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**Article**

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CESifo Forum

**Provided in Cooperation with:**

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

*Suggested Citation:* Bartholomae, Florian W.; Stumpfegger, Eva (2021) : Government Interventions during the Coronavirus Pandemic – A Critical Consideration, CESifo Forum, ISSN 2190-717X, ifo Institut - Leibniz-Institut für Wirtschaftsforschung an der Universität München, München, Vol. 22, Iss. 05, pp. 37-42

This Version is available at:

<https://hdl.handle.net/10419/250940>

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Florian W. Bartholomae and Eva Stumpfegger

# Government Interventions during the Coronavirus Pandemic — A Critical Consideration

Political decision-making situations can be tackled using various strategies. Making a decision is difficult, however, if there is insufficient information about the possible outcomes. If the probabilities regarding the individual outcomes are known (i.e., uncertainty), one can at least fall back on expected values. The situation is different, however, if nothing is known at all, that is, a decision must be made without being able to factor in enough information, which limits possible strategies considerably. This is especially true when there is a high degree of risk aversion involved—something that is the case, for example, with politicians who must not only worry about the big picture but also about their chances for re-election. Politicians may well adopt the maximin strategy, which is designed to secure the least bad outcome. Furthermore, politicians rely on assistance from experts to learn about possible situations, but the experts themselves have special interests at heart. The art of politics is to deduce the “true” situation from the various interests (Grossman and Helpman 2001). The coronavirus pandemic, which posed a particularly large number of health and virological questions, confronted policymakers with precisely these issues, and they have had to find answers and implement their responses in the form of appropriate measures.

The coronavirus disease (Covid-19) is caused by the SARS-CoV-2 virus that spreads between people who are in close contact with each other and in indoor settings where people spend longer periods of time together. Touching contaminated surfaces and then touching one’s mouth, nose or eyes (WHO 2021) is another way the disease is often transmitted. The disease may cause serious health issues in individuals, especially in those with compromised immune systems, and the economic costs—which can include intensive care, long-term negative health effects, and death—in terms of hospitalization are staggering. All of this is clearly undesirable from both an individual and the societal perspective.

During the coronavirus pandemic, various types of government intervention in every area of the economy and life have been omnipresent. These interventions are not only popular with politicians who can increase their power and influence considerably, but also many voters demand these interven-

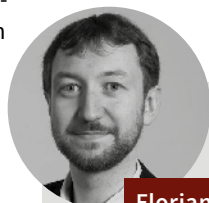
## ABSTRACT

The coronavirus pandemic poses major challenges for governments. Especially in the beginning when news of the virus was breaking, information about the virus was limited. Many minor (e.g., facemasks) and major (e.g., curfews) restrictions were implemented to contain the virus. However, the German government failed at presenting a clear and targeted strategy, which led to confusing and overwhelmingly detailed regulations that did not entail suitable cost-benefit considerations. Many costs occurred as a consequence of the measures that were instituted (e.g., government aid for forced shop and restaurant closures). In addition, asymmetric interventions severely impacted the economic structure of and the careers, for example, those in the hospitality industry. We suggest that the government focus on more general recommendations for action based on sound information, which would then provide an appropriate framework for the markets.

tions to be able to counter all imponderables of an increasingly complex world with a supposed bulwark. In a politico-economic analysis, Zweifel (2020) shows that citizens are willing to give politicians a larger share of GDP in order to manage risks. We assess government interventions in general and focusing on the pandemic situation from an economic point of view.

## THE NEED FOR GOVERNMENT INTERVENTIONS

On many occasions, government interventions are not only justified but also necessary to enable a coopera-



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tive and respectful living together in society. This also applies to the economy, which, as can be read in any economic textbook, requires regulation at one point or another. This particularly applies in case of market failures, which is also reflected as one the three core functions formulated by Musgrave (1959):

- macroeconomic stabilization
- income redistribution (addressing distributive market failures)
- resource allocation (addressing allocative market failures)

Consequently, governments should focus on the above core functions. However, with exception of stabilization, these goals are rather medium- to long-term oriented. Assessing the “Measures by the Federal Government to contain the spread of the Covid-19 pandemic and address its impacts” (Bundesregierung 2020), we find predominantly short-term objectives (Figure 1). The proposed and widely implemented strategy suggests a range of measures, most of them ad hoc and very specific, such as regulations payment deferrals for electricity, gas and telephone contracts, repatriation of tourists, and organizing a hackathon. Other measures have significant financial impact, e.g., short-term work arrangements. While some of the measures taken can and will certainly have lasting effects on the distribution of income and the allocation of resources, at this stage the focus of this analysis can only be on the immediate effects aimed at stabilizing the economy.

