COVID-19: Balancing the Infection and the Misery Curves

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EXECUTIVE SUMMARY

- COVID-19 not only highlights existing inequalities, it exacerbates them. Not only do the poor have higher COVID-19 infection and mortality rates, they suffer disproportionately from curtailment measures.

- As governments try to flatten the infection curve, the misery curve measuring the loss of incomes, livelihoods and lives has been rising. These costs tend to accelerate the longer the lockdown is in place, contributing to an increase in violations that can reduce the effectiveness of the measure itself.

- In countries without broad-based safety nets, it is no longer a choice between lives and livelihoods because those are often one and the same thing amongst the poor. Poorer countries must consider the trade-off between lives lost through destroyed livelihoods and lives lost to the virus.

- These ground realities suggest that targeted time-bound measures rather than prolonged general lockdowns should be considered in poorer countries, while increased testing is being vigorously pursued.

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INTRODUCTION

Most natural and man-made disasters, from earthquakes to climate change to financial crises, have a disproportionately large negative impact on the poor and other vulnerable or marginalised groups. Pandemics like COVID-19 are not an exception. Although COVID-19 may be an “equal opportunity infector”, the poor are more susceptible to infection and to succumbing to it if infected. The poor are also likely to bear a disproportionately high share of the burden of curtailment measures designed to curb the spread of the virus. COVID-19 not only highlights existing inequalities and disparities, it exacerbates them. Therefore, informed policy making that considers these ground realities and how they affect costs and benefits is critical especially in countries with high proportions of the poor, and where safety nets are likely to be weak.

Unfortunately, limited testing capabilities is another feature of being poor, and this prevents the assembly of data required to make informed decisions. Fear of the unknown, coupled with the potential for exponential spread, is leading governments in poor countries to err on the side of caution and to employ draconian measures. Lockdowns are being prolonged because the data required to support a safe lifting of the measures cannot be collected, even though the same data deficit means that extensions may not be justified either. The costs of lockdowns on the welfare of the poor is rising, and can accelerate the longer they are in place, in the absence of income support.

The infection curve finds its counterpart in the misery curve, which measures the loss of incomes and livelihoods, contributing to long-term and sometimes irreversible harm. This makes prolonged lockdowns not only a potentially erroneous policy instrument for minimising overall harm, it is also likely to render them ineffective since implementation will be compromised as violations begin to increase. This suggests that there may be a need, over time, to ease certain restrictions that inflict significant misery on vulnerable groups. Otherwise, violations may increase to a point where they compromise the overall objectives of the lockdown, causing health and economic crises that together approximate a humanitarian disaster.

WHY THE POOR ARE AT HIGHER RISK

The poor are a heterogeneous group with significant variation in susceptibility. The urban and peri-urban poor face much higher risks than the rural poor, especially in the early stages of the spread. Living conditions for the rural poor are generally less congested, and work such as subsistence farming would involve less physical contact. The urban or peri-urban poor employed in service sectors such as transport or construction may find social distancing difficult to implement. Urban slums are generally defined by their congested and unhygienic conditions, and can be hotbeds for the spread of all kinds of disease.

While COVID-19 may have introduced the developed world to the importance of proper hand washing to avoid infection, it has long been recognised as an important part of preventing disease in the developing world. The United Nations Children’s Fund (UNICEF) and World Health Organization (WHO, 2009) estimate that up to 40 percent of often deadly diseases could be prevented by proper hand washing, if the poor had access to running...
water. But with a third of urban populations living in slums, and one in five people under 17 years being excluded from education, the poor lack access to clean water and the requisite knowledge to practise even proper hand washing. The general lack of education amongst the poor combined with limited access to information and communications technology further increases their risks.

Not only are the poor more prone to infection, they are also less likely to recover from it if infected. There are a number of reasons why the poor are likely to have higher infection-fatality rates. Years of poverty-induced malnutrition and poor diet weaken immune systems and the ability to fight off viral and other infections. This is particularly problematic since the poor tend to have less access to medical and healthcare services, increasing the probability of secondary infections. In fact, it is unlikely that many of the poor will be tested until symptoms are so severe that the chances of recovery are compromised. In ASEAN for instance, the mortality rate in its richest member, Singapore, is 0.075 percent, compared to about 6.5 percent in Indonesia and Philippines, two of its most populous members with a high proportion of poor people.

WHY ARE POOR COUNTRIES PROLONGING LOCKDOWNS?

Countries and regions with the highest reported COVID-19 infection and mortality rates are imposing lockdowns to flatten the curve — slowing its spread so that healthcare systems can cope with the increase in patients. Lockdowns aim to change the shape of the infection curve, or the temporal distribution of infections, but not necessarily the area underneath it, or the total number of infections. Unless the lockdown is meant to last until a vaccine is developed, it should not affect the number of people who are eventually infected. In fact, on the negative, it could delay getting to herd immunity.

