

Health Policies to Address Inflation Crisis under COVID-19

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Abstract: As the world has been under the covid prevalence for 2 years, countries have escalated and new crises in the disturbed economy. One of the crises which pressure society most significantly is widespread inflation. Even though several factors drive it, comparison between the pandemic control and inflation severity allows to cancel out the rest of the factors influencing China and the U.S., such as the world gasoline price. Through analysing the relations between health policies and markets, try to solve the inflation crisis from its origin. After comparing the results of both countries, evaluate health policies regarding the implementation and side effects, including the possibility of bringing about inflation whilst attempting to control it from the origin. It is found that health policies could be in a risky position to implement where great effectiveness in controlling the outbreak and inflation accompanying with tremendous cost. Successful government expansionary policies do not further the aggravate inflation crisis. Meanwhile, the research suggests that the provision of buffer stock on highly-weighted products in the consumer price index can counter the potential short-run inflation.

1. Introduction

1.1 Research background

Bearing effects of the trade war, inflation, known as a general increase in the price level in China, is widely divergent compared to the figure in the U.S. under COVID-19. Within the period of the quarantine order in January 2020, the inflation rate in China showed a pattern of increase from 4.5% in December 2019 to 5.4%. Nonetheless, the pace started to fall and fluctuate until reaching 2.3% in November 2021, peaking at 2.7% in Jul'2020 [1]. During the 1st outbreak of COVID-19, the temporary increase in January 2020 also is driven by the boosted consumption in Spring Festival, mainly contributed by food prices. According to the Bureau of Labour Statistics, Americans have been experiencing a high inflation rate since May 2021, reaching 5% general increase in the price level [2]. The all-items index in Nov 2021 increased by 6.8 percent for the 12 months ending November, as the most significant 12-month rise since June 1982 [3]. Due to differences in the economic system, culture, health policy practices, and other aspects, the 2 countries' inflation rates differ a lot. Major causes of inflation in the United States in November 2021 are linked with the pandemic [4]. There is less available labour supplied to the market, inducing higher wage costs and lower productivity which drive up prices. This illustrates the importance of successful health policies and effective practices to keep the supply of production and economy stable during the pandemic.

1.2 Literature review

There have been some researches and working papers on inflation under COVID-19. David Blackmon suggested that one of the reasons for gasoline price rise was the rapid recovery in demand with the loosening of covid restrictions globally, leading to the price increase among consumers, with some companies seizing the precious opportunity to drive up prices [5]. Alberto Cavallo from the National Bureau of Economic Research finds that the real covid inflation rate is higher than the official in the U.S. since the consumers' behaviour and consumption pattern are greatly influenced by the lockdown practices as well as social-distancing behaviours. In addition, consumers are spending more on food and similar categories undergoing inflation, demanding less on transportation

and relevant services suffering from the remarkable deflation. Furthermore, low-income households suffered more from inflation, with an annual inflation rate of 1.12% in May 2020, compared to the figure 0.57% among high-income households [6]. You, S. et al. found that although health policies such as lockdown in Wuhan negatively affected economic development and significantly crimped the production and services in many industries, the total losses in the economy should be controllable if covid was effectively contained from the transmission. Additionally, strategies and practices must be taken critically according to the characteristics of different areas for the sake of economic recovery [7]. By comparing the effectiveness of policy interventions during financial crises in China and Russia, Bin Li et al. proposed that lack of capital control should result in policymakers underestimating the need for substantial intervention, emphasizing the greater effectiveness of globally coordinated policy responses in a pandemic crisis [8].

1.3 Research gap

The currently authorised researches mainly focus on the nature of impacts driven by COVID-19 and the pandemic to industries and economies, improvement in the accuracy and effectiveness of public policy through calculation and cooperation enhancement, future economic recovery and sustainable development, related financial crises, and evaluation on the current and future lives related to saving lives and economy preservation. However, there are few researches on addressing one of the greatest impacts of the pandemic, worldwide inflation, through the origin of the major causes. Therefore, through analysing and evaluating the most effective health policy that is more importantly, suitable for generalizing to the world regardless of the differences in local. The global economy will stabilize with a steady labour supply and normal gasoline and energy market through successful practices. Therefore, this research paper could be beneficial for policymakers to understand the deeper relations between the pandemic and inflation crisis contribute in allowing them to make more effective health policies in mitigating the effect of worldwide inflation.