An original purpose of the government is the provision of public goods. Public goods have no rivalry in consumption (the good can be used by many consumers at the same time without any loss of utility to the individual) and no one can be excluded from use by a barrier to access, such as paying a price, which makes a provision on private markets less attractive. In this context, a robust public health system and the absence of a pandemic is a public good. Every member of society benefits from not being exposed to a potentially deadly virus and the opportunity to receive medical treatment as and when needed. As public goods imply market failure, government intervention makes sense. Of course, private enterprises care for health and safety of their stakeholders as well. However, taking care of every individual, e.g., the very poor, is beyond their objective and would also overstrain them.

Another market failure relevant for the pandemic are externalities. Externalities are the cost or benefits of an economic transaction of an individual that is not involved in this transaction and are not compensated for by price changes. While at the beginning (and still ongoing), the focus rests on the negative externalities of physical proximity (which resulted in the well-known imperative of social distancing), currently the positive externalities of being vaccinated are stressed.

Nevertheless, both externalities lead to inefficient market outcomes. In the first case, people do not account for the high social costs of getting close to each other, which include, e.g., more infections and higher costs for the health system and therefore from societal perspective too much of this activity takes place.

In the second case, many do not consider that vaccination does not only protect individuals from severe consequences and thus directly lowering the costs for the health system but also, as many studies suppose, lowers the probability of spreading the virus. Therefore, from a societal perspective the benefit of one person being vaccinated is much larger than the individual one. Consequently, the percentage of a fully vaccinated population that is necessary to achieve herd immunity is unlikely to be achieved when only allowing for individual benefits of vaccination. This explains government incentives, such as fewer restrictions on vaccinated individuals or rewards like lotteries as in the United States.

Since the market thus does not have a sufficient incentive to provide public goods or has not the incentive (and perhaps information), both failures are economic justifications for why governments must intervene in the pandemic.

## EVALUATION METHOD FOR (CORONAVIRUS) POLICY MEASURES

Any policy measure generates winners and losers, thus leading to an intentional disruption of the present situation. These two interrelated effects also determine the basis on which policy measures can be evaluated. An economic welfare analysis may essentially use the very strict Pareto-criterion—no improvement of at least one party is possible without anyone else being worse off—or the more suitable “Kaldor Hicks” criterion, which points to a potential Pareto improvement—the winner(s) must at least be able to compensate the losers of a measure—for its evaluation.

The pandemic is causing almost everyone to be worse off compared to the pre-coronavirus situation. Evaluating policy measures must therefore always be made in comparison to the situation without the measure. Dorn et al. (2020) highlight that in principle, there is no trade-off between economic recovery and combating the pandemic, as significant costs would have been incurred in individual sectors of the economy even in the absence of any measures. Nevertheless, the measure must not make the situation worse. As there are still some worse off, the Pareto criterion would significantly limit the scope for action, thus paralyzing the decision-makers. Thus, in principle, one must accept welfare losses in some areas but should expect a welfare improvement overall (compared to a situation without any interventions). It is therefore necessary to examine which measures can best achieve the higher-level goal.

Generally, the measure used must first be appropriate for achieving a specific goal, and second, it must achieve this goal at the lowest possible (economic) cost. This consideration often referred to as targeting principle was formulated by Bhagwati (1971, 71): “when distortions have to be introduced into the economy, because the values of certain values have to be constrained, the optimal (or least-cost) method of doing this is to choose that policy intervention that creates the distortion affecting directly the constrained variable.” However, as Rodrik (1987, 904) points out, “individual agents typically will have some influence—intentionally or not—over the nature and level of distortions that emerge in equilibrium.” He highlights the importance to understand “the process by which distortions are generated” (Rodrik 1987, 910). Thus, changes in individual behavior can increase (economic) costs that imply the importance of ensuring the (right) incentives through policy measurements. This is illustrated by Siebert (2001) who describes the “cobra effect” and refers to an anecdote from India during colonial times: a British governor wanted to tackle a plague of cobras in Delhi by offering a bounty for each dead cobra. The strategy was very successful as many dead snakes were brought to him. However, at some point he received information that people had started to get into the lucrative cobra breeding business. This eventually led to the termination of the program with serious consequences: since cobras have no financial value in themselves, they were released, so by the end of the intervention, the situation was only exacerbated.

