“IF SOMETHING CANNOT GO ON FOREVER, IT WILL STOP”

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CEP POLICY BRIEF
March 2021

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The views expressed herein are solely the author's and do not necessarily reflect those of the Council on Economic Policies or its board.

1. INTRODUCTION

"If something cannot go on forever, it will stop."

This famous observation was made by Herb Stein, Senior Fellow at the American Enterprise Institute. It became famous largely because it was just that, obvious. Yet, what is no less obvious is that public policy is commonly based on a wholly contrary assumption, that the future will be like the past, more or less. This is deeply unfortunate since many of the most important systems on which the future of mankind depends are evolving in an unsustainable way. They threaten to stop. Global economic, political, environmental and health systems are all showing clear signs of stress and prospective breakdown. The Four Horsemen of the Apocalypse can be clearly seen riding, purposefully, in our direction.

We have allowed the stock of global debt and the stock of greenhouse gases to rise to levels that now threaten economic and environmental sustainability. At the same time, we have allowed the stock of trust in government – both national and international – to erode to a degree that threatens the future of democracy. Worse, that erosion threatens our capacity to provide political solutions to the other problems that confront us, implying in turn a still further loss of trust. Finally, the Covid-19 pandemic has threatened public health systems in many countries. Wholesale cancellation of elective procedures and the threat of triage have become increasingly and tragically common. As well, the pandemic has had huge economic costs, has called into question the very competence of some elected governments, and has diverted attention from environmental issues.

These interactions across systems imply that the challenge we face is not restricted to repairing just one of these threatened systems. We must repair them all. As Tolstoy noted "All happy families are the same, but each unhappy family is unhappy in its own way". What he meant was that many conditions must be met simultaneously to ensure happiness. Similarly, each of our global systems is a complex, adaptive system, nested within and dependent upon the proper functioning of the other systems. Thus, in seeking to repair any one system, we must be conscious of the implications of our actions for all the other systems.

This will not be easy given fundamental limitations in our knowledge of cause-effect relationships. As well, achieving needed tradeoffs among objectives will be impeded by limitations in political processes whose fundamental purpose is to allow such tradeoffs to take place. Perhaps the greatest danger to be overcome will be the human tendency to accept the "quick and easy fix" instead of more lasting solutions. Sadly, evolution seems to have hard-wired mankind to discount the future excessively.

These challenges can be overcome, but to do so will require a brutal clarity about the seriousness of the problems we face, and then general agreement about three practical issues. First, what are the challenges to sustainability that are already at work, or can already be confidently anticipated as posing future challenges? In short, what path are we now on? Second, what kind of a sustainable society, made up of systems of systems, do we wish to migrate towards. In short, where do we wish to go? Third, what practical steps will be required to get there from here? This last challenge encompasses, not only the identification of what should be done, but also requires overcoming the political difficulties of making required changes actually happen.

2. WHAT PATH ARE WE ON NOW?

In an old joke, a man is lost in the tiny lanes of Ireland. Seeing an old man in a field, he asks how he might get to Dublin. And the old man replies “If I were going to Dublin, I wouldn’t start from here.” Unfortunately, since complex systems are path dependent, “here” is always where we start from. And we are already on a bad path.

Some emerging problems were getting increasing attention prior to the pandemic. There was growing alarm about climate warming and still broader concerns about **environmental** degradation. Many noted that complex systems have “tipping points” in which change becomes irreversible. In addition, they presented compelling evidence that such a juncture seemed imminent enough to warrant policies to ensure against such an outcome. Similarly, many people were seriously concerned about a **political** tipping point, in which trust in democratic government would be replaced by a desire for autocratic rule. It was feared that such a transition, motivated in part by the desire to reduce the influence of elites (the “enemies of the people”), could easily tip into outright fascism. There was also a growing willingness to admit that rising inequality, not only of income and wealth but of opportunity, was fuelling political dissatisfaction.

What was less appreciated, prior to the pandemic, was the growing exposure of capitalist **economies** to risks that had been created by their own policies. As a result, the economic patient had serious morbidities or “preconditions” even before the arrival of the pandemic. In addition to growing inequality, the most serious of these preconditions was the continued increase in debt levels. The International Institute of Finance estimated that, on the eve of the pandemic, the global ratio of debt to GDP was 321%. This was 40 percentage points higher than in 2008 on the eve of the Great Financial Contraction, and three times levels seen in the early 1980s.

