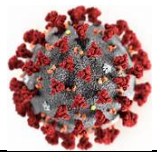
National COVID-19 Science Task Force (NCS-TF)



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Comment on planned updates : As soon as new evidence emerges. Given the short time frame of available data and the changing nature of the pandemic, costs and benefits of policy measures are likely to change	

Is there a health-wealth tradeoff during the COVID-19 crisis?

Summary of request/problem

Fighting the pandemic has direct costs, but also a negative economic impact caused by measures imposed to limit the spread of the virus. This Policy Brief presents the current international evidence on the economic costs and benefits of fighting the pandemic, the so-called health-wealth trade-off. We limit our brief to industrialized countries, such as Switzerland.

Executive summary:

Interactions between health and economic measures as well as behavioral responses of firms and individuals in view of COVID-19 are inherently complex. Nonetheless, a few lessons can be drawn from the research conducted so far. There is broad consensus among economists that some non-pharmaceutical interventions (NPIs) are indispensable to limit the effect of the virus in industrialized countries and that full economic recovery will not happen before the virus is controlled. The economic valuations differ as to which measures are most effective, as this depends not only on the economic structure of a country, but also on how individuals adjust their behavior in view of increasing number of infections as well as on assumptions about the further course of the pandemic (virulence, vaccinations, immune responses). In open countries such as Switzerland a large part of the reduction in economic activity is not only due to lockdown measures and containment policies, but also due to a fall foreign demand and travel.

There is also broad consensus that a significant second wave should be avoided and that there are softer measures to reach that goal than blanket lockdowns. Apart from hygiene and distancing measures, the importance of testing and quarantining as an optimal cost-effective response is stressed in situations like the current one in Switzerland/Europe. Economists also generally agree that in a context of low borrowing costs, generous complementary publicly funded economic support measures are highly likely to generate net benefits by minimizing the economic costs of public health measures.

Main Text:

1) Introduction

Nearly half a year into the SARS-Cov2 pandemic, it has become clear that the virus entails huge economic costs. What is less clear are the drivers of these costs. The illness has direct costs (such

as sick leave, hospital use), indirect costs from government interventions (NPIs, such as masks, distancing rules, and lockdowns) to fight the pandemic, and behavioral adjustment costs of individuals facing the risk of getting infected. The direct and indirect costs are very hard to disentangle: we do not know whether individuals refrain from undertaking activities because they are forced/encouraged or because they voluntarily decide to do so. Moreover, these aspects depend on each other. If the government is successful in keeping the virus under control through NPIs, direct costs will be lower, but potentially at larger indirect cost. Furthermore, in a globalized world, international interdependencies mean that even the best national policy cannot protect a nation from the fallout of economic downturns abroad.

In this brief we need to distinguish between different types of measures (NPIs) to fight the virus: (a) hard lockdowns during the initial phase of the epidemic, and (b) smaller-scale NPIs (such as masks, local closures and TTIQ) once the infection curve is brought down and needs to be kept down.

2) The fundamental trade-off: constraining the virus but not the economy

For policy making, it is important to understand the multitude of costs generated by the pandemic – in both the medical and the economic domain. At least in the short run, government interventions create a trade-off between saving lives and preserving economic activity (or livelihoods), the "health–wealth trade-off". Economists have come to call the trade-off between "health" and "wealth" as the "double flattening problem" (Gourinchas, 2020). This problem comprises the following ideas:

a. In the absence of countermeasures, the number of infections may overburden the health care system and lead to a higher mortality rate. Thus, governments take NPIs to flatten the virus contagion curve and to keep the number of cases below the level that would overwhelm the health care. This will allow people to receive proper health treatment and it buys time for the development of effective treatments and a vaccine. Moreover, countermeasures may have beneficial additional effects as the fear of contagion is reduced thus allowing for more economic activity, especially in high-contact sectors.
b. The flattening of the virus spreading curve will come at the cost of restricting production and consumption in some sectors, as well as themobility of people (either as a consequence of measures taken or on a voluntary base). Thus, the direct effect of NPIs will be to depress economic activity. However, how much the NPIs themselves account for the economic downturn is a difficult question, because the counterfactual is hard to pin down: NPIs deliberately constrain economic activity, but in their absence the pandemic would be more severe and therefore depress economic activity through behavioral adjustments as well as higher absenteeism through sickness.
c. The direct economic costs due to "hard" NPIs may be amplified because the economic system is highly interconnected: self-isolating customers might spend less, firms might invest less, and banks with worsening portfolio might cut lending. This could lead to panic and losses of confidence and result in cascading business failures and a self-reinforcing recession.
d. Economic measures to support incomes, business balance sheets and financial markets can improve the situation of individuals and firms, or–in other words–flatten the economic curve and prevent those cascading events to happen. How much, again, depends on the type, size and duration of support measures.

