



Research Article

## COVID-19 more than an ill-health: combined supply-side and demand-side shocks

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**Abstract.** COVID-19 mitigation restrictions have avoided countless deaths and infections while simultaneously disrupting livelihoods and economies. The global loss of gross (world) product is unprecedented as COVID-19 has inflicted both supply-side and a demand-side shocks. While public health measures have mitigated morbidity and mortality with positive effects on cross-country economic results, the decline in global Gross Domestic Product is leading to diminished spending on healthcare, the environment, and social wellbeing. In addition to the current challenges, there will also be various long-term implications of lasting illness (“long COVID”) which are still to be determined. Numerous and varied economic stimuli packages have been instituted by different countries aiming to revive economies in the short term and thereby also mitigate long-term implications. In line with these measures, as a result of the COVID-19 vaccine roll-out, European countries have initiated discussions on vaccine-immunity passports to enhance mobility and assist economic recovery. However, this will not resolve the economic scars, the impaired innovation outcome and the healthcare fatigue that are expected to linger for years. While uncertainty is certain, this very uncertainty highlights the need for unbiased and rigorous quantitative evaluations of all possible decisions. A “nuanced approach” to the easing of restrictions must take into account the balance of immediate mortality and both short- and long-term morbidity versus the even longer-term risks of widening health, education and wealth inequalities and decreased life expectancy among the more socially and economically vulnerable.

**Keywords:** COVID-19, recession, depression, economics, health economics

### 1 Introduction

COVID-19 continues to plague the globe and the presence of effective treatments and vaccines is reducing spread and death. Other treatments by non-pharmaceutical interventions (NPIs), so-called community mitigation strategies are also assisting in reducing pandemic spread (Ferguson et al., 2020). These include hygiene, social distancing, self-isolation and travel restrictions. The application of these interventions has not been consistent across countries, with countries like Sweden, the United States (US) and the United Kingdom (UK) imposing social distance restrictions cautiously, a so-called “sacrifice lives to save economy” approach (Born et al., 2020; Casey, 2020; Krueger et al., 2020). Others imposed strict lockdowns after high infectivity and fatality rates, as seen in Italy and Spain (Brauner et al., 2021; Farboodi et al., 2020). Indeed, these initially unprepared localities experienced devastating COVID-19 morbidity and mortality that overwhelmed their respective healthcare systems, as witnessed in Italy early in 2020 (Faggioli et al., 2020). On the other hand, in Germany and Denmark, lockdowns were imposed due to perceived insufficient voluntary social distancing by the population (Brauner et al., 2021). Strict restrictions imposed by countries such as Japan, China, South Korea, Norway and Finland among others were considered to “sacrifice economy to save lives” (Casey, 2020). These mitigation measures resulted in a flattened curve in the early summer months of 2020 in the Northern hemisphere, preventing millions of infections and saving millions of lives (Flaxman et al., 2020; Hsiang et al., 2020). However, these positive effects were reversed when the measurements were relaxed, especially

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when done hastily (Cuschieri et al., 2020). This narrative review will discuss the direct and indirect economic impact of COVID-19 and the public health implications.

### 1.1 Mitigation measure effects on the economy

Mitigation measures have had detrimental effects on global healthcare systems and a disruptive ripple effect on literally every aspect of human endeavour and economic activity. There have been unprecedented levels of disturbance to individual lives and even more importantly for the long term, to general economic activity, both at national and at global levels (Nicola et al., 2020). Employment challenges occurred across all economic sectors, although not in a consistent manner. Some sectors such as tourism, wholesale and retail have been badly hit compared to others. Certain areas of economic activities proved to be resilient by shifting to new forms of work such as remote working. Schools have closed, piling additional pressure on carers and economic activity in general. From a consumption perspective, some sectors experienced a lower expenditure during lockdowns, with households who managed to retain their employment, experiencing increases in their saving rates. Indeed, in March 2020, the US reported that personal savings surged as a percentage of disposal income from 7.5% (normal level) to 34% during lockdown (Copper, n.d.). This led to an anticipated post-lockdown economic spree with the anticipated inflation pressures never truly materialising (Copper, n.d.), probably because the post-lockdown phase was not extensive in most countries. Households mainly used their income on food related products, and the sector faced increased demands due to panic-buying and stockpiling (Nicola et al., 2020). On the other hand, the general demand for commodities and manufactured products has significantly decreased while demand for specific medical supplies has risen.

