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A Sectoral View of Lifting the Lockdown and the Use of Sample-based Random Testing

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In a previous paper, we argued that lifting quarantine restrictions should be in lockstep with the preparedness of the health system to face the disease. There would be two components:

Geographical (default approach)

- Depending on the ability of localized systems to 'quarantine-test-isolate', restrictions on mobility could be lifted, first, within barangays, then within cities/municipalities - and then between cities/municipalities.
- Mayors and Governors would be given additional authority, provisions and funding to ready local systems.

Sectoral

- Economic activity could also be revived by phase. For instance, supply chains for food and essential goods would be prioritized
- How fast this happens would largely depend on an adherence to, and enforcement of, public health protocols by and among private establishments



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In this paper we detail the **sectoral** component.

- **We propose principles and parameters for how sectors can be organized and ECQ restrictions lifted from them accordingly.**
- **We assume that, in the best case, a stable long-term scenario may come about only 18 months from now when a vaccine is expected to be available.** Until then, intermittent but limited lockdowns will remain a possibility.
 - Our proposal includes a mechanism by which these decisions can be made based on more rigorous information.



First, we organize sectors along two dimensions.*

1: How vital is the sector to sustaining the economy over the next 18 months?

- ‘high’ - for instance, food and agri production; food distribution and retail; logistics and transportation; banking, finance, telecoms; public works, construction; BPOs
- ‘low’ – for instance, malls, theatres, bars/resorts/casinos; family subsistence agriculture; schools and educational institutions

2: How much social contact do occupations have on the job?

- ‘High-risk’ spreader – for instance, workers in food distribution and retail; in transportation, distribution; in schools/educational institutions; in malls/theatres, etc.
- ‘Low-risk’ spreader – for instance, family subsistence farm workers; workers in agri. production, banking, finance, BPOs, telecoms

** Health personnel, military, police, and others in the frontlines are not discussed here because they are already covered by existing safety and care protocols*



Next, we describe what protocols must be in place so that mobility restrictions can be lifted.

Note: *Matrix may be used to classify export-oriented firms who continue to service foreign clients or who can pivot to serve the domestic market. The matrix can also be further refined, i.e., it is not exhaustive and classification may be adjusted depending on economic region.

Vital to sustaining the economy for the next 18 months*

		Low	High
<p><i>Extent of social contact on the job (i.e. potential contribution to spreading the virus)*</i></p>	<p><i>Low-risk spreaders</i></p>	<p>A: family subsistence agriculture workers</p> <p>Action: Lift restriction on movement, excluding >=60 yrs and/or with comorbidities.</p> <p>Minimum requirements: basic safety measures (social distancing, face masks, coughing manners, handwashing)</p>	<p>B: Workers in food and agricultural production, banking and finance institutions, telecoms, BPOs</p> <p>Action: Lift restriction on movement, excluding >=60 yrs and/or with comorbidities</p> <p>Minimum requirements: basic safety measures. Implement periodic sample-based random testing.</p>
	<p><i>High-risk spreaders</i></p>	<p>C: Workers in malls, theaters, bars, resorts, casinos.</p> <p>Schools & educational institutions</p> <p>Action: Do not lift restrictions on movement. Online and other work-at-home arrangements can be pursued. If located in provinces with no reported case, Cluster B actions/rules may apply.</p>	<p>D: Workers in logistics & transport networks, food distribution & retail networks including public markets and restaurants; private security workers; public works/ construction workers.</p> <p>Action: Lift restriction on movement, excluding >=60 yrs and/or with comorbidities. Dine-in services remain prohibited.</p> <p>Minimum requirements: Basic safety measures; additional PPE where necessary. Implement regular sample-based random testing **</p>

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Result: For clusters A,B and D, restrictions on mobility may be lifted *for as long as* sample-based random testing (for B and D) is undertaken

Other requirements for A, B and D

1. Basic safety measures: social distancing, use of face masks/PPE, coughing manners, handwashing, workplace modification, environmental disinfection, etc.
2. Workers who can be placed on work-from-home arrangements should maintain such arrangements until a vaccine/cure is available
3. Restrictions continue for workers aged 60 and above and/or with comorbidities.
4. Young adult workers should be given specific instructions on how to prevent the possible spread of infection to vulnerable family members

For C: Keep restrictions on mobility

- Online and other work-at-home arrangements can be pursued.
- If located in provinces/HUCs with no reported cases, sectors in cluster C may be treated like those in cluster B

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Of prior importance: Ensure that the spread of the virus can be controlled at the barangay level and in mass transportation systems.