To summarize: It is likely that there is a health-wealth trade-off in the short run: Flattening the virus spread curve with hard NPIs (such as lockdowns) depresses economic activity. However,

economic policy can help to limit the economic damage to some degree and thereby ameliorate the health-wealth trade-off. The trade-off of softer measures is harder to evaluate.

3) Why things are not as easy as they seem

So why is it so difficult to pin down the cost of measures taken to fight the virus? Comparing economic and health costs and benefits at an individual base might look controversial, but it is not uncommon, for example, when deciding to allocate scarce medicine or organs to patients in need, or payouts of damages for death/injuries in legal claims. Such calculations should take into account not only simple survival probabilities, but also the number of life years at stake and their quality. The most common measure is QALY: quality-adjusted life-years. One QALY equates to one year in perfect health.

At a macroeconomic level, however, interdependencies complicate the assessment to balance the benefits in terms of QALYs and costs of policies to mitigate the virus:

a. To estimate the benefits of an NPI against the potential damage, one needs to compare it against an alternative policy (a so-called counterfactual policy). For example, the net cost of a stay-at-home order depends on the situation that would have prevailed in the absence of the intervention, but with the virus spreading (point 1. above). Simply comparing the NPI to a status quo without a virus would be misleading.
b. The causal impact of an NPI is often unclear: The government may have mandated a stay-at-home-order, but individuals might have stayed at home even in the absence of such a policy, be it for fear of the virus or for other reasons. The impact of behavioral adjustments on decisions such as investment and consumption has long been understood in economics. What makes an assessment of the cost difficult is that there are few suitable ways to identify the effects and separate them out. Comparing countries and regions can help, but those comparisons have to be interpreted with care. Certainly, whether people would have changed their behavior without NPIs or not, depends on the nature of the specific NPI. Hard measures, such as lockdowns, would probably not have happened voluntarily. Softer measures, such as wearing a mask or keeping social distance, could more easily happen on a voluntary basis.
c. The costs of an NPI crucially depend on measures taken by the government to alleviate its economic impact. If individuals lose their job as a consequence of a lockdown, for example, their effective wellbeing crucially depends on income replacement programs and other measures taken by the government. Trade-offs therefore look very different in countries with fewer means to mitigate the economic impact of NPIs.
d. In a globalized world, the pandemic affects countries even in the absence of infections. The larger the number of countries affected by the virus, the higher the likelihood of a propagation of negative economic shocks, as export demand contracts and financial markets might become more volatile.
e. There is large uncertainty about the evolution of the pandemic. Measures that look expensive in the short run might lead to lower costs or better recovery options in the future as the example of the Spanish flu has demonstrated (Correia et al., 2020). Trade-offs also depend on the assumptions about the availability of vaccines or better treatment options. All estimates are burdened with large degree of uncertainty (probably much larger than during the financial crisis).

Notwithstanding these difficulties, economic research has tried to shed some light on the trade-offs associated with the pandemic. This short overview offers some insights on what we know based on current data and recent preprints.

4) What we know

The economic costs of COVID-19 are large

The usual measures of economic performance are only available with a substantial lag. So, forecasters have to rely on simulations. For Switzerland, the KOF currently estimates the drop in GDP in the second quarter of 2020 to be 8.4% compared to the previous quarter (Abrahamsen et al., 2020). For the full year, a loss of 4.9% relative to 2019 is expected. As compared to a world without Corona, this implies a loss in GDP of 45 billion CHF. Countries that were more heavily affected by the virus (Italy, Spain, UK and France) are also expected to have stronger reductions in GDP. A large part of the reduction in GDP (estimated to be more than 50% of the fall in GDP in Switzerland) is not only due to lockdown measures and containment policies but also due to reduced foreign demand and travel restrictions (Rathke et al., 2020; Lalive et al., 2020a). So even in the absence of direct costs of SARS-Cov2 and hard measures to fight the virus, the economy would be heavily impacted.

