A critical examination of policy objectives and instruments for a sustainable and inclusive post-pandemic recovery

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Abstract

Purpose – This paper aims to provide rigor and clarity to the current coronavirus disease 2019 (COVID-19) policy debate in Vietnam. It is intended to serve a three-fold purpose. First, it critically examines the framing of policy objectives and the utilization of policy instruments for controlling COVID-19 in Vietnam. Second, it goes beyond policy design to consider the coordination and implementation of COVID-19 policies in Vietnam. Third, it discusses policy measures needed for post-COVID sustainable and inclusive growth, especially the sharing of the public costs of COVID-19 policies.

Design/methodology/approach – The paper employs a positivist research framework that emphasizes the causal relationships between the variables under study. The method of analysis is mixed, combining both qualitative and quantitative techniques. In particular, a simple, theoretical model is constructed to evaluate the welfare effects of alternative vaccine strategies. No primary data were collected.

Findings – The Vietnamese government's dual goals of containing the pandemic and maintaining economic growth, while being reasonable, need clarification and updating. It is argued that in the longer term, there is no trade-off between saving lives and protecting the economy. The downward revision of the projected growth rate and commitment to a coherent and transparent vaccination strategy is the best way to move forward in Vietnam. The choice of vaccine rollout order involves a consideration of ethics. It is suggested that it is appropriate to vaccinate elderly people and people with underlying medical conditions first. Complementary policy measures to stimulate aggregate demand and supply need to be expanded but also more targeted. Effective coordination and implementation of COVID-19 policies remain a serious challenge for Vietnam. Finally, inclusive growth and sustainable development should take account of human capital development and distributive justice.

Social implications – The paper proposes a number of policy measures which have social impact. These include the government's formal commitment to a vaccine first strategy and a relief package of essential goods to poor and disadvantaged households.

Originality/value – The paper contributes positively to the current COVID-19 policy formulation by providing rigor and clarity to the framing of policy objectives and the utilization of policy instruments. While vaccination has been adopted as a national policy instrument, its design and implementation can be much improved. The paper recommends an appropriate vaccine strategy for Vietnam. It also draws attention to other

dimensions of successful policies, namely, communication, coordination, implementation and distributive justice.

1. Introduction and context

The coronavirus disease 2019 (COVID-19) pandemic, caused by the SARS-CoV-2 virus, originated from Wuhan City in December 2019 and spread rapidly across the world. It soon became the most pressing and dominant issue in both developed and developing countries, even overshadowing such issues as climate change or the US–China trade war. The optimism of early recovery, based on the successful discovery of effective vaccines in late 2020, has been dashed mainly due to the emergence of Delta, a highly contagious virus strain. Delta, first identified in India in December 2020, has quickly become the most dominant variant and has been responsible for recent waves of COVID-19 around the globe (Bernal *et al.*, 2021).

While there is still much to learn about the SARS-CoV-2 virus, the adverse consequences of COVID-19 have been both significant and multidimensional. From the health perspective, COVID-19 is by far the most serious pandemic since the 1918 Spanish flu. By late October 2021, it was reported that there had been over 242 million confirmed cases, including 4.9 million deaths (World Health Organization (WHO), 2021). This has imposed tremendous pressure on health systems across countries, not counting the long-term mental and physical health impacts (del Rio, Collins & Malani, 2020). From an economic perspective, COVID-19 has triggered the deepest economic recession in nearly a century, causing a global GDP contraction estimated to be between 5.2% (World Bank, 2020) and 6% (Organisation for Economic Co-operation and Development (OECD), 2020) in 2020. COVID-19 has also had many adverse social impacts, ranging from individual depression, harmful consumption and domestic violence to civil unrest and political upheaval. In short, COVID-19 has exposed serious, inherent weaknesses in national and international social and economic systems (OECD, 2020).

Unlike other contagious diseases, COVID-19 has not been confined to the least developed countries. Directly and indirectly, no country has remained untouched, and Vietnam is no exception. In 2020 and the first four months of 2021, thanks to its early tracing, testing and strict quarantine strategy, Vietnam excelled in controlling the spread of COVID-19, with an infection rate of 0.003% over the whole population (=2,928/98.5 million) and a death rate of 1.2% overall infected cases (=35/2,928) (Worldometer Coronavirus, 2021). On the economic front, Vietnam enjoyed a GDP growth of 2.9% in 2020, the highest in Southeast Asia, when many other countries were entering a recession (World Bank, 2021a).

Not surprisingly, Vietnam's early COVID-19 performance was praised by the World Bank (2021b), the International Monetary Fund (IMF) (Dabla-Norris & Zhang, 2021), and The Economist (2021). According to the Lowy Institute (2021), an independent think tank in Australia, Vietnam was ranked second worldwide in the control of COVID-19 infection at the end of January 2021. Keeping in mind Vietnam's proximity to China, its population size, its level of economic development and its reliance on international tourism, Vietnam's COVID-19 record in 2020 can be justly considered as the best in the world. In this optimistic climate, the Vietnamese government anticipated an economic growth rate of 6.5% in 2021 (Dabla-Norris & Zhang, 2021).

In the last five months (from late April to late September 2021), Vietnam has struggled to cope with a new wave of COVID-19 outbreaks. While the pandemic has occurred in all 63 provinces in Vietnam, it has been particularly severe in key populous economic centers with significant contributions to Vietnam's GDP, such as Ho Chi Minh City (HCMC), Binh Duong and Dong Nai. Thus, the severity of COVID-19 is national in terms of economic impact. At the

household level, income losses from employment or self-employment may have given rise to poverty and created a new phenomenon of urban poors. There is also evidence of mental stress arising from long periods of lockdown or from involuntary return to hometowns. The health sector, especially public hospitals, has been under tremendous pressure. The well-being of frontline health workers is also under threat. At the same time, the overall death rate from COVID-19 to date has increased substantially to about 2.4%, although the numbers of both new cases and new deaths have been in rapid decline since the beginning of September 2021 (Worldometer Coronavirus, 2021).