1.4 Research framework

This research starts by analysing the nature of worldwide inflation crises in shortage and uncertainty exacerbated by the global pandemic. After comparing the results in inflation control and attitudes towards the pandemic China and the U.S. hold, the paper focuses on evaluating China's policies to control and prevent covid incidence. Moreover, raise or verify the existence of possible side effects driven by the policy implementation in economics and international relations. In the meantime, provide relevant impacts on inflation and the practical countermeasure. Therefore, suggest relatively effective and applicable policies in addressing the inflation crisis under covid-19

2. Method

This research paper analyses the effectiveness of health policy adoptions at the national level under the pandemic. Following the mainstream measure, the paper utilizes the microeconomic responsiveness to adopt practices in tackling and evaluating inflation as well as corresponding macroeconomic impacts with the effectiveness displayed in the macro economy for evaluation. In order to improve the reliability of the conclusion, the paper tries to analyse thoroughly through multiple dimensions and directions, mainly utilizing the following researching methods to control variants for evaluation. In addition to analysing the policies independently, some of them are divided in periods and levels of severity; thus, more reliable and precise relations between policies and inflation are obtained.

2.1 Comparative analysis

Comparative analysis is a method that compares 2 or more things or objects to find the similarities and differences between them. In this research paper, firstly, China and the U.S. are selected as the comparative group to contrast the results of 2 countries with China's policies based on historical data. Therefore, discuss the practical and economic health policies in addressing inflation globally. The

comparison set itself cancel out other factors driving inflation in both countries. The method is fully utilized, which means the paper investigates the effectiveness of health policies to the pandemic inflation and categorizes policy implementation into phases from a whole for the sake of more accessible and more precise evaluations. Then combine the personal understanding of these areas to discuss those topics further to conclude more comprehensive results.

2.2 Cost-effectiveness analysis (CEA)

Whereas the impact of health policy on the economy is complex and relatively less certain in the long run, cost-effectiveness analysis is considered in evaluating applicable measures. CEA is a measure that compares the relative costs and effects of different courses of action. It allows the researchers to analyse the opportunity cost of policies. Whilst considering the corresponding extent to which policies are worthwhile to implement, they are compared regarding the costs and relevant side effects brought to the economy and international relations, thereby evaluating the policy and risks needed to bear. Furthermore, this analysis concludes that relatively more economical and effective health policies among all, helping differ the corresponding side effects such as the crowding-out effect and motivation of the production resumption. This research further discusses other possible influences after adopting the analysed policies.

3. Result

Ha [9] from World Bank had found that the decline in global inflation during the 2020 global recession was the most muted and shortest-lived of any of the five global recessions over the past 50 years, and the increase in inflation since May 2020 has been the fastest. In the past one and a half years, the world was facing the inflation crisis. It is found that whereas governments implement differed health policies with distinct attitudes, the locals underwent different inflation levels.

3.1 Introduction to the inflation under COVID-19

The supply and demand shock-induced global inflation in the recent 2 years. The current pandemic exacerbated this crisis. Restrictions on consumption by governments in the early days reduced consumption temporarily. As nations started to vary their policies against COVID-19, this lifting the restraints on trade created a situation in which demand soared. Nonetheless, the previous practices had already crimped and inflicted heavy losses on business' production captivity. Furthermore, the supply side still suffers from the finite and limited number of available workers by the ongoing prevalent SARS-COV-2. Individual firms experience a decline in productivity and rise in costs which is a multi-dimensional accumulated result. From the energy perspective, the world has undergone a relatively windless summer, which means the burden on other sources such as fossil fuels increased to generate electricity. In addition, China's gas demand has exceeded expectations, and gas demand is expected to increase by 13%, or 42 billion cubic meters, year-on-year in 2021 [10]. With the economic recovery in China after the general pandemic, the domestic demand for airlines has exceeded the figure before the pandemic many times. Meanwhile, gasoline-guzzling vehicle transaction in China has started to grow from the floor since the 3rd quarter of 2020. This caused the rise in demand for gasoline. Therefore, this has increased the gasoline price, which brings about worldwide inflation, further raising the risk of stagflation which stands for high inflation with low economic growth.

