SOME SIMPLE THOUGHTS ON THE TRADEOFFS INHERENT IN MITIGATING THE EFFECTS OF THE CORONA VIRUS

Joseph L. Pagliari, Jr.

This note is intended for my non-economist friends. Specifically, it is meant to look at the narrow issue of the inherent tradeoff between the quarantine (or stay-at-home) measures intended to mitigate the effects of the spread of the corona (or COVID-19) virus and the consequences relating to shuttering a portion of the country’s economic production.

This notion of tradeoffs is central to much of economics. And while economists are comfortable examining these tradeoffs in terms of traded quantities (e.g., the dollar value of things like domestic production, interest rates, workers’ salaries, etc.), the current pandemic places economists in the less-comfortable position of examining things like the economic value of human life, the quality of such lives, the human stresses related to attending to a pandemic, etc.1 Despite the uncomfortable nature of the exercise, economics still plays an important role; consider the following illustration highlighting the tradeoffs inherent in the current pandemic:

1 That being said, economists (along with lawyers and insurance companies) have – as one example – come to a rough consensus on the value of a human life (as a function of remaining life expectancy, likely future earnings, etc.) in legal matters such as wrongful-death claims. Michael Greenstone and Vishan Nigam [“Does Social Distancing Matter?,” Becker-Friedman Institute working paper, March, 2020] estimate that the mortality benefits of social distancing are ≈ $8 trillion.
As has been much discussed elsewhere, the intention of these stay-at-home (or shelter-in-place) measures is to “flatten the curve” (i.e., to slow the rate at which the virus spreads, thereby reducing the likely surge in demand for medical services which may lead to sorrowful triage-like decisions). The red-colored curve illustrates the all-in costs of mitigating the adverse effects of the coronavirus as a function of the length of the government’s quarantine measures. These all-in costs include not only those who unfortunately perish due to the virus, but also the economic and human costs of providing these medical services – including the extraordinary efforts of the medical community in responding to the pandemic. To state the obvious, these costs are exceedingly difficult to quantify.

The first green-colored curve illustrates the all-in gross costs relating to the slowdown in the country’s economic production, while the second green-colored curve illustrates the net costs – after having considered various governmental fiscal and monetary policies designed to mitigate those costs. Both green-colored curves are also functions of the length of the government’s quarantine measures. The steep curvature is meant to illustrate that a throttled economy eventually reaches a cascade of compounding adverse effects. As one of innumerable examples, consider that many retailers can pay neither their employees nor their rent (as well as a score of other charges); in turn, their workers’ anxiety about when they will be re-employed leads them to curtail their consumption and this lowered consumption adversely ripples through the economy – similarly the unpaid rent leads to the landlord’s inability to service the mortgage loan and this monetary default also adversely ripples through the economy, and so on and so on.

And while the initial interpretation of the green-colored curves may be that they simply represent a portion of the country’s forsaken gross domestic product, the more compassionate interpretation is that this productivity also acts as a proxy for the quality of human life. Said another way, economic tragedies (e.g., lost employment, bankruptcies of small business, depleted life-savings, etc.) often bring about human tragedies (e.g., alcoholism, drug addiction, family dysfunction, etc. – sometimes culminating in the loss of human life) as well. Moreover, the stay-at-home measures disproportionally effect lower-than-average wage earners. So, these measures hit hardest those who can least afford it.

Consequently, fair-minded policy makers (and those who advise them) try to strike a balance, as illustrated below, between these two competing forces (where the blue-colored curve represents the sum of the two competing costs):

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2 In a manner devoid of extensive mathematics, see: chapter seven – “Susceptible, Infective, Removed: How to Stop an Epidemic” – of Kit Yates, The Math of Life and Death: 7 Mathematical Principles that Shape Our Lives, Simon & Schuster: New York, 2019 (which, interestingly, was written just before the coronavirus outbreak was well-known or recognized).

3 Given the nature of politics, most everyone is unhappy with at least some portion of the ≈ $2 trillion Coronavirus Aid, Relief, and Economic Security (CARES) Act. One such stinging criticism is leveled by Amit Seru and Luigi Zingales, “Save Capitalism from the Cares Act,” Wall Street Journal, March 30, 2020. Despite the suboptimal nature of the CARES Act, most everyone agrees that it will have some overall beneficial impact.