At the business level, there have been revenue losses and a discontinuation of inputs (especially labor input), causing the collapse of many small businesses, although COVID-19's impact on business has varied from one industry to another. In the labor markets, there have obviously been job losses and serious disruptions to urban labor supplies in HCMC and Binh Duong due to the departure of migrant workers. In the commodity markets, the local and global supply chains have been severely disrupted. While the local transportation of final products (e.g., rice, fruits, basic foodstuffs) from one region to another has been blocked, export orders for garments and shoes have continued to shift to overseas countries.

It seems that, perhaps because of its early successes, the Vietnamese government underestimated the seriousness of the Delta variant and therefore did not prioritize a coherent vaccine strategy. Policy responses to recent outbreaks have not always been systematic and sometimes even inconsistent [1]. Since early August 2021, vaccination has rapidly accelerated and, by October 23, 2021, about 28.2% of the country's adult population were fully vaccinated, with 55.6% having received one shot (Our World in Data, 2021; Covid-19 Vaccination Information Gate, 2021). However, as discussed in Section 4 of this paper, the vaccination rollout in Vietnam has generally not been consistent with international practice and medical advice.

In view of the above discussion, the overall aim of this paper is to provide rigor and clarity to the present COVID-19 policy debate and formulation with a view toward achieving post-pandemic recovery in the shortest timeframe possible. The paper intends to achieve three specific objectives. First, it critically examines the framing of policy objectives and the utilization of policy instruments for controlling COVID-19 in Vietnam. Second, it goes beyond policy design to consider the coordination and implementation of COVID-19 policies in Vietnam. Third, it discusses policy measures needed for inclusive and sustainable growth. In this paper, post-pandemic recovery is interpreted to mean substantial improvements in both health and economic performance. In term of health performance, recovery means a low rate of virus infection and a low death rate of infected persons, such that public hospitals can function in a reasonably normal manner in looking after other patients.

The remainder of this paper is structured as follows. Section 2 presents a very brief and succinct review of the COVID-19 literature and evidence, focusing on issues that are relevant to the paper. Section 3 explains the research methodology and constructs a theoretical model to evaluate the welfare and economic effects of alternative vaccine strategies. Section 4 consists of policy analyses in five related areas, namely, the framing of COVID-19 policy objectives, vaccine strategy, aggregate demand and supply stimulation measures, challenges of policy coordination and implementation, and inclusive growth and sustainable development issues. The final section provides some conclusions based on the discussions.

2. Brief literature review
The literature on COVID-19 is substantial and growing rapidly. The aim of this section is to present a very brief and selective overview of the literature, focusing mainly on some aspects of the literature that are relevant to the discussions in the present paper.

There are two main strands of the literature relevant to this work: the hard science literature (nature of the virus, transmission, mortality, prevention, treatment, vaccines and

vaccination, public health, long-term impact, etc.) and the soft science literature. Within the soft science strand, the economic literature has been the most dominant (Brodeur, Gray, Islam & Bhuiyan, 2021). Economic research on COVID-19 has been conducted by both private researchers (for a list, refer to National Bureau of Economic Research (NBER), 2021) and transnational institutions (OECD, 2020; World Bank, 2020). The economic literature on COVID-19 can be conveniently divided into two strands: one that examines the effects of COVID-19 on individual markets (labor, assets, etc.) or sectors (households, firms), and one that examines the effects of COVID-19 on the aggregate economy.

Although economic tools (opportunity cost, marginal analysis, costs and benefits principles, etc.) can be used to analyze the pandemic, there are no well-known standard models with built-in mechanisms to examine the effects of COVID-19. To rectify this deficiency, economists have attempted to link the SIR (susceptible–infected–recovered) or SEIR (susceptible–exposed–infected–recovered) model for the spread of disease to standard economic models to study either the effects of COVID-19 on the macroeconomy or the best strategies for limiting or managing the spread of the disease (Krueger, Uhlig & Xie, 2020; Lloyd & Dixon, 2021).

Evidence-based research has revealed several key features of the COVID-19 pandemic. First, COVID-19-related deaths are far more likely in certain demographic groups, such as people over 60 or those with pre-existing medical conditions, like cardiovascular disease, hypertension, diabetes, respiratory disease and cancers (see, for example, Williamson, Walker, Bhaskaran, Bacon & Bates, 2020). Second, the current waves of COVID-19 outbreaks around the world have been primarily caused by the Delta variant (Bernal *et al.*, 2021). The highly contagious Delta variant has affected the meaning of post-pandemic recovery, as discussed below.

Third, vaccination is, at this stage, the most effective tool against COVID-19 although, due to the short development time and technological novelties, there are several issues with the approved vaccines that only the passage of time can clarify (Forni, Mantovani, & on behalf of the COVID-19 Commission of Accademia Nazionale dei Lincei Rome, 2021). Dr. Kristalina Georgieva, the IMF's Managing Director, confirmed the importance of vaccination by declaring that "[v]accine policy this year, probably next year, is going to be the most important economic policy, may beat even monetary and fiscal policy in terms of significance" (CNBC, 2021).

Fourth, medical studies on COVID-19, cited above, indicate that vaccine rollout should prioritize the most vulnerable groups, namely, elderly people and people with underlying health conditions. Further, in a study on the optimal strategy for a COVID-19 vaccine rollout, Tekant (2021) concluded that in cases where the number of infected persons is too large, the objective of no infection is no longer feasible, and it is therefore necessary to prioritize minimizing cases of severe infection.