The most serious policy error was the reliance, cycle after cycle, on monetary easing to restore aggregate demand and spur future growth. Unfortunately, this process worked by encouraging the private sector to take out debt to support spending and this spending was often of an unproductive kind. Over time then, rising debt levels acted as a “headwind” slowing spending. Perhaps not surprisingly, the response of central banks was a commensurate increase in the aggressiveness of easing in downturns. Since this was never matched by equal tightening in upturns, interest rates eventually ratcheted down to zero and even below. In short, even before the pandemic, the effectiveness of monetary policy in resisting negative shocks had become highly questionable.

Nor was the prospective ineffectiveness of monetary easing the only concern. Past easing also posed a threat to future financial stability by squeezing the lending margins of financial institutions and encouraging imprudent behaviour in the search for yield. As the IMF put it in its Global Financial Stability Report of October 2020: “Financial vulnerabilities are rising, putting medium-term macro financial stability and growth at risk”. Finally, as if financial instability was not enough, easy money contributed to the survival of old but inefficient “zombie” companies as well as encouraging the serious misallocation of new resources. These factors now threaten to constrain potential growth, and the capacity to service debt, going forward.

Less serious, but still significant, was the problem of asymmetric fiscal policy in the advanced countries. This caused sovereign debt ratios to ratchet up almost everywhere. Under the influence of automatic stabilisers, and sometimes discretionary easing, deficits always rose as the economy slowed. However, surpluses were rarely allowed to rise symmetrically in upturns. The traditional objective of lowering unusually high debt ratios, to provide fiscal room to respond to wars, pandemics and natural disasters, was replaced by a less difficult imperative. All that was required was sufficient discipline to allow continued access to market financing. In fact, this access remained intact for most countries, prior to the pandemic, but serious concerns about future access had already begun to mount in some countries at least. The difficulties faced by sovereign borrowers in some peripheral countries during the European crisis provided a worrisome precedent for others.

The **pandemic** has substantially aggravated many of these undesirable trends. Inequality has worsened as the working poor have been hardest hit, both by the virus and the measures taken to supress it. Debt levels, both private and public, have both risen significantly in response to sharply slowing economic growth and a massive degree of monetary and fiscal easing designed to mitigate the damage. As output levels have sunk and debt levels have risen, ratios of debt to GDP have not only risen to record levels but have done so at a pace unprecedented in history.

Unfortunately, the bad path that we are currently on will also be influenced by forces that seem very likely to slow growth in the future. The IMF predicts that, by end 2021, the level of GDP in advanced market economies (AMEs) and emerging market economies (EMEs) will be almost 5 percent and 8 percent respectively below pre pandemic levels. Forces acting to slow future growth will make it harder to regain this lost ground. Above all, slower growth will make debt service more difficult and will restrict funds that might otherwise be used to improve inclusiveness and respond to environmental challenges.

The first concern affecting future growth will be the lingering effects of the pandemic. Standard epidemiological theory says that around 60 percent of the population will need to be immune before "herd immunity" is achieved. Individuals can get immunity (we hope, for a time at least) through infection or through vaccination. The proportion of the population already infected is far from 60 percent, and the promise provided by recent vaccine breakthroughs is constrained by worries about take-up and logistical issues. This implies that fear of infection could continue to constrain future economic activity even if governments relax rules about social distancing.

A second concern is closely related to the first. Social distancing has accelerated other trends already under way. Even given an effective vaccine, working from home and at distance is likely to increase permanently. Companies will now put more emphasis on resilience in production and less on efficiency. The economic gains from globalisation will diminish. As well, companies that rely on enabling technology will gain at the expense of service sectors, like travel and leisure activities, that rely on close human interaction. Relative prices will shift, implying the need for resource reallocation and a "temporary" increase in frictional unemployment that might well last for some time.

A third concern has to do with demographics. Over the last thirty years, global production surged under the influence of many EMEs, not least China, re-entering the global economy. In the AMEs, baby boomers were adding to supply capacity as was the rising participation rate of women in the work force. These forces led to increased income inequality in AMEs (as workers lost bargaining power), encouraged disinflation and lower interest rates in turn. These forces are now tending to reverse, with slower growth in potential and possibly higher inflation being unfortunate byproducts. More positively, income inequality will tend to decrease.