A further problem arises especially in areas where politics strongly interferes with consumer behavior. It often becomes apparent that politicians distrust the market or the economic subjects and instead want to impose their own preferences and beliefs. In the energy sector, Gayer and Viscusi (2013, 263) observe this tendency by summing up that “even if some consumers do sometimes fall short on certain dimensions of choice, the magnitude and prevalence of such a shortfall is important and is never addressed in the regulatory assessments. [...] Perhaps the main failure of rationality is that of the regulators themselves. Agency officials who have been given a specific substantive mission have a tendency to focus on these concerns to the exclusion of all others.”

To sum up, we evaluate main policy measurements by asking the following questions:

- (1) Is the measure suitable to achieve the objective while minimizing distortions?
- (2) Do the decision-makers have a sufficient information base?
- (3) Are all impacts considered or are possible side effects ignored?

First, we do not quantify costs since we focus on distortions caused by the measures. Second, there is a

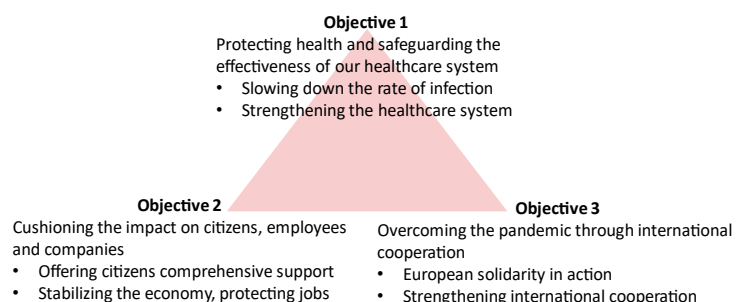
multitude of measures taken on the one hand and a multitude of affected areas as well as interactions between them on the other hand. A comprehensive consideration is not possible within the scope of this outline, so that the analysis is to be regarded as very selective.

## ASSESSMENT OF CORONAVIRUS-RELATED GOVERNMENT INTERVENTIONS

To start with, regarding the information base available to policymakers, Donsimoni et al. (2020) point out the asymmetry between health and economic data: while infection and death rates are reported daily, there are no comparable daily economic indicators (see also Riphahn 2020). However, rather rough data on infections are collected (e.g., information on professions or special circumstances is missing, see RKI (2020) and §11 IfSG—German Infection Protection Act), and reported data are sometimes incomplete due to the workload of the health authorities (RKI 2021). This makes it difficult to get an accurate picture and to classify how infection figures are to be assessed in context (e.g., outbreak in a local retirement home vs. diffuse infection incidence in a large city). In addition, experts assess and process the information for decision-makers. In this context, Frey and Steiner (2021) criticize the non-representative composition of the consulting committees, which strongly biases the information, leading to decisions that focus primarily on few virological considerations without paying much attention to other opinions or effects. Thus, in general, we must deny (2) and (3), so that policy measures are fundamentally not based on an economic efficient and cost-minimizing basis.

Therefore, we will primarily focus on question (1) in the further analysis and look at the Federal Governments’ objectives (Bundesregierung 2020) as a guideline for the measures and discuss the immediate impact on households, the public sector and firms. Figure 1 summarizes these objectives and also points out possible trade-offs via the chosen pres-

Figure 1  
Objectives by German Federal Government



Source: Authors’ own compilation from Bundesregierung (2020).

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entation. As our analysis shows, most measures target objective 1, which jeopardizes the success of objective 2. This supports Frey and Steiner (2021)'s point. Of course, another rationale is to try to contain the virus as quickly as possible in order to keep the economic costs low (see Dorn et al. 2020), which would benefit objective 2. In the analysis, we focus on measures that can be assigned to objectives 1 or 2.