Fifth, there is now a consensus between medical and economic researchers that saving lives and protecting the economy are non-trade-off objectives. In their study of 25 highly developed countries and 10 US states, Kochańczy and Lipniacki (2021) demonstrated that "the trade-off between the death toll and economic loss is illusory: high death toll correlates with deep and long-lasting lockdown causing a severe economic downturn." This conclusion is supported by economists; see, for example, Aghion, Oliu-Barton, and Pradelski (2021).

Sixth, the interpretation of post-pandemic seems to have changed over time. In 2020, before the emergence of the Delta variant, post-pandemic was at times optimistically interpreted as a zero or near-zero rate of new COVID-19 cases (see, for example, Aghion *et al.*, 2021). After the appearance of the highly contagious Delta variant, post-pandemic has been reinterpreted to refer to the new normal that would prevail when herd immunity to COVID-19 was achieved due to a very high rate of full vaccination. However, there is no universal consensus on what the vaccination threshold should be. Prior to the Delta-related COVID-19 outbreaks, a threshold rate of more than 70% was regarded as adequate. Some medical experts have recently suggested that the rate may need to be even higher for the Delta variant. For example, Professor

Alain Fischer, Chairperson of the Vaccine Strategy Orientation Council of France, indicated that a full vaccination rate of 90% is required for herd immunity in France (Rioux, 2021).

The above brief and selective review of the literature provides the basic health and economic knowledge on which subsequent analyses in the remainder of this paper are based.

3. Research methodology and theoretical model
3.1 Research methodology
The methodology of any research involves three separate but related elements: research framework, research method and data collection. The research framework of this paper is decisively positivist because its underlying assumption is that there exist various causal relationships between the variables under study. For example, based on current medical knowledge, it is assumed that a high rate of COVID-19 vaccination (for example, 80% or more of the relevant population) would lead to effective community immunity, at least with known variants of the virus, giving rise to a lower number of serious COVID-19 cases and deaths. As a result, the existing pressure on the public health system would gradually disappear. Since there is no widespread lockdown or quarantining, the disruptions in the labor and commodity markets can also be gradually resolved.

The technique of analysis is mixed, combining both qualitative and quantitative methods based on deductive reasoning. In particular, we constructed a simple, theoretical model to evaluate the welfare and economic effects of alternative vaccine strategies. It is important to stress that the analysis in this paper is based on an economic perspective, taking current and reliable medical knowledge on COVID-19 as a given. Neither primary data collection nor quantitative analysis was performed. However, to support various assertions or arguments, quantitative evidence drawn from secondary data sources will be provided whenever it is appropriate to do so.

As stated in the previous section, vaccination is currently the most effective policy instrument against COVID-19. An important aspect of any vaccine strategy is the order of vaccine rollout in terms of recipients' age or underlying health conditions. We note that the idea of minimizing deaths cannot be derived from pure economic rationalism alone as there may be some economic advantages in having a smaller population of elderly or chronically ill people. Some consideration of ethics is necessary to justify the objective of minimizing the death rate resulting from COVID-19. To this end, we now construct a simple theoretical model to prepare the ground for the discussions that follow.

3.2 Theoretical model
For simplicity, we consider a country (or a region or a city) whose population has only two categories: (1) elderly people (older than 65 years) and non-elderly people with comorbidities, and (2) workers. There are N persons in category 2 and λN persons in category 1 with $0 < \lambda < 1$.

We suppose the output y is given by a Cobb–Douglas production function

$$y = A(Nh)^{\alpha}K^{1-\alpha},\ 0 < \alpha < 1,$$

where h denotes the human capital of a worker and K the capital input. In the short term, the capital K is given and equals K^-. We can thus write

$$y = A^-(Nh)^{\alpha} \text{ where } A^- = AK^-1 - \alpha.$$

All people are assumed to consume the same quantity c, which is given by

$$Nc + \lambda Nc = y \Leftrightarrow c = A^-(N\,h)^{\alpha}/N(1 + \lambda N) \tag{1}$$

The social welfare function of this country (region/city) is of the form

$$W = (Nc)^\gamma + \theta(\lambda Nc)^\gamma = (Nc)^\gamma(1 + \theta\lambda\gamma),\ 0 < \gamma < 1,\ \theta \geq 0 \qquad (2)$$

The parameter θ characterizes how the society values the well-being of people in category 1. The larger the value of θ, the higher the social valuation of the welfare of people in category 1. We will suppose that this country (region/city) cares for people in category 1, that is, $\theta > 1$.

At the beginning, $h = h_0$, $\lambda = \lambda_0$, $y = y_0 = A(Nh_0)^\alpha$, $c = c_0 = A(Nh_0)^\alpha/N(1 + \lambda_0 N)$, and $W = W_0 = (Nc_0)^\gamma + \theta(\lambda Nc_0)^\gamma$. We then suppose that this country (region/city) receives a quantity of vaccines $V = N$ (i.e. there is vaccine scarcity).

3.2.1 Strategy 1. We vaccinate only people in category 2. Since the people in category 1 will not be vaccinated, many of them will get infected and pass away. Their number will decrease from $\lambda_0 N$ to $\in \lambda_0 N$ with $0 < \in < 1$. The output remains the same since the workers, being vaccinated, are healthy. The individual consumption c_1 is

$$c_1 = A^-(Nh_0)^\alpha/[(1 + \lambda \in)N] = c_0(1 + \lambda N)/(1 + \lambda \in N) > c_0 \qquad (3)$$

The value of the social welfare function becomes

$$W_1 = (N_{c_1})^\gamma[1 + \theta(\in\lambda)^\gamma] = W_0[(1 + \lambda N)/(1 + \lambda \in N)][1 + \theta(\in\lambda)^\gamma]/[1 + \theta\lambda)^\gamma] \qquad (4)$$

when ε is small, that is, the mortality rate is high for people in category 1, then $W_1 < W_0$. In this case, the country faces a dilemma: The economy performs better but the social welfare is lowered. However, we suppose that the human capital h depends not only on the skill of the workers but also on their mental spirits. The deceased persons are either parents or relatives of workers. As a result of the passing of some people in category 1, workers may be in low spirits and their human capital accordingly decreases from h_0 to $h_0(1-\delta)$, where $0 < \delta < 1$. The output decreases correspondingly to $y_2 = y_0(1-\delta)^\alpha$. The individual consumption c_2 becomes

$$c_1 = y_0(1 - \delta)^\alpha/[(1 + \lambda \in)N] = c_0(1 - \delta)^\alpha(1 + \lambda N)/(1 + \lambda \in N) \qquad (5)$$

If δ is close to 1, that is, the workers' spirits are strongly sensitive to the deaths of their parents and relatives, not only does social welfare decrease but the economy is also adversely affected.