3.2 U.S. and China

To analyse the necessity of cutting off the virus transmission in addressing the inflation crisis, U.S. and China are selected to compare different results. As distinct history and culture exist between 2 nations, governments have reacted with contrasting attitudes and efficiency. This has been reflected in very different results. The prevalence of SARS-COV-2 creates economic instability and uncertainty. Comparing policies that have not received general acknowledgement nor been successfully adopted in America allows to evaluate the CEA of implementation to society. Moreover,

the integration of international trade comparison analysis of the comparison group could counteract impacts on the inflation crisis which are considered to be worldwide phenomena.

Food prices have been influenced by the disequilibrium between supply and demand and other unavoidable factors such as the rise in transportation costs and restrictions on imports. According to the U.S. Department of Agriculture, prices for the aggregate category of “meats” were predicted to increase between 7.0 and 8.0 percent. Wholesale fats and oils prices were expected to increase between 37.0 and 40.0 percent in 2021, with farm-level wheat prices increasing between 41.0 and 44.0 percent [11]. The U.S.’s annual inflation rate accelerated to 6.8% in November of 2021, recorded as the peak since June 1982 [12]. In contrast, China’s inflation rate reached 2.3% in November 2021, partially contributed by a seasonal rise in demand [13]. Shu from China’s Ministry of Commerce (CMC) stated that spending on life’s essentials remained stable. In August 2021, the retail sales of grain, oil, foodstuff, and beverages of enterprises above the designated size increased by 9.5% and 11.8%, respectively [14]. GAO stated the practices of strengthening market sourcing and maintaining normal operation during the two festivals to ensure sufficient supply whilst following the Covid control and prevention requirements during the approaching New Year and Spring Festival [15].

The difference in attitudes and values of governments in considering the importance of Covid control and prevention has indirectly led down to a distinct path. From Community-Transmission Prevention, U.S and China both reacted quickly. Nevertheless, because of unavoidable and disparate cultural differences, practices implemented in the U.S. relatively lack enforcement compared with China’s. The U.S did not forcefully and validly implement lockdown but stay-at-home instead. This also reflects wearing mask order and imported cases prevention, particularly the quarantine and PCR nucleic test mechanisms. It is undeniable that the U.S., representing a few countries, bears a resemblance in suffering from heavy expenditure in health care but with the far less efficient return, aggravating the ineffectiveness of practice implementation. They cannot prevent and control the covid outbreak efficaciously, thereby facing far more complicated inflation crises.

3.3 CEA on health policies, China

China is the first country commonly known to encounter covid. In contrast, China is also acting well in controlling virus transmission and inflation. To evaluate the impacts of health policy implementation on the inflation crisis, this paper further analyses the cost and effectiveness of China’s policy implementation brought to the economy. Starting from the support in community infection prevention, it is commonly approved by governments to carry out the mask order in public places. Few countries such as China have provided the public with education about mask efficacy in preventing infection through controlling virus spread, resulting in a general acceptance of wearing indoor and outdoor masks; thus, this effectively inhibits the pandemic outbreak to a certain extent. Furthermore, China has instructed locals to ask individuals and firms to ratify accords representing obligation and approval on resuming work and study. Enhancement of individual fundamental protection could reduce the possibility of community infection, relatively shrinking the psychological load by the punishment from accords.

Nevertheless, this brought an elevation in demand for masks. A rise in the cost of production drove up the price of protective products, meanwhile attracting many new entries to the industry, creating quality and ethical issues. China commenced counteracting through enhancing regulation and assisting firms in stabilizing prices [16]. Civil servants were allocated to the mask production in the 1st half year of 2020 when China faced a mask shortage. As of the end of April 2020, China was producing around 450 million medical masks daily, implying a steep rise in production capacity utilization rate, effectively addressing the shortage, price instability, and zero inventory storage challenges. A study found that wearing a mask when going out contributed to a risk reduction of 70% to get infected [17]. Elevating mask production stabilizes market price, allowing those who regard masks as a daily necessity to consume without financial burden. Ehsan et al. stated that the increase in prices of masks and other critical goods influenced little to overall inflation during the mitigation phase [18]. Moreover, these interventions successfully supported individual firms to resume economic and applicable production, mitigating the inflation crises by supporting the aggregate

supply. As the mask has been considered one cost after production resumption, unsuppressed growth in mask price would inevitably drive up the cost of production, thereby exacerbating the potential inflation crisis.