### Households

The foundation of the measures is the AHA campaign ("Abstand"—distance, "Hygiene"—hygiene, "Alltag mit Maske"—everyday life with mask), which was further extended at various stages of the pandemic (e.g., to include ventilation, "Lüften," or the use of the coronavirus warning app). In light of today's knowledge of SARS-CoV-2 transmission, reducing close physical human contact in general, particularly indoors and in combination with poor ventilation and crowds, directly affects the transmission of the virus (Eikenberry et al. 2020). Also, moderate disinfection to kill germs and viruses prevents the spread of diseases. Since the spread of the virus occurs through aerosols emitted by breathing, the wearing of face masks that obstruct this means of transmission is also very suitable. Each measurement renders any physical contact unattractive, and thus is effective for reaching objective 1.

On the individual level, contact restrictions were imposed regarding a maximum number of individuals congregating at any one time. Yet, despite adhering to the rules, the total sum of contact persons may be high if meetings occur sequentially. Therefore, although the measure is intended to be targeted and low-cost at first glance—regarding objective 1, while objective 2 is fully violated—it can only be effective if a substantial proportion of society follows the rule to the letter. In a society that highly values freedom, enforcing such rules is deemed unacceptable, thus reducing the suitability of the measure. The campaigns to encourage staying at home or foregoing unnecessary venturing outside the home has also led to significant psychological stress, e.g., the pandemic has led to both short- and long-term psychosocial and mental health implications for children and adolescents (Singh et al. 2020). There are also some behavioral changes that counteract non-coronavirus goals, such as the increase in private transport as public transport is to be avoided (Zeit 2021).

Although acceptance of wearing facemasks was low during the early stages of the pandemic in Germany (April/May 2020), Bertsch et al. (2020) find that a mandatory policy leads to sufficient compliance, is considered fair and avoids stigmatization. Face masks are available at low cost, particularly as the market quickly adapted to the demand and offers competitive products, so wearing them comes at comparatively low social cost. However, the policy change from re-

usable community masks to disposable medical products (surgeon's mask, FFP2) results in a serious threat to the environment (Dharmaraj et al. 2021).

### Public Services

As one of the initial measures, schools and universities were closed, again preventing people from congregating and thus targeting objective 1. However, this interrupted conventional schooling, so that pupils and students had to rely more on their own and their parents' resources to continue learning remotely, which seems to have worked better in more privileged families (Schleicher 2020). The learning losses may result in a 3 percent lower lifetime income and 1.5 percent lower annual GDP for the remainder of the century (Hanushek and Woessmann 2020). The learning losses also suggest that the resulting increase in educational and income inequality will have a lasting negative effect on society. School closures also have implications for families, as particularly younger children need to be looked after. Heggeness and Fields (2020) suggest that women in particular cut back on working hours, suffering direct economic consequences on income and pension as well as career progression. In addition, not immediately quantifiable effects on gender equality, e.g., shown by unusually lower submissions to academic journals by female academics (Flaherty 2020) may have a long-term impact. All these effects jeopardize objective 2.

To speed up the development of vaccines, the German government decided to drastically increase expenditures for research and to invest in companies that quickly developed promising vaccines. Focusing on innovative vaccines looks like a good choice. Yet, investing in research and development always involves entrepreneurial risk that governments typically do not bear because market forces are deemed much more efficient. Due to the huge costs of the pandemic, speed was essential, thus justifying potentially inefficient allocation of resources. The expenditure of considerable financial resources on research is justified, since the government in particular is supposed to support basic research. However, it becomes problematic when the government attempts to "pick the winner" (BioNTech vs. CureVac).

The government also became an entrepreneur in other areas. To save firms that have run into serious problems during the pandemic control measures, the government took (partial) ownership in Lufthansa and TUI, since the travel industry was most seriously affected. However, the issue is not the faulty business model of the firms but the demand shock. Bridge loans would therefore be much more suitable than corporate activity by the government, which in view of very different objectives does not fall within the competence of the government or its representatives.



