The Disease Impact Through Centuries
What makes the COVID-19 so special compared to earlier plagues? The quick answer is very short — nothing. In the past, the cause of the disease was believed to have a religious image. People were encouraged to show devotion to the Virgin Mary, the Queen of Heaven who would intercede and offer protection against divine judgement. Intersession was desperately needed by people who believed that God punished them with death. One example is when death arrived at Weymouth in June 1348, and it was Black Death. In less than a year, England was stricken. No one could have understood what was happening. Once a person was infected, large foul smelling swellings developed in the groin, neck and armpit. Death followed within two or three days. The disease killed more than a third of the population. By 1350 the population of England was half that of 1315 (Gourinchas & Obstfeld, 2012).

It may come as a surprise, but the leaders of the past did with pests no different like today’s policymakers. For example, in the above case, in the midst of the dying, the theatre of Royalty grew grander. King Edward created the Order of the Gutter where two tournament teams played out in a Florian drama based on Saint George’s Chapel in Windsor. The castle was rebuilt for the show. With the nobility bound to him by chivalric dreams and the shires and towns granting funds for the war in Parliament, the French war could still go on. These examples clearly resemble what recently Jair Bolsonaro in Brazil or Donald Trump did in the US.

Diseases were very important in deciding human fate. They determined the lives of kings and queens. They directly affected the life of the general public. For example, in the summer of 1453, King of England Henry VI went mad. He had probably inherited the strain of madness in his mother’s family, the illness that had wrecked Charles VI. The true legacy of the King was a recurring disease that would afflict members of the English Royal family for centuries. He lost his memory. He lost control of his body. He lost the ability to speak coherently or understand what was said to him. His wife gave birth to their only...
son, but he knew nothing about it. With King incapacitated, the government needed to be handed to a regent. The man with the backing in the South to take over the reins was Richard Duke of York. The inevitable and disastrous outcome was civil war: Lancaster against York.

The most dangerous thing for the spread of the disease through the centuries was civil wars. The example is the civil war in England under King Charles I. It is now reckoned that possibly a quarter of a million people died in battle, of starvation, of disease as a result of the fighting out of a population of about five million. That is a far higher death rate than in the first world war. This civil war had later brought another disease. It was connected with King Charles II. In a way, the sense of a new beginning was strengthened by the destruction of London by plague and fire. The plague was a swift and grotesque disease which had frequently erupted before, but in 1665 it took a firm grip and killed about 20 per cent of the city's population. London was primarily turned into a ghost city as the survivors fled. The King, who had moved to Hampton court, gave a thousand pounds a week to London charity. And then London began to burn. The King returned to the city with his brother James the Duke of York to take personal charge of firefighting in the streets. Everyone knew that the Mayor had been too timid to pull down houses that might have created firebreaks until he was directly ordered to do so by Charles. It certainly helped the Royal image, though it did not help London much. The old rotting disease structure was purified by an inferno that simply burned the place away as thoroughly as if it had been blasted by a nuclear weapon and a lot more cleanly.

In the early 19th century, the disease partly helped Russia win the war against Napoleon. Fearing the approach of winter but reluctant to abandon his conquest, Napoleon wrote the Czar proposing negotiations. The Czar responded with icy silence. After five weeks of waiting, Napoleon bitterly ordered his soldiers home. On October 19th 1812 he led his men laden with spoils out of Moscow. It was a warm fall day. Three weeks later it began to snow. The Russian winter had arrived early. Temperatures fell. Napoleon's soldiers froze in the open countryside. Food ran out. Horses died by the thousands. Hungry soldiers quarrelled over the horseflesh. They were fighting starvation, cold, fatigue, disease, and the Cossacks. The Cossacks hurried Napoleon's flanks tearing off his army as if it were a wounded enemy. The French army no longer existed as a fighting force. Napoleon watched as his army die. Fearing capture he carried in a little black leather bag tied around his neck a vial of poison. Six months before he had crossed into Russia with more than a million soldiers, confident of victory. Now, on December 5th rumours of the coup in Paris forced him to abandon his troops and head back to the French capital. He lost half a million men, a staggering sum. Out of the 600,000 men who went with him, 93,000 came back.

