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### **Muddling through: How to tackle problems we don't understand**

*Roman Boutellier, ETH Zürich*

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## Muddling through: How to tackle problems we don't understand

*Roman Boutellier, ETH Zürich*

In 2022 we fight a heavy inflation, close to 100% in Turkey. USA and EU are battling 9 % and all Central Banks are increasing interest rates, big increases not seen since decades. The same banks reassured the public just a few months earlier that price increases were only temporary, and the Economist is even discussing whether the long-term goal of 2 % inflation should be increased to 3 or 4 %. Every student of economy knows the "Quantity Theory of Money", the formula describing the problem:  $MV = PT$  or expressed in growth rates:

***growth rate money supply + growth rate velocity of money = inflation rate + growth rate output.***

By definition, the formula is true, but all parameters are estimates for the past and guesswork for the present and the future. Past recessions tell us that especially the velocity of money is not sufficiently predictable for use in policy. Nobody understands the problem fully. The solution? Let's increase interest rates a little bit and perhaps another little bit next month based on guesses of experts. Nobody knows whether this triggers a recession or not, whether increases should be 0.25 % or 0.75 %. Effects may be delayed by years from the measures taken. We only know, it worked in the past. Increasing interest rates brought down inflation, in most cases with a recession. Nobody knows how to set the

parameters that guarantee a reasonable inflation without recession. But many economists believe that there is such a magic number.

Take a contrasting problem based on natural science: Mid-January 2020 Moderna decided to develop a vaccine against Covid-19 based on its profound know-how in handling mRNA with the help of Lipid Nano Particles. A clear strategy with a precise goal built on 9 previous vaccine-developments with the same technology. Some 10 months later the first person got its jab. Because the new vaccine is fully chemically produced in a proven network of more than 120 global specialists scaling up was achieved in weeks. A precise assessment of the situation combined with a precise goal and a detailed plan how to solve the problem led to a successful product. Everybody was surprised how quickly it was possible to develop a new vaccine. Most people think that a similar approach is possible for complex societal problems like vaccinating whole populations.

However, the problem starts anew: How to convince a population to get vaccinated? Up to the end of 2020 the pandemic had been fought with measures perceived as a cacophony: Masks no, masks yes, full lockdowns, partial lockdowns, testing yes and no, ..... In the newspapers an outcry started "We want a clear strategy how to fight the pandemic, we

## Vaccination in Switzerland: Stagnation at 70% of the population

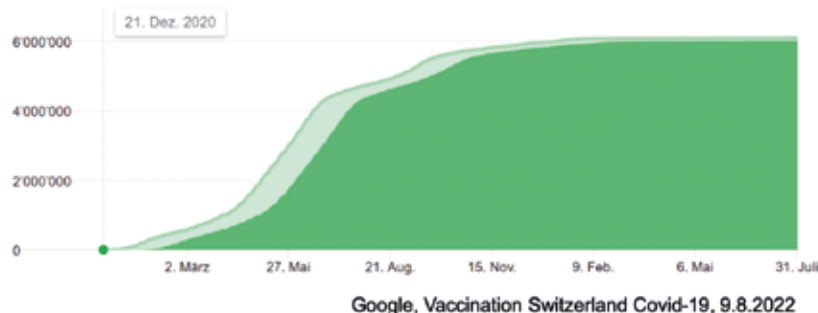


Figure 1: Vaccination in Switzerland: Stagnation at 70% of the population

want to know when we can go back to normal life, lets replace existing governmental structures through a crisis-staff with experts, ...." The vaccination program was evidence based, science driven and nevertheless not accepted.

Science alone does not convince. Once again, the government was forced into muddling through: Trying step by step to convince the population to get vaccinated. Some measures were successful, others not. Government and population went through a social learning process with limited success. Polio has been fought with vaccines since more than 70 years and is still not eliminated. The same can be expected for Covid-19. Obviously to develop a vaccine is much easier than to apply it (Fig.1).

Let's make a thought-experiment. In Switzerland, Mr. Berset, the minister responsible for health would have declared in March 2020: "We must achieve a compromise between protecting the population and protection of the economy: After consulting universities, CEOs, political parties and experts we come to the conclusion the balance we reasonably can achieve is a decline in our GDP of 2.9 % and 11'000 deadly casualties". Would the minister still be in charge? The two numbers are what Switzerland has achieved. Nobody set a precise goal, nobody articulated a strategy based on evidence. Many experts tried to reduce the complexity to one number: Excess mortality, beds occupied in intensive care units, positive test rate or the R-value. Whenever the R-value was below 1, administrators and the public cheered. In eastern Switzerland ski lifts opened when R was at 0.97 forgetting that the value published was 0.97

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with a margin of 0.14. With R at the upper bound,  $R = 1.11$ , infections would have gone up by a factor of 2.5 within 3 weeks! And the upper bound has the same probability as the average. But the decision taken by the administrators was perceived as evidence based, science driven. Looking back, we must accept, that the Swiss government achieved a reasonable result in its fight against Covid-19, without a clear strategy, just by taking measures based on a constant learning process. It never communicated a full solution, nor a finite goal - only the next steps to be realized. Means and goals went together, means were the tool to describe the goal and to get public support.

In 2018, a few months before his death, Kofi Annan gave a speech in Zürich. "I was asked to reorganize the United Nations within 6 weeks. I complained to Lavrov, the Russian foreign minister about this mission impossible. Lavrov told me that God organized the whole world within 6 days! I was impressed - but after a while I answered: Dear mister Lavrov - don't forget, He was working alone!" We sometimes forget that human beings do not follow precise laws in their behavior, they adapt to perceived situations with all the big differences depending on their specific situation, their personal experiences and goals. In Western Europe we have brought down child mortality from 200 to less than 5 per 1000 births without an explicit program, without a formulated strategy, but with thousands of investments in clear water, sanitation, better food, and hygiene (Fig. 2). Sometimes humanity solves problems indirect, without even getting aware that there is a problem.

## Child mortality in Switzerland



F. Höpfliger, Bevölkerungsentwicklung Schweiz, online version at hoepfliger.com

Figure 2: Child mortality in Switzerland

Looking back to Corona crisis in 20 years, what will we remember? Certainly, mRNA, and hopefully that in times of a real crisis, whenever deep fog lies before our eyes, nobody understands fully what is going on, muddling through, learning step by step is a humble and effective approach to manage a crisis.

## Literature

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