The macroeconomic costs of the pandemic dwarf the direct monetary costs of the virus. The direct impact of the illness (such as sick leave and hospital use) as well as medical spending contribute to the overall costs to a smaller degree and are of course contingent on the progression on the pandemic. Expenditures on medical spending such as development of treatments, vaccines, TTIQ (Testing, Tracing, Isolation, Quarantine) and protective equipment, moreover, have large social returns as outlined in a number of policy briefs (Bütler, 2020a; Bütler, 2020b; Bütler et al., 2020; Bonardi et al., 2020; Stocker et al., 2020). These measures themselves contribute in an important manner to a reduction in the economic impact of the pandemic.

Almost all researchers find that the effects of COVID-19 are unequally distributed across socio-economic groups even in the absence of NPIs. Economically more vulnerable groups (poorer individuals, migrants) also those that are more likely to get sick, and ifsick have a higher mortality rate. Poorer individuals are at greater risk of losing their job, even without being directly affected by the virus. The ability to work from home is an important channel to mitigate the potential costs of COVID-19 or NPIs, but that option tends to be available more to the higher socio-economic classes. As such, especially service sectors that require personal contact are negatively impacted by the Corona virus (Leibovici et al., 2020).

Voluntary behavioral adjustments are very important

A decline in infection rates can also be caused by behavioral adjustments, and not only by official NPIs. Foot traffic in the US declined drastically even before local shut-downs were implemented (Cronin et al., 2020). To disentangle the effects of the virus and the policies aiming at containing it, Denmark and Sweden provide a natural experiment. Although both countries were impacted similarly (prevalence and timing) by the virus at the early stages of the pandemic, the Danish government mandated social distancing and the lockdown of restaurants and stores to slow the spread, while the Swedish government opted for largely “voluntary” measures and softer recommendations. Exploiting these contrasting policies, Andersen et al. (2020b) estimate that aggregate spending dropped by around 25 percent in Sweden and, as a result of the shutdown, by an additional 4 percentage points in Denmark. Hence, the majority of the economic contraction is caused by the disease itself – regardless of mandatory social distancing laws. The cumulative death toll in Sweden, however, has to date been far greater than the one in Denmark (Our World in Data, 2020).

Also research from South Korea (no lockdown) and other countries show that behavioral adjustments are, to a large degree, responsible for the economic downturn. Ignoring the negative impact from the international economy, authors estimate the share of the downturn due to voluntary measures in a range from 50% to 90% (Aum et al., 2020b; Goolsbee and Syverson, 2020). There are other behavioral adjustment: Consumers tend to visit smaller/less busy stores and focus on "essential" businesses as a response to a local increase in COVID-19 numbers.

Trust in government and institutions and access to correct information plays a decisive role in peoples' willingness to follow social distancing and hygiene measures. Akesson et al. (2020) and Briscese et al. (2020) show the importance of managing people's expectations in a public health emergency.

In the initial phase of the pandemic, it thus appears that there is not much of a health-wealth tradeoff when it comes to the decision whether or not to lock down the sensitive sectors of the economy and society in industrialized countries: the economy would suffer anyway, but health outcomes will be significantly better under a coordinated lockdown. Once the infection rates have stabilized at a steady and manageable level, however, the tradeoffs become much more complicated. Overall, research shows that measures should be implemented as locally and as early as possible.

Test-Trace-Isolate-Quarantine (TTIQ) is cheap compared to other NPIs

A number of economists emphasize the crucial role of testing (Bethune & Korinek, 2020) and quantify by how much individually rational agents undervalue the cost of infection. In their model, targeted measures (testing and isolation) lead to a milder recession than a laissez-faire policy. Quarantining infected people has large social benefits and ameliorates the trade-off between health and declines in economic activity that are associated with broad-based containment policies such as lockdowns. The amelioration is especially strong if the recovered only acquire a temporary immunity (Eichenbaum et al., 2020). Such targeted policies can also deliver larger welfare gains than indiscriminate measures such as lockdowns (Chari et al., 2020). This finding is also supported by Aum et al (2020a) in a comparison between South Korea and the United Kingdom. According to that study, had the UK adopted South Korean policies, its GDP loss and infections would have been substantially smaller both in the short and the long run. This is because aggressive testing and tracking more effectively reduce infections and disrupt the economy less than a blanket lockdown.