3.2.2 Strategy 2. We first vaccinate people in category 1. The remaining quantity of vaccines, $(1-\lambda)N$, will be for the workers. Being partly vaccinated, some of the workers will get infected with COVID-19. The human capital of the workers will be reduced from h_0 to $h_0(1-\delta)$. The new output will be

$$y_3 = A^-1 - \delta'^\alpha N^\alpha h^\alpha \qquad (6)$$

We assume that, since the workers are relatively young, if they get sick, they will not pass away. The individual consumption c_3 will be

$$c_3 = c_0(1 - \delta')^\alpha < c_0 \qquad (7)$$

However, since the parents and relatives of the workers are vaccinated and remain alive, the workers will be in good spirits. Their human capital may thus be enhanced, changing from h_0 to $h_0(1-\delta')^\alpha(1 + \eta)$ $h_0(1-\delta)^\alpha(1 + \eta)$, where $\eta > 0$ (η is due to their good spirits). The output becomes

$$y_4 = A^-N^\alpha h^\alpha(1 - \delta')^\alpha(1 + \eta) = y_0(1 - \delta')^\alpha(1 + \eta) \qquad (8)$$

If $(1 - \delta')^\alpha(1 + \eta) > 1$, then this vaccination strategy is beneficial. It improves the economic performance and keeps the welfare at the initial level.

3.2.3 Strategy 3. The quantity of vaccines V is larger than the total number of people in both categories, that is, $V > (1 + \lambda)N$. This is indeed a blessing. We thus vaccinate both categories. There is no conflict between keeping the economy in good shape and caring about people in category 1.

3.2.4 A more flexible definition of category 2 people. The country (region or city) may have to decide between first vaccinating the adult population (aged 18 to 65 years old) or the population in category 1. In this case, category 2 will denote the population from 18 to 65 years old, excluding those with comorbidities. The new category 2 also includes the workers since the retirement age in Vietnam is below 65. If N denotes the number of persons of new category 2, only $\zeta N (\zeta < 1)$ are workers. The production function will now be $y = A^{-}(\zeta h_0)^{\alpha} N^{\alpha}$. All of the results above apply.

4. Policy analysis
4.1 Framing of COVID-19 policy objectives
In a well-cited study, Rochefort and Cobb (1994, p. 5) explained policy framing as follows:

Framing involves the definition of a policy's image, or how issues are portrayed or categorized. Issues can be framed to make them appear "technical" and relevant to experts, or linked them to wider social values to heighten participation.

Thus, framing can be interpreted as a metaphor to describe the ways in which we understand, and use language selectively to portray, policy problems. It is apparent that policy framing is particularly relevant in the context of COVID-19, where there are considerable uncertainties and social stresses.

Vietnam is supposed to have pursued dual COVID-19 policy objectives, namely, containing the pandemic while maintaining socioeconomic recovery. Such policy framing is plausible, appealing to the general public and consistent with that of other countries. The key advantage of framing policy objectives in general terms is that the government can pursue different specific objectives within the broad goal. However, from a technical point of view, these policy objectives require clarification and revision in response to recent developments of the pandemic. Further, such policy framing may lead to a possible misinterpretation regarding the trade-off between the two objectives. These issues will be considered in turn below.

First, the objective of containing the pandemic requires clarification. This is because preventing the spread of COVID-19 involves many different dimensions, such as reducing (1) the number of new cases/infection rate, (2) the number of severe cases that require hospital treatment/rate of severe new cases (over the population), or (3) the number of deaths/death rate to acceptable levels. Acceptable levels can be some arbitrarily low threshold, or they can be determined by the "normal" capacity of the public health sector where normal capacity takes the need to look after non-COVID-19 patients into account. While the different specific objectives are positively correlated, each can be best achieved by a different policy instrument. For example, to minimize the new infection rate, both lockdowns or vaccination can work, whereas to minimize the death rate, it is most effective to first vaccinate the vulnerable (generally interpreted as people aged over 65 and people with underlying health conditions). In the midst of the grave outbreak, it seems ethical and plausible to interpret pandemic containment as the minimization of the number or rate of severe illness and death.

Second, the second objective requires frequent and urgent updating. While the Vietnamese economy can still grow in 2021, the projected GDP growth rate of 6.9% is clearly unachievable given that the growth rate in the first six months of 2021 was only 5.64% [General Statistical Office (GSO), 2021]. In August of this year, the World Bank (2021c, p. 14) forecast that Vietnam's economy could grow by about 4.8% in 2021 and converge toward the pre-pandemic GDP growth rate of 6.5% to 7% from 2022 onward. More recently, the Asian

Development Bank (ADB, 2021) expected Vietnam's GDP to grow by 3.8% in 2021 and 6.5% in 2022. The ADB and World Bank estimates thus suggest that Vietnam's economy is likely to grow by between 2% and 3.7% in the last six months of 2021. Their estimates are disappointing to the Vietnamese government but entirely reasonable considering the circumstances. It is thus sensible for the Vietnamese government to officially announce, as soon as practicable, a similarly downward revision of its growth projection for 2021.

