## COVID-19 and the economy: Where do we go from here?

Posted on June 25, 2020 by Gail Tverberg

The COVID-19 story keeps developing. At first, everyone listened to epidemiologists telling us that a great deal of social distancing, and even the closing down of economies, would be helpful. After trying these things, we ended up with a huge number of people out of work and protests everywhere. We discovered the models that were provided were not very predictive. We are also finding that a V-shaped recovery is not possible.

Now, we need to figure out what actions to take next. How vigorously should we be fighting COVID-19? The story is more complex than most people understand. These are some of the issues I see:

**[1] The share of COVID-19 cases that can be expected to end in death seems to be much lower than most people expect.**

Most people assume that the ratios of deaths to cases by age group, computed using reported cases, such as those included in the Johns Hopkins Database, give a good indication of the chance of death a person faces if a person catches COVID-19. In fact, the cases reported to this database are far from representative of all cases; they tend to be the more severe cases. Cases with no symptoms, or only very slight symptoms, tend to be missed. The result is that ratios calculated directly from this database make people think their risk of death is far higher than it really is.

The US Center for Disease Control has published Planning Scenarios, based on information available on April 29, 2020.* Using this information, the CDC's best estimate of the number of future deaths *per 1000 cases with symptoms* is as follows:

Ages 0 – 49  0.5 deaths per 1000 cases with symptoms

Ages 50-64  2.0 deaths per 1000 cases with symptoms

Ages 65+  13.0 deaths per 1000 cases with symptoms

The CDC's best estimate is that 35% of cases have no symptoms at all. Thus, if we were to include these cases without symptoms in the chart above, the chart would become:

Ages 0-49  0.5 deaths per 1,538 cases (including those without symptoms), or 0.3 deaths per 1000 cases with or without symptoms

Ages 50-64  1.3 deaths per 1000 cases with or without symptoms

Ages 65+  8.5 deaths per 1000 cases with or without symptoms

A recent study of blood samples from 23 different parts of the world came to a similarly low estimate of the number of deaths per 1000 COVID-19 infections. It reported that among people who are less than 70 years old, the number of deaths per 1000 ranged from 0.0 to 2.3 per 1000, with a median of 0.4 deaths per 1000.

The same paper remarks,

> *COVID-19 seems to affect predominantly the frail, the disadvantaged, and the marginalized – as*

*shown by high rates of infectious burden in nursing homes, homeless shelters, prisons, meat processing plants, and the strong racial/ethnic inequalities against minorities in terms of the cumulative death risk.*

**[2] There seem to be things we can do ourselves to reduce our personal chance of serious illness or death.**

General good health is protective against getting a bad case of COVID-19. Thus, anything that we can do in terms of a good diet and exercise is likely helpful. Staying inside for weeks on end in the hope of preventing exposure to COVID-19 is probably not helpful.

Continued exposure to huge amounts of disinfectants and hand sanitizers is likely not to be helpful either. Our bodies depend on healthy microbiomes, and products such as these adversely affect our microbiomes. They kill good and bad bacteria alike and may leave harmful residues. It is easy to scale back our personal use of these products.

There are recent indications that vitamin D is likely to be protective in reducing both the incidence of COVID-19 and the disease's severity. Web MD reports:

*Several groups of researchers from different countries have found that the sickest patients often have the lowest levels of vitamin D, and that countries with higher death rates had larger numbers of people with vitamin D deficiency than countries with lower death rates.*

*Experts say healthy blood levels of vitamin D may give people with COVID-19 a survival advantage by helping them avoid cytokine storm, when the immune system overreacts and attacks your body's own cells and tissues.*

While we don't know for certain that vitamin D is helpful, there is certainly enough circumstantial evidence to suggest that it would likely be worthwhile to raise vitamin D levels to the amount recommended by the National Institute of Health (30 nmol/L or higher). People with dark skin living in areas away from the equator might especially be helped by this strategy, since dark skin reduces vitamin D production.

Masks seem to be helpful in preventing the spread of infection. A person's own immune system can handle some level of germs. If two people meeting together both wear masks, the combination of masks can perhaps reduce the level of germs to within the amount the immune system can handle. Our immune systems are built to handle a barrage of small attacks by viruses and bacteria. Continued "practice" with relatively low combinations of good and bad bacteria (as occur with masks) will tend to build up our bodies' natural defenses.

