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ABSTRACT

The COVID-19 Conundrum in the Developing World: Protecting Lives or Protecting Jobs?

It is almost certain that the world economy is entering a recession of historic proportions; how bad things get will depend on how governments manage the Covid-19 pandemic. At the core of the problem lies a very difficult choice: whether to “flatten the curve” of the epidemic or whether to flatten the curve of the recession. It is unlikely that both can be achieved and, in this case, it is better to address the tradeoff heads-on rather than try to ignore it or assume it doesn’t exist. Because developing countries are less prepared to deal with the consequences of an economic downturn, they might not be able to afford “social distancing” policies for extended periods.

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The Covid-19 Conundrum in the Developing World: Protecting Lives or Protecting Jobs?

David A. Robalino¹

It is almost certain that the world economy is entering a recession of historic proportions; how bad things get will depend on how governments manage the Covid-19 pandemic.² At the core of the problem lies a very difficult choice: whether to “flatten the curve” of the epidemic or whether to flatten the curve of the recession. It is unlikely that both can be achieved and, in this case, it is better to address the tradeoff head-on rather than try to ignore it or assume it doesn’t exist. Because developing countries are less prepared to deal with the consequences of an economic downturn, they might not be able to afford “social distancing” policies for extended periods.

Epidemiologists have known for a long time that in the absence of cures or vaccines for a contagious disease the only way to mitigate or suppress its spread is social distancing, but it comes at a cost.³ It is costly because to be able to affect the dynamics of the epidemic, measures have to be stringent and implemented during a *relatively* long period of time. The result is a prolonged demand *and* supply shock that can be more difficult to treat than a normal recession; a severe disruption of the economic network.⁴ Yet, the number of countries/regions adopting one form or another of social distancing is growing by the day and with it the likelihood that the recession will become a depression.

The benefit/cost ratios of social distancing are likely to be particularly unfavorable for developing countries because of unplanned urbanization, informal labor markets, and more limited state capabilities.⁵ In many countries -- from Yemen, through Kenya, to Brazil and Ecuador -- large percentages of the urban population live in slums where trying to enforce social distancing is near impossible (see Figure 1). Likewise, informality in the labor market aggravates the negative economic impact of social distancing. Seventy percent of workers in middle- and low-income countries operate in the informal sector; even in countries like Argentina and Mexico these workers represent half of the labor force. Some are wage employees in informal firms, but the majority are self-employed workers engaged in relatively low productivity activities: when businesses shut down or when they can’t go out to work, they don’t generate income to feed their families. And, the supply and demand-side programs that governments need to protect jobs and incomes and mitigate the effects of an economic downturn are often lacking or cannot be expanded fast or far enough because of poor institutional capacity and limited fiscal space. In countries like Lebanon, Ecuador, and Chile, Covid-19 arrived when the economies and public finances were already under strain.

Many governments are now trying to stimulate their economies and protect incomes, but it is also imperative to start making difficult choices about the extent of social distancing policies to minimize the

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² Forecasts by investment banks and economic consultancies for the Euro Area, Britain, and the United States range between 6 and 9%.

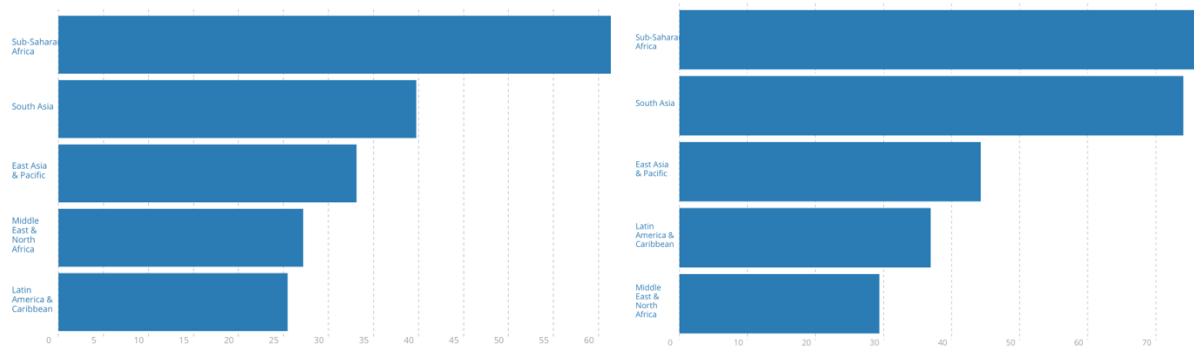
³ See Daley and Gani (2005); Hethcote (2000); and Manski (2020).

