

## Covid-19 and GDP: a Life and Death Trade-off

### An alternative phase-out proposal to the lockdown

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It was once said that the decision to leave a war is as difficult as to enter it. The situation in which we find ourselves with the Covid-19 pandemic (one which we did not chose to enter) and its impacts on all sectors of society poses this enormous challenge. In particular, the consequences on economic activity are highlighted, which, some argue, may have even greater consequences than the pandemic itself. Thus, the issue must be addressed taking into account the timeframe, the extent and the intensity of the disease in the population, but also, and perhaps above all, how to control and economically manage the effects of the outbreak.

In our society (in ordinary situations) it is not acceptable to choose human loss under any circumstances, much less to establish the value of life. However, this does not exempt professionals such as doctors - in extreme situations - from being forced to make crucial choices. Neither do governments, and in situations like the one we live in, this reality imposes itself and true leaders are expected to make decisions that contemplate optimal alternatives (albeit hard and painful). At this moment, it seems clear in several studies that the situation of extremely high infection rate and most likely high demand for treatment of infected people, who may reach the critical state of the disease, authorizes the adoption of more extreme solutions, capable of considering losses and gains in a situation of high uncertainty. This, even considering that there are also those who are more skeptical, who do not believe in the possibility of any really effective interference in the contamination process of the population, which is why the outbreak would still follow its course regardless of the actions taken, due to its supposedly marginal effect.

For many of us economists, interpreting situations at their limits is a good start, because as a rule the optimal picture is likely to be between these two situations. In concrete terms, in our case, the limit situations are those

of total or no isolation from the population. The inconvenience of taking risks inherent to both seems obvious, and so the challenge will be to find an intermediate position, taking into account the restrictions that pertain to realms not only economic and financial, but also moral (inseparable from merely considering to relax lockdown measures, a single-minded proposal exclusively couched on epidemiological requirements). Thus, even though some models indicate a sub-optimal alternative focusing on the dynamic balance of the system, allowing a portion of the population to die in favor of more positive outcomes for the country's economy is an aberration in itself. Thus, it is assumed that a lockdown (with maintenance of essential services) for a maximum limit up to the peak of the infection curve. This is the first hypothesis, the immediate consequence of which is to develop funding mechanisms (additional extraordinary credits in the budget) to cover all the immediate and sequential expenses of this decision. This consequence, however, is a restriction in itself, given that there will be a limit to this funding and therefore a time limit for us to do as much as possible with available resources. Fortunately, although under uncertainty, the models point to a critical period of approximately two months.

Thus, the construction of an ideal lockdown phase-out model should focus on the marginal rate of the contamination index reaching the inflection point (marginal rate = zero), but with paying mind to the eventual possibility of an upswing in contagion. The obvious policy, therefore, looks like a temporary lockdown, whether from a moral or economic perspective. It saves us time. Time to flatten the contagion curve (and thereby decrease death rates), and hence gain time to shorten the curve by discovering effective treatment.

A pre-defined and organized phase-out model, in addition to being responsible in all respects, is also an obligation of the State. Yes, not only because the

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preservation of life and security of the people are fundamental rights, but because, with this alternative, the State directs an induced and managed economic retraction, in which economic support to society and its coordination until the return to normality are essential. This seems to be the best solution given the time path of contagion and our actual conditions, which separate us, for example, from South Korea, which faced the problem without "shutting down" its economy. We are not in a position to replicate here actions such as carrying out universal testing of the population and promoting the tracking of individuals, and we would probably not count on the uniform understanding and collaboration of society and government officials across the country. Perhaps, quite the contrary.

The alternative proposed then, without prejudice to the use of the measures adopted in South Korea to the extent possible, is part of the agile and efficient intervention following the guidance of experts in particular, but not only, up to the peak of the contagion curve. From that moment on, crisis management would have a risk component attached to the functioning of the economy and its outcomes. Given the unprecedented nature and magnitude of this crisis, as well as the dynamics and the yet not clearly measurable impacts of the sectors of the economy, the mapping and structuring of systems capable of predicting the full recovery of supply conditions and their contribution to the overall production process should always adopt more restrictive assumptions. In fact, unlike the policy guiding us today, which focuses on decelerating the contagion curve with a pre-defined budget restriction, in the phase-out model we should seek to maximize the results of economic activity subject to a decreasing contagion curve constraint.

Thus, from this moment on, with the flattening of the curve and the relieving of hospitals and adequate care, the economic effects suppressed in the two months of full-blown attack on the virus, we must prioritize (because these effects will be harshly felt), at the cost of being unable to reverse the economic situation and endure impacts even greater than those of Covid-19.

However, the permission to return to activities, in one side of this analysis, should not be done in a broad, general and unrestricted way. Management will need to first address those sectors with the greatest aggregate and multiplier effect on the supply chain and gradually expand to all other sectors of the economy. This transition should take into account, of course, the number of people reinstated and their impacts on the contagion curve, setting out acceptance limits. Alternatively, with less obstruction and state interference, all sectors can be released to resume activity, but with certain gradualism in terms of the number of people.

Obviously, the control of this phase-out process is borderline utopian, and it will certainly require enormous rigor, in the face of certain dissatisfactions and eventual abuses and special favors (our eternal evil). This is the reason why there should be a time limit for the start and duration of the phase-out. At this stage, even if the outbreak does not reappear, the trade-off of extra lives lost will be evident in the face of the urge to rekindle the economy. There will be no lack of criticism from those who almost irresponsibly today advocate against the lockdown, but abandoning the opinion of experts on the subject cannot be on the decision-making board of the responsible officials.

In summary, the analytical solution of the proposed phase-out model is fundamentally based on the maximization of an objective function that represents GDP, subject to the restriction that is expressed in the equation, which represents the contagion curve and the mortality rate of our local reality. The macroeconometric structuring of this complex system requires robust epidemiological models, continuous learning and adjustment of the equation system, with Artificial Intelligence. The dynamic calibration of the model should also dynamically guide the policy, with appropriate adjustments.

Paradoxically, the Brazilian economy for the first time in a liberal direction, will be subject to a transitory "dependency on broad state planning" to get back on its track. The cost of doing so is justified: human lives at stake.

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