More recently, the disease became also part of economic problems. The economic shocks of the early 1990s in Russia brought related socio-economic problems. For example, crime nearly doubled in the early 1990s from about 1991 up until 1995; then it roughly doubled again by the early 2000s. This affected families, as well. From 1991 to 1993, right at the beginning of the transition, the Russian marriage rate fell by 20 per cent, and the birth rate fell by 12 per cent. Life expectancy for Russian men has plummeted. It went from 64 years of life expectancy in 1989 to 57 years of life expectancy in 1994, with coronary disease, suicide, alcoholism, and murder, all playing a large role. In five years, life expectancy for men went down by seven years. It was just an extraordinary change. When you put all these together, you got shocking estimates of future population decline. The US Census Bureau estimates for countries around the world of population decline. They said back then that the Russian Federation had 147 million people in the year 2000, by 2010 about it was going to be 140 million people. By 2050, the US Census Bureau forecast was 109 million people in Russia, i.e. the population was going to drop by something like one quarter over the forty years. It was just an extraordinary demographic event. Other than times of plague or massive warfare, you just do not see declines in population like these throughout human history. It was an enormous change. Fortunately, such a disastrous scenario did not realise. However, it is true that in the late 1990s and early 2000s, Russia declined even sharper than the declines when you hear about Japan or some other countries. In those countries, population declines are just based on lower birth rates. They are not based on higher death rates. Lots
of different population factors happened across what used to be the old Soviet Union was driving down the population, and some of the new countries formed out of the old Soviet Union do have higher birth rates, but for that group as a whole what used to be the Soviet Union, the population is still probably going to be lower in 2050 than it is now. Social scientists sometimes like to say demography is destiny. Economic problems like Russia’s bring much more deaths with them than even the COVID-19 (Johnson, 2013).

There are, of course, pure economic diseases. For example, there is an IMF study of the Middle East region over the thirty years from 1970 up to 2000. They looked at oil-producing countries and their per capita income over that time. They found that oil-producing countries saw per capita income fall by about 1.3 per cent per year from 1970 to 2000. The non-oil-economies, meanwhile, rose 2 per cent a year over that time (Boddin, 2018).

Later two economists named Jeffrey Sachs and Andrew Warner published papers over the last decade or two systematically looking at economic growth and oil sales and then trying to adjust for other factors like did the economy start out low-income or middle-income or high-income? Was the government inefficient or corrupt? Did the economy have a lot of inequality? Was it open to trade or not? So, they adjusted for all the factors they could think of. And what they found systematically was that higher oil exports across all of the countries of the world were linked to systematically slower economic growth. Another economist Michael Ross looked at oil dependence versus factors like life expectancy, malnutrition, etc. And in one study what he found was each rise of five-percentage-points in oil exports as a share of GDP led to one-third of the year less in life expectancy. It also led to a one per cent rise in malnutrition of children under age five. In another study, Ross looked at oil and democracy. What he tended to find was that more oil leads to less democracy, not just in the Middle East, but also in African countries like Nigeria. There even seems to be some connection between petroleum and civil war in places like Sudan and Angola. You have probably heard about conflict diamonds where arms are financed by selling diamonds. But there is conflict in oil too. The Middle East region is essentially anti-democratic. And it is, of course, riven with conflicts and other abrupt changes of government. A few years ago, in a little country of South Tome, there were some seismic readings that were announced that said maybe there was oil under the country. They did not actually find any oil, but they had an armed coup a week later, so just in case there was oil to find (Cohen, 2012).

So, the key here is the economics of the Dutch disease. Dutch disease refers back to the situation when Holland discovered offshore natural gas in the 1950s and the 1960s. It discovered this natural gas, and its economy experienced a dramatic slow-down. Similarly, when Norway discovered North Sea oil in the 1960s and the 1970s, its economy experienced rapid inflation, contraction in manufacturing and slow growth. An oil discovery leads to the following sequence of events: it leads to a boom of buying power in the economy, which can easily lead to inflation. Because you have just found oil, it makes focusing on oil look highly profitable, and everything else in the economy looks unprofitable. So, investment capital in education, transportation, communications — everything gets aimed at the oil resources, and the rest of the economy suffers as a result.

