EIC0461

Written evidence submitted by Professor Aditya Goenka (University of Birmingham) and Dr Lin Liu (University of Liverpool)

Background: We have been among the first researchers to use epidemiology models in standard macroeconomic frameworks. Our first work was published in 2013. We have also researched on business cycle fluctuations and economic growth. This gives us a perspective to understand potential impacts of Covid-19 on the economy and its subsequent recovery.

Economic Recovery

- Most modeling of the outbreak is based on the premise that the epidemic is short lived. OBR expects recovery by the end of the year, IMF in 2021. The challenge is that if the control of the disease is not rapid then its effect will be much longer than 6 months, and this will affect the path of growth of the UK and the international economy. Without any vaccine and treatment available we see it reappearing as economies in lockdown open up. The plans to open up businesses announced on 25/05/2020 are very worrying as infection has not been controlled as in other countries that have eased restrictions. As there is already fatigue with current lockdown and a growing lack of trust in government guidance and response, a second spike could be significant.

- There is **no trade-off between health outcomes and the economy:** There have been other epidemics and significant incident infectious diseases with higher annual mortality. OECD countries have been unprepared and generally slow to respond to the pandemic. What we know from other epidemics can inform us in thinking about the current one. Our modelling (Goenka and Liu (2013, 2019), Goenka, Liu and Nguyen (2014)) has shown how disease incidence by affecting labour productivity, investment in capital, education, and health, can depress per capita income and growth rates.

- Robust international evidence shows that higher incidence of infectious diseases decreases both per capita income and growth rates across a 50 year period. (See https://link.springer.com/article/10.1007/s00199-019-01214-7).

- What is a short run epidemic, if not suppressed and controlled quickly can lead to a **permanent change in the growth pattern of UK** by affecting investment behaviour. Recall that after the financial crisis of 2008, there has been a growing gap between actual performance of the UK economy and the trend growth rate which was 2.1% before the crisis (IFS). If we use 2008 as a base of 100, in 2018 per capita income rose only to 105 as opposed to what should have been 125. Till 2022 the gap was projected to be 108 as opposed to 135. We also anticipate a change in the growth trajectory with a gap developing between trajectory of per capita GDP and what would have been had the epidemic not developed in UK. The reason for this is three-fold:
    1. UK has been one of the hardest hit countries (largest fatality rate on a weekly rolling measure and the third highest fatality rate (which going by ONS data is under-reported) per 100,000 in the world as of 27/05/2020. There is no functional plan to contain the disease. This will **decrease investment and permanently affect growth** trajectory based on experience of other infectious diseases.
    2. UK is also being affected by the epidemic when growth and investment rates have been low following the uncertainty surrounding Brexit. The uncertainty has affected

investment and consumer spending (several Bank of England Inflation reports document this). It has seen an output gap developing **with supply chains being re-organized** due to increasing trading cost and delays. This process will hasten.

3. There is a global trend in technological change and the pandemic will hasten this process leading to a **jobless recovery** when the economy does begin to recover.

OBR estimates that GDP will drop by 35% between March – June and recover by December with still a 12.8% drop in the year. Unemployment is expected to rise by 2% to 10% of workforce (32 million). We think these are optimistic as without suppressing the disease, the economy will not recover to where it was. Too many businesses would have closed, patterns of activity and investment will change. The job restructuring will accelerate. Thus, **we do anticipate a quick V-shaped recovery**. The severity and duration of the recovery/recession/depression will depend on policy response in controlling the disease in UK and in the global evolution of the pandemic. The disease is not fully understood as yet and the policy response in UK is evolving **leaving a degree of uncertainty on magnitudes.**

- One-fourth of the labour force has been furloughed within 2 weeks of the announcement of the plan. Reports indicate that many workers without permanent contracts have been let go. The furlough scheme is hiding the true nature of the effect in the labour market. There are two aspects – many jobs will be lost due to the effect of the crisis, as well as there will be further substitution of capital and technology for labour. This ongoing process will hasten.