In economic terms, COVID-19 has inflicted both a supply-side and a demand-side shock. A shock is a sudden and unexpected change which can be both negative and positive. A supply shock is an unexpected increase/decrease in the supply of goods/services due to non-price determinant factors. Demand shocks are sudden increased/decreased demands for goods or services. Since the supply of a commodity/good/service is usually not very flexible (inelastic in economic terms), all of these COVID-19 affected factors can and have wreaked economic havoc.

Almost all countries are constantly reducing and increasing NPI restrictions, but these actions will not undo the damage already done and the evolving domino collateral damage. Indeed, due to ongoing effects including

decimated tourism, the World Travel and Tourism Council (WTTC) has averred that COVID-19 is threatening the livelihoods of 300 million people – one in 10 of the global workforce – employed in the tourism/hospitality industry, an industry which accounts for 300 million jobs and almost 10% of global gross domestic product (GDP) (Broom, 2020; “UNWTO World Tourism Barometer and Statistical Annex, January 2019”, 2019).

### 1.2 The impact of COVID-19 on GDP

The Gross Domestic Product (GDP) is defined as the total amount of goods produced and services provided, typically quoted or cited per country, for a one year period (Callen, 2008). Annual growth is invariably given as a percentage of the previous year’s GDP. The world’s GDP was \$85.9 trillion in 2018 (The World Bank, 2018). As an example and for the sake of perspective, the largest economy in terms of GDP is that of the United States at almost \$19.5 trillion/year (Worldometer, 2019), with an annual budget for 2019 of almost \$4.45 trillion (USA Spending, 2019).

Health issues are inextricably intertwined with GDP and other economic indicators such as social wellbeing. In fact, it has been estimated that in the developed countries, if GDP drops by circa 6%, more years of life would be lost due to recession than would be gained through lives saved at this tipping point since there is a link between GDP and life expectancy. This is because affluent countries are able to spend more on healthcare, safety and the environment and this expenditure would be restricted due to decreased funds available if GDP falls (Thomas, 2020).

Income is causally related to health not only via a direct effect on the material requirements necessary for simple survival, but also by influencing the ability to participate in society, including at work and hence the opportunity to control life circumstances. Indeed, the fewer the goods and services publicly made available by the community, the more important individual income becomes for health (Marmot, 2002).

This can even be shown in relation to COVID-19 in that case fatality rates (CFRs) have varied widely in different countries, from 0 to 8.91%. An analysis of the effect of socio-economic and health indicators showed that GDP, more specifically a low GDP per capita among other indicators were significant contributors to CFR. Developing countries are therefore particularly vulnerable (Asfahan et al., 2020).

### GDP and mitigation measures

A modelling study comparing the UK with European countries of similar income and healthcare resources showed that when applying a quality-adjusted life year (QALY) value of £30,000 (the maximum under national (NICE)

guidelines), the cost of the imposition of further strict lockdown would only be justified with a QALY value of at £220k – £3.7m (much higher than NICE values,  $\times 7 - \times 125$ ). The authors concluded that clearly, the costs of continuing draconian restrictions are so great in relation to lives saved that a quick easing in restrictions was highly warranted (Miles et al., 2020). A study conducted in the US had shown that with a value of \$125,000 per QALY, assuming COVID-19 vaccine availability by April 2021, QALY benefits from averted deaths by continued social distancing and limited reopening. This exceeds full reopening with projected increased GDP gains. The authors concluded that a limited reopening to achieve partial economic mitigation of COVID-19 would be more cost effective than a full reopening (Schonberger et al., 2020). Another study explored the effects of GDP growth in relation to changes in lockdown strategies across 42 countries, over the first three-quarters of 2020. It was reported that although strict government measures had a negative economic activity impact, these kept the fatality rates low. Therefore, from an economy perspective, lockdowns and low fatality rates were the second-best policy to limit economy damage secondary to high fatality rates. It was concluded that changes in lockdown strategies have dominant effects on in-country GDP, while low fatality rates have a positive effect on cross-country economic results (König et al., 2021).