Another issue is that the exchange rate appreciates after you have found oil. When you have found lots of oil, you start selling lots of oil to other places. And those high exports mean your country has a big trade surplus. You are earning a lot of foreign currency, say, Saudi Arabia is earning a lot of US dollars. They need to convert that foreign currency back to the home currency of the oil-exporting country. When this happens, it tends to drive up demand for that nation’s currency and leads to a strong exchange rate. A strong exchange rate, of course, means that all the other export-based industries of that country will suffer. And imports become expensive, which also feeds inflation. Politically, a government that has oil resources can rely on oil money and oil taxes. So, what exactly is the need for, say, democracy or accountability or a sensible system of broad-based taxes across the economy? Indeed, a government with a lot of oil would discover it is really easy to borrow. Banks are happy to lend you money, based on the future revenues from the oil reserves. And the huge amount of money sloshing around can easily lead to inequality and corruption. It explains many of the patterns noted above. It explains why these countries rein up big budget deficits because people wanted to lend to them.
It explains how there was not very much foreign trade unrelated to oil. It explains why there has not been very much development unrelated to oil. It is all Dutch disease, and now in times of world oil prices’ plummeting, it is going to have devastating effects for the economies of many oil-exporting countries (Beetsma, Giuliodori, De Jong, Widijanto, 2016).

Another difficulty is climate and its effect on human health and the economy. A tropical climate tends to have certain economic consequences. Poverty is in general, pretty close to the equator. Wealthier nations tend to be further away from the equator with, of course, a few exceptions. Even within Africa, the high-income countries are the southern ones like South Africa. In South America, the high-income countries Argentina and Chile are far to the South. Because there are high temperatures at the equator in Africa, people tend to live away from the coast where would be hot and up in the mountains and highlands, which, of course, made transformation costs for products even tougher. In an equatorial zone there tends to be less food production.

A temperate climate with winter has various advantages over a tropical climate. Winter kills bugs and pests. It breaks up the soil. It helps to fertilise the soil. A cycle of freeze and melt and water flow makes the soil much more fertile. Plants tend to grow better when it is warm in the day and cool at night. Areas that are right in the equator tend to have lower overall rainfall, especially in coastal areas and greater heat. The summer in temperate areas has longer days. The days get longer and shorter. In the winter, the days are shorter. But around the equator, all the days are roughly the same length. And that does not help growth very much. Around the equator there tend to be seasons of very heavy rains and very dry weather which tends to bleach out the soil. So, there are a lot of reasons why crops do not grow as well around the equator as they would in more temperate areas (Rousseau & Wachtel, 2011).

Right around the equator, there also tends to be more disease. Malaria, for example, probably causes something like a million deaths every year, and tens of millions of cases where some people get it over and over. The social and economic costs are extraordinarily high. It, of course, discourages outsiders from visiting or investing. It is very difficult to think about how you deal with malaria, because mosquitoes evolve very quickly, and they keep developing more virulent strains of the disease. HIV/AIDS is bad in itself, but it also brings other opportunistic infections like tuberculosis and yellow fever and hook vermin and river blindness, and all those things in tropical climates are much worse than they are in temperate zones. Also, there is less spill-over of technological progress into equatorial regions. Technology that works well in temperate zones often does not transfer well to tropical areas. The green revolution, for example, did gold and rice. It was really good for Asia. But there have not been similar improvements in things like cassava and taro and grounds and things like that, other crops that are really well-suited to Africa. We do not have the same research on malaria and other diseases that affect Africa so much, compared to what we would do in those affected high-income countries. In fact, if you just do a map of the world, and you know each of the countries’ latitude, you can actually predict its GDP surprisingly well (Vayanos & Woolley, 2013).