Third, many people, including economists, perceive a trade-off between the dual objectives, that is, better (worse) pandemic control implies worse (better) economic recovery and vice versa. This perception is not generally correct and requires clarification. In 2020, when COVID-19 mainly attacked the elderly and there was no vaccine, the key policy instruments were tracing and mobility restriction. In this situation, one may talk about policy trade-off as mobility restrictions improve pandemic control at the expense of employment and output. However, in 2021, the Delta variant has attacked the entire adult population and working vaccines are now available. Thus, there now exists no trade-off between policy objectives in the long run, only good health outcome and economic recovery when COVID-19 is effectively controlled through an effective vaccination strategy.

According to Resolution 75/NQ-CP, Section II.1, released on July 14, 2021, the Government of Vietnam is committed to focusing on fighting COVID-19 first. This response is clearly consistent with the informed views discussed above. Thus, in terms of policy framing, it is appropriate for the Vietnamese government to adopt a coherent and transparent vaccine-first policy together with an official announcement of a revised and lower projected rate of economic growth for 2021. Such an approach, if successfully implemented, can be expected to yield not only desired health and economic outcomes but also socially calming effects.

4.2 Vaccine strategy
As argued previously, a vaccine-first strategy is central to accomplishing both policy goals. A coherent and transparent vaccine strategy can be defined in terms of four broad, key elements: aims, recipients and demand for vaccines, supply of vaccines and subnational allocation, and vaccine rollout (including priority groups).

4.2.1 Aims. The specific aims of the vaccine strategy are as follows: (1) fully vaccinate the population of intended recipients in the shortest time possible given the availability of vaccines, and (2) ensure that the vaccine rollout follows an appropriate order based on priority provinces and groups. It is conceivable that the vaccine strategy may be ongoing with annual boosters, at least for certain priority groups, until a longer-lasting vaccine has been found.

4.2.2 Recipients and demand for vaccines. The Vietnamese government's policy has thus far restricted intended recipients to adults aged 18 or over. Following international practice, when the vaccines are more readily available, it may be desirable to extend the vaccination program to younger people. Based on the 2019 Census, the number of people aged 18 or over in 2019 in Vietnam was 68.9 million (GSO, 2020: Table 4). Adjusting for the population growth rate, the total number of intended recipients would be about 70.6 million, corresponding to about 141.2 million vaccine doses for full vaccination. Since only about 73.26 million doses have been administered as of October 23, 2021 (Covid-19 Vaccination Information Gate, 2021), about 68 million doses still need to be administered to fully vaccinate the whole adult population of Vietnam.

4.2.3 Supply and distribution of vaccines. Vietnam is not yet able to produce vaccines domestically, although the local vaccine (Nanocovax) is promising. Vietnam currently relies on overseas sources, such as the WHO (COVAX program), foreign aid, government purchases from vaccine producers and other countries, and authorized private imports. The approved vaccines include Astra-Zeneca, Sputnik 4, SinoPharm, Pfizer, Johnson & Johnson, and

Moderna. The data on vaccine availability are not precise due to uncertainties regarding vaccine arrivals and thus tend to change from time to time. The Health Authority expects Vietnam to receive 150 million vaccine doses during 2021 (CCI France Vietnam, 2021), more than sufficient to satisfy the projected aggregate demand of 141.2 million doses. The key issue in the supply of vaccines is the need to ensure a regular flow of about five million doses a week to guarantee smooth vaccine administration for the remainder of the year. In terms of subnational allocation, priority is given to (1) pandemic-hit provinces and cities, (2) localities in key economic regions, (3) industrial and populous localities, and (4) localities with international border gates.

4.2.4 Vaccine rollout. There are two dimensions in a vaccine rollout, namely the duration of the campaign and, most importantly, the priority groups. The duration of the vaccine campaign depends on two variables: the daily flow of vaccines from overseas and Vietnam's ability to administer vaccine doses per day. During the late September–late October 2021 period, the average daily vaccine administration rate was about 1.2 million does per day (Covid-19 Vaccination Information Gate, 2021). That rate of vaccination is very difficult to maintain when vaccines do not arrive on time or when vaccinating people in isolated or mountainous provinces. Assuming conservatively that Vietnam can administer, on average, 0.7 million doses per day (or 4.9 million doses per week), the remainder of the current vaccination rollout could be completed or mostly completed in about 98 days from October 23, 2021 (end of January 2022, just before Lunar New Year).

In terms of vaccine priority, the Vietnamese authority has recognized 16 categories of priority groups (CCI France Vietnam, 2021) [2]. While the list of priority groups is very comprehensive, the vaccine rollout has so far tended to neglect the following two groups:

(1) Group A: elderly people (aged over 65) and people with underlying health conditions; and

(2) Group B: essential workers who guarantee the operation of infrastructure and the production of necessary goods and services (frontline workers in the supply chains, such as long-distance drivers, workers in wholesale markets, shippers, etc.) [3].

We perceive that the first and most important aim of vaccination is to minimize cases of severe infection and death. The rationale for considering Group A as a priority group is that if people in Group A are infected, they have the highest probability of death or severe illness, which would require special medical treatment. Based on data from the Vietnamese Ministry of Health (Vietnamnet, 2021), there is one death for every two infected persons aged 75 or older, every three infected persons aged 65 to 74, and every 10 infected persons aged 50 to 64. For younger groups, the death rates are much smaller, only 0.2% (1%) for infected males (females) aged 18 to 29. The corresponding death rates for infected people aged 30 to 39 are 0.9% and 0.6%, respectively.

In view of the theoretical model discussed in sub-Section 3.2, if the quantity of vaccines is limited then vaccinating all of the elderly and chronically ill first and then the young is optimal, as this minimizes deaths and keeps the economy healthy, that is, no trade-off. If elderly people are fully vaccinated, then young people who live in the same households may bring COVID-19 home, but, with the protection of full vaccination, the elderly will be much less likely to become severely infected or pass away. We thus recommend the following vaccine rollout:

(1) Phase 1: first vaccinate Groups A and B and the remainder of the officially recognized priority groups (within that combined priority group, the order of vaccination can be random and proportional to the size of each subgroup).