4 If you are of a certain age, you may know (or may have known) an older person who lived through the country’s Great Depression. If so, you likely agree that the experience had a profound impact on how that person views the world.

5 Jonathan Dingel and Brent Neiman [“How Many Jobs Can be Done at Home?,” Becker-Friedman Institute working paper, March 27, 2020] estimate that 34 percent of jobs that can plausibly be performed at home and such jobs account for 44 percent of all wages.
The trough of the blue-colored curve theoretically represents the length of the stay-at-home measures which optimally trades one cost off against the other. But by now, you have of course realized that these two graphs have been drawn on a scale-free basis. This was done intentionally, as it is extremely difficult to calibrate such a model. Yet, notwithstanding such difficulties, this is the awkward and unenviable position in which our policy makers have been placed. Reasonable people will disagree on the parameterization of such analyses and, given the life-and-death nature of such decisions, it is unsurprising that such disagreements invoke strong reactions.

However, it would seem that such strong disagreements should be tamped down; instead, a little humility is in order – humility in the sense that there is much that is unknown (e.g., data about the virus’ rate of infection, its mortality rate, etc. are still arriving from a variety of foreign and domestic sources: China, Italy, South Korea, metropolitan areas within the U.S., passenger/cruise ships, U.S. Navy ships and so on) and a clinical consensus has yet to be reached on many of the virus’ key lethal characteristics. And, something similar could be said about the uncertainty of the economics effects corresponding to a significant slowdown in domestic production: the U.S. has experienced relatively few instances of abrupt curtailment of its economic production, making it difficult to generalize from such a relatively small sample size. As a result, we would be better served by recognizing that even our best estimates are merely projections set amongst a wide range of potential and plausible outcomes:

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6 While the physical sciences often provide experiments where all but one factor is controlled, the social sciences (including economics) rarely provides for such a controlled experiment. Therefore, more observations are needed to extract the “signal from the noise.”
Here, the shaded regions represent the uncertainty of making such calibrations. But here too, the illustration implies unjustified certainty. Instead, we are dealing with the risk that our confidence intervals are too narrow and the risk that risks will change over time. As to this latter point, consider that this sort of analysis is complicated by a host of (exogenous and endogenous) factors, including:

1) the possibility of finding a pharmaceutical cure – perhaps hastened by loosening certain regulatory constraints,7  
2) lifting the stay-at-home orders is unlikely to be binary; instead, it seems more likely that certain geographies and/or demographies may return to work sooner than others,  
3) the possibility that the virus re-emerges after it had been initially “knocked down,” and  
4) the ever-present problem of “unknown unknowns” (in addition to the existing “known unknowns”). All of which contributes to yet another confidence band around the estimate of the optimal stay-at-home measure:

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Living involves risk-taking: otherwise, we would never set foot in an automobile or an airplane, we would build our homes in coastal areas or “tornado alley” in completely different ways, etc. – all of which place us in harm’s way (e.g., possible loss of life). That said, we strive to take prudent risks – some of which are insurable – whereby the expected benefits of some action exceed the probability-adjusted loss. Complicating the matter is that different people will evaluate the benefits, risks and probabilities differently. Generally, these evaluations are undertaken individually and what one person decides little effects other people (e.g., some people decide to “run with the bulls,” while others do not). Unfortunately, this compartmentalization of decisions breaks down in a pandemic – where how one person decides to act (e.g., to social distance or not, to wear a mask or not, etc.) potentially impacts many other people. It is the collective (or coordination) problem which contributes to the difficulties faced by policy makers.

In conclusion, economics’ standard prism of examining tradeoffs and searching for the optimal outcome(s) is often, and unfortunately, relegated to the financial realm; however, that prism – even (or, perhaps, especially so) when searching among “bad” choices – can serve us well in the current crisis, provided that we invoke some healthy skepticism about the uncertainty (i.e., we acknowledge the ambiguity and imprecision) embedded in any attempt to calibrate the model’s parameters, given the nascent nature of much of the data.