⁴ Andrews et al., (2017)

⁵ Guerrieri et al., (2020)

economic slowdown itself. And yes, this requires placing a value on human lives and a value on jobs and the wellbeing of future generations.

Figure 1: Percentage of the Urban Population Living in Slums and Percentage of Self-Employed Workers in the Labor Force



Source: World Bank

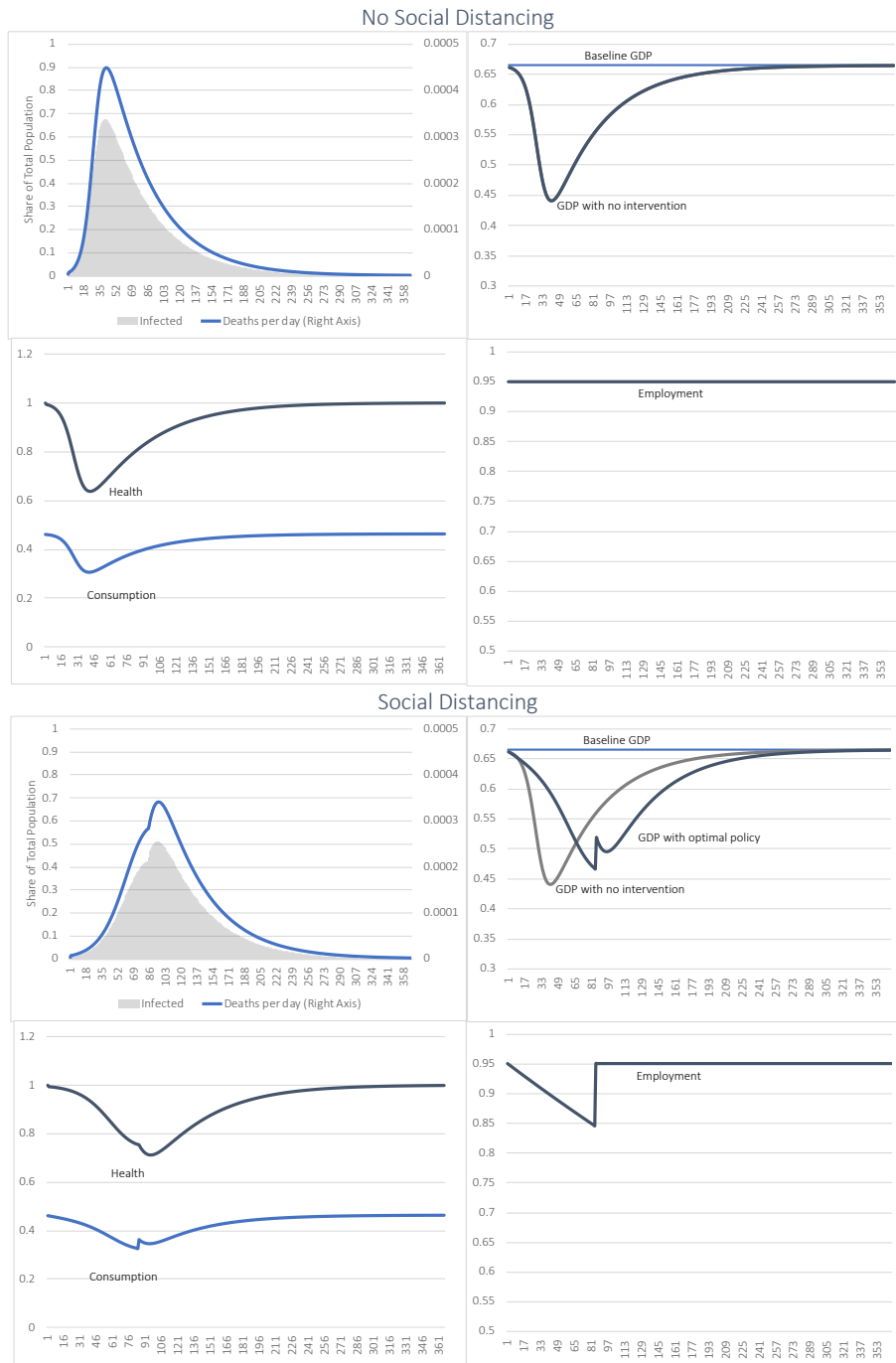
Simple, stylized, economic-epidemiological models can be used to put things in perspective and make explicit the tradeoffs between lives and jobs. Economics, the dismal science, has to deal with similar tradeoffs all the time: whether to invest in education or roads; whether to slow down the economy or face climate change; and how to allocate resources among different health interventions that will save some lives but not others. As a result, there is an edifice of policy frameworks and quantitative tools that can be used to inform public policies. They all have in common some measure of social wellbeing that, in the case of model I use, is a composite of the number of deaths per population (which decreases social welfare) and aggregate consumption (which increases social welfare). Consumption depends on income, which in turn depends on the number of jobs and their average productivity. Social distancing saves lives, but it also reduces the number of jobs and labor productivity, and therefore income and consumption. Therein lies the conundrum (see Annex).