The containment of the virus in Wuhan shows that lockdowns can be effective in reducing infection rates, however, with curbs being lifted after infection rates reportedly diminished. If there is learning by doing, and social distancing behaviour acquired during the lockdown continues after its lifting, then overall infection rates can be affected. But excessively draconian measures may not always be necessary for controlling the spread — as Hong Kong’s and Taiwan’s experiences demonstrate (see Cowling and Lim, 2020).

Even countries with relatively low infection and mortality rates are implementing lockdowns and increasingly draconian measures. For instance, Malaysia, the Philippines and Thailand extended their lockdowns into a second month. As of mid-May, Thailand reported just over 50 deaths from COVID-19, Malaysia over 100 and the Philippines over 800 (Worldometer, 2020).

These numbers do not suggest rampant community transmission. Why then are these and other countries with similar infection rates extending such draconian and costly measures?

It may be that governments do not trust the data, with limited testing revealing only the tip of the iceberg. The gap between reported and actual infection and reproduction rates \((R_0)\) is likely to be higher in developing versus developed countries due to limited testing in the former. Figure 1 shows that there is a strong positive relationship (correlation of 0.64)
between the number of reported cases per million population and per capita GDP in purchasing-power-parity (PPP) terms for countries in Asia. Since it is unlikely that immunity is higher in low income countries, the difference is most likely due to reduced detection because of lower testing.

**Figure 1**
COVID-19 cases per million population and per capita GDP in Asia

This view receives further support from Figure 2, which compares the number of tests per million population and per capita GDP in PPP terms. These two variables display an even stronger correlation of 0.72. The much lower rates of testing in lower-income countries implies that the number of cases in those countries is being substantially under-reported. Governments are therefore unlikely to place much credence on reported infection rates in deciding on their response.
Governments may also be guided by the adage that prevention is better than cure, especially when one does not exist, and domestic healthcare systems are weak. Flattening the infection curve and keeping rates in check is particularly important if the healthcare infrastructure cannot cope with a sudden increase in demand. Some governments that had underestimated initial risks may follow up by over-reacting in order to try and catch up or compensate, especially when lives are at stake.

Despite the virus being less deadly than many other non-communicable diseases and even some communicable ones, the continuing uncertainty surrounding this new virus and its highly infectious nature may account for some of the overreaction. At the regional level, opportunities for rent seeking may also underlie requests for extensions in lockdown periods, if they are accompanied by income transfers from the centre that can be appropriated by local officials for personal gain. Therefore, a combination of continuing uncertainty, incomplete information and politics is leading governments to prolong lockdowns.

WHY THE POOR SUFFER MORE FROM LOCKDOWNS

Whatever the reason, these measures are exacting a huge toll in economic and social terms. But how can we measure if they are justified?

Answering this question requires evaluating the benefits and costs of the lockdown. The main aim of a lockdown is to slow the spread of the virus, and it may be too early to tell what the effects are. Because the incubation period is between 2-14 days, what is reported today may be reflecting conditions in the past. Rising infection rates could also reflect increased testing rather than a failure of the measures. The lockdown may have limited the
increase, but it is impossible to tell by how much. All of these factors complicate the measurement of benefits.

The costs are easier to estimate. There are countless estimates of impacts on economic growth under various scenarios, and how they filter through to changes in household incomes and poverty incidence.\textsuperscript{10} While the numbers can be disputed, it is clear that the curtailment measures are having a major negative impact on economic growth, incomes and poverty in both rich and poor countries. The usually large informal sector in poor countries suggests that these estimates may be biased upwards, and that the true costs may be significantly higher, especially after considering distributional implications. Workers in the informal sector are not eligible for any form of wage subsidy or employment guarantee or any other social protection measure associated with formal employment. Lockdowns also disrupt food supply chains, and can affect production and prices of staples. Since food constitutes a higher share of the budget of the poor, they will suffer disproportionately.

While countries try to flatten the infection curve, another curve measuring the costs and misery associated with curtailment measures is rising, and approaching catastrophic levels in poor countries. This misery curve measures the costs of curtailment measures that result in the loss of incomes, livelihoods and lives. The misery curve can vary by household but in general, it rises with the severity and length of curtailment measures and declines with the amount of compensation provided through safety nets.

If the infection curve is being flattened, it is not a reflection of the condition of the poor. In developing countries, the poor are unlikely to be able to afford the healthcare that is temporally rationed by this flattening process. They will bear most of its unintended consequences in any case. The poor live hand-to-mouth, and lockdowns prevent the poorest from begging or scavenging for food, or the millions in the informal sector from earning a daily subsistence income. For the poor, especially the urban or peri-urban poor, it is quickly becoming a question of survival, in the absence of broad-based safety nets.