(2) Phase 2: vaccinate the remainder of the adult population of Vietnam.

To estimate the total number of vaccine doses required for each stage of the vaccine rollout, we estimated the total number of persons in each of the above groups. Based on population, health, and employment data, making various plausible assumptions and eliminating double counting, [4] it is estimated that the priority groups consist of about 44.9 million persons, while the non-priority group consists of 25.7 million persons. The total number of vaccine doses required for priority and non-priority groups would be about 89.8 and 51.4 million, respectively. To complement the above vaccine rollout, we also recommend the following distribution of vaccines to provinces. Priority should be given to pandemic-hit cities and provinces such as HCMC, Binh Duong and Dong Nai. For the remaining provinces, it is proposed that vaccine allocation be based on the following objective criteria:

(1) Phase 1: distribution is proportional to the province's GDP share, and

(2) Phase 2: distribution is proportional to the province's population share.

We note that our proposed vaccine rollout, first publicized on August 9, 2021 (Nguyen, Tran-Nam & Le-Van, 2021a), differs from the official one, which has not yet, in practice, prioritized elderly people and people with underlying medical conditions. Our suggestion is completely consistent with proposals from the WHO representative (Vietnamnews, 2021) and foreign chambers of commerce (VNExpress, 2021) in Vietnam. We contend that, relative to the government's predominantly area-by-area, household-by-household vaccine rollout, the benefits of our proposal outweigh its slightly higher administrative costs. Since there are still about 68 million doses to be administered, there is still time to formally adopt our proposed vaccine rollout.

4.2.5 Other aspects of the vaccine strategy. Vaccination cannot be made compulsory in Vietnam. Refusing to be vaccinated is unlikely, although there has been some public resistance against SinoPharm. However, there should be a variety of economic and noneconomic incentives that can be considered to encourage people to be fully vaccinated, for example, salary penalties against frontline workers or full medical costs charged to COVID-19 patients who previously refused to be vaccinated, or the use of vaccination green cards (at least in the short term) to control access to public places. A final remark regarding the vaccine strategy deserves mention. A coherent and transparent vaccine strategy should also be supplemented by other medical and administrative measures to prepare for and cope with opening up the country. These associated measures include digital tracing, mask wearing, social distancing, "live well with the pandemic" messaging, case management, improving treatment, epidemiological surveillance and rehabilitating healthcare (Tu, 2021).

4.3 Aggregate demand and supply stimulation
Unlike previous crises, such as the financial crisis of the late 1990s or 2008–2009, COVID-19 has attacked both aggregate demand and aggregate supply at the same time. Mobility restrictions represent a large negative shock to aggregate demand. At the same time, supply chains in a number of industries have also been adversely affected because of a significant decline not only in foreign trade but also in domestic trade, leading to an increase in the prices of many goods and services. In that context, measures to stimulate aggregate demand and supply can be considered necessary and appropriate. There are two problems that need to be addressed: first, how far should the government go to stimulate supply and demand without jeopardizing the macroeconomy, and second, how should economic stimulation measures be targeted?

Vietnam's general government revenue was estimated at nearly 24% of GDP before the pandemic (OEDC, 2019) and, until mid-2021, the government had used relatively little of the national budget (about 1.4% of GDP) for policies related to COVID-19, especially in comparison to other, similar countries (4% of GDP for emerging countries and 1.6% of GDP

for low-income countries) (Dinh, 2021, p. 19). This was likely because the government had successfully controlled the pandemic in 2020 and in the first four months of 2021. According to the calculations of some economic experts (Dinh, 2021, p. 22), the Government of Vietnam can employ a supply and demand stimulus package of about 5% of GDP for each year, 2021 and 2022 (estimated at VND 433,000 billion per year), without affecting macroeconomic stability. Although public debt will increase in the following years, the government still has the ability to manage it, especially in view of very low international interest rates today. From a macroperspective, the government should also pay attention to the issue of price inflation, although that is not the focus of this paper.

The public costs associated with the vaccination strategy can be viewed as both a supply and demand stimulus, as high vaccination rates will lead to the lifting of the lockdown and the resumption of the supply and value chains. In addition, Vietnam has made certain achievements in the fight against COVID-19, including the production of face masks, test kits and even vaccines. Currently, the Vietnamese government and enterprises have launched encouraging projects and made progress in the production and diffusion of vaccine technology transfer. This may be an opportunity for Vietnam to make further investments in developing this strategic sector.

Demand and supply stimulus packages, in addition to short- or medium-term economic effects, are also meaningful in stabilizing people's psychology. Therefore, we support the proposal that the Government of Vietnam immediately introduce a budget package to provide relief to poor and disadvantaged households that have been adversely affected by the pandemic (i.e. sustained loss of employment or self-employment and difficulties in obtaining food). This relief could take the form of a package of basic necessities (food, water and electricity) for at least one month. The amount of relief would be based on the number of members of the household. Since Vietnam currently does not have any social safety net, such a package can be considered both necessary and effective.

Most of the budget for COVID-19 so far has focused on supporting businesses, mostly in the form of deferring income tax, value added tax (VAT) or land rent. The positive impact of these untargeted support packages is relatively small. The supply-stimulating policy needs to target the right businesses that *do* require support. More specifically, the Government of Vietnam needs to pay more attention to those industries that have been the most negatively affected, such as tourism, transportation, textiles, footwear, retail, and education and training. Based on the quarterly revenue declaration of each enterprise in these fields, the Vietnamese government can offer a cash support package depending on the level of revenue reduction of each business. Another important issue that needs urgent attention is the restoration of the food supply chain, which is critically important to household welfare.