With the proper amount of burden added on healthcare systems and economies, governments have found that domestic health care services could have huge impacts in controlling the pandemic. Following the instructions by the government of China, provinces started to set price ceilings on nucleic acid tests regarding local economies of scale and economic cost of testing despite the neglect of time consumption in biosafety and faculty protection and job satisfaction. Beijing implemented the price ceiling of PCR test at 35 RMB in December 2021 [19], further improving the effectiveness of compulsory 48-hour testing results from groups of people visiting high-medium risk places. 43 new hospitals became capable of carrying on nucleic acid tests after the policy compared to August in the same year [20] [21]. Residents have found taking tests more conveniently and readily with less pressure, maintaining the market stability, and bringing confidence for individual firms to resume production.

Nonetheless, this practice could bring about certain impacts on the economy. Total benefits are damaged, the market operates inefficiently. Although local governments may have thoroughly analysed historical data and Grade A hospitals' behaviour before the practice implementation, it could still push agencies into a dilemma. The annual plans and targets will be relatively unpredictable in balancing and evaluating revenues and costs in the region, which is not conducive to achieving dynamic efficiency. Overall, the price ceiling incentivizes individuals to resume the production process and pushes the economy into the recovery stage, even though potentially escalating the health care burden.

Mobile cabin hospitals (MCHs) are implemented worldwide due to the significant effectiveness contributed during the pandemic. The first Wuhan MCH was launched on February 5, 2020. Zhang et al. has discussed the effects of MCHs implementation [24]. The incidence in Wuhan decreased slightly, the number of newly recovered cases increased significantly daily, and the number of new deaths remained stable. During the construction of MCHs, NDRX (National Development and Reform Commission) invested 230 million yuan within the government budget [25].

Nonetheless, the practice potentially results in a budget deficit. Terrones et al. support previous studies that budget deficit pushes inflation in high-inflation or developing countries but does not have a positive connection in advanced economies or low-inflation zones. Moreover, the relationship is stronger during the high inflation period [26]. If the practice were widely applied, the worldwide inflation crisis would aggravate high risk. In order to balance the potential crises, considering corresponding opportunity costs or countermeasures is unavoidable by governments.

Wuhan is the first city to implement lockdown under the pandemic. The practice was imposed on Jan 23rd, 2020, with the banned transportation to and from Wuhan. The effectiveness in external areas was multivariate to evaluate, whereas the outbreak was ongoing without approaching the peak. With the enhancement of quarantine and isolation, the figure of confirmed cases was led to be less than the estimation studied by Wang et al. [22]. Wuhan's infected people could reach 227,989 by the end of February 2020 without efficient lockdown, compared to the figure of confirmed cases as 49122 reported [23]. Based on the per capita cost of treatment (141,250 yuan) for patients in the period of Jan 23rd, 2020 to Feb 23rd, 2020, the cost of treatment for epidemic patients alone would amount to 32.204 billion, whilst the direct economic loss of health is about 2142.5 million yuan in a month, it would add up to >30.06 billion without the lockdown [7]. European nations have adopted this policy, but the White House declares that they would not follow the pace.

In addition to these listed policies targeted in domestic, the following analyses are raised more about international collaboration. It is proposed and broadly approved that only soaring the vaccination rate of humankind could lessen the incidence rate and achieve virus self-elimination. The first and most important policy is the encouragement of worldwide vaccination, trying to achieve herd immunity. Delta variant was reported to disappear in Japan in late 2021. The fact behind this was that Japan had born a high Covid vaccination rate of over 70%, reaching 78.88% on Jan 3rd 2020 [32]. The world shall share the great efficacy brought by the high vaccination rate. Nonetheless, the vaccine

is still inefficient and ineffective, with uneven roll-out and distribution, vaccine hesitancy, targeted population boundedness, and validity period, which are further analysed in the discussion part in the economic and international relation perspectives. [33]

