

Effects of Vaccination Policies on the Economy of Britain, United States, and China

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Abstract: In the midst of a global COVID-19 pandemic, economic sectors across all countries have been suffering from severe disruptions due to lockdowns, causing recessions and slowdowns of economic growth. In an attempt to revive economic activities in various industries within the nations, different countries issued corresponding policies for promoting vaccination coverage, which is the most effective solution to curb this deadly disease and resume the economy to normality. After analyzing the effect of vaccination policies on the economy of Britain, the United States, and China, we discover that applying fiscal policies, increasing government investment on vaccination development, and issuing laws and acts that promote and accelerate vaccination coverage are common approaches among the three countries.

1. Introduction

Coronavirus disease 2019 (COVID-19), a contagious disease caused by severe acute respiratory syndrome coronavirus 2 first emerged at the end of 2019, has led to an unprecedented global pandemic. Since this virus is through person-person transmission, the majority of the countries across the world ordered the shutdown of non-essential businesses and local lockdown in an attempt to stop the spread of the disease, causing disruptions in global supply chains, travel restrictions, workplace closures and surging unemployment. As a result, there is an estimated 5.2% contraction in global gross domestic product in 2020. In light of the global context of national social and economic lockdown, there is an urgent need for effective vaccination policies in order to speed the coverage of vaccines thus rebuilding economies in the decades post-COVID-19. We read a similar previous research that addressed Taiwan's public vaccine policymaking (specifically regarding dengue) through the lens of political economy analysis. The researchers highlight how technocrats and scientists involved in public vaccine policy making play an indispensable role in bringing a healthcare solution to a population in need, which yields significant economic benefits to the society. However, as the researchers merely narrow on the vaccination policies in Taiwan, and the scale of dengue and COVID-19 is different, further research that spans across different regions and addresses specific policies of COVID-19 vaccination and its economic impact is needed. This paper aims to compare and contrast the different COVID-19 vaccination policies and their economic benefits in China, the UK, and the United States, endeavoring to present the relative optimal vaccination policies carried out by these three countries to the public and policy makers.

2. The Economic Impact of COVID-19 in America

The economic impact of COVID -19 has been severely disruptive over various industries nationwide. Overall, In 2020, the GDP of the United State had the biggest contraction since 1946 and the first contraction since 2009, with a “3.5 annualized rate”. In the second quarter of 2020, the U.S. economy contracted a “record 31.4%”^[1]. In addition, the U.S. shutdown gave rise to the stock market crash of 2020^[1]. Starting on March 11, the Dow Jones Industrial Average (DJIA) plunged from its prior high in February with a “20.3%” fell, which launched a bear market. Moreover, the social and economic lockdowns that attempt to contain the pandemic have led to a sharp rise in unemployment rate. According to the CBO, in April, the unemployment rate rose to “14.7 percent”.

3. The Government Funds on Vaccination

The United States has invested more than “\$10 billion” in Operation Warp Speed to fast-track SARS-CoV-2 vaccines from conception to market in 1-year. By mid-August 2020, given the massive and urgent threat of COVID-19, the US government had been willing to take on a great share of the innovation risk by pre-ordering “800 million doses of at least 6 vaccines in development”. This approach has substantially reduced the risk of the innovation process for vaccinations, incentivizing pharmaceutical companies to develop multiple approaches simultaneously in order to find the effective ones. In addition, this fiscal policy also enabled the pharmaceutical companies to “progress the vaccines through the necessary regulatory clearance stages more quickly”, continuing with testing while seeking regulatory clearance in parallel.

On January 6, 2021, The Department of Health and Human Services (HHS) announced \$22 Billion in funding to support expanded testing and vaccination Distribution^[1]. Moreover, on February 15, 2021, the Federal Emergency Management Agency (FEMA) granted Guam \$1.1 million to open a vaccination site to support the distribution and administration of vaccines nationwide. The funds reimburse expenses for medical and support staff, personal protective equipment, facility costs and supplies required to store, handle, transport, and administer vaccines, and efforts to share public information regarding vaccinations.

4. The United State Investment on Vaccination and Related Law

Passed by U.S. Congress on March 27, 2020 in response to the economic fallout of the COVID-19 pandemic, the Coronavirus Aid, Relief, and Economic Security Act, (the CARES Act) established a \$150 billion Coronavirus Relief Fund to provides for payments to State, Local, and Tribal governments by covering expenses that are necessary expenditures incurred due to the public health emergency with respect to COVID–19. On February 26, 2021, the Departments of Health and Human Services, Labor, and Treasury issued new guidance on the coverage of vaccines under the Coronavirus Aid, Relief, and Economic Security (CARES) Act, which requires comprehensive private health insurance plans to cover COVID-19 vaccines and related services without cost-sharing. Besides, the CARES Act has been funded programs that aim to facilitate and accelerate the development and distribution of COVID-19 vaccinations in addition to therapeutics and diagnostics, including Operation Warp Speed (OWS). With the initial fund of \$10 billion from the CARES Act, OWS managed to promote mass production of several vaccines, allowing faster distribution once one of the vaccines is confirmed to be effective. Since there are vaccines that fail to be safe nor effective, this program is more costly compares to typical development of vaccination. On the other hand, this plan successfully fast-track SARS-CoV-2 vaccines from conception to market in one year.^[2]