### Long COVID and the economic implications

In addition to acute morbidity and mortality, “long COVID” is a novel term that describes lasting illness in patients who have either recovered from COVID-19 but still experience lasting symptoms or who have had symptoms for longer than expected. Up to 90% of symptomatic patients may go through this, with 90%, 32% and 55% were still experiencing at least one, two, or three or more symptoms respectively 60 days after onset (Carfi et al., 2020). It has been estimated that due to residual functional disability, the cumulative post-discharge health-care costs/patient/year are comparable to those of elderly patients with severe chronic diseases (Ambrosino et al., 2020). The additional complication of long COVID-19 is that relatively young and previously healthy individuals who lack important comorbidities, do not return to their previous baseline functional status. This has enormous public health implications, particularly in the context of a pandemic (Ambrosino et al., 2020). These complications will weigh most heavily on those least equipped to shoulder them and their families and friends: lower-income earners, the uninsured/underinsured, and the homelessness (Jiang et al., 2020). All of these costs must also be factored in when weighing the pros and cons of removing restrictions.

Of course, this will have serious economic implications not only in terms of the quality of life of these individuals, but also in terms of economic activity. The faster the workforce recovers, the faster will be the economic rebound to the new economy post-COVID.

### 1.3 Reviving the economy

It has been reported that COVID-19 contributed to a number of positive long-term outcomes on companies, as these were forced to change their daily operations and consumer behaviour. Indeed, businesses that survived the initial COVID-19 economic shock are more likely to be resilient and flexible in the future. It has also accelerated digitalization, increased e-commerce and virtual selling apart from enhancing health and safety (Maqui et al., 2021).

#### Economic stimulus and forecasts

Individual countries have varied in the degree of stimulation that they have internally provided in their attempts to ameliorate the negative economic effects of the pandemic, and this has ranged from 2.5% – 50% of GDP (Danielli et al., 2020). These include immediate fiscal impulse, deferrals, and other liquidity and guarantee measures.

In order to assist economies and attempt to avoid a recession of the magnitude witnessed in the 1930s during the Great Depression (Romer, 1990), countries have pledged various stimulus packages, including a \$10 trillion internal aid boost (Cassim et al., 2020). This is more than three times more the 2008-2009 crisis. The European Union initially planned 1.8 EUR trillion a recovery package which is mainly aimed at greening the economy and transformation through investments in digitalization, (European Commission, 2020) and this has been increased to \$2.2 trillion backed by joint debt (Dendrinou et al., 2020). The equivalent stimulus package for the USA is \$1.9 trillion (Wasson et al., 2021). Despite the extraordinary efforts to counter the evolving recession/depression with fiscal and monetary policy support, forecasts vary but are overall bleak.

#### World Economic Outlook

“A Crisis Like No Other, An Uncertain Recovery” (World Economic Outlook Update, 2020). Global growth is projected at 5.5% in 2021, after shrinking by 3.5% in 2020 according to the latest IMF projections (World Economic Outlook Update, 2021). In 2022 global growth is projected at 4.2%. Despite the growth projections, the “adverse impact on low-income households is expected to be particularly acute, imperiling the significant progress made in reducing extreme poverty in the world since the 1990s” (World Economic Outlook Update, 2020).

## Eurozone

Meanwhile, according to the latest statistics published by the European Commission, GDP growth in the euro area decreased by 6.8%, less than the 9.1% anticipated last year. This is even better than the 5.5% contraction in 2009 as the Eurozone dealt with the financial crisis (OECD, 2020). In 2021 and 2022, the Eurozone economy is expected to grow by 3.8% per year (European Commission, 2021).

Despite the relatively positive economic outlook for the coming years, and with the use of the vaccine, COVID-19 will leave “lasting scars through lower investment, an erosion of human capital through lost work and schooling, and fragmentation of global trade and supply linkages” (The World Bank, 2020). Additionally, innovation will be affected through the impaired financial contribution to research and development (Martin Fuentes et al., 2021). Furthermore, healthcare fatigue that will affect healthcare services and output (Adibe, 2021). Finally, ongoing waves of infection (even in countries with relatively high vaccination rates) may derail all estimates. This is particularly important as viral spikes have been witnessed in Chile and the Seychelles despite relatively high vaccine uptake (39% and 67% respectively) (Balicer et al., 2021). Indeed: “How fast will economy recover? It depends on businesses reopening, vaccination, COVID-19 third wave” (Nangia, 2021).

