to deal with it is imperative. It is better to err on the siding of giving too much rather than too little.

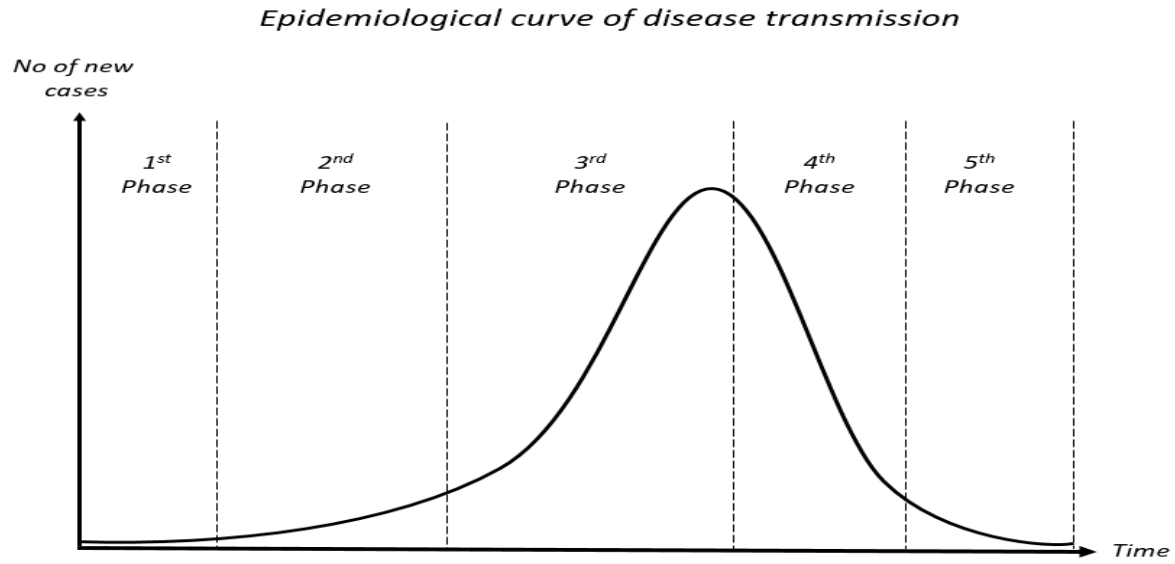
The Situation

Ever since the spread of COVID -19, all the countries are pumping huge amount of money to combat with the emerging issues due to coronavirus, whether curative, preventive or counteractive measures to the shocks felt by different sectors of the health and economy. Eventually, these countries are deviating from the normal trajectory of development. "UNCTAD, the UN trade agency, warned of a slowdown of global growth to fewer than 2% this year, effectively wiping $1 trillion off the value of the world economy"[1].The economic giants like "US, China, Japan, Germany, Britain, France, and Italy, account for 60% of world supply and demand of 65% of world manufacturing, and 41% of world manufacturing exports"[2] and as India is highly dependent on these countries, so bound to be highly influenced by the emerging global situation.

Since the reporting of presence of Coronavirus in country, the economy has started revealing its symptoms of sickness through different macroeconomic indicators and with a strong reflection on share markets. After announcements of lockdown in almost entire country, it is strongly presumed that economy may cost in an unimaginable manner and magnitude. It is expected that if lockdown continues at least up to 3rd May ,2020, Indian economy may loss up to tune of Rs 17.78 lakh crore giving shocks not only to informal economy but formal sector economy too.[3,4] .Now in case of continuation of it to 17th May 2020 loss to the Indian economy likely to be increased further.

Understanding Epidemiological Transmission of COVID 19

On the basis of observation of data released by WHO and ICMR on regular basis and the different reports of the leading health agencies of the affected countries it may be said that the transmission of the disease happens in five stages, and occurrence of these stages depends upon duration, intensity and extent of isolation a population undergoes.



Source: CDC.gov, [5]
1st Phase: Investigation
2nd Phase: Recognition and Initiation
3rd Phase: Acceleration and Peak
4th Phase: Deceleration
5th Phase: Resolution
And determinants of spread effect of pandemic disease transmission, during these phases may be shown as

$\Delta N_t = E.P.N$

$N_{t+1} = N_t + E.P.N_t$

$N_{t+1} = N_t(1 + E.P)$

$N_{t+2} = N_t(1 + E.P)^2$ (therefore exponential growth)

$N_t =$ No. of infected person at a given day

$E =$ No. of average person that are exposed

$P =$ Probability of exposed person being infected

Henceforth, it is evident that to reduce the exponential growth, we have to reduce the values of E and P and this can be done only by preventive measures like social distancing and/through lockdowns/Economic Sudden Stop. Hence utmost priority is to be given to lockdown. Longer the period of lockdown, complete or partial, higher is the economic cost. Given the macroeconomic indicators, India cannot afford longer lockdown. However we are passing the lockdown 3.0 till 17th may 2020 (Total 54 days of lockdown) and Indians have to pay economic cost of Covid-19 heavily in case of further extension, though some experts are advocating for further extension beyond May 17th 2020 [6]

Preparedness and Response in Healthcare Facilities

Ministry of Health and Family Welfare in association with ICMR and other central and state level agencies are monitoring and regulating the emerging issues in day to day basis

and releasing guidelines and advisories related to surveillance and triage, clinical evaluation, patient isolation and cohorting, engineering and environmental controls, exposure reporting and evaluation ,staffing needs and personnel policies, access controls, supplies and equipment ,communication and reporting , to address the situation.