5. Three Phases of Vaccination in United States

On December 11, 2020, the U.S. Food and Drug Administration issued the first emergency use authorization (EUA) for a vaccine for the prevention of COVID-19 in individuals 16 years of age and older, approving the Pfizer-BioN Tech COVID-19 Vaccine, a mRNA vaccine that protect against infectious diseases by producing antibodies in the body, to be distributed in the U.S. In phase 1, the vaccine is given to a small number of generally healthy people to assess its safety at increasing doses and to gain early information about how well the vaccine works to induce an immune response in people. In the absence of safety concerns from phase 1 studies, phase 2 studies include more people, where various dosages are tested on hundreds of people with typically varying health statuses and from different demographic groups, the vaccine is generally administered to people in the nation randomly. On February 27, 2021, the U.S. Food and Drug Administration issued an EUA for the third vaccine for the prevention of COVID-19, which allows the Janssen COVID-19 Vaccine, a viral vector vaccine that uses a modified version of a different virus to deliver important instructions to our cells, to be distributed in the U.S for use in individuals 18 years of age and older.

6. COVID-19 Vaccination Policies in the Workplace and Exceptions

On December 16, 2020, the Equal Employment Opportunity Commission (EEOC) updated its technical assistance document the “Guidance” for employers regarding COVID-19 vaccinations in the workplace. EEOC’s responses in the document allow an employer to implement a mandatory vaccination policy as a condition of “continued employment” or as a condition of “physically returning to the workplace”. The EEOC Guidance, however, is subject to certain exceptions. For instance, Title VII of the federal Civil Rights Act protects employees whose “sincerely held religious belief” from receiving the vaccine.

7. Difficulties Regarding Vaccination Coverage

A considerable population of Americans resists adopting public health measures. A survey carried out by The Department of Health and Human Services (HHS) reported that merely “37%” firmly expressed that they would get vaccinated. On the other hand, “45%” of the respondents remained “cautious”, and “18%” stated their unwillingness to receive COVID-19 vaccination. Moreover, altering such rigid public opinions toward vaccination could be difficult, especially with misleading information about the adverse effects of the vaccination wide-spreading. These myths hinder the carry out of the vaccination policies in the U.S. to a certain degree.

8. The Economic Impact of Vaccination Policies

Experts believe at least 70 percent of the population must be vaccinated to achieve herd immunity, when enough of the population is immune to protect the others by stopping spread of the virus. In the case of COVID-19, the sooner this target can be reached, the sooner the economy can fully reopen and recover. To achieve herd immunity with COVID-19, a large proportion of the population either gets infected or gets a protective vaccine. In this case, the approach of intentionally getting infected as a way of achieving immunity is not feasible, as COVID-19 carries a high risk of severe disease and even death. One of the deficiencies of United States vaccination policies is that the government did not release a comprehensive vaccine plan until March, months after the first emergence of COVID-19. Shortening this time by even weeks could have alleviated tremendous economic loss. As vaccines are broadly available by march, economies are driven to

reopen and recover significantly on a daily basis. As the Congressional Budget Office mentioned in its economic forecast report, vaccination is expected to effectively slow down the spreading of COVID-19 over the course of the coming year, which would lift various economic activities such as travel and hospitality thus setting for a faster economic rebound. According to CBO, the unemployment rate is expected to fall to “5.3 percent at the end of 2021” (down from an “8.4 percent” projection last July), and the economy is expected to “grow 3.7 percent” for the year. Moreover, by the end of 2022, the vaccination coverage is predicted to add “between \$800 billion and \$1.1 trillion” to the U.S. economy. Clearly, as the budget officials put forth in the report, rapid deployment of the COVID -19 vaccination across the population would “significantly accelerate” the rebound in growth and employment.

9. Vaccination in Britain

On December 30th 2020, the Medicines and Healthcare Products Regulatory in UK has authorized the Oxford-AstraZeneca vaccine (codenamed AZD1222) for COVID-19. The vaccine consists of two doses that should be taken between a 4 to 12 weeks interval. Another type of vaccination is also introduced in the UK – the mRNA vaccine BNT162b2, which contains two doses that should be taken at between 3 to 12 weeks. The 2 doses schedule is recommended for both vaccines while the delivery for the first dose to all is prioritized before the second.