We see dentists and dental hygienists wearing face shields. These shields are readily available over the internet and can be worn with a mask or by themselves. We don't yet know precisely how much protection they provide, but early models suggest that they can be helpful in two directions: (a) preventing the wearer's droplets from harming others and (b) reducing the droplet exposure from others. Thus, they may be a worthwhile way to reduce exposure to the virus causing COVID-19, even when others are not wearing masks.

**[3] The medical community's ability to treat COVID-19 cases keeps improving.**

There seem to be many small changes that are improving treatment of COVID-19. If patients are having trouble getting enough oxygen, having them lie on their stomachs seems to increase their blood oxygen levels. The cost of this change is pretty much zero, but it keeps people out of the ICU longer.

Originally, planners thought that ventilators would be needed for patients with COVID-19, since ventilators are often used on pneumonia patients. Experience has shown, however, that oxygen plus something like a CPAP

machine often works better and is less expensive.**

The simple change of not sending recuperating patients to nursing home-type facilities for the last stages of care has proven helpful, as well. Many of these patients can still infect others, leading to infections in long-term care facilities. Tests to tell whether patients are truly over the disease do not seem to be very accurate.

Last week, it was announced that treatment with an inexpensive common steroid could reduce deaths of people on ventilators by one-third. It could also reduce deaths of those requiring only oxygen treatment by 20%. Using this treatment should significantly reduce deaths, at little cost.

We can expect improvements in treatments to continue as doctors experiment with existing treatments, and as drug companies work on new solutions. Looking at cumulative historical mortality rates tends to overlook the huge learning curve that is taking place, allowing mortality rates to be lower.

**[4] More doubts are being raised about quickly finding a vaccine that prevents COVID-19.**

The public would like to think that a vaccine solution is right around the corner. Vaccine promoters such as Anthony Fauci and Bill Gates would like to encourage this belief. Unfortunately, there are quite a few obstacles to getting a vaccine that actually works for any length of time:

(a) Antibodies for coronaviruses tend not to stay around for very long. A recent study suggests that even as soon as eight weeks, a significant share of COVID-19 patients (40% of those without symptoms; 12.9% of those with symptoms) had lost all immunity. A vaccine will likely face this same challenge.

(b) Vaccines may not work against mutations. Beijing is now fighting a new version of COVID-19 that seems to have been imported from Europe in food. Early indications are that people who caught the original Wuhan version of the COVID-19 virus will not be immune to the mutated version imported from Europe.

Vaccines that are currently under development use the Wuhan version of the virus. The catch is that the version of COVID-19 now circulating in the United States, Europe and perhaps elsewhere is mostly *not* the Wuhan type.

(c) There is a real concern that a vaccine against one version of COVID-19 will make a person's response to a mutation of COVID-19 worse, rather than better. It has been known for many years that Dengue Fever has this characteristic; it is one of the reasons that there is no vaccine for Dengue Fever. The earlier SARS virus (which is closely related to the COVID-19 virus) has this same issue. Preliminary analysis suggests that the virus causing COVID-19 seems to have this characteristic, as well.

In sum, getting a vaccine that actually works against COVID-19 is likely to be a huge challenge. Instead of expecting a silver bullet in the form of a COVID-19 vaccine, we probably need to be looking for a lot of silver bee-bees that will hold down the impact of the illness. Hopefully, COVID-19 will someday disappear on its own, but we have no assurance of this outcome.

**[5] The basic underlying issue that the world economy faces is overshoot, caused by too high a population relative to underlying resources.**

When an economy is in overshoot, the big danger is collapse. The characteristics of overshoot leading to collapse include the following:

- Very great wage disparity; too many people are very poor
- Declining health, often due to poor nutrition, making people vulnerable to epidemics
- Increasing use of debt, to make up for inadequate wages and profits
- Falling commodity prices because too few people can afford these commodities and goods made from these

commodities
- Gluts of commodities, causing farmers to plow under crops and oil to be put into storage

Thus, pandemics are very much to be expected when an economy is in overshoot.

One example of collapse is that following the Black Death (1348-1350) epidemic in Europe. The collapse killed 60% of Europe's population and dropped Britain's population from close to 5 million to about 2 million.

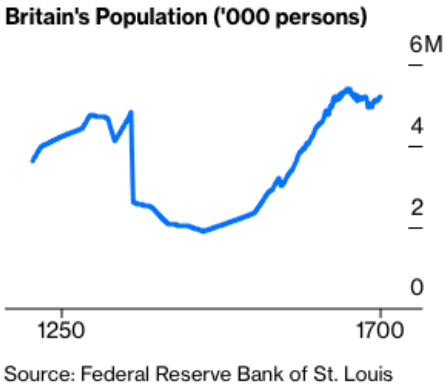


Figure 1. Britain's population, 1200 to 1700. Chart by Bloomberg using Federal Reserve of St. Louis data.