According to the Global Health Security Index 2019, India ranked 57th among 100 countries on a scale to gauge preparedness for the outbreak of serious infectious diseases[7] ,despite that India's performance to combat with Coronavirus is better than USA , Italy and China and some other countries in terms of case specific mortality rate. But our focus should be on the comparison of economy and volume of GDP of India with these countries to understand the per capita economic suffering what India is paying for this pandemic.

India with resource-constrained environments and having more than 1.3 billion populations residing in densely populated areas is at high risk at a point of time through any type of violation of isolation, lockdowns or curfew and Indians cannot afford it. However, densely populated cities and slums, low awareness and unhygienic conditions of these areas, non co- operational attitude of the affected people towards corona warriors still may turn this outbreak into epidemic proportions in a matter of days. If it is not taken care of, all the preparation and lockdown of several weeks may go in vain, which may add to shortage of hospital beds, healthcare equipment and quarantine facilities, it may wreak havoc on the already overburdened healthcare system. Hence, this is the high time to move from containment to mitigation. And for this complete lockdown for further few weeks after May 18 is the indispensable tool, as cases of asymptomatic carriers are also increasing

In case of India, critical concerns were there about the efficiency and timeliness of quarantine and isolation and moreover the challenges of detection of Coronavirus are manifold with lack of specific treatment, lack of testing laboratories, lack of medical infrastructure, lack of knowledge about the behavior of epidemiological behavior along with the social factors such as the large rural, illiterate and unacquainted population who can understand the importance and significance of lockdowns adequately. And Indian's experiences with control of HIV in 1984, SAARS in late 2002,and pandemic influenza H1N1 in 2009 and moreover of Chamki Bukhar (Acute Encephalitis Syndrome) at state level in Bihar in mid of 2019 increase the fear and anxiety to control the spread of Covid -19 a mighty spreader and killer virus.

Fortunately outbreak of Coronavirus in India is moderate in nature in comparison to U.S.A., Italy and other western countries and Indians are doing better with fewer facilities. As on 10 May, 2020 the total number of Government laboratories approved stand at 254 , and as per health ministry report as on 10th May 2020, the country has 1.07 lakh isolation beds available across 672 dedicated covid hospitals. [8] Intensive care unit (ICU) beds per lakh population are also less in comparison to western countries, but there are few occupied ICU beds for the corona patient. Delving further into individual cases, the officials of MHFW of India said that in comparison to March 29, when there were 979 cases, the number rose to 52,952 on May10, 2020. Out of these 52,952 cases, only 4.1 percent of patients needed critical care treatment. Numbers of Isolation beds or ICU beds may be insufficient in terms of huge population but Indian corona warriors are performing their best to control this epidemic with the scarce resources.

Economic implications

Covid-19 has created not just an emergency situation for health only but for the economic health of the country too. It could not have come at a worse time for India, who is already in the middle of a slowdown. "Vulnerability of the impact of this pandemic increases with the situation of Economic Sudden Stop. It is a sudden stop of economy where supply and demand shocks to an economy and economic activities come to a halt. Indexes of share markets of India have already come down to the lowest level of the past three years and Rupee falls to all-time low of 76.15 on Coronavirus scare"[9] adds up to the economic loss it entails, including the loss of livelihoods, severely.

The real economic cost of Covid-19 will be different for different sectors of Indian economy each sector will have its own shapes of recovery and growth. Beside Informal sector, manufacturing sector of the economy is worse effected sector at the present but once the lockdown ends and factories reopen, the production will rebound to restock inventories. As this sector has the ability to recover soon due to restocking inventories and rising demand, it will take a U-shape. On the other hand, service sector will experience an 'L' shape. The shock to tourism, transportation services, and domestic activities may not be recovered easily, as it will see a permanent loss of revenue and closures of business**.** The projected slowing of global growth may further enhance the L-shape evolution of demand for these non-storable tradable services

The Way Ahead

Because the choices people make change infectious disease transmission rates, they also change epidemiological dynamics. It follows that disease dynamics are sensitive both to the cost of disease (the income forgone during illness and the direct cost of illness) and the cost of disease avoidance. If the cost of disease is very low there is little incentive to avoid it, and disease dynamics will be those associated with proportionate mixing. If the cost of illness is very high, people will invest substantial resources in disease avoidance. In extreme cases, private decisions about selection of contacts can lead to an effective quarantine on infected individuals—an effect that would never occur in classical models. Disease dynamics are also sensitive to the benefits of contact. People trade-off disease risks against the benefits of contact. If there is much to be gained from contact they will accept much greater disease risks than if there is little to be gained [10,11,12,] and is applicable to present Indian context.
There are an ever increasing number of studies focusing on health inequalities, expanding also into areas such as life course analyses and regional inequalities. Pressure is mounting over public health authorities to develop more targeted and cost effective disease management strategies to focus on risk targeting, bringing a geographic specificity to prevention policies, and developing a rank ordering of policies by cost effectiveness

Beyond such objectives and measures, data on prices, sales, employment, output, exports, and imports may be as valuable for predicting epidemics as data on current disease status, which will be helpful to frame a realistic policy ahead. However, utmost priority should be accorded for the guarantee of income and food security of the marginalized sections of the society. In short Government must consider that beyond health, the priority should be on people.

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