- Most of the modelling, including OBR, Bank of England Monetary Policy Report (May 2020), and the modeling we see for the US (e.g. https://www.nber.org/papers/w26882) treat the epidemic as only a short run event and they project a quick recovery once social isolation is lifted. However, the growth trajectory is likely to be changed as the state to which the economy recovers is not the pre-pandemic state of the economy. There are modeling assumptions in the last paper as they do not account for capital and thus cannot model the changing investment behaviour. Our work (Goenka and Liu (2019)) explicitly shows how investment behavior will change if a disease becomes endemic (which is the most likely scenario for Covid 19). The impacts projected in their work are also relatively small in the US – about 6% drop in GDP and a 2% drop at peak of recession of consumption. What we hear from the retail sector in UK, the magnitude is likely to be much larger. The fall in consumption is larger in UK (BoE, May 2020)) and is unlikely to recover to old levels especially for durables due to permanent losses to income and greater job uncertainty. The evidence from other European countries also suggests a change in pattern of consumption and a drop in expenditure on consumer durables.

- Our on-going modelling (Goenka, Liu and Nguyen (2020a)) shows that if the disease is not eradicated, then there can **be two different situations that can result – one with high disease incidence and one with lower disease incidence.** The stable outcome is the higher one. It also shows the possibility of a **"backward bifurcation"** where bringing the contact rate, R0, below 1 is not sufficient to eradicate the disease. The implication is that there may be some economies such as UK, USA, Sweden, Brazil which have taken laxer approaches to control the disease will have higher incidence of the disease going forward while other countries have largely controlled them. However, as Covid-19 is highly contagious it will persist in different economies at different levels – for those that have controlled the disease will have waning incidence until there are outbreaks coming from external links as we see in

the China-Russia border. Thus, Non-Pharmaceutical Interventions (NPI) such as isolation and tracing, lockdowns, will persist for some time – coming and going as the disease evolves.

- One challenge specific to UK is that we are facing **potential reorganization of supply chains following Brexit**. This reorganization is likely to be much sharper if the pandemic is not controlled. E.g. JLR furloughed half of its work force, i.e. 20,000 workers. This was following spending and job cuts (500 workers) announced in January 2020, January 2019 (4500), and 2018 (1500). This is the example of one flagship company with main manufacturing base in UK. But if economic uncertainty continues, coupled with changing technology (in this case move towards electric cars), effects of Brexit (in this case Defender now being built in Slovakia), these jobs may be gone for good.

- There will be **sectoral impacts** – **transport** (1.4 m), **food and accommodation** (1.7 m), **retail**, **auto repair and retail** (this employs 4m workers – the opening for car retail on 1 June should be seen in this context) may be badly hit (Numbers from ONS). **Smaller business** will be hit harder than larger businesses due to cash-flow problems. Some sectors will be able to adapt but some will not. The fall in oil prices and the glut in stored oil – both due to both decreased demand and geopolitical issues – may make any of the remaining North Sea oil industry unviable. There are industry 280,000 jobs in **oil and gas production** in UK (OGUK)). . The **scarring** will be due to changing patterns of demand, regulatory uncertainty, shortages of workers. There will be some industries that are likely to come out stronger, particularly IT, online retailing and distribution, pharmaceuticals, and biotechnology.

- **Universities and higher education** establishments are already projecting large decreases in income for 2020-2021 due to fall in foreign student numbers, uncertainty about home student numbers, research income, and use of conference centres. If the epidemic is not controlled rapidly, the plan to move to online-teaching in September 2020 is likely to have large permanent negative impact on foreign student numbers (estimated to bring in 17.5 billion in exports by Ministry of Education in 2015). Competition is high from Australia, New Zealand, N. America, and many European universities having courses only in English. Coupled with the hostile student visa and post-study work visa environment, this can affect the viability of many of these institutions, especially as they have engaged in expensive capital expenditures anticipating continued foreign student numbers.