Although there is tremendous uncertainty surrounding the predictions one can make using these models, the main insight is that, in most cases, the optimal form of social distancing is likely to be mild and of short duration. It all boils down to assumptions about relative preferences for consumption and lives, how the epidemic alone affects the economy, and how social distancing affects jobs and labor productivity.⁶ If to reduce the infection rate by, say 50%, the unemployment/underemployment rate has to increase to 15% in a three month period or less – not something that is unthinkable after seeing the spike in the number of applications for unemployment benefits in the U.S.⁷ – social distancing would only be efficient if society has a strong aversion to the short-term increase in mortality rates and almost no concerns about aggregate consumption.

⁶ In the United States, for instance, a rough estimate is that the economic impact of a partial lock-down could reduce GDP by 5 percent per month, depending on the share of digital workers in each economic sector (see Makridis, 2020). This doesn't take into account the demand shock. The supply shock in developing countries is likely to be more severe with fewer workers able to work from home.

⁷<https://www.dol.gov/ui/data.pdf>

Figure 2: A Stylized Example of the Dynamics of Infections, Deaths, GDP and Employment with and without Social Distancing



Source: Author. The parameters used in this simulation are presented in the Annex. The optimal intervention reduces the infection rate by 56% through a lock-down that lasts 3 months. This intervention reduces mortality and the loss in consumption, but it does not flatten the curve. The unemployment rate increases to 15% over the 3-month period.

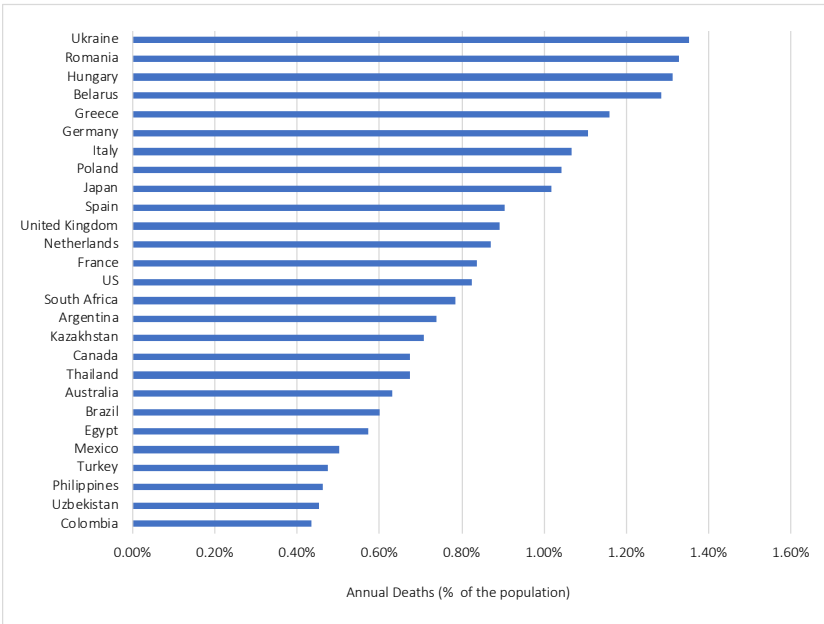
As an illustration, in a representative developing country facing a Covid-19 epidemic, the longest duration of the “lock-down” period one is able to generate under pretty extreme assumptions is of three months; in most cases the optimal response is a lock-down of just a couple of weeks. The three months scenario gives almost no value to consumption. It also requires that the epidemic alone generates an economic