A fourth threat to future growth arises from global warming and other environmental damage. Even if mitigation efforts prove largely successful, adaptation to changes that cannot be avoided will prove very costly. Investments to protect against rising sea levels, for example, are investments that are not available for other growth enhancing purposes. Climate related emigration and immigration will raise further challenges, both economic and political.

In contrast, a fifth consideration, digitalisation, holds out the promise of much faster growth and perhaps even more environmentally friendly growth. The potential for rapid productivity growth in high tech sectors is already clear, but it is less clear that other sectors can benefit equally. Even within the high tech sector, many firms are lagging behind the leaders. Moreover, there are some serious downsides to digitalisation. One is the threat of increased sectoral concentration, and then the exercise of monopolistic and monopsonistic power as well as political influence. Another, closely related concern, might be widening inequality, as the digital divide grows between "haves" and "have nots", and as increasing returns to scale imply that "winners take all".

To summarize, our starting point is not a place where we wish to be. We are on a bad path. There are already strong grounds for belief that our environmental, political, economic and public health systems are under a degree of stress that could end in systemic breakdown. Finally, other threats to future growth can be identified that will slow economic growth and exacerbate existing tensions in other systems. We need significant structural changes to get off the path we are on and to move to a more sustainable one. Unfortunately, many of these changes will be unpalatable, to vested interests in particular.

Judging from past experience, there is a significant risk that governments will choose not to make these necessary changes but will instead double down on "still more of the same policies" that opened up these systemic exposures in the first place. As a practical matter, the likelihood that this will happen rises along with the perceived plausibility of arguments suggesting there are easy solutions to current problems rather than just unpalatable ones. Today, the easy answer seems to be that that governments should "spend and print" in pursuit of their various objectives. Fiscal stimulus should be directly financed by central banks. There are reasons why this easy answer might sound plausible, but there are also attendant dangers.

One point enhancing plausibility is that "spend and print" can easily be seen as an enhancement of what has actually been going on since 2009. In the advanced countries, government debts have increased substantially at the same time as the balance sheets of central banks have expanded enormously under the influence of Quantitative Easing. While these expansionary measures have not been coordinated, the end result has been much the same. More government debt has wound up on the balance sheet of the central bank. Moreover, this outcome has not led to either higher inflation or higher interest rates. Absent such undesired outcomes, and confronted with the perceived need for macroeconomic stimulus, provides an argument for doing "still more of the same". That is, we should maintain the ultra easy stance of monetary policy but combine it with fiscal expansion rather than contraction. This would only accelerate the growth in government debt that was going on anyway.

The plausibility of "spend and print" is further enhanced by reference to historical experience in Japan and to Modern Monetary Theory. Japan has been following such policies for decades without serious side effects. Modern Monetary Theory, as described in "The Deficit Myth" by Stephanie Kelton, suggests that central-bank-financed government debt can rise without limit as long as inflation does not increase. Should inflation increase, then tax increases can be used to resist that acceleration.

The counter-arguments to "spend and print" also invoke both historical experience and economic theory. The starting point is the recognition that the economy is a complex, adaptive system subject to tipping points. Thus, "spend and print" could go on for an extended period before the harmful effects appeared, potentially quite suddenly. Renewed crisis in the financial system might be a likely outcome. Peter Bernholz, in his "Monetary Regimes and Inflation" also documents many historical examples which culminated in high inflation and sometimes even hyperinflation. In a paper written in the 1980s, Sargent and Wallace present a theory of how the process works. Growing recourse of governments to central bank financing raises fears of fiscal dominance and higher inflation. If central banks resist through higher interest rates, increased debt service requirements and fears of fiscal dominance are aggravated. If the central bank does not resist, then this fuels inflationary expectations directly. Either way, there is the possibility of a vicious circle leading to currency flight, which further exacerbates inflation. And the rest, as they say, is history. The possibility of such a disruptive outcome provides further support for structural changes that move us on to a more sustainable path.

3. WHERE DO WE WANT TO GO?

The management consultant Tom Peters once quipped "If you don't know where you are going, you are going to wind up somewhere else." The destination we seek is one characterized by sustainability in all the major systems that will be needed to support human life in the future.