We might say that there was a U-shaped population recovery, which took about 300 years.

A later example that almost led to collapse was the period between 1914 and 1945. This was a period of shrinking international trade, indicating that something was truly wrong. On Figure 2 below, the WSJ calls its measure of international trade the "Trade Openness Index." The period 1914-1945 is highlighted as being somewhat like today.

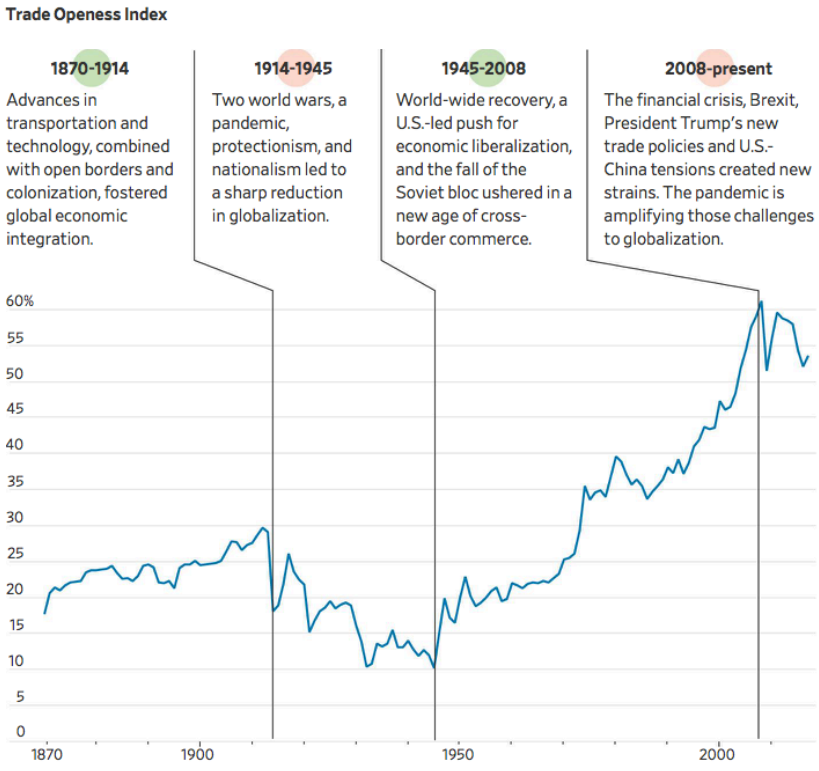

Figure 2. The Trade Openness Index is an index based on the average of world imports and exports, divided by world GDP. Chart by Wall Street Journal

Many of the issues in the 1914-1945 timeframe were coal related. World War I took place when coal depletion became a problem in Britain. The issue at that time was wages that were too low for coal miners because the price of coal would not rise very high. Higher coal prices were needed to offset the impact of depletion, but high coal prices were not affordable by citizens.

The Pandemic of 1918-1919 killed far more people than either World War I or COVID-19.

World War II came about at the time coal depletion became a problem in Germany.

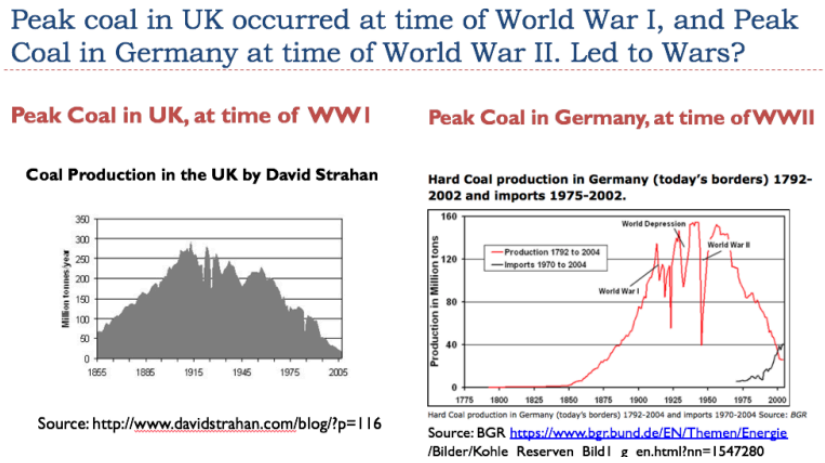


Figure 3. Figure by author describing peak coal timing compared to World War I and World War II.