**International Aid Programs**

One part of the United Nations is that each year it puts out Human Development Report, and it ranks countries according to a mixture of different factors including income measured by per-capita GDP, life expectancy for the country and education levels for the country. They also produce other versions of this measure that might add in factors like the level of inequality between men and women or the level of poverty inside a country. They all do a provocative reading. In the HDR rankings, for example, the United States ranked 12th in the world, according to the human development report. It was just behind Finland and just ahead of Spain. And in these rankings, the US advantage in per capita GDP was to some extent offset by a worse performance on life expectancy and educational performance compared to some other countries. Or compare — Russia and Chile — they were similar in measures of per capita GDP. Chile ranked 55th in the world among all countries in per capita GDP, Russia ranked 58th. Both had pretty high levels of school enrolment, although Russia is a little bit better. Among countries of the world, Russia ranks 37th in school enrolments, and Chile ranks 48th. But Chile is much better...
on life expectancy. Chile is 28th in the world in life expectancy, Russia is 119th in the world in life expectancy, with that big decline in life expectancy that followed the economic transition in the 1990s, leading to those big declines in life expectancy for Russia. And as a result in overall human development rankings, Chile ranks well ahead of Russia. In these rankings Chile ended up 40th overall, Russia ended up 67th overall (Lane & Milesi-Ferretti, 2011).

The UN General Assembly adopted a resolution about what it calls the Millennium Development Goals. These, in particular, were eight goals for what countries and development agencies would try to accomplish overtime: to eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria and other diseases; ensure environmental sustainability; develop a global partnership for development. What is important about the Millennium Development Goals is that many of these goals have a concrete numerical target behind them. For example, eradicating extreme poverty says the goal is to reduce the percentage of people in the world who are living on less than a dollar a day by half from the 1990 level up to 2020. What is not clear in thinking about this is why they are eight goals, and whether all eight of them make equal sense. For example, three of the goals are related to health: child mortality, maternal health, and other diseases. They are all worthwhile, but maybe health should be one goal rather than three goals. And there is the eighth goal — the global partnership for development which is just empty bureaucrat speak. It is all about a process. It is not about the outcomes you are hoping to get out of the process (Milesi-Ferretti, 2011).

If you think about the period from 1950 up to 2000, world population over that time went from 2.5 billion up to 6 billion. Average incomes rose all around the world. The demand for farm output in that time tripled (Patil & Kulkarni, 2011).

Over the next fifty years, the world population is slated to go from 6 billion in 2000 up to 9 billion by 2050. Average incomes keep rising, and it seems plausible the demand for farm output may double again. Here we rely heavily on an economist Vernon Ruttan. He looked at the possibilities all around the world for using more land, more irrigation, more fertiliser, and better seeds and better crop cultivation methods. His study back in the 1950s, looking fifty years ahead suggested supply could definitely keep up with the expansion of demand over that time. Later Vernon set down again around the year 2000 to apply the same kind of thinking he had earlier used and to ask whether in the next fifty years or so supply could keep up with demand, and this time he felt a lot shakier about his conclusions. For example, although Vernon argues that soil degradation and erosion is a big problem in some areas, he does not expect it to hold back agricultural growth in the next fifty years in any real substantial way. He also believes that although water supply will be an issue in certain countries and certain places, there are a lot of improvements possible in the use of water that could make water supplies not a big constraint on agricultural output from a worldwide perspective. But he emphasises two big problems: the control of disease and pests is going to be a real and difficult limit on increasing food supply overtime. Lots of pests and diseases have built up in unity to our ways of controlling them. International trade spreads pests around the world more than ever, which encourages them to evolve faster into more difficult strains, and whatever more aware of the environmental and safety costs of just dumping huge amounts of chemical pesticides on them. But Vernon’s biggest worry is that it may be difficult to make continued technological progress in crop output because of various physical limits that come up (De Haas & Horen, 2011).

In fact, you need to expect spending more and more on research and development just to keep current output at high levels, given the evolution of pests and diseases that affect plants. One hope is that the new genetic technology might offer fundamental ways to improve output. And certainly, there have been gains in these areas. Still, the question is not whether these technologies can be helpful, but whether they can accelerate and sustain technological gains relative to all the past gains from standard cross-breeding methods. There are surely some successes in those products, but overall the jury is still very much out. There is also strong political opposition in some places to genetically modified crops. For example, Europe has been strongly opposed. And because Europe is strongly opposed, many countries of Africa do not
use genetically modified crops, because they fear they will not be able to sell in Europe as a result. Looking around the world as a whole we really need some substantial increases in agricultural research and development, and we are going to have any confidence that food supplies will grow in the kinds of ways that seem likely to be needed (Kasekende, Brixova, Ndikumana, 2010).