In recent decades, huge attention has been directed to **environmental** sustainability. Most attention has been paid to the need to restrain the rise of global temperature to a 2% C increase over pre-industrial levels. However, attention has also been directed to a whole host of other problems, like the acidification of the oceans and the loss of biodiversity, albeit with less precise quantitative targets in mind.

Political sustainability, at least sustainability of the democratic order, demands a restoration of trust in government. People must once again become convinced that "Government of the people, by the people and for the people" has not "perished from the earth". Rebuilding trust is contingent upon establishing a world where the distribution of income, wealth and, above all, opportunity, will be less unequal than it currently is in many countries. This also implies restraints on the inordinate influence of vested interests on political processes. At both the national and subnational levels, new procedures (eg collaborative democracy, citizens councils etc.) could help ensure effective compromises to reconcile diverse positions and interests.

Economic sustainability is not compatible with ever increasing debt ratios, unless that increased debt is matched by increases in productive investments to support the service of that debt. Debt increases fragility in virtually all states of nature. A more sustainable economy would emphasize more investment and less consumption. Finance would also involve more equity, and risk sharing, and less reliance on debt and leverage. Above all, monetary and fiscal policy would be conducted more symmetrically in the future to prevent stocks of debt, both private and public, from accumulating to levels that seriously constrain future behaviour. At a more structural level, a sustainable economy would facilitate the easy entry and exit of companies to foster competition and a process of dynamic innovation.

The Covid–19 pandemic has underlined vulnerabilities in our current **public health systems** (principally hospitals and care homes) which have at times come close to being overwhelmed. A more sustainable system would be prepared for future pandemics, likely arising from cross-species crossovers of pathogens. At least seven such crossovers have been identified since the turn of the millennium and it would be naïve to think this process has ended. As well, much more attention would be paid by public health authorities to preventing disease rather than treating it once discovered. It is well known, for example, that better nutrition and exercise can reduce obesity and the incidence of diabetes, heart disease and many other ailments. Better sanitation provides enormous benefits. More disease prevention would directly increase human welfare and would also free up resources for other uses.

4. HOW TO GET FROM THE CURRENT PATH TO WHERE WE WANT TO GO?

We are at a crossroad and, as Yogi Berra once put it, “When you come to a crossroad, take it”. Above all, we must recognize the need to question old beliefs and assumptions that constrain our willingness to act. As Mark Twain once said, “It ain’t the things you don’t know what gets you. It’s the things you know for sure what ain’t so.”

A large number of changes will be required to achieve sustainability in all the systems on which mankind currently depends. As already noted, it will be difficult to promote improvements to individual systems while maintaining the sustainability of these interacting systems operating as a whole. This analytical challenge will be complemented by a still greater political challenge. Each of the changes suggested below will be seen as economically costly or otherwise unpalatable to some vested interest, and potentially some powerful interest.

The first requirement is that we need a **paradigm shift** in how we think about the world. Above all in the realm of economics and finance, it must be accepted that the economy is a complex, adaptive system with similar characteristics to other such systems that have been widely studied in both nature and society. Perhaps most importantly, it must be accepted that changes affecting systems have both nearer term and longer term consequences, and that humans have a bias towards ignoring the latter. Moreover, it must be accepted that these systems interact. A systems mentality must replace a silo mentality.

These transformations will not be easy to achieve. Thomas Kuhn has described how difficult it is to achieve paradigm shifts in science, in normal times. Daniel Kahneman has documented how it becomes even more difficult in abnormal times, when unexpected occurrences lead to an ever more desperate embrace of previous beliefs. As for retreating from silo thinking, academics have prospered for decades from "digging the hole deeper". Multidisciplinary thinking is becoming more fashionable, but remains a fringe activity for most.

Achieving **environmental sustainability** will require many changes, but avoiding too much climate warming is essential. As a practical matter, phasing out government subsidies for fossil fuels will be critical. The International Energy Agency estimates these amount to US$ 500 billion per year. As well, the IMF suggests the need for a global carbon tax of US$ 75 per ton of CO2. Environmental, social and governance (ESG) criteria for future investment must be better defined and applied, perhaps even influencing central bank investment decisions concerning acceptable collateral for lending and for asset purchase under Quantitative Easing (QE). The implications for stranded assets (stated reserves of fossil fuels that cannot be used) and for financial stability must also be directly addressed. This seems likely to involve some migration of unsustainable private sector debts on to public sector balance sheets.