contraction of 6% in one year (see Figure 2). At this point, increasing just marginally the value placed on a human life puts us in a totally unrealistic situation where the lock-down lasts close to a year and the economy is allowed to collapse with GDP contracting by 30% in one year. Scenarios with more realistic assumptions recommend “lock-downs” of less than two months (see Annex).

The implication is that developing countries are probably better-off letting people, particularly young workers, resume their normal activities as soon as possible while focusing on protecting the lives of the most vulnerable, jobs and incomes.⁸ The thought of letting the epidemic progress and claim lives can be shocking to many. The reality, however, is that in the absence of a vaccine, the virus will not go away until the proportion of the population that is immune exceeds the herd immunity level. The number of deaths, however, is likely to be small relative to the total number of deaths that occur each year from other causes (see Figure 3).

The one piece of good news, in fact, is that mortality rates so far are relatively low and that most people who become sick won’t die, particularly youth. Africa has some of the poorest countries in the world but also the youngest. Thus, the priority should be to reallocate resources to the health sector and try to expand testing and enforce strict gate keeping rules in health facilities to ensure that health services are provided to those who need them the most; the elderly and those with pre-existing conditions that make them vulnerable to the infection. International organizations have a big role to play in helping mobilize the necessary financial resources. At the same time, one has to acknowledge that even under normal circumstances health systems in developing countries are already under strain; there are major problems with access and the quality of care. Governments might also need to consider expanding options for palliative care at home.

Figure 3: Annual Deaths per total Population around the World



Source: World Health Organization. As a reference, under a worse -case scenario of 240,00 deaths, the United States would have experienced a mortality rate due to Corona-19 of 0.073%. In Italy, the mortality rate on April 2nd was around 0.018%.

⁸ See a similar argument in the case of the UK (Oswald and Powdthavee, 2020).

Economic instruments to protect jobs and income are not new and were tried during the last financial crisis.⁹ For small and medium enterprises (SMEs) a good place to start is to defer payroll taxes, income taxes, and social security contributions. Wage subsidies and work-sharing arrangements also have a role to play, as do credit lines accessed through banks but funded by the government. These are policies for formal firms that, ideally, should be conditional on avoiding job destruction. For workers in informal firms, self-employed workers, and the unemployed the focus should be on *unconditional* income transfers for consumption smoothing; different from anti-poverty cash-transfers. As the economy recovers, transfers can be better targeted and conditionalities added, such as participating in active labor market programs to transition to a new job. Digital platforms might also provide a source of income during the recovery and beyond.¹⁰

Unfortunately, most developing countries have a limited tool-kit: mainly anti-poverty programs (conditional cash transfers or public works) that do little for the middle class. It is also difficult to scale-up programs on time and impossible to implement them from scratch. Plus, all these programs have a high fiscal cost while what the average developing country can spend might be less than a couple of percentage points of total GDP. Thus, the importance of trying to minimize the extent of the economic slowdown in the first place, which may mean stopping social distancing sooner rather than later.

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⁹ See Benerji et al., (2011)

¹⁰ Freudenberg (2019).

Annex: A Simple Economic Model of the Covid-19 Epidemic

In the presence of an epidemic the total population of a country can be divided in four groups: 1) those who have been infected $I(t)$ at time t ; 2) those who are susceptible to be infected $S(t)$; 3) those who were infected but have recovered and are now immune $R(t)$; and 4) those who were infected and have died $D(t)$. The dynamics of the epidemics is then characterized by the following equations:

$$\begin{aligned} S(t) &= S(t-1) - \beta(t)S(t-1) * I(t-1) \\ I(t) &= I(t-1)(1 - m - \gamma) + \beta S(t-1) * I(t-1), (1) \\ R(t) &= R(t-1) + \gamma I(t-1) \\ D(t) &= D(t-1) + mI(t-1) \end{aligned}$$

where $\beta(t)$ is the infection rate at time t which is measured in days, m is the mortality rate, and γ is the recovery rate. Both the mortality and recovery rates are constant over time, but the infection rate can be influenced by policy (see below).