This kind of long-term research word can take ten to fifteen years or more to pay off. You also need to have an ongoing investment in this area. You need to be steadily investing now, so ten to fifteen years from now you will have gains, so the gains will keep continuing on and on into the future. The pests and diseases that affect plants evolve. The seeds need to evolve, too. It does seem plausible in certain poorest parts of the world like large chunks of Sub-Saharan Africa or the poorest areas of Latin America or the poorest parts of Asia, farmers in those areas could do a lot of things differently, for they are already well-known (Ostry, 2012).

Urbanisation as a Curse and a Blessing for Human Society

It is hard to give general advice on what countries should do since across the world places are very different. One big challenge for cities is they need investment in infrastructure: roads, houses, sewers, electricity and more. About a billion people already live in urban slums in low-income countries. When we talk about these slums, what do we really mean in practical terms? We are talking about people living in shacks. They are often so close together that they might not even have streets between them, just walkways. Sometimes they might be built up several storeys. People might be living four, six, eight people in a room. There is mud, dirt, garbage, sewage, smell, noise. There are enormous air pollution problems. Big cities like New Delhi or Jakarta or Beijing have terrible difficulties with the respiratory disease caused by air pollution. In Dacca, in Bangladesh, cars still use leaded gasoline up in the 21st century. So, there are lots and lots of lead in the air. In fact, the lead in the air is something like ten times the government safety limit. One study in Dacca found that 90% of children in the city have enough lead in their blood to impair their learning process. In Mumbai, in India, one study found that air quality is equivalent to smoking twenty cigarettes a day. People visiting China describe the air in Beijing and Shanghai as chewy, which is maybe good for a bubble gum but not for air. Some of the air pollutions are the local industry. Some of it is electricity. Some of it is people who do not have enough electricity. As a result, they are burning polluting little diesel generators for electricity. They are burning anything they can find for cooking and heat. Some of the pollutions are poor transportation and its gridlock of cars just sitting there pumping out emissions (Kadamian, 2014).

Many cities have enormous water and sewage problems. In Jakarta, the drinking water system is ineffective, so most of the population uses wells and groundwater, which is slowly being depleted. As the groundwater is depleted, then the land begins to settle. It becomes more vulnerable to flooding, and also seawater begins to leak into freshwater aquifer. Mexico City has similar water issues. So does Bangkok. In Mumbai half of the population lacks running water. In Shanghai maybe half the population lives in buildings without any access to sewage. In many of these large megacities in low-income countries, indiscriminate dumping of sewage and industrial supplies happens all the time. It goes into rivers and ends up in the water supply.

As a result, you get outbreaks of disease. Lima, Peru, had the outbreak of cholera in the late 1990s because of a lack of sanitation and sewage being dumped into rivers. Lagos, Nigeria, had cholera outbreaks too. Fifteen of the top twenty megacities are on or near a coast. Poor people often live in the low-line areas of cities. So, as the water table falls and cities sink, they are particularly susceptible to flooding problems. It is common in these cities to have half or fewer of the people with electricity, to have enormous problems with roads and congestion. At one step, what seems possible to do is just getting kids into school. It is not just education, which of course is valuable, but getting kids into school reduces crime and general disorder. It creates a group of parents who monitor the schools and care about them. It creates a group of teachers who argue for higher pay and creates a sort of ties across the community. For example, schools can be a social mechanism for delivering some meals to low-income kids (Obstfeld, 2011).
Foreign aid in the mid-2000s was a little over 100 billion dollars per year. It goes up in a given year if there is a large humanitarian disaster like a tsunami of December 2004 that hit the Indian Ocean off the coast of Indonesia. Of course, it also affected Sri Lanka, Thailand, India and other countries as well. This 100 billion dollar includes what basically is called official development assistance, which is a pretty good measure of foreign aid. The biggest donors in terms of absolute dollars are the big high-income economies of the world. The United States gave 23.5 billion, while the United Kingdom, Japan, France and Germany — all gave in the range of 10 to 12 billion. Of course, these official donations do not cover all forms of assistance (Reinhart & Rogoff, 2011).