Furthermore, practices in preventing imported viruses have been implemented in China with the remarkable contribution in infection control, but introduce side effects and other issues at the economic and political level. Before entering China's territory, air travel fusing is commonly adopted, which boosts the ticket price by shrinking the supply—functioning when the primary screening through PCR nucleic acid tests before boarding is extremely ineffective. According to local pandemic prevention guidelines in China, after checking the customs, 14-day hotel quarantine on personal expense is compulsory, and the latter home quarantine lasts for 7 days or longer. These have dramatically disincentivized domestic foreign tourism and promoted the development of online business and study conferences, pushing the transformation and development of online websites and applications. External economies of scale brought by online working platforms have been driven to grow. Promoting remote work saves the cost of production and increases productivity. Whilst keeping and increasing the supply of products benefits the recovery after the pandemic.

In addition, the enhancement in customs check on imported goods for nucleic acid tests successfully reduces the possibility of infection through the parcel express with intervention in international trade. It is undeniable in reducing the black-market transaction of demerit goods. In the meantime, the government has prohibited importing goods from firms that keep being tested positive. Consequently, domestic manufacturers and retailers have to find other cooperation in the short run. Moreover, this stands for heavy loss to countries relying on export. The pandemic increases potential costs for companies and nations to trade with China, aggravates deglobalization, and deteriorates international relations.

Whereas the coordination with CMC, 2000-ton frozen pork were allocated and arrived in Wuhan Central Reserve in tackling the shortage, further analysing the supply and demand of pork in and nearby Wuhan, improving supply and market utility. During the pandemic, China experienced a reduction in an interest rate until the end of April 2020. The curve in February was in the steepest stage, with the greatest decline in interest rate within the period [27]. Meanwhile, CPI in February 2020 grew 5.2% on a month-on-month basis, PPI showed a month-on-month decline of 0.4%. Both measures were in the pattern of disinflation in the following months [28]. This illustrates that the effect of inflation brought by effective and successful government expansionary policies during the pandemic is negligible. Pork price pushed the CPI in February 2020 by 3.2%, contributing 62% of CPI elevation. With the steady and gradual recovery of production, substantial success brought by buffer stock implementation led to a reduction of 7 yuan in price in April of the same year compared to the highest price in February. Whereas the Covid situation was improved, the newborn rate of piglets soared by 3.4%, 7.3% respectively in February and March, implying the substantial increase in pork supply [29] [30]. In addition to the higher seasonal demand in summer, the demand for pork increased after the Covid prevalence in China. The growth in price of pork was shrinking by the end of July 2020 and in equilibrium in the 2nd week of August [31] with the improvement in recovery and productivity, whilst the growth of CPI was 2.7%, in which the price of pork drove 85.9%.

4. Discussion: Improvement, global recovery, and countermeasures against potential inflation

Japan reached a more than 70% full vaccination rate in the 2nd half-year of 2021. The incidence declined on a month-on-month basis. In the meantime, Japan's economy was in the recovery stage where the inflation rate continued to manifest a steady and slight increase pattern, reaching 1.5% in November [34]. This illustrates that a high vaccination rate could lead to economic recovery. Nonetheless, in order to achieve a worldwide result, several issues still need to be solved. Vaccine hesitancy is the one that directly influences the vaccination rate. Politicians might find that utilizing the appropriate propaganda in education could considerably reduce the infection and mortality rate. Whilst not harming the economic objectives, social objectives benefit from increased social benefit.

Additionally, distributing vaccines more evenly is the challenge of enhancing international collaboration. Humankind and all governments should realize the importance of peaceful international assistance. Maximize the possibility of achieving herd immunity, lowering the infection rate, thereby allowing the world to return to economic recovery gradually. Effectively tackle the supply shortage and inflation problem driven by the covid pandemic.