- There will be **regional impacts**. E.g. BA has furloughed 30,000 staff and one runway in Heathrow is shut. 4,000 pilots have taken unpaid leave for 4 weeks. The economy in the Slough area will be badly hit. There are other regions such as West Midlands and Northwest which have manufacturing bases that will be hard hit.

- There is likely to be an impact on **housing prices**. There are two general facts: At the time of recession, house prices generally fall, and that London has been the main driver for recent trends in UK housing prices and these have already been affected by Brexit. With this epidemic we are likely to see a continued depression in London house prices – both due to decreased foreign demand as well as a desire of people to leave urban conurbations which have seen the highest concentrations of disease incidence. Thus, the pattern of regional price increases with a depressed London housing market may continue.

- There will be **restructuring of business** with greater drive to automation, IT, etc. Some businesses will adapt and some will go under. We are already seeing big tech companies doing well in the crisis but other sectors such as airlines, hotels, traditional retail, oil, etc. not doing well.

- **Credibility of government** is very much at risk with turnarounds in dealing with pandemic and promises on testing and PPE not being met. The reopening of primary schools on June 1, 2020 has been criticized by parents as well as teachers. The recent controversy on travel during lockdown has further undermined the credibility of the government. This loss of credibility is likely to impact across all aspects of government policies - even unrelated aspects of policy making. As a result government advice – both in dealing with the epidemic and after the epidemic will be heavily discounted. Economists have studied the credibility issue in other areas as monetary policy and the concern is that there is a serious credibility gap in UK dealing with the pandemic. Other countries, New Zealand, Germany and Singapore come to mind have been very frank and clear on the risks. Singapore's very clear messaging and information from government websites and social media is an example how transparent information can lead to greater confidence and trust on NPIs that are necessary.

- **Externalities** – individuals do not take into full account how their own actions affect others in infectious disease transmission: one may self-protect but one cannot take into account how this affects disease transmission. The government advice on elderly and people with symptoms to self-isolate relies on people doing the right thing, but which all do not follow as shown by the plateauing of mortality during lockdown in UK. We estimated that the effect of this externality has halved growth rate in sub-Saharan Africa where there are many diseases endemic (Goenka and Liu (2019)). We see this clearly in other diseases as people not using enough mosquito nets, anti-vaxxers, etc. The issue of people flouting lockdowns during good weather, queues outside B&Q; whole village turning out to celebrate the 100th birthday in Derbyshire , etc. can be clearly understood as this disease externality - people not taking into account how their actions affects others. There can be under-protection as we see in the UK (example, by the crowds in English beaches during the Bank holiday on 25/05/2020) but there could also be over protection as well (e.g. when infections go down, parents may still not send young children to nursery and school).

- **International trade** impacts: As supply chains are already under strain, countries that bring the pandemic under control are likely to do better. We already see some countries having controlled the disease – South Korea, China (except at borders) , Vietnam, Taiwan, Mongolia, Trinidad and Tobago, Rwanda, Senegal, and they will be able to move to full production sooner than countries such as US, UK, Brazil, Russia, and India. There will be realignment of supply chains, there will be some industries that will take a harder hit. UK which is also dealing with Brexit is especially vulnerable.

- With a lockdown and social isolation policies in place, **social insurance** is desirable and the Treasury's furlough scheme is to be commended on this front. However, the fiscal impact is going to be large. The cost of the **furlough scheme** is estimated to be 10 billion for every 3 million people using it and in April 2020 the Treasury had to put aside 3 times of what it anticipated in March. However, it is too wide and has led to moral hazard problems where

some companies have shut down or furloughed staff when they need not have. There is the dilemma of extending loans to companies with high debt (e.g. Aston Martin).