Many kinds of foreign aid really are about an immediate need. But there is also foreign aid in the category of building human resources and physical resources for the future. We are talking about better nutrition, better health, better education, clean water, applicable technologies. These sorts of aid are really the primary focus of the discussion here because there are a lot of cases where receiving foreign aid does not seem to have done much to build the long-term future of economies (Yu, 2014).

Foreign aid does have some remarkable accomplishments to its credit. For example, there are health breakthroughs like vaccinations. The World Health Organisation is pretty much rid the world of smallpox, a remarkable accomplishment. The Pan-American Health Organisation pretty much rid the Western Hemisphere at least of polio. After thirty years of aid work in West Africa, they greatly diminished, almost eliminated river blindness, a parasitic worm that causes people to go blind. There is a current effort to fight malaria, free mass distribution of bed nets that have been dipped in the insecticide to chase off the mosquitoes that spread malaria, and also spreading more effective anti-malaria medicines. There are a lot of programmes for clean water and sewage treatment. These have a public health component as well. There is the green revolution, that effort to improve crops all around the world which was largely funded with aid money.

To be clear, the green revolution was a large coordinated research effort to breed better and better plants. They tried lots and lots of different plant combinations. They tried them in different conditions of soil conditions and dryness and pests and all the rest. Over time they gradually developed some far superior crops, higher yields, more drought resistance, extra nutrients in the crops as well. One difficulty is that while the green revolution research programme was supposed to be carried out worldwide, it was actually carried through much more effectively in South-East Asia than it was across Africa. There are really good yields, for example, of more nutritious rice, which is great for India, Thailand and Malaysia, but it is hard to do a rice pad in a lot of sub-Saharan Africa. So, one frontier for foreign aid would be to spread the green revolution to Africa. There have also been successes in infrastructure or education. More recently, foreign aid programmes started with experiments on what is sometimes called conditional cash transfers, i.e. you give families money if kids attend a school or if they go to doctors’ appointments and get vaccinated. The success of these aid programmes than actually led to government programmes in a lot of countries of these conditional cash transfers, but the aid programmes led the way in showing that something was ineffective to proceed. Other small-scale aid projects have had the potential to become large-scale programmes as well. For example, one big problem in many low-income countries is that you have a lot of school buildings, and you have a lot of health care buildings, but especially in rural areas a lot of the time the teachers and the health care workers may not show up for their jobs.

In some cases, those workers may even have other jobs. They just draw a government paycheck. It is not clear how you check this regularly (Dorrucci & McKay, 2011).

Of course, aid has thousands of small-scale successes to its credit, roads that got paved, villages with clean water, schools that got built or, say, small micro-loans that got made to local entrepreneurs. Yet another issue is that health gains from aid may not show up very well as economic gains. Programmes that provide vaccinations or improve infant mortality may increase social statistics like infant mortality or life expectancy, but these may show up not directly as economic gains. In talking about Africa’s economy, we spoke about how Africa increases in health and increases in economic statistics were not always aligning. There had been health gains across much of sub-Saharan Africa from the 1970s up to early 2000s,
but really not much in the way of economic gains over that time, or to put it more accurately, it may be the economic benefits or a healthier society in terms of people who develop their full physical capabilities may take several decades to emerge.

A final issue is that aid may, in some ways diminish the power of self-governance. After all, aid agencies have money. That can give them disproportionate power in low-income countries. Just listen to government officials in low-income countries sometimes, talk about their experiences with the International Monetary Fund or the World Bank. Of course, they will admit these agencies had done some good. There is also a lot of prickliness and how they felt pushed around when things go well and even angry when they felt like things were going badly. The force of government and citizen groups sometimes can be just how to get more aid projects, how to comply with aid requirements, how to talk the language of the aid people, how to go to the conferences the aid people hold. In a way, aid can make citizens and governments feel less in charge of their destiny, and instead, they focus on outside forces where they really have limited or no control. Countries, especially low-income countries, may have a limited number of skilled and public-spirited civil servants and administrators. Do those people end up running schools and the transportation and the hospitals and spreading technology to farmers and industry? Or do they end up filling out forms to get more aid money from the World Bank or the IMF and filling up the follow-up paperwork? Reasonable as aid can sound in theory, it can get involved with policies that offer a high level of interference in markets. There can be a process of aid being funnelled to non-democratic leaders that end up being used for their own political survival.