As air travel fusing was implemented by China temporarily to several airlines, it was accompanied by international relations crisis and tremendous opportunity costs. Nations could consider the practice as a violation and market disturbance. The U.S. government decided to suspend 44 China-bound flights from January 30 2022[35]. Whilst choosing to reduce the burden of the domestic health care system, opportunities for people abroad to go to China are also shrunken. In addition, the increase in ticket prices causes young graduates and capitals to determine not to return to their country for work, bringing about brain drain to a certain extent; meanwhile, making the registered permanent residence for attracting overseas students less effective. This would indirectly influence the housing tertiary industry.

The policy may not be suitable to promote since it leads to immobility of skilled labour and enterprises. Air travel fusing does not favour international collaboration, specialization, or achieving economies of scale. Therefore, taking the risk of not controlling the pandemic effectively, there could be a more severe worldwide inflation crisis.

Expansionary demand-side policies do not contribute significantly to inflation. Potential inflation could be addressed and prevented from the supply side. China has invested tremendously in infrastructure and epidemic control in the 1st half-year of 2020, with the well-controlled pattern of the inflation rate. After evaluating the main variants that greatly impact inflation and CPI value, directly and indirectly, supplying more successfully could tackle the challenge. Moreover, sustainably provide positive market effects and elasticity for fluctuation for the latter recovery period.

Nonetheless, lockdown brings remarkable damage to the economy. China did not suffer much because of the granary reformation in the late 20th century. On the one hand, China had most land not undergoing lockdown. On the other hand, the reformation had provided the market with abundant food inventory storage compared with masks. Nevertheless, it is revealed that the health burden caused by this pandemic was estimated to be 4.49 billion yuan, with the loss of residents' mental health reaching RMB 114.5 billion. The direct economic losses reached 21.6 billion yuan, and all industries' monthly indirect economic losses were 36.4 billion induced from the lockdown [7].

In contrast, the U.S.'s food-at-home (grocery store or supermarket food purchases) CPI increased 0.3 percent from October 2021 to November 2021 and was 6.4 percent higher than November 2020 [36]. Similarly, during the lockdown in London from Jan to July 2021, the CPIH 12-inflation rate kept rising with the considerable price increase in household services and transportation [37]. Additionally, effective health policies have been studied to bring psychological burden to frontline staff. Therefore, governments should not limit their medical and economic actions but implement parallel psychological assistance measures [38].

5. Conclusion

Health policies are worthwhile enough to be strongly recommended and widely adopted to prevent and control the inflation crisis, which matters pandemic life seriously. Mask supply stabilization possibly requiring reallocation of resources is successful in community infection prevention. Although corresponding practices induce short-run misallocation and loss, it is beneficial in improving productivity and achieving economies of scale in mass production, thereby allowing production resumption and controlling inflation crisis.

Some policies are implemented on domestic health care services evaluated, which often accompany huge opportunity costs and economic burden. The price ceiling on the PCR test allows resumption and dynamic efficiency to become more practicable. In contrast, the construction of MCHs requires huge financial investment, possibly leading governments to the budget deficit, thereby contributing to exacerbating the inflation crisis. Furthermore, this is only economic and

practicable in areas with a big population density. Lockdown in China 2020 was only implemented in several places under the prevalence of covid. The sole policy should contribute to the inflation crisis and induce heavy economic loss. The great effectiveness it brings, directly-resulting well-controlled status, stabilizes demand and supply.

Furthermore, the effective and successful government expansionary policies during the pandemic outbreak would not contribute to inflation. It is the first time for the world to undergo such a prevalent pandemic under the extent of globalization ever reached. International relations and collaboration have become considerably important ever in history. Nevertheless, air travel fusing and embargo on certain imported goods are policies that effectively control the virus spread domestically, accompanying the original international market disequilibrium and political crises. These practices are relatively less adaptable, and China has announced to phase the border entrance resumption over 3 years in early 2022 [39]. Moreover, buffer stock is studied to effectively address inflation, implementing highly-weighted products in the consumer price index. It could be a countermeasure to prevent potential inflation from health policies such as a lockdown.

All policies would bring side effects to society. The gap in this research is that it does not consider social-cultural differences among countries. The paper only studies the cost and effectiveness in tackling the inflation crisis between 2 countries. The direct results of the discussed policies should generally be the same as there are patterns. Nonetheless, the severity and variety of side effects could give rise to a different extent of inflation among countries.

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