4.4 Challenges of policy coordination and implementation

Good policy design alone is insufficient. Good policy design (right things) also requires good coordination and implementation (do things right) to be successful. This subsection examines Vietnam's capability in terms of large-scale policy coordination and implementation in dealing with the COVID-19 pandemic. It should be noted that, despite its 30-year plus transition toward a more market-based economy, Vietnam's deep roots in a command-economy style are still alive in policy making and implementation (i.e. governance) at all levels of government machinery, with all of its strengths and weaknesses.

Thanks to its large and extensive network of local staff at the communal/grassroots level, the Vietnamese government had been able to mobilize human resources and implement COVID-19 control measures effectively in the earlier phase of the pandemic. This was in part thanks to the Center of Disease Control (CDC)-style extensive network of public health

community units and workers and also in part due to the country's experiences in coordinating and implementing large-scale poverty reduction policies (such as the Program 135 and New Rural Program), and in controlling SARS in the early 2000s. However, with the new and highly infectious Delta variant and the current large scale of the new surge in infections and deaths, the current system seems to be inadequate. There is insufficient time to interpret data, digest problems, and design and evaluate various policy options. Typically, policy measures have often been made, announced, changed, and even revoked in short periods of time, leading to frequent U-turn policy design and implementation. This in turn causes additional confusion and damages the economy and society in addition to the COVID-19 lockdown and social distancing measures.

The pandemic has also revealed a lack of coordination between different levels of government (e.g. central and provincial authorities), which has created unnecessary costs, burdens, and hardship for the business sector and people's livelihoods. There are cases in which provincial authorities, due to a number of reasons, including unfounded fear and limited capacity, have blocked transportation and the movement of goods and people from one province to another by imposing either physical blockades or over-stringent paperwork requirements.

In a crisis, having quick, integrated, and reliable access to data is critical for effective and timely decision-making. The Government of Vietnam has made great efforts in compiling and making such COVID-19 case data available for the public and should therefore be commended. While this represents significant progress and is very helpful for monitoring the pandemic for the whole country as well as for individual provinces, effective policy making in other areas to cope with the pandemic requires much more than new or cumulative confirmed cases.

The lack of real-time, disaggregated, reliable and transparent data has hampered the coping strategy, such as the identification of poor households for fiscal and social support. This has, in turn, limited Vietnam's ability to disburse local but large-scale measures that could drain the resources of the whole country. Data sharing between government departments is also critical for policy coordination. Although the situation has improved recently with increased data sharing by the GSO thanks to support by international organizations such as the United Nations Development Programme (UNDP) and the World Bank, this area is traditionally problematic and still needs further improvement.

It is the lack of data availability and data sharing that has limited the active participation of researchers and experts in public policy discussions and consultations relating to COVID-19. There is evidence that prominent economists, epidemiologists, health researchers and social scientists have been consulted by various governmental agencies through some special and dedicated mechanisms, such as advisory groups. However, in the face of the current serious pandemic, it is indeed desirable to have the wider participation of the full academic community.

Vietnam's administration is generally known to be problematic. There are corruption cases relating to the procurement of health and medical equipment across provinces. Unequal access to vaccines and abuses of power have also been reported in the media. Finally, poor staff capacity and discretionary power have rendered pandemic control ineffective and caused hardship to people's livelihoods under the lockdown. For example, the term "essential goods" was interpreted differently by police in different localities. In some extreme cases, bread was not considered food, and hygiene products for women were not considered essential.

Finally, policy fragmentation is a well-known problem in Vietnam. Thus, in terms of policy coordination and implementation, the establishment of a Central Steering Committee headed by the Prime Minister of Vietnam was a good step in the right direction.

4.5 Inclusive growth and sustainable development
Post-pandemic recovery is obviously the key and most pressing issue. However, once recovery is more or less achieved, it is also important not to neglect inclusive and sustainable development issues. While these issues are wide ranging, this paper only focuses on three key long-term issues, namely, the digital economy, reform in higher education, and the tax and transfer system. These issues were selected because they are all consistent with continuingly high Foreign Direct Investment (FDI) inflows to Vietnam. Each of them will be briefly discussed in turn.

4.5.1 Digital economy. The value of the digital economy in Vietnam has been on the rise, especially in response to the recent social distancing and mobility restrictions caused by COVID-19. The Government of Vietnam has also identified the digital economy and the 4th Industrial Revolution as a strategic approach for Vietnam's long-term prosperity and development. According to the e-commerce development plan approved by the government in 2020, the targeted revenue of this sector is about USD 35 billion, corresponding to an average annual growth rate of about 16.2% (World Bank, 2021c, p. 45). To evaluate this ambitious target, the World Bank's CIP (connect, harness, innovate and protect) framework can be utilized. In comparison with similar countries in the middle-income group (Colombia, Ivory Coast, Indonesia, Mexico, Morocco, South Africa, Thailand and Tunisia), Vietnam has performed well in terms of connect and innovation, but not in terms of harness and protection (World Bank, 2021c, p. 46).

To promote this strategic sector and to achieve its ambitious aim, the Government of Vietnam needs to design and implement a proactive and coherent digital strategy. This strategy needs to be comprehensive and ongoing, including various elements such as upgrading infrastructure, encouraging technology adoption, attracting investments to enable small business participation, and facilitating skills acquisition and upgrading, data privacy, and cybersecurity (World Bank, 2021c, p. 14). The enhancement of digital skills is closely connected with higher education reform, which shall be briefly discussed next.

4.5.2 Reform of higher education. Economic models show that productivity matters for economic growth. Labor productivity is positively related to human capital investment (expenditures on training and education), especially at the higher education level. The relative weakness of Vietnam's higher education sector in comparison with other countries has been revealed in various studies. Poor quality and low relevance of skills of Vietnamese university graduates were highlighted in a dated study by the World Bank (2008, p. 19). Although the quality of the Vietnamese university sector has shown signs of improving, it is still poorly ranked internationally. According to the 2019 Global Competitiveness Report, Vietnam was ranked 106 out of 141 in critical thinking in teaching, and 116 out of 141 in skillsets of graduates (Schwab, 2019, p. 596).

