

Economics and Public Health: a case for interdisciplinary cohesion in the time of Coronavirus

Pritika Rao & Smita Srinivas

Who could have anticipated that the 4-country [Innovation for Cancer Care in Africa \(ICCA\)](#) project could have been this prescient in its focus on the economics of industrial organization? When the India work began in 2019, only a small fraction of the non-Chinese world had heard of Covid-19 or Wuhan, and fewer still had considered supply chains and policy scenarios. Yet here we are today. Our multi-country teams (Kenya, Tanzania, India, and the UK) comprises economists, S&T policy experts, and public health scholars. We are still collecting data, but are also just beginning the first internal writing of how countries tackle cancer of different types. And yet, it is evident, even to us, that the dynamic industrial scenarios we are addressing in non-communicable diseases such as cancer are relevant to the current infectious disease predicament of Covid-19 that we live in.

We are in unusual times that call for unusual opportunities to talk about complex issues. Economics' application to health is one of them. The recent pandemic has brought home smartly to the world's population that disease and response have important industrial elements. Without a vaccine in sight and with essentials such as medicines, tissue paper, sanitizer and masks flying off the shelves at a record pace, we can now hardly afford to deny that public health is a pressing industrial organization problem in need of innovative solutions. Sensing a shortage in supply driven by panicky buying, sellers have hiked prices of these essential items to 2-3 times their original prices. A [black market](#) for commodities like sanitisers and face masks emerged as e-commerce platforms and chemists quickly ran out of stock. Individual hoarding and a disruption in the supply chain of face masks have resulted in a severe shortage of N95 grade masks, most worryingly for doctors and healthcare professionals. In most of these markets, industrial producers and retailers are already running at full capacity with most of their inventory depleted, rendering even highly ramped up production to be inadequate. There is a huge pressure on manufacturers, retailers and companies who rely on a single, trusted supplier for material or stock, and they face far longer lags than usual.

There are also global regulatory supply chain issues. Goods and service restrictions across borders, even as measures to contain the virus, have resulted in disruptions to personnel, equipment, stocks, and travel. Lockdowns of cities have created a huge narrowing or shutdowns of some industrial activities (eg. transport and automotive, fashion, and footwear) but expanded others so rapidly they cannot cope (e-commerce, protective equipment manufacturers, and food producers). The supply chain of essential supplies and medical equipment has faced immense bottlenecks; ramping up production is no easy matter for the more complex items such as diagnostic kits. For simpler protective equipment, other national strategies are required to prevent emergency room medical staff from reusing ventilators or masks. According to [The New York Times](#), China produced half of the world's masks before the outbreak, and while factory production has increased nearly twelvefold, the country has kept most of its inventory as it sought to control the virus.

India had initially banned the export of face masks to China but revoked this in the light of dire global need. Firms have had to rethink their entire production line to be able to cater to this gap in the market. Automobile companies, such as Mahindra, are offering to manufacture ventilators and use their resorts for treatment, luxury goods makers and distilleries are creating sanitizers, while fashion houses and NGOs have volunteered to produce hospital scrubs. The competencies to do so, summoning the manpower needed, and procuring raw materials and specialized parts to produce unfamiliar items to very strict standards is certainly no mean feat. There is an inevitable lag in production as firms navigate search and learning in an entirely new industry that failed to accurately forecast demand in the face of unexpected crisis.

But industrial organization and its economics are not merely about manufacturing mature products, important though this is. Many health technologies from breast cancer diagnostics and Human Papilloma Virus (HPV) vaccines for cervical cancer have also emerged as a critical focus point precisely because they are newer and more contentious products. Many clinical trials are already underway in the US, China and

Europe with researchers scrambling to win this race. According to a [New York Times piece](#), this has taken on a nationalistic quality, illustrating the importance of investing in research and enhancing biotechnological capabilities within nations. Even if a vaccine were to be discovered, that is at the very least 12 to 18 months away and a country like India, which has struggled with cold chain issues in the past may have to wait even longer before the vaccine can be equitably and effectively distributed. However, as [past research](#) has shown, vaccines are not merely science lab breakthroughs, they are strongly dependent on certainty of the animal models, the clinical interface and testing contexts, and the pilot scale-up and manufacturing under strong public policy goals.

While microeconomics, and public health derived from it, has traditionally chosen to focus on cost, pricing and largely static models of welfare economics derived from the so-called ‘marginalist’ revolution of the late 19th century, our ICCA project does something different: we depend on the most recent thinking of institutional and evolutionary economics to study the dynamics of technological advancement and local production. These economic advances are not concerned with pricing, but with learning, especially the uncertainty, technology transfer and embedding, and customisation challenges in new areas. In our study of cancer care, we have noticed an underlying “cupboard-full” assumption that diagnostics, devices, vaccines, skilled personnel and the notion that effective implementation of policy will magically fall into place.