**Recommendations to Fight the Disease**

Maybe you deal with sewage first with the latrine system, then with the trench system and later on with the pipe system. Maybe you deal with water problems first by selling containers of water from a central source and then letting people distribute those containers around the city rather than with pipes. Maybe you need to encourage privately run firms that provide bathrooms and latrines at some cost. Maybe you need real estate developers coming to slums, tear down the existing building and build up a new one. However, the builder has to guarantee people currently in that place will have a place to live in the new building, and the builder could then rent or sell extra space for businesses or homes. You might need to deliver electricity with a mixture of large generating plants and smaller devices, maybe solar-powered devices. When you are thinking about water pipes or electrical wires, you need to think about how you are going to limit leakage, i.e. water or electricity being drained out of the system by poor people. You just cannot provide unlimited free stuff to hundreds of thousands of people and try to lower the costs on the rest of the population. Some of the financings here could come from central governments, some from local governments, some from fees and charges, some from foreign aid, some from investment by private-sector firms hoping to make a profit.

For example, in Sao Paolo, Brazil, one of the fastest-growing cities in the world over the last few decades, infant mortality was 51 per 1,000 live births in 1980, now, about thirty years later, it is down from 51 to 12 deaths for every 1,000 live births. In the late 1970s, piped water reached about 50 per cent of the population of Sao Paolo. Now piped water reaches 99 per cent of the population. In the late 1970s, sewage treatment covered 38 per cent of the population, and thirty years later, it reaches 88 per cent of the population. These are all city-projects to extend that infrastructure. Another, a limited but success story is Bangkok’s efforts in reducing air pollution. It is something that the city really did, not the national government. The city of Bangkok put pollution control on cars. It set high taxes on motor scooters which run pretty dirty, and it made taxis run on natural gas. Those changes make a big difference.

Here are some of the especially juicy targets for foreign aid. One would be nutrition supplements. There are tens of millions of children, maybe hundreds of millions of children around the world who lack essential vitamins and nutrients in their diets like zinc and iron. There are things you could do like providing vitamin capsules for orphans who are aged under two or zinc supplements, particularly for infants aged under two as well. There are things you can do to make sure salt is iodised, which is an enormous gain to people’s diet. There are also ways to fortify other essential foods like...
bread with iron. You can figure out, maybe using genetic engineering if necessary, how to grow biofortified crops, which just means that the crop itself has iron or vitamin or other nutrients in it. It can often be highly effective to do de-worming programmes. If someone gets infested in the worm, it ruins their nutrition, it stunts their growth, and it can stunt their intellectual development. One way to provide those de-worming programmes is to connect them with school-age children and thus do it through the school system.

Another area where aid can be very effective is broadly in concerns with water and sewage. In poor rural areas across the world, you can get clean water if you can dig it deep, borehole down the water, and then use a hand pump to help get the water up. There are also probably a few places in Africa where large dams should be considered. Large dams have a bad reputation these days and often deservedly so. Dams can be total white elephant projects with huge, huge cost overruns. It can also lead to massive displacement of people who are living near the river, which is in the area that is going to be flooded. But on the other side of it, Africa really badly needs electricity, and it has hydro-electric power available if some dams were built. Africa also really needs to manage its water supply for irrigation purposes and also to reduce the chance of floods in many areas. So, there may well be areas in Africa, in specific locations where the costs of dams are less than the benefits you can receive. In any event, ruling out dams altogether is a pretty large step in terms of the possible benefits you might be giving up. Africa has not been dammed extensively in the past. And so at a minimum, aid can think about where some sides are plausible or sensible.

There are more places where aid could help. How about bio-sand filters for dealing with sewage and wastewater? A bio-sand filter basically involves packing sand and gravel into a concrete or plastic chamber, and then you run your sewage or your wastewater through that filter. You do need to clean out the filters from time to time, but in general, this can be a quite efficient and low-cost way of dealing with sewage and getting cleaner water instead. There are also a lot of possible health gains still possible for routine care. There are a lot of places where children do not get the immunisation they should get, for example, against tuberculosis.