A piece of SARs-CoV-2 virus has spike proteins on its surface that clip onto body cells to allow the virus to inject a strand of RNA containing the genome. There are a few ways of making vaccines. Scientists take the virus and inactivate, in the case of COVID-19, a range of chemicals is used: Trizol, Trizol LS, Triton X, sodium dodecyl sulfate, NP-40, Povidone-iodine products ... Or Scientists could use mRNA in the vaccine. By providing the genetic code of part of the virus, the person’s immune system is able to recognize and trigger immunologic memory. The BNT162b2, also known as Pfizer BioNTech vaccine, mRNA vaccine. In comparison, the Oxford-AstraZeneca is adenovirus that uses a virus vector. While the storage for Oxford-AstraZeneca is easier than the Pfizer vaccine, 2-8C and -70C respectively, the latter one scores a success rate of 95% with the former one only being 63.09%. Israel, being the country that has the biggest number of population vaccinated using Pfizer, showed only 0.04% of people had developed Covid after receiving two jabs.

10. Vaccination on Britain’s economy

On 9 March 2021, over 42% of the adults in the UK had received at least one jab, relative to the average of 8% in the EU. On 22 March 11 a.m., there are more than 27 million people in the UK who have received at least one dose of the covid vaccine. This creates a positive prospect for the recovery of the UK's economy as lockdown could be eased and people could be back in normal work condition. According to the Bank of England, the vaccination program is believed to loosen the social distancing restrictions and allow higher economic activity, but the time for rebound still remains uncertain.

11. China’s vaccine

China, as the place of the first case of COVID-19, of course has been fighting against this pandemic since December 2019, when this disaster started. Till today, there are 63 different vaccines that has been researched and developed across the globe.

Candidates in Clinical Phases I-III

As shown in the diagram, there are four main types of vaccine: whole virus, protein subunit,

nucleic and viral vector. Among the 63 vaccines come from the globe, 4 of them come from China. 2 of which come from Sinopharm, a state-owned company. These two vaccines are widely accepted and are the most successful ones in China. They are both inactivated vaccines.

Inactivated vaccine is a type of whole virus vaccine. It uses the viruses that whose genetic material has been destroyed so it is inactivated, but it can still trigger the immune system to respond.

The greatest advantage of China's vaccine is that, unlike Moderna and Pfizer's vaccines which need to be stored in -20C and -70C, it can be stored in 2-8C. This means it does not require a large cost to store and transport, it can be stored in a standard refrigerator. Like Oxford's vaccine, they both use genetically engineered viruses and it only causes a common cold when they are testing it on chimpanzees. The advantage of can be stored in a standard refrigerator makes the Sinovac's vaccine much more useful in the developing countries as their technology is struggling to store a large amount of vaccines in this condition and pay for the high cost of transporting.

12. China's economy structure

In the first quarter of 2020, not a long period after the first case of COVID-19 discovered in Wuhan, China faced the largest challenge to its economy during the pandemic. To make things in control, Chinese government responded quickly to the situation and started its brutal but effective national lockdown. From the analysis by Karishmav Vaswani, Asia business correspondent, in a BBC article says "a brutal lockdown that saw the Chinese economy contract by a historic 6.8% in the first quarter of 2020" As I said earlier, the main parts of China's economy is secondary and tertiary industries. And due to the lockdown, these industries had the greatest impact. Secondary industry was facing the problem of not having enough people coming back to work after the lockdown and the difficulty of transporting the goods needed. With the restriction of travelling and lockdown, it was difficult for companies to transport goods to different cities, especially for those medium and small firms that do not have the ability to fight against the impact of COVID. Wang Peng's analysis gives an example of this. Wuhan, where the first case of virus was discovered and the first city went into lockdown, is one of the major provinces in China that produce upstream components for many products. And during the lockdown, Wuhan was at the stage where its own economy was at standstill, the industries that are linked to Wuhan surely were affected. The tertiary industry was facing the problem of the lockdown. The essence of the service industry is people providing service to people, and the essence of lockdown is to prevent the interactions between people. This means the service industry is naturally in conflict with lockdown. With the principle that pandemic prevention is the primary goal, the whole industry is under great impact.

13. Conclusion

Based on the analysis of three countries, the epidemic control varies and have different effects on their economy. We can divide the types of control method into three kinds: China's strict and precise control mode; Britain's flexible control mode; America's free and loose control mode. Under Chinese government's efficient organization and mobilization, along with citizens' consciousness and habit of observing collective norms, China managed a V-shaped recovery. However, the complete shutdown of economic production at the early stages of COVID-19 resulted in sudden GDP contraction. Britain employed flexible control methods after seeing outcomes of herd immunity. Along with the furlough scheme, fiscal and monetary policies, the government kept the unemployment rate relatively low but still experienced a second wave of coronaviruses and fell into a double dip recession. On the other side of the spectrum, lies America's infection prevention. There was a delay in the recognition of the severity of the coronavirus, and as many people regard

personal freedom higher than the prevention of the epidemic, the pandemic costs the government hugely. The advocacy of a liberal society defers the process of resuming to work, production and market. Despite the differences in managing epidemic, all three countries had rolled out vaccination to terminate the virus. Vaccine program has become an investment in human capital. The unprecedented COVID-19 shows lockdown cannot solve the long term problem. Vaccines help a country to reach herd immunity without making most people infected by the actual active virus. It can definitely help to recover the economy but more momentum is needed to support a sustainable growth.

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