Many countries implemented stricter measures, e.g. lockdowns, in Spring of 2020, to curb exponential growth in infections, and strict measures could become important now as a second wave of infections develops. Stricter measures are more expensive than TTIQ but less expensive than they seem because lower infections help the economy. For instance, Deb et al. (2020) document the partial effect of NPIs, indexed by their severity using the Oxford index, and control for the state of the economy. Results indicate that NPIs lead to a loss of industrial production of 15 percent in the 30 days after introducing a lockdown. But the lockdown generates an indirect effect, through improving the state of the epidemic, and this indirect effect is beneficial for the economy. NPIs could improve employment and GDP by about 10 percentage points. The total effect of NPIs on the economy is much lower than 15 percent, the partial effect, because NPIs improve the state of the epidemic which is economically very valuable.

Compensatory economic support measures work well during lockdown

The effective costs of NPIs for individuals and firms crucially depend on economic policy measures that complement NPIs. Policies supporting payroll and fixed costs have been shown to reduce

firms' economic distress, by cutting the negative effect of the crisis on profitability, liquidity, debt, and solvency by approximately a half (Alstadsæter et al., 2020). The findings suggest that traditional macroeconomic tools might not be as effective to restore economic activity during the lockdown phase (the short-run multipliers on consumption are smaller because of lockdown and fear of the virus). As long as consumer spending is constrained by the fear of the virus, consumers will not resume normal consumption activities until they feel safe from potential infections. Thus, standard macroeconomic stimulus is of little effect during a lockdown. What does matter, however, is the protection of worker incomes and business structures. Such measures avoid individual hardship for households and businesses hit by Covid-related losses in income and turnover, they sustain demand for sectors not directly hit by the pandemic, and they protect economic structures to allow a quick rebound once the pandemic subsides. In countries with low public borrowing costs, compensatory support measures are particularly likely to generate large net benefits.

Other trade-offs and interdependencies

Our economies are highly complex. Due to complementarities across sectors, NPIs in one sector also propagate to the rest of the economy. As an example: In the US, a decrease of 51% in the final demand for goods and services from contact-intensive industries (restaurants and hairdressers among others) implied a 13% decline in the output of low contact-intensive industries and a 24% drop in aggregate output (Leibovici et al., 2020).

Spillovers between sectors are especially important when opening up after the successful reduction in the number of cases. In all opening decisions, not only the direct economic costs and benefits should be taken into account, but also their effects on other areas of public life and the economy. A number of economists have tried to devise risk-based opening plans that take into account such interdependencies and the relative relevance of economic sectors. For the US, Baqaee et al. (2020b) suggest focusing on mitigation measures outside of workplaces to avoid a second wave. In fact the measures they suggest for the US would lead to a better outcome both the number of deaths avoided and the loss to the economy than alternative, stricter measures. The measures they suggest include a) limitations on large-group gatherings, especially indoors, b) widespread use of masks and maintaining the recommended six-foot social distance during shopping and other public activity, c) increased testing for the virus and contact-tracing, combined with support for self-isolation, and d) special protections for the elderly, such as financial support for regular testing of staff and residents at nursing homes and personal protective equipment for elderly-care workers.

Andersen et al. (2020a) present a tool for Denmark to deal with the tradeoff between the economy and health by identifying which sectors should be opened first based on their low risk of infection and high economic benefit from opening. In general, they find that activities of great economic importance sometimes also have a high probability to spread the virus (which they call virus spread pressure). However, comparing the value added of a sector with its spread pressure index, yields some guidance for reopening strategies. For example, shopping centers have a relatively large economic significance, but also a high risk of spreading the disease. At the same time, restaurants and cafés have a slightly higher spreading risk but add less economic value. Therefore, the reopening of all shopping centers should be prioritized over the reopening of all restaurants because the former rank higher in terms of economic value and lower in terms of virus spread pressure.