The problem of inadequate energy resources finally ended when World War II ramped up demand through more debt and through more women entering the labor force for the first time. In response, the US began pumping oil out of the ground at a faster rate. Instead of depending on coal alone, the world began depending on a combination of oil and coal as energy resources. The ratio of population to energy resources was suddenly brought back into balance again, and collapse was averted!

**[6] We are now in another period of overshoot of population relative to resources. The critical resource this time is oil. The alternatives we have aren't suited to fulfilling our most basic need: the growing and transportation of food. They act as add-ons that are lost if oil is lost.**

If we look back at Figure 2 above, it shows that since 2008, the world has again fallen into a period of shrinking imports and exports, which is a sign of "not enough energy resources to go around." We are also experiencing many of the other characteristics of an overshoot economy that I mentioned in Section 5 above.

Figure 4 shows world energy consumption by type of energy through 2019, using recently published data by BP. The "Other" combination in Figure 4 includes nuclear, hydroelectric, wind, solar, and other smaller categories such as geothermal energy, wood pellets, and sawdust burned for fuel.

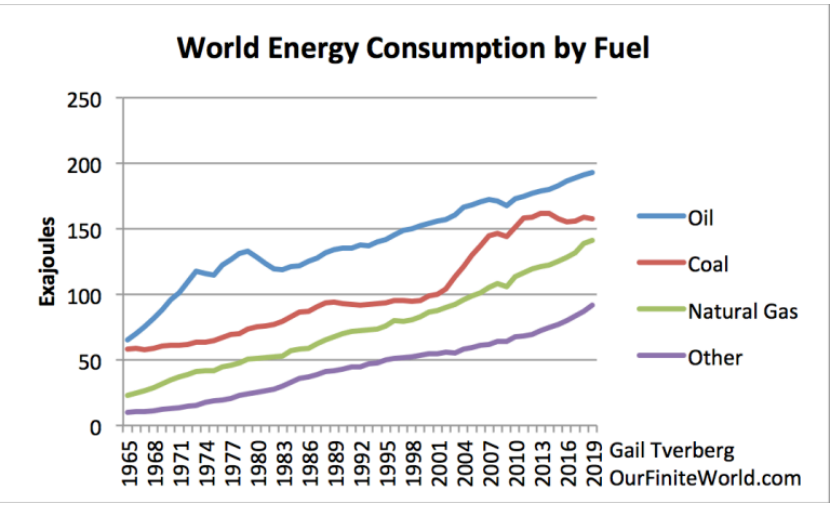


Figure 4. World energy consumption by fuel, based on BP's 2020 *Statistical Review of World Energy.*

Oil has been rising at a steady pace; coal consumption has been close to level since about 2012. Natural gas and "Other" seem to be rising a little faster in the most recent few years.

If we divide by world population, the trend in world energy consumption per capita by type is as follows:

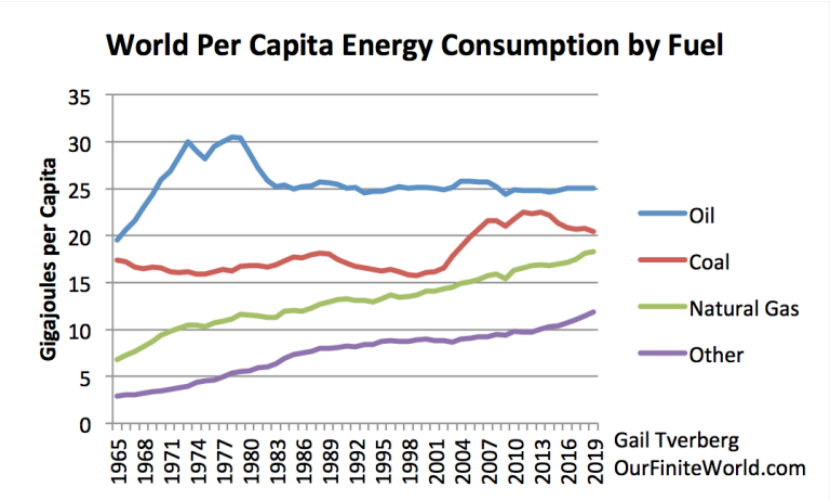


Figure 5. World Per Capita Energy Consumption based on BP's 2020 *Statistical Review of World Energy*

Many people would like to think that the various energy sources are substitutable, but this is not really the case, as we approach limits of a finite world.