## Hyperinflation

Economic stimulus packages and increased family savings due to ability to spend on holidays and entertainment is also raising the spectre of hyperinflation, a rapid, excessive, and out-of-control general price increases in economies (Asia Times, 2021). Furthermore, the initial drop in COVID infections in Europe earlier in 2021 followed by further waves of infection has triggered a double-dip i.e. a recession followed by a short-lived recovery, followed by another recession (also known as a W-shaped recovery) (Financial Times., 2021). These factors will also mostly impact low-income earners.

## 1.4 Immunity-vaccine passports

The recovery of the hospitality industry is crucial to all economies and tourism plays a crucial role (Grech et al., 2020). COVID-19 vaccines roll-out have initiated across most European countries (March 2021) resulting in a debate for the introduction of a vaccine passport among countries. Those fully vaccinated, tested negative or recently recovered from COVID-19 will be eligible for this certification (BBC News, 2021b). These passports aim to enable mobilisation and relaxation of restrictions so as to revive economies. However, these initiatives are faced

by a number of debates including ethical concerns and privacy concerns and the possibility that this will exacerbate inequalities and discrimination (Brown et al., 2021). Naturally, increased travel also risks viral spread from one country to another by asymptomatic (albeit certified) carriers but the newly approved pan-European vaccine passport may mitigate these risks (Schengenvisainfo News, 2021).

## 1.5 Positive outcomes and forecasts

Not all appears to be gloom and doom and for example, China's economy grew 18.3% in the Q1 2021 compared to the same quarter of 2020, the largest rise in GDP from 1992 when China started keeping records. This should be contrasted with a 6.8% reduction for the same country in Q1 2020 due to lockdowns (BBC News, 2021a).

Similarly, in the United States, retail sales have spiked by 9.8% in March 2021 due to pandemic relief cheques, and a successful vaccination program and the rollout of a \$1.9 trillion rescue package. All of these factors are positioning the USA's economy for the fastest growth spurt this year in decades (Aljazeera, 2021). Indeed, a surplus of cash in the financial system has reduced interest rates (The Economic Times, 2021) and it is estimated that business have accumulated billions of dollars and euros (Bharti, 2021). Not all households have done badly and overall, it is estimated that households have saved the equivalent of 6% of global GDP since the pandemic began, a staggering \$5.4 trillion (Romei, 2021). These has led to bullish market with fears of a bubble forming and perhaps the best example is the surge in cryptocurrency (Gutscher et al., 2021; Raimonde et al., 2021).

All these estimates may be disrupted by additional waves of infection. For example, the planned (at the time of writing) UK reopening and relaxation of all measures may lead to between 1000-2000 hospital admissions daily and 100-200 deaths daily in England when cases peak, based on the assumption that the public's behaviour will change slowly over several months, rather than suddenly (Vaughan, 2021).

## 2 Public Health Implications – Conclusion

The oft-repeated ‘COVID-19 does not discriminate’ is patently incorrect – it certainly does and has in fact highlighted the stark wealth and health inequalities within society and exacerbated them (Patel et al., 2020).

COVID-19 continues to pose a dynamic challenge for both governments and policymakers who have been ping-ponging degrees of restrictions to reduce viral morbidity and mortality through social distancing interventions over economic growth. However, travel and mobility restric-

tions and shuttered businesses have triggered an economic collapse with an inbuilt uncertainty.

While uncertainty is certain, this very uncertainty highlights the need for unbiased and rigorous quantitative evaluations of all possible decisions. A “nuanced approach” to the easing of restrictions must take into account the balance of immediate mortality and both short- and long-term morbidity versus the even longer term risks of widening health and wealth inequalities and decreased life expectancy from poverty (Danielli et al., 2020), particularly in the more socially and economically vulnerable strata since public health measures disregard the most economically disadvantaged (Patel et al., 2020).

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## Conflict of Interests

All authors have no conflict of interest to declare.

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