Both curves have threshold limits that should not be breached. For the infection curve, it is when the supply of healthcare is no longer able to cater to demand. But for the misery curve, it is when the harm caused by the curtailment measures starts impinging upon health conditions or survival itself.

Each individual or household has its own misery curve because the impact of curtailment measures will vary depending on a host of characteristics, such as initial income, amount of savings or other liquid assets, living conditions (eg. in-house access to running water and proper sanitation) and the like. These characteristics determine the extent of the burden imposed by lockdowns. As these costs increase, so does the probability of breaches of the lockdown. While initial income will determine the original level or starting point of the curve, these other factors will affect the rate of increase or the slope of the curve over time.

After a prolonged period of lockdown, the time to rethink the balance between the two curves may have arrived in poor countries without adequate safety nets. Prolonged lockdowns can lead to more deaths from hunger or hunger-related illnesses\textsuperscript{11} than from the virus, and cause other irreversible effects such as loss of physical and social assets. Long-term effects such as lost months of schooling, health check-ups, and nutrition can be
particularly high for children in poor families, adversely affecting their human capital development and earning potential, contributing to an inter-generational cycle of poverty. A large community of “new poor” will emerge in and around urban areas, while rural poverty will deepen further.\(^{12}\)

**THE WAY FORWARD**

So, where does this leave us? Although the outcome of the cost-benefit exercise cannot be determined definitively, decisions need to be made about the future course of action.

The question facing developing countries is how much longer existing measures should remain in place. Lockdowns are inherently unsustainable and their costs rise at an accelerating rate over time. As the costs rise sharply, the efficacy of the lockdown itself is likely to be compromised, as discussed earlier. Brown *et al.* (2020) show that more than 90 percent of poor households in developing countries may not be able to comply with WHO recommendations because their personal and household characteristics prevent them from observing lockdown requirements.

For instance, if the household does not have access to safe drinking water within their premises, then they will be forced to break the curfew and wander to the closest public utility, where other poor may also congregate in breach of safe distancing rules. Since women generally undertake such household chores, they will be at higher risk than men. So, faced with the high probability of dehydration or starvation by remaining at home versus a relatively low probability of infection, and (multiplied by) an ever lower chance of dying from that infection, the poor are likely to take calculated risks and find ways of violating lockdown restrictions to ensure their survival. The absence of a reliable source of energy may also make it difficult to comply with stay-home notices.\(^{13}\) Therefore, it is unlikely that lockdowns can be effectively implemented over long periods of time in poor countries without adequate safety nets.

Given these circumstances, what is the best way forward? If lockdowns are likely to be breached the longer they are in place, then using them as a curtailment option could be counter-productive unless they are regularly reviewed. If lockdowns are kept in place for too long, their eventual easing could result in an explosion of pent-up activity, resembling a return to the “old normal”, increasing the risk of a second wave of the epidemic. To overcome this, some epidemiologists propose rolling lockdowns or cycles of a ‘suppress and lift’ policy around the incubation period that can keep both the pandemic and social costs manageable.\(^{14}\) Therefore, targeted time-bound measures rather than prolonged general lockdowns should be considered in poor countries when there is insufficient data to support either the safe lifting or extensions of lockdowns.\(^{15}\)

Alternatively, might relaxing specific measures that have particularly large impacts on the poor reduce costs and therefore reduce the probability of breaches? The relaxation of such measures could actually assist in achieving the objectives of the lockdown by reducing violations, rather than compromising it. It could also pre-empt a general and arbitrary easing of measures as lockdown fatigue inevitably sets in.
Consider Manila, where all transport except private vehicles is restricted. This disadvantages the poor by restricting their mobility and access to essential services, and by removing livelihoods for millions employed in the public and private transportation sector. For the poor, getting to a public hospital may not be possible without public transport. During a lockdown, social distancing on public transport should be possible because congestion is unlikely. There could be other policies like this and we need to look harder and be prepared to take calculated risks, like Vietnam just did. With less than 300 infections and no reported deaths, Vietnam extended its lockdown to only 12 high-risk locations up to the maximum incubation period of two weeks (Onishi, 2020). Pakistan recently extended its lockdown but reopened its construction sector, which employs millions of its poor, to ensure, in the words of its Prime Minister, that “people don’t die of hunger” (Economist, 2020).

Testing should be ramped up in sectors or occupations targeted for opening, prior to the easing taking effect. This will minimise the risk of a second wave of infections, although some increase in cases should be expected because of increased testing, and as a result of the easing of restrictions. These expected increases should be factored into any calculation of what constitutes a second wave of infections that warrants a reintroduction of restrictions.16

If we initially erred on the side of caution, we now need to err on the side of reducing misery. The precautionary principle is increasingly becoming a luxury available to wealthy nations that can afford effective safety nets. While developed nations debate the value of a statistical life17 in the trade-off between saving lives and destroying livelihoods, poor countries need to consider the trade-off between the number of lives potentially lost through destroyed livelihoods and those that could be lost to the virus.