One catch is that there are very few stand-alone energy resources. Most energy resources only work within a framework provided by other energy sources. Wood that is picked up from the forest floor can work as a stand-alone energy source. Wind can almost be used as a stand-alone energy source, if it is used to power a simple sail boat or a wooden windmill. Water can almost be used as a stand-alone energy source, if it can be made to turn a wooden water wheel.

Coal, when its use was ramped up, enabled the production of both concrete and steel. It allowed modern hydroelectric dams to be built. It allowed steam engines to operate. It truly could be used as a stand-alone energy source. The main obstacle to the extraction of coal was keeping the cost of extraction low enough, so that, even with transportation, buyers could afford to purchase the coal.

Oil, similarly, can be a stand-alone energy solution because it is very flexible, dense, and easily transported. Or it

can be paired with other types of less-expensive energy, to make it go further. We can see our dependence on oil by how *level* energy consumption per capita is in Figure 5 since the early 1980s. *Growth in population seems to depend upon the amount of oil available.*

As I have mentioned in previous posts, the economy is a self-organizing system. If there isn't enough of the energy products upon which the economy primarily depends, the system tends to change in very strange ways. Countries become more quarrelsome. People decide to have fewer children or they become more susceptible to pandemics, bringing population more in line with energy resources.

The problem with natural gas and with the electricity products that I have lumped together as "Other" is that they are not really stand-alone products. They cannot grow food or build roads. They cannot power international jets. They cannot build wind turbines or solar panels. They cannot put natural gas pipelines in place. They can only exist in a complex environment which includes oil and perhaps coal (or other cheaper energy products).

We are kidding ourselves if we think we can transition to modern fuels that are low in carbon emissions. Without high prices, oil and coal that are in the ground will tend to stay in the ground permanently. This is the serious obstacle that we are up against. Without oil and coal, natural gas and electricity products will quickly become unusable.

**[7] A major problem with COVID-19 related shutdowns is the fact that they lead to very low commodity prices, including oil prices.**

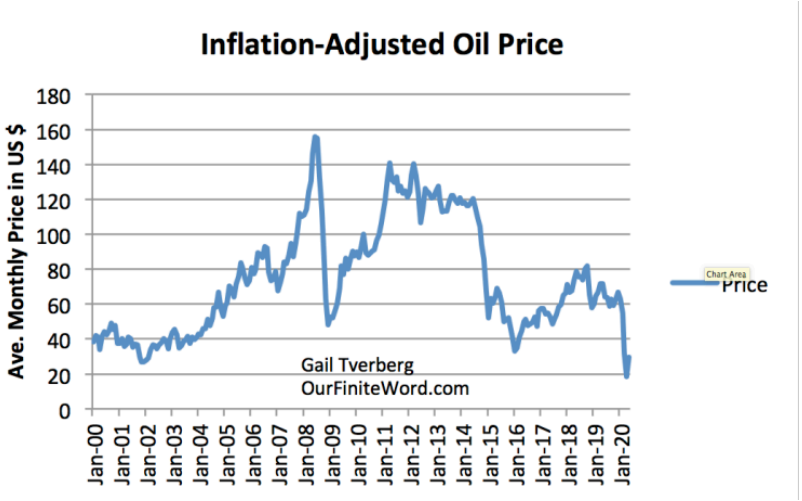


Figure 6. Inflation-adjusted monthly average oil prices through May 2020. Amounts are Brent Spot Oil Prices, as published by the EIA. Inflation adjustment is made using the CPI-Urban Index.

Oil is the primary type of energy used in growing and transporting food. It is used in many essential processes, including in the production of electricity. If its production is to continue, its price must be both high enough for oil producers and low enough for consumers.

The problem that we have been encountering since 2008 (the start of the latest cutback in trade in Figure 2) is that oil prices have been falling too low for producers. Now, in 2020, oil production is beginning to fall. This is happening because producing companies cannot afford to extract oil at current prices; governments of oil exporting countries cannot collect enough taxes at current prices. They hope that by reducing oil supply, prices will rise again.

If extraordinarily low oil prices persist, a calamity similar to the one that "Peak Oilers" have worried about will certainly occur: Oil supply will begin dropping. In fact, the drop will likely be much more rapid than most Peak

Oilers have imagined, because the drop will be caused by low prices, rather than the high prices that they imagined would occur.