The causes and effects of the lack of quality universities in Vietnam are numerous, and it is not possible to discuss them here. Suffice to say, since the Vietnamese government has identified digital and technology innovations as being crucial for Vietnam's long-term development, the government would need to develop a coherent plan and make strategic investments in certain university programs or universities in order to encourage high-quality teaching, research and innovation in digital technology. The successful execution of such a plan may pave the way for sector-wide university reform. In this context, it seems worthwhile to expect better teaching and research performance by university academics, and higher salaries are appropriate (Le-Van & To-The, 2021).

4.5.3 Tax and transfer system. The economic burden of the COVID-19 pandemic in Vietnam has been shared by people, businesses, charities and international organizations, the Government of Vietnam, and overseas donor governments. As for the Government of Vietnam, in addition to reduced tax revenue, it also has to increase its expenditures to cover the costs of the vaccine strategy and to stimulate supply and demand support packages. This

will lead to a budget deficit and an increase in public debt although these are appropriate policies in the current context, as mentioned above. In the long term, to reduce public debt, the government will have to use any combination of the following measures: equitization of public assets or state-owned companies, reducing spending or increasing tax revenue. So, in the end, people, today or tomorrow, will have to bear the costs of public debts due to COVID-19-induced budget deficits. This is an issue to which few people, including experts, pay attention.

To obtain a proper answer, we need to observe the trends in the distribution of income and wealth at home and abroad. There is ample evidence that income and wealth inequality has increased dramatically in recent decades, especially as economic growth slows. A new study of the OECD countries by the McKinsey Global Institute suggests that, since the 1990s, productivity has grown by 25%, while wages have grown by only 11%, and the capital income of the richest grew by two-thirds since the top 10% own 87% of all equity (Manyika *et al.*, 2020).

A similar picture holds true in Vietnam. The gap between the urban and the rural, and between the rich and the poor, is ever increasing (Nguyen, 2017). Studies that draw on data from national surveys tend to underestimate this gap because of the discrepancy between declared and real income. The COVID-19 pandemic has made this inequality even worse and more obvious. There is some evidence that women, young people and the less well-off in Vietnam are most negatively affected by the pandemic.

Thus, according to the social justice principle of public policy (which many people agree and support), those with high incomes or assets should bear a very high proportion of the public cost burden. This requires a very progressive tax and transfer system in which the average tax rate must increase steadily as income increases. Currently, for various reasons, the tax system, especially personal income tax, in Vietnam has not been able to do this. Therefore, after Vietnam has overcome the pandemic, reforming tax-transfer policies in the direction of increasing social justice is a must for inclusive growth and sustainable development.

5. Conclusions

Within eight months, from January to August 2021, Vietnam declined from being ranked as the second best country in the world in controlling COVID-19 to a country very far from recovery. This necessitates closer scrutiny of the Vietnamese government's policy responses to the recent outbreak of the pandemic in Vietnam. Its dual policy objectives of containing the pandemic and maintaining economic growth are plausible but require clarification and updating. In terms of policy framing, we argue that it is beneficial for the Government of Vietnam to express its full commitment to a vaccination-first strategy together with a formal announcement of a revised and lower GDP growth rate for 2021. While a lower rate of growth is disappointing, such a policy approach is not only acceptable in the pandemic context but is also socially reassuring.

Vietnam had a late start in its vaccine rollout, but the rate of vaccination has accelerated recently. Correspondingly, there have been declining trends in both new confirmed cases and new deaths since the beginning of September 2021. There is, however, a crucial feature of the vaccine rollout that requires adjustment. Despite being included in the 16 priority groups, elderly people and people with underlying health conditions have not been systematically offered early vaccination. This is against conventional medical and ethical wisdom. Thus, in the remainder of the vaccine rollout, it is desirable to prioritize the full vaccination of elderly people and people with underlying health conditions.

The Vietnamese government has the fiscal capacity to substantially increase its economic stimulation program without risking its macroeconomic stability. To stimulate aggregate

demand, it is proposed that the government provides relief to the needy and disadvantaged households with a package of essential goods for at least one month. To stimulate aggregate supply, it is recommended that the government targets support to businesses according to their industry sector and the rate of decline in turnover. A critically important issue at present is to quicky restore the food supply chain. It is also recognized that national COVID-19 policies will present considerable policy coordination and implementation challenges to Vietnam.

Finally, to sustain exclusive economic development in the post-pandemic recovery, the long-term issues cannot be disregarded. Although there are many such issues, we suggest that it is beneficial to focus on three key and related items for sustainable and exclusive growth, namely, the digital economy, reform of higher education and a more progressive tax-transfer system.

Notes

1. Vietnam was ranked last in the Nikkei COVID-19 Recovery (in terms of infection management, vaccine rollout and social mobility) among 121 countries at the end of August 2021. Afterward, Vietnam improved marginally, moving to the 118th position at the end of September 2021; see Nikkei Asia (2021).

2. The 16 priority groups include medical workers, those participating in COVID-19 prevention and control work, military personnel, the police force, Vietnamese diplomats and their relatives, customs and immigration officers, workers in essential services, teachers, people with chronic diseases and people aged 65 and over, residents in pandemic-hit areas, poor people and social welfare recipients, students authorized to go overseas to study and foreign experts, factory workers and their relatives, religious leaders, freelance workers and others proposed by local governments or donors.

3. For a comprehensive discussion on essential workers, refer to the Centers for Disease Control and Prevention (CDC, 2021).

4. For more details on various assumptions and calculations, refer to Nguyen, Tran-Nam & Le-Van (2021b).

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