We mentioned earlier the efforts against malaria, more bed nets dipped and insecticide to fight mosquitos that spread malaria, making new treatments available for malaria to develop as mosquitos and the disease develop resistance to earlier treatments. Other people would add up programmes, say, to make microloans available to people in low-income countries for starting businesses.

A big part of fighting disease is clearly a diet, especially diets for mothers and new-borns. As you get higher incomes, diets are a lot better. In general better diet makes you more resilient against all kinds of other health problems. There are better health habits like personal cleanliness. There is public health, like public sanitisation and vaccination programmes. There is also the treatment of some common conditions like diarrhoea and dehydration that used to cause a lot of people to die very young. Now, probably different factors are important at different times over the last couple of centuries. But my point here is that when life expectancies are rising sharply, and birth rates are staying much the same, the population is going to increase really sharply. Though we are emphasising a global view here, in reality, this happened in one region of the world at a time. We saw these higher life expectancies in population growth first take off in the United States and Western Europe in the 19th century, and that process took decades to happen.

**Conclusion**

In the globalised economy of the future, the main economic powers will probably continue to be nation-states — the United States, China, India, the European Union combination, Germany, the United Kingdom, Brazil, many others. Nation-states will follow the policies they want to follow. They want to pass the laws they want to pass. But as they become more interconnected, international agencies and agreements may play an important role as well. Agreeing on ground rules and certain kinds of coordination becomes more important in a world of globalisation, and international agencies are the places where these kinds of ground rules get hammered out. Many of these international agencies have already been mentioned.

The World Bank has long seen its key role as providing loans to countries that might not oth-
erwise have access to financial capital. Perhaps the best answer for foreign aid is for foreign aid to focus on specific projects like vaccination or clean water or anti-malaria efforts, ways to solar energy or electrical technology, reward schemes for education.

The IMF has traditionally been an international agency that steps in when there is an international financial crisis. But it is not clear that that role works as well now as it did a few decades ago either. The IMF is the one agency in the world that has the power to lend tens of billions of dollars on relatively short notice to address this kind of immediate financial crisis. Roughly speaking, you can think of the IMF as macroeconomics, i.e. it works on money and exchange rates and overall growth, and you can think of the World Bank as microeconomics on particular aid projects, although the division in practice is not quite that simple.

The fundamental problem, though, of solving poverty and this is something so obvious, but it makes sense, is hooking up unskilled workers to consistent local paychecks. When you focus on the poor, their immediate needs are so great, it is easy for the discussion to focus on food and clean water and health care and education, all the things they need and these are all worthwhile endeavours, but even if you provide food and clothing and vaccinations and anti-malarial nets dipped in second side and classrooms for the kids, you still have not solved the problem of earning income.

Of course, in low-income countries, there is not like a food stamp programme or something like that. They might not even have a very good list of who actually lives in certain rural areas. You cannot just hand out money. But what you can do is undertake a different kind of programme. A programme called conditional cash transfer is a payment where they send the money to those who send their children to school. That targets families with kids, and it encourages education. Or you could give food assistance to moms who shore up for pre-natal health appointments, or who bring their kids to get vaccinated. Another approach is the government creating work projects, maybe working on infrastructures like roads or irrigation. Anyone who shows up and works gets paid. Maybe they get paid in terms of food or maybe in cash. Only those who do not really have good options are going to show up. And you do not have to work extremely hard. It just provides a way of selecting out poor people and getting them money and getting them food, so people can get the food they need, rather than trying to hold the price at an artificially low level.

The pull is that development of manufacturing and services needs workers, and it needs them in somewhat more centralised locations. That pattern is held true in the US over the last few centuries. It is held true in Europe, and it is occurring now in low-income countries all around the world. This shift is sometimes presented as a shift from the beautiful, bucolic and environmentally friendly countryside to the exploitation of sweatshop manufacturing and urban slums. Like any economic transition, you can turn it into a morality play if you want to. Certainly, some individuals have lived out that morality play. But it is worth remembering that even though work and living conditions have been pretty bad for recent immigrants to cities. In low-income countries, it can be pretty down and lousy out on the farm too. Being poor, a rural low-income country typically means not much food, dirty water, illness, not much health care or education.

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