CONCLUSION

The poor and other vulnerable groups have higher COVID-19 infection and mortality rates. The poor are also likely to suffer more from the unintended consequences of lockdowns than others. While countries try to flatten the infection curve, the misery curve has been rising as a direct consequence. Without broad-based safety nets, the integrity and effectiveness of a lockdown is likely to be compromised if the misery curve rises beyond a certain threshold level. This limit is likely to be breached the longer the lockdown is in place, especially once it exhausts the limited savings of poor and uncompensated households. The likelihood that the threshold will be breached increases when households do not have access to potable water and adequate sanitation within their dwellings. And for the homeless or undocumented migrant worker, whose misery levels were already high to begin with, the lockdown will quickly push them over the threshold limit. These characteristics of the population should be considered in choosing and designing curtailment measures.

It is time to consider options that can keep both the infection and misery curves in check. Focussing on one at the expense of the other is bad policy in all countries, but rapidly becoming untenable in developing countries. With the level of misery increasing faster than the data that measures it, calculated risks that limit imminent and foreseeable harm may
need to be taken. The rate of increase in the level of misery may also preclude waiting for more comprehensive data on testing to enable better informed decision making. Therefore, we should be guided by the obvious and observable rise in misery when there is insufficient data from testing to support a safe lifting of the lockdown, or indeed its continuation for that matter. As lockdown fatigue inevitably sets in, the restrictions that cause the most amount of misery should be eased first, but preceded by a targeted increase in testing to minimise the risk of a second wave of infections.

While the debate in developed nations on when to open up may be regarded as putting the economy over saving lives, in developing countries the question is how to balance the economy to minimise overall loss of lives. This is to say that it is no longer a choice between lives and livelihoods, as it is in Western industrialised countries, when these are often one and the same thing amongst the poor in countries without broad-based safety nets.

REFERENCES


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1 See Levy (2020), quoting Larry Brilliant.
2 For more details relating to these data, see United Nations Statistics Division (UNSD, 2020).
3 Based on data from Worldometer (2020), accessed on 20 May.
4 One of the key issues for the monitoring and control of the pandemic is the extent to which testing is capturing those who have the virus but do not exhibit symptoms. Since those displaying severe symptoms are more likely to be tested in poor countries, the reservoir of untested, infected
individuals that show only mild or no symptoms will not strain the healthcare system as they will not require hospitalisation. They will, however, still pose a risk to the spread of the virus.

5 The reproduction rate, or $R_0$, of a virus is a measure of its transmission, or the number of new infections generated by each case. An $R_0$ rate of 1 means on average each infected person will infect one other person they come in contact with. It may be safe to ease a lockdown if the rate is below 1, because it implies that the epidemic is subsiding, while a rate above 1 suggests exponential growth in its spread, and the possibility of overwhelming the healthcare system if left unchecked. This assumes there is zero immunity in the community, which is what the “0” in $R_0$ stands for.

6 For details relating to the country sample, see Morgan and Trinh (2020).

7 For communicable diseases, see Harding and Lanese (2020). For non-communicable diseases, see Reddy (2020).

8 In the Philippines for instance, the government has received a total of 318 complaints against the supposed graft and corrupt practices of local officials in the distribution of cash aid to low-income households. So far, 23 village officials are facing criminal charges while 110 others are currently under investigation for alleged anomalies. See, for instance, Pulta (2020) and Cudies (2020).


10 The IMF (2020), for instance, predicts that world output will contract by 3 percent this year, resulting in the greatest recession since the Great Depression.

11 The Food and Agriculture Organisation (FAO, 2019) estimated that more than 820 million people were hungry in 2018, while about 2 billion suffered from moderate or severe food insecurity. This results in about 25,000 deaths per day from hunger or hunger-related illnesses. This daily average is more than 10 times that of COVID-19, based on data for about 5 months since the first case was reported in late 2019 (Worldometer, 2020).

12 An increasing number of early studies are already pointing in this direction. See, for instance, Brown et al. (2020), Ravallion (2020), Sanchez-Paramo (2020) and literature cited therein.

13 For a more detailed discussion of these and other characteristics of poor households and how they affect the efficacy of lockdowns and home environments for protections against COVID-19, see Jones et al. (2020) and Brown et al. (2020).

14 See, for instance, Leung (2020).

15 Beyond the short run, and in order for decisions to be made based on data rather than fear, efforts to increase testing and data collection should be vigorously pursued.

16 Policy should only be reversed when there is a clear need to do so, because they can be particularly disruptive and costly as they increase uncertainty and reduce confidence in a government’s policy credibility. But when such a need does arise, then the reversal should be swift and certain.

17 For a discussion of the value of a statistical life, see, for instance, Harford (2020).
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