Amounts which are today shown as "proven reserves" can be expected to disappear because they will not be economic to extract. Governments of oil exporting countries seem likely to be overthrown because tax revenue from oil is their major source of revenue for programs such as food subsidies and jobs programs. When this disappears, governments of oil exporters are forced to cut back, lowering the standard of living of their citizens.

**[8] What our strategy should be from now on is not entirely clear.**

Of course, one path is straight into collapse, as happened after the Black Death of 1348-1352 (Figure 1). In fact, the carrying capacity of Britain might still be about 2 million. Its current population is about 68 million, so this would represent a population reduction of about 97%.

Other countries would experience substantial population reductions as well. The population decline would reflect many causes of death besides direct deaths from COVID-19; they would reflect the impacts of collapsing governments, inadequate food supply, polluted water supplies, and untreated diseases of many kinds.

If a large share of the population stays hidden in their homes trying to avoid COVID, it seems to me that we are most certainly heading straight into collapse. Supply lines for many kinds of goods and services will be broken. Oil prices and food prices will stay very low. Farmers will plow under crops, trying to raise prices. Gluts of oil will continue to be a problem.

If we try to transition to renewables, this leads directly to collapse as well, as far as I can see. They are not robust enough to stand on their own. Prices of oil and other commodities will fall too low and gluts will occur. Renewables will only last as long as (a) the overall systems can be kept in good repair and (b) governments can support continued subsidies.

The only approach that seems to keep the system going a little longer would seem to be to try to muddle along, despite COVID-19. Open up economies, even if the number of COVID-19 cases is higher and keeps rising. Tell people about the approaches they can use to limit their exposure to the virus, and how they can make their immune systems stronger. Get people started raising their vitamin D levels, so that they perhaps have a better chance of fighting the disease if they get COVID-19.

With this approach, we keep as many people working for as long as possible. Life will go on as close to normal, for as long as it can. We can perhaps put off collapse for a bit longer. We don't have a lot of options open to us, but this one seems to be the best of a lot of poor options.

**Notes**:

*The CDC estimates are estimates of future deaths per 1000 cases. Thus, they probably reflect the learning curve that has already taken place. It is unlikely that they reflect the benefit of the new steroid treatment mentioned in Section 3, because this finding occurred after April 29.

**I have been told that disease spread can be a problem when using CPAP machines, however. Using ventilators at very low pressure settings seems also to be a solution.

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**About Gail Tverberg**

My name is Gail Tverberg. I am an actuary interested in finite world issues - oil depletion, natural gas depletion, water shortages, and climate change. Oil limits look very different from what most expect, with high prices leading to recession, and low prices leading to financial problems for oil producers and for oil exporting countries. We are really dealing with a physics problem that affects many parts of the economy at once, including wages and the financial system. I try to look at the overall problem.

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**Harry McGibbs** *says:*
July 10, 2020 at 3:33 am

"Covid-19 threatens to push tens of millions of people in emerging markets back into poverty. It also risks exacerbating inequality and triggering a fresh wave of social unrest, giving a fresh boost to anti-incumbent populists… as virus-induced recessions hit emerging markets with full force, budget deficits will blow out, triggering a wave of downgrades by ratings agencies and scaring away investors.

"A stress test by Absolute Strategy, a London research firm, found that up to 37 per cent of the benchmark JP Morgan emerging market bond index could be at risk of default over the next year or so."

https://www.ft.com/content/ddfe663e-c1df-11ea-9b66-39ae33ea12cb

Reply

**Harry McGibbs** *says:*
July 10, 2020 at 3:37 am

"…unemployment in the region [Latin America and the Caribbean] is expected to rise to 13.5% from 8.1% last year, affecting more than 44 million people, compared to over 18 million in 2019. The poverty rate is expected to rise to 37.2% from 30.2%, meaning 230 million people will be affected compared to 185 million last year, it said."

https://www.washingtonpost.com/world/the_americas/un-says-latin-america-and-caribbean-are-covid-19-hot-spot/2020/07/09/77cf517c-c23c-11ea-8908-68a2b9eae9e0_story.html

Reply

**Harry McGibbs** *says:*
July 10, 2020 at 3:39 am

"Philippine trade data for May showed both imports and exports cratering, down by 40.6% and 35.6% respectively. The narrowing of the trade deficit means should be supportive of the strong-peso for now, but it also highlights that the economy is headed for a protracted slump."

https://think.ing.com/snaps/philippines-trade-data-continues-to-point-to-drawn-out-economic-slump/