For Germany (Dorn et al., 2020) find that a slow opening with an effective reproduction rate Re of 0.75 is better than a sudden, faster opening which would lead to a reproduction rate of 1 as it would increase costs in the long run. They also emphasize another trade-off that is sometimes ignored. A faster opening could reduce costs in the short run, but would entail a longer recovery phase, and thus increase the total economic costs. In a similar vein, Aum et al. (2020) argue that premature

lifting of the lockdown may raise GDP temporarily, but infections subsequently rise again to a level at which many people voluntarily withdraw from economic and social activities because of fear of infection.

Conclusion

COVID-19 entails large costs in many dimensions. We have summarized evidence on the trade-off between health and economic aspects in the context of the epidemic. We have cited evidence that COVID-19 affects the economy directly, by changing our ways to interact with each other. Even in the absence of government intervention, therefore, the pandemic would hurt the economy. Some NPIs, which reduce infections and deaths, constrain economic activity, but might still have a net positive overall economic effect compared to a non-intervention counterfactual (in addition to their evident health benefits). The broad consensus is that low case numbers support an economic recovery when they can be achieved by softer measures such (such as masks, TTIQ and local closures).

The results established so far leave many elements of the tradeoff uncertain. The suitable counterfactual situation when estimating the benefits of an NPI is often not clear and will change in the future. Teasing out the causal impact of an NPI is difficult because individuals adapt their behavior also in the absence of the NPI, and there is a lot of heterogeneity across time and space. In a globalized world, a pandemic affects a country even in the absence of infections through trade linkages.

Last, but not least, there is a large uncertainty about the evolution of the pandemic and the timing and effectiveness of medical solutions like better treatment or vaccines. The evidence presented is derived from the first six months of the pandemic. It may well have to be revised in the months to come.

Unresolved issues

Address open questions, future work and timelines

References

Abrahamsen, Y.; Eckert, F.; Kronenberg, P.; Mühlebach, N.; Neuwirth, S.; Rathke, A.; Sarferaz, S.; Siegenthaler, M.; Streicher, S. & Sturm, J.-E. 2020. Gratwanderung der Schweizer Wirtschaft. *KOF Studien, Nr. 154, August 2020*. http://www.doi.org/10.3929/ethz-b-000430181

Akesson, J.; Ashwort-Hayes, S.; Hahn, R.; Metcalfe, R.D. & Rasooly, I. 2020. Fatalism, Beliefs, and Behaviors During the COVID-19 Pandemic. *NBER Working Paper No. 27245*

Alstadsæter, A.; Bjørkheim, J. B.; Kopczuk, W. & Økland, A. 2020. Norwegian and US policies alleviate business vulnerability due to the Covid-19 shock equally well. *NBER Working Paper No. 2763.*

Andersen, T.M.; Schröder, P.H. & Svarer, M. 2020a. Designing Reopening Strategies in the Aftermath of COVID-19 Lockdowns: Some Principles with an Application to Denmark. *IZA Policy Paper No. 158.*

Andersen, A. L.; Toft Hansen E.; Johannesen, N. & Sheridan, A. 2020b. Pandemic, Shutdown and Consumer Spending: Lessons from Scandinavian Policy Responses to COVID-19. *Working Paper.*

Aum, S.; Lee, S. Y. & Shin, Y. 2020a. Inequality of Fear and Self-Quarantine: Is There a Trade-off between GDP and Public Health?. *NBER Working Paper No. 27100.*

Aum, S.; Lee, S. Y. & Shin, Y. 2020b. COVID-19 Doesn't need lockdowns to destroy jobs: The effect of local outbreaks in Korea. *NBER Working Paper No. 27264.*

Baqaee, D. ; Farhi, E. ; Mina, M. J. & Stock, J. H. 2020a. Reopening Policies for a second wave. *Brookings Papers on Economic Activity*.