The principal, though by no means only, complication is that many of these measures will prove regressive. Experience in France and Chile as well as elsewhere demonstrates this could cause widespread political unrest. One suggested solution, already endorsed in a petition by thousands of economists in the US, is that a substantial portion of the tax proceeds be remitted to taxpayers in a purposefully progressive fashion.

Dealing with inclusiveness issues, to support **political sustainability**, will require changes in both private practices and public policy. Companies (especially in the US) must narrow the extraordinary divide that has opened up between the compensation of senior management and other paid employees. Reconsideration is also required of the "bonus culture" that has encouraged senior management to cut investments and to increase corporate borrowing to raise cash. This cash has then been used to finance share buybacks that raise share prices and the value of options held by senior management. A reconsideration of the balance between shareholder's interests and stakeholder's interests would also be welcome. Statements of intent by corporate management must be verified by an examination of actual changes in practice.

As for governments, restoring the trust of voters will require legislation promoting more income and wealth equality. Changing the tax system, at the international as well as national levels, to cut unfair corporate subsidies would be helpful. So too would international cooperation and data sharing to reduce tax evasion. Explicit measures to stop lobbying by powerful and well financed interest groups will be required. Progressive tax measures like wealth and inheritance taxes, fuller taxation of capital gains and the removal of the tax deductibility of interest payments should all be considered. With interest rates so low, and the wealth of richer citizens increased accordingly, the political resistance to such tax measures might be temporarily diminished.

Minimum wage legislation should also be revisited. As well, safety nets for workers, rather than companies, should be expanded as should training and lifetime learning. Antitrust laws should be both tightened and more rigorously enforced, and the contractual power of firms to restrict the future mobility of their employees should be limited. Finally, devising insolvency laws that are more supportive of debtors, and less supportive of creditors including bankers, would not only help change the political climate but might prove more supportive of future growth as well.

Dealing with the current debt overhang problem, and achieving **debt sustainability**, could in theory be accomplished in a number of ways. However, in practice, the alternatives are much more limited. Austerity, for a whole economy rather than a single household, leads to Keynes' "Paradox of Thrift" and is actually counterproductive. Faster real growth is almost impossible given a debt overhang, though structural reforms to strengthen underlying potential must be welcomed. Higher inflation would help, but only if interest rates could be kept down at the same time. This kind of "financial repression", which succeeded in reducing debt burdens after World War II, seems much less likely to work in the modern world.

These shortcomings point to the need for explicit debt restructuring or even outright forgiveness. However, the administrative and judicial mechanisms needed to do this effectively are lacking and need to be put in place. In recent years, the Working Party on Macro-Economic and Structural Policy Analysis at the OECD and the Group of Thirty have published extensive documentation of current shortcomings and suggestions for improvements. Procedures for resolving debt problems in the corporate and household sectors need improvement. Not least, "zombie" companies must be restructured rather than be given "evergreen loans" as is currently the case. Indeed, measures taken to reduce the economic costs of the pandemic have sharply worsened this problem. Procedures for resolving financial sector insolvencies are even more inadequate. The problem of banks that are "too big to fail" must be dealt with definitively. We also need an accepted set of principles for the restructuring of sovereign debt. In fact, as we saw recently during the European financial crisis, there are not even constraints on the provision of new loans to countries that are already effectively bankrupt.

One common problem has been the tendency to suggest that agents are illiquid rather than insolvent. This confusion has been central to the repeated recourse to monetary easing both during and after financial crises. It seems increasingly likely that monetary policy is now doing more harm than good. Therefore, monetary policy should be "normalized" as soon as possible. Evidently, given the likelihood of this sparking a "temper tantrum" in financial markets, this tightening will have to be done very carefully. Hopefully, measures taken in advance to resolve debt problems in an orderly way would reduce the costs of such a disorderly outcome.

Current fiscal deficits in many countries are large and are adding to already large levels of debt. Nevertheless, this stance should be maintained until a robust economic recovery is underway or until market access seems under threat. By borrowing at low rates for long durations, sovereigns can push off increased debt service well into the future. Further, by indicating clearly their firm intention to restore fiscal order in the future, and providing guidance about the measures required to do so, governments might help extend