A book [Market Menagerie](#): Health and Development in Late Industrial States (Stanford University Press 2012), acts as one of the foundations of the ICCA project. It splits the world of industrial and health institutions and policies into three co-evolving domains. The approach draws on considerable economics advances of the last decades: in evolutionary analysis, but which are rarely taught in orthodox classrooms. Rather than worrying exclusively about cost and pricing, important though these are, we use this approach to illustrate the need to study market variety at a more granular and dynamic level, evaluating industrial differences across countries by observing their distinctive evolutionary patterns and bottlenecks. Not all countries respond the same to a crisis because they differ in priorities, policy and preparedness and furthermore, each subset of the healthcare industry has its own unique set of challenges on each of these fronts. The supply chain issues of vaccines for instance are not the same as that of masks or medical equipment, nor from an economics perspective do they represent the same implications for India’s economic development down the road. As [many have pointed out](#), the Covid-19 moment is also a BioDiversity and Climate moment, which will require shifts of diet, transport, and land use among others. The Coronavirus is suspected to have begun at a meat market in Wuhan, exposing the need to regulate ‘[human-wildlife interface](#)’. These nuances within and across industries must be closely regarded if we are to successfully formulate both economics that is relevant as well as a well-functioning and adaptable public health policy.

The healthcare system is overwhelmed due to delayed and insufficient testing. This is where social distancing will be critical in flattening the curve and ensuring production smoothing. In a country where multigenerational families cohabit, access to testing kits and timely precautionary measures are critical. The DGCI (Drug Controlled General of India) has licensed 14 private companies to evaluate the quality of testing kits, right after the Indian Council for Medical Research (ICMR) announced that accredited private labs will conduct tests for COVID-19. This will help improve capacity for detection and diagnosis. But while this form of technological leaning is critical to rapidly unfolding disasters, creating the institutional environment to encourage learning and innovation is more critical than industrial supply alone. It will require asking where our demand models come from, and which types of economics is most amenable to dynamic technological learning and knowledge frameworks. The existing economics taught in classrooms and used in Indian and global public health models will likely come up very short.

India was one of the first countries to create a National Disaster Management Plan under the Sendai Framework, in an effort to build resilience by improving preparedness, ensuring quick response and developing inclusive policies as well as recovery measures. However, in the case of our Defence Preparedness plan, with an emphasis on ‘Make in India’, the volume of locally made products have been ramped up in accordance with government priorities, but most are rendered ineffective due to quality concerns. Delhi’s Institute for Defence Studies and Analyses (IDSA) has [reported](#) that the emphasis on

price and the prioritization of state-owned firms that do not invest in research and learning have considerably affected our preparedness.

Similarly, in the area of healthcare, multiple wide-reaching reforms and the supply of numerous medicines and products will not solve our predicament nor will it be enough to ensure better preparedness in the future. What we need is a focus on the fundamental economics of innovation, rooted in an understanding of industry dynamics. A Lancet commentary evaluating global preparedness by [Kandel et. al \(2020\)](#) revealed that “only 57% of countries had the functional capacity to perform crucial activities at national and sub-national levels. 18% had low readiness and would require external resources to control an emerging infectious disease event.” The paper suggests a stringent implementation of International Health Regulations. A crisis of this level still requires greater capacity building, particularly of laboratories and facilitating sufficient stock of critical medical supplies and equipment. In large countries such as ours, ensuring equitable distribution of protective gear as well as essential drugs and vaccines will require closer public-private sector partnership to disseminate. Considering the underlying economic agents, and studying their priorities while using this opportunity to force learning will be crucial to ensuring a higher level of preparedness in the future.

There is much to be done in the area of prioritizing and investing in healthcare innovation and ensuring multidisciplinary effort to improve healthcare intervention. The ICCA project is able to take on complex economics and industrial analysis because of the thinking of the lead university. [The Open University UK](#), one of the world’s largest research and teaching impact universities, hosts both scholarly teams of Innovation and Development and a strong concentration of pluralist Economics. The [National Centre for Biological Sciences \(NCBS\)](#) in Bengaluru also plays host to the ICCA project, thus extending their own multidisciplinary efforts around fundamental biology to include economics and public policy. Much more such adventurous disciplinary rigour but within multidisciplinary teams is required of our leading universities and research institutes if we are to tackle Cancer or Covid 2019. This pandemic has opened our eyes to the urgent need for deeper and sustained engagement by pluralistic experts from various fields of study, who are willing and able to rethink and restructure our existing frameworks to make them more adaptable and relevant for a complex, technologically advanced and rapidly evolving industrial world.

[Pritika Rao](#) is a Research Fellow on the ICCA project and holds a Master’s degree in Economics from The University of Warwick.

[Smita Srinivas](#) is the EAEPE Myrdal Prize author of “Market Menagerie: Health and Development in Late Industrial States” (Stanford University Press, Economics and Finance, 2012). She is Professorial Research Fellow in Economics and Development Policy and Practice at the Open University UK that leads the ICCA project, and Visiting Professor at the National Centre for Biological Sciences (NCBS) India, leading the ICCA India team. .