Baqaee, D. ; Farhi, E. ; Mina, M. J. & Stock, J. H. 2020b. Reopening Scenarios. *NBER Working Paper No. 27244.*

Bonardi, J.P.; Brülhart, M.; Danthine, J.P.; Saxena, A.; Thöni, C.; Thoenig, M. & Zehnder, C. 2020. Digital Proximity Tracing – The View from Economics. NCS-TF Policy Brief. https://ncs-tf.ch/de/policy-briefs/digital-proximity-tracing-the-view-from-economics-28-july-20-en-2/download

Briscese, G.; Lacetera, N.; Macis, M. & Tonin, M. 2020. Compliance with COVID-19 Social-Distancing Measures in Italy: The Role of Expectations and Duration. *NBER Working Paper No. 26916.*

Bütler, M. 2020a. Who should pay for SARS-CoV-2 testing? NCS-TF Policy Brief. https://ncs-tf.ch/de/policy-briefs/who-should-pay-for-sars-cov-2-testing-15-may-20-en-2/download

Bütler, M. 2020b. Economic Considerations of Test-Isolate-Trace-Quarantine (TITQ). *NCS-TF Policy Brief.* https://ncs-tf.ch/de/policy-briefs/economic-considerations-of-test-isolate-trace-quarantine-titq-10-may-20-en-2/download

Bütler, M.; Dorn, D. & Sturm, J.-E. 2020. Contact Tracing Costs. *NCS-TF Policy Brief. https://ncs-tf.ch/de/policy-briefs/contact-tracing-costs-24-april-20-en-3/download*

Chari, V. V.; Kirpalani, R. & Phelan, C. 2020. The hammer and the scalpel: On the economics of indiscriminate versus targeted isolation policies during pandemics. *NBER Working Paper 27232.*

Correia, S.;Luck, S. & Verner, E. 1918. Pandemics depress the economy, public health interventions do not: Evidence from the 1918 flu. Public Health Interventions do not: Evidence from the.

Cronin, C. J. & Evans, W. N. 2020. Private Precaution and Public Restrictions: What Drives Social Distancing and Industry Foot Traffic in the COVID-19 Era? (No. w27531). National Bureau of Economic Research.

Deb, P.; Furceri, D.; Ostry, J.D. & Tawk, N. 2020. The Economic Effect Of Containment Measures *Covid Economics: Vetted and Real-Time Papers No. 24.*

Dorn, F.; Khailaie, S.; Stöckli, M.; Binder, S.; Lange, B.; Vanella, P.; Wollmershäuser, T.; Peichl, A.; Fuest, C. & Meyer-Hermann, M. 2020. Das gemeinsame Interesse von Gesundheit und Wirtschaft: Eine Szenarienrechnung zur Eindämmung der Corona-Pandemie. *Ifo Schnelldienst Digital, No. 6 (2020).*

Eichenbaum, M.S.; Rebelo, S. & Trabandt, M. 2020. The Macroeconomics of Testing and Quarantining. *NBER Working Paper No. 27104.*

Goolsbee, A. & Syverson, C. 2020. Fear, Lockdown and Diversion: Comparing Drivers of Pandemic Economic Decline 2020. *NBER Working Paper No. 27432.*

Lalive, R.; Sturm, J.-E.; Dorn, D.; Brülhart, M.; Bütler, M.; Weder di Mauro, B.; Crivelli, L.; Siegenthaler, M.; Lehmann, T. & Colella, F. 2020. Disruption of the Swiss labor market: 2020 Corona crisis and 2008 Financial crisis compared. NCS-TF Policy Brief. https://ncs-tf.ch/de/policy-briefs/disruption-of-the-swiss-labor-market-2020-corona-crisis-and-2008-financial-crisis-compared-16-june-20-en/download

Leibovici, F., Santacreu, A.M. & Famiglietti, M. 2020. Social distancing and contact-intensive Occupations. *On the economy, St. Louis FED.*

Gourinchas, P. O. 2020. Flattening the pandemic and recession curves. Mitigating the COVID Economic Crisis: Act Fast and Do Whatever, 31.

Moser, C. A. & Yared, P. 2020. Pandemic lockdown: The role of government commitment. *NBER Working Paper No.* w27062.

Our World in Data. (2020, July 22). Total confirmed COVID-19 deaths per million people. Retrieved from https://ourworldindata.org/grapher/total-covid-deaths-per-million

Stocker, R. & Tschudin Sutter, S. 2020. Benefits of wearing masks in community settings where social distancing cannot be reliably achieved. NCS-TF Policy Brief. https://ncs-tf.ch/de/policy-briefs/benefits-of-mask-wearing-1-july-2020-en/download

Appendices