Social wellbeing can be measured by a standard utility function of the form:

$$U(t) = \frac{[C(t)^\alpha h(t)^{1-\alpha}]^{1-\lambda}}{1-\lambda}, (2)$$

where C is aggregate consumption in the economy, h measures the health status of the population, α captures *social preferences* between consumption and health, and $\lambda > 1$ measures risk aversion.

Consumption, in turn, depends on the number of jobs, labor productivity, and the savings rate:

$$C(t) = (1 - s)vL(t), (3)$$

where s is the savings rate of the economy, v is average labor productivity, and L is the total number of employed workers.

The number of employed people is given by:

$$L(t) = e(t)l[(S(t) + R(t) + (1 - \varphi)I(t)], (4)$$

where $e(t)$ is the employment rate at time t , l is the participation rate in the labor market assumed to be constant over time, and φ is the proportion of the infected who display symptoms and cannot work.

The health indicator that enters the welfare function is given by:

$$h(t) = \exp\left(-A \cdot \frac{D(t) - D(t-1)}{N}\right), (5)$$

where N is the total population which is constant during the period of analysis and A a scale factor.

The government can affect the infection rate by implementing social distancing policies during a given period of time. We have:

$$\beta(t) = \beta * (1 - z), \quad \text{if } t \leq d, (6)$$

where z is the reduction in the infection rate (which depends on how aggressive social distancing policies are) and d is the duration of the intervention measured in number of days.

These policies, however, affect employment rates and therefore income and consumption. We assume that the employment rate is given by:

$$e(t) = e * \exp(-\theta z t), \text{ if } t \leq d, (7)$$

where e is the steady-state employment rate and $\theta < 1$ a parameter that captures how sensitive employment is to the social distancing.

Policymakers need to solve the following dynamic-optimization problem:

$$Max_{z,d} : \sum_{t=0}^{365} \frac{U(t)}{(1+r)^t}, (8)$$

where r is the discount rate.

The parameters used in the simulations are presented in Table 1. The epidemic is calibrated to generate a number of deaths per capita per day in line with observed death rates in developing countries. Optimal “social distancing” policies for different combinations of model parameters are summarized in Table 2,

Table 1: Baseline Model Parameters

PARAMETER	VALUE
Activity Rate	70%
Employment Rate	95%
Labor Productivity	1
Population	1
Propensity to Consume	0.7
Alfa in Utility Function	0.25
Risk Aversion in Utility	3
Initial Share of Infected	0.01
Infection rate	0.2
Recovery rate	0.02
Mortality rate	0.00066667
% Experiencing symptoms	50%
Employment elasticity	0.0025

Table 2: Optimal Social Distancing under Different Scenarios

Symptoms	Employment Elasticity	Alfa	Risk Aversion	z	d	Weeks	Months
50%	0.0025	0.25	3	56%	83	12	3
50%	0.0025	0.5	3	41%	56	8	2
50%	0.0025	0.5	2	25%	42	6	2
30%	0.0025	0.8	3	90%	2.6	0	0
30%	0.0025	0.5	3	50%	40.3	6	1
30%	0.0025	0.5	2	90%	3.9	1	0
30%	0.0025	0.5	1.3	66%	2.5	0	0
30%	0.0025	0.1	1.3	90%	345	49	12
30%	0.0025	0.2	2	90%	345	49	12
30%	0.008	0.1	3	48%	66	9	2
30%	0.008	0.1	2	30%	45	6	2
30%	0.00125	0.1	2	90%	348	50	12

Low values for the parameter alfa in the welfare function imply that society places of high value on human lives. A 0.0025 employment elasticity implies a 15% increase in the unemployment rate over a 3 months period for a 50% reduction in infections. Value of the elasticity of 0.00125 and a 0.008 imply reaching a 15% unemployment rate over a period of six months and a one month respectively.