- **Policy Recommendation:** Going forward, once lockdown is lifted, instead of the furlough scheme, if there is effective contact tracing in place, then those asked to self-isolate (quarantined if exposed) or isolate (if infected) could be given full pay sick leave for 2 weeks (which does not affect normal entitlement)) which is paid by the government and not by the employer. This is very important to give the people being asked to self-isolate the means and incentives to do so. Everyone in the household should be covered. For self-employed or those on contracts without sick leave entitlements something along the existing schemes could be followed. This would have a smaller burden on the Exchequer than having the blanket schemes in place currently. The issue of moral hazard may be there but given the uncertain and potential serious effects of Covid-19, the likelihood of knowingly self-exposure to Covid-19 will be minimized. If someone asked to self-isolate does develop the infection, then the period of isolation is to be extended on the same terms for period of isolation based on medical guidelines. As the current understanding – which is uncertain - is that the likelihood of reinfection is low, the likelihood that quarantine is to be repeated for an infected household will also be low.

Inequality

- The impact of both adverse health and adverse economic conditions will have **differential impacts of different groups** – worse for poorer households - less secure employment; furloughing grants will not cover full loss of income (it is only upto 80% upto max of 2500 for upto 3 months); more frontline jobs where exposure to infection is higher.

- The higher mortality of **BAME households** has received attention. The economic impact is also likely to be higher as unemployment is higher and labour participation rates are lower for these groups. Due to structural inequalities, BAME households live in more crowded conditions. According to Gov figures, 2% (white British)-4% (white Irish) households live in crowded conditions. For BAME groups: Chinese (7%), Indian (7%), Pakistani (16%), **Bangladeshi (30%), Black Caribbean (8%), Black African (15%).** As a large part of the transmission of Covid 19 takes place within households – with or without lockdown – they will be badly affected. These households are also more likely to be multi-generational. Thus, opening schools will affect them worst in terms of disease incidence.

- **Economic and social inequalities** in the country will widen as a result. There is the short run impact due to declines in employment and income but there will also be long run decreases in education (human capital). Robust international evidence is that higher incidence of **infectious diseases reduces schooling for children** (Goenka and Liu (2019))– due to effects on childhood health, different amortization of education, and ability and incentive for parents to educate children.

  There is already an attainment gap among school children (22.6 months at GCSE level, Education Policy Institute, 2019) and in university attainment for BAME groups (ONS). These may widen.

- As it is there is a **life expectancy gap** in the country: of 21.5 years for females (life expectancy of 53.5 in Nottingham as opposed to 75 in Orkney Islands) and 15.8 for males (54.1 in Blaneau Gwent as opposed to 69.8 in Rutland, Wokingham and Sutton) (ONS). This is likely to increase as the formula for distribution to local authorities no longer takes social deprivation into account.

- In times of crises, there is a **rise in nativist sentiments and hate crimes,** and it was seen in the aftermath of the 2008 financial crisis. This was seen worldwide following the global financial crisis. There are already reports of this in many countries (USA, China, India, Australia are examples). In UK there were 267 registered cases of hate crime against East Asians between January-March 2020 (there were 360 cases in 2018 and 375 in 2019, as reported in a survey by Sky News). Continuing cases will have implications for investment and foreign students coming to study in UK universities.

- Addressing long term, persistent inequalities in the short run is difficult. However, a **credible public inquiry** on the effects of Covid-19 on BAME groups, and **release of data on incidence** across social groups and by location is necessary.

References

1. Goenka, A. and Liu, L. (2013) Infectious disease and economic fluctuations, Economic Theory, 50 (1), 125-149. (https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxnb2Vua2FlY29ufGd4OjU2M2Y5MGJkZmQ3YzJmNTE)
2. Goenka, A. and Liu, L. (2019) Human capital, infectious disease and economic growth, Economic Theory, (https://link.springer.com/article/10.1007/s00199-019-01214-7)
3. Goenka, A., Liu, L. and Nguyen, M-H. (2014) Infectious disease and economic growth, Journal of Mathematical Economics, 50, 34-53. (https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxnb2Vua2FlY29ufGd4OjQ1ZjU3ZDc0Yjk4MWYzNGQ)
4. Goenka, A., Liu, L. and Nguyen, M-H. (2020) Modelling Covid-19: A dynamic general equilibrium analysis, Work in progress.

May 2020