## Business

It should always be noted, even without any measures, businesses would have been affected, e.g., by the disruption of global supply chains. Consumer behavior very likely would have changed, as some part of the population would have stopped or limited bar and restaurant visits, extensive shopping tours, participating in large-scale cultural events and traveling. Nevertheless, at various stages of the pandemic businesses were affected by many regulations: limitation of the number of customers allowed in shops, provision of hand disinfection agents, obligatory community face masks or FFP2 masks, presentation of a negative test result, and documentation of contact tracing. Despite being an obstacle for consumers to enter shops, businesses can stay operational, which implies that economic costs are comparatively low. At any rate, there was a shift in economic activity to distance solutions, which imposed an asymmetric shock. Online store business has been soaring (Ahrens 2021), for example, Amazon reported its operating cash flow increased by 72 percent in 2020 (Amazon 2021).

These asymmetries between different business models were exacerbated by the imposition of several lockdowns and also created new frontiers in physical commerce. Businesses providing essential goods or services were not subject to the lockdown measures. However, the definition of “essential” changed several times, ranging from food shops, drugstores, shoe shops, and hairdressers. Food retailers that remained open throughout the pandemic increased sales significantly, due to both price and quantity increases (Kecskes 2020). In addition, bicycle sales went up significantly while the sale of clothes and shoes decreased drastically in the first half of 2020 (Jung et al. 2020). The combination of uncertainties about the duration and scope of the measures and growth in other competing areas, caused by either induced consumer switching (e.g., delivery) or government regulations (e.g., medical test stations), leads to an adjustment in economic and employment structure. In some regions, bars and clubs are still closed, which may even be final as this endangers their concession (Dehoga 2021). As a result, the lockdowns adversely affected both businesses and their customers beyond the pure costs of the pandemic, which also caused an unintended restructuring of the economy. Together with the demographic shortage of skilled workers, this change may be sustainable or will at least entail significant costs in the future.

While the basic idea was actually to mitigate the effects caused by the pandemic, much of the government’s economic aid is now instead dampening the negative effects of the pandemic response. Even at an early stage, economic consequences were sought to be relieved by means of short-time work compensation, the cost of which is borne by the taxpayer. The idea behind short-time work compensation is

to prevent unemployment and keep businesses with suitable business models alive. It remains to be seen whether that shift is permanent, which would imply long-term structural changes for shops in cities and shopping centers, as well as employment. In this case, it may turn out in hindsight that doomed industries were supported financially that are not suitable. Despite compensation payments for businesses and the self-employed, some individuals still may change careers because of the pandemic and work in positions that do not adequately use their skills, thus resulting in an inefficient allocation of resources. This has been happening in hotels and restaurants, where a shortage of employees has been reported (Business Insider 2021).

## CONCLUSION

To fight the spread of the SARS-CoV-2 virus and, thus, the pandemic, the most suitable and efficient measures are comparably low cost, such as face masks and social distancing. Nevertheless, many of the measures taken are oriented toward a multitude of details (e.g., how many people from how many households are allowed to meet at one time; how many customers are allowed per square meter, depending on the size of the store) that require a great effort in terms of information and implementation on both the governmental and the individual side. In view of an only very rudimentary information base, this suggests a higher degree of controllability than is actually the case. Thus, a literal interpretation of the regulations creates a certainty that does not exist, while at the same time causing considerable costs. The creation of a fundamental awareness, whereby the government acts as an informant and supporter, and takes care of its very own tasks, such as ensuring services for the public in the form of sufficient medical facilities or the availability of medical products, and not as a detail-obsessed regulator, where one intervention always requires further interventions, should be the objective of the government. Markets are much more efficient when it comes to making detailed decisions, since they can adapt their behavior to the imposed requirements and the decentralized information that they are more familiar with.

Besides that, the success of the measures depends on their acceptance in the population. Enforcing these measures is costly (e.g., police, asking neighbors to report potentially illegal parties) and leads to people being unhappy with the government. Since compliance is closely linked to political trust (Bargain and Aminjonov 2020), politics should ensure consistent measures and communication thereof. In the current pandemic, rules have been changing from state to state and were rapidly amended over time. Therefore, improving communication and building trust in the population is key. Clear roles and responsibilities of government entities are suggested.

Finally, since the measures mainly aim at containing the virus and, at best, stabilizing the economy in the short term, the medium- and long-term consequences are tolerated. It remains to be seen whether the economic structure will be permanently transformed, whether the shortage of skilled workers in certain sectors will continue and how severely and sustainably the educational prospects of the younger generation will be impaired. Nonetheless, further substantial government intervention will be required to mitigate these consequences in terms of income distribution and allocation.

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