- If their area of residence is infected, the mobility of workers in B and D is affected; they cannot travel to work if they are home quarantined. Thus, **barangay level systems to control the spread of the virus must be in place.**
- Infections can also happen en route while commuting from one place to the other. Therefore **health protocols for the operation of mass public transport** facilities (in cluster D) are required before other sectors can open.
- **The provision of nearby housing for employees could be a justifiable preventive measure if reckoned against the possibility of infections that may occur when workers are in transit or at home.**



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Why sample-based random testing? Because as the economy restarts, we need a reliable way to track how COVID-19 is behaving in the population.

1. **Currently, government undertakes *diagnostic* testing (using RT-PCR), prioritizing those manifesting symptoms in order to identify people to be treated.**
 - While this is largely due to limited RT-PCR testing capacity, it **cannot** provide reliable estimates of how many in the population are actually infected - nor estimates of disease transmission rates - given that roughly half of those infected are asymptomatic but are spreading the virus.
2. **To truly understand COVID-19, we need to expand testing coverage and undertake *surveillance* testing.**
 - If we do surveillance testing, we will be able to reliably gauge (a) if the curve is indeed 'flattening'; (b) whether and when second or third waves of infection may occur; and (c) the extent of 'herd' or community immunity.
 - This information will provide some level of safety and assurance to households, firms and LGUs as the economy restarts.



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Specifically, **sample-based random testing for antibodies** would be a feasible way to surveil COVID-19.

If there is a positive result, the rapid antibody-based test would be followed by RT-PCR testing using the *pooled* approach.

- For surveillance purposes, a rapid antibody-based test can be used (DOH prohibits it only for diagnostic purposes.) It would be too costly to use the RT-PCR test exclusively at this time.
- For RT-PCR testing, the pooled approach would reduce costs substantially. Pooling of samples is done for many diagnostic testing protocols such as for HIV and influenza. For COVID-19 testing, it is recommended that no more than 5 samples is used per pooled specimen.



How could sample-based random testing be implemented ?

1. Two-level design:

- **Level 1: a random sample of firms per sector.** For instance, roughly 10 to 20 firms, depending on the size of the sector. For Cluster D, a new sample is drawn every week. For Cluster B, it could be every 2-weeks. The sample would come from lists drawn up by DTI, PSA and LGUs.
- **Level 2: a random sample of employees within the selected firms.** For instance, about 2 to 10 workers per week depending on the size of the firm (e.g. 2, if 30 or less workers; 5, if 30-100 workers; 10, if workers number greater than 100)

2. For all sampled workers, the rapid antibody-based test (@ ₱1930 per test) is administered.

3. If a sampled worker tests positive, then RT-PCR testing (@ ₱8150 per test) using the pooled approach would commence for the entire shift of workers that was exposed to the infected individual.



Illustration: Expected cost of a firm in Cluster D randomly selected for the week.

If 30 workers or less

- i. Antibody-based rapid test for 2 workers (@ ₱1930/test): ₱3,860.
- ii. If a sampled worker tests positive, then swabs are taken from all employees exposed and *pooled* into batches of 5 each for testing. If all are exposed: ₱48,900 (₱ 8150 x 6)
 - If 2 batches are found to have a positive sample, then each employee in these batches is tested: 2 batches x 5 employees x one confirmatory RT-PCR test = ₱81,500.

If the pooled approach is not used, then RT-PCR testing would cost ₱244,500 (₱8150 x 30) in this case

If > 100 workers (say 150 workers)

- i. Antibody-based rapid test for 10 workers (@₱1930/test): ₱19,300.
- ii. If a sampled worker tests positive, then swabs are taken from all employees exposed and *pooled* into batches of 5 each for testing. If all are exposed: ₱244,500 (₱ 8150 X 30)
 - If four batches are found to have a positive sample, then each employee in these batches is tested: 4 batches x 5 employees x one confirmatory RT-PCR test = ₱163, 000.

If the pooled approach is not used, then RT-PCR testing would cost ₱1.22 M (₱8150 x 150) in this case



Restrictions on mobility may be lifted for various sectors if this approach is used. What is needed to implement it?

1. **RT-PCR testing capacity.** DOH capacity in granting *accreditation* to private and LGU laboratories must be expanded. Current capacity will be overrun even with pooled RT-PCR testing.
2. **Design of sampling schemes, implementation arrangements, and data aggregation and analysis systems** (DOH, DTI, PSA, LGUs and private sector)
3. **Full cooperation of the private sector.**
4. **Local systems to control the spread of virus at the barangay level, along with health protocols on mass transportation systems.** (Alternatively, firms can provide nearby housing to workers.)

The role of LGUs in lifting the current ECQ and managing responses on the ground moving forward cannot be overstated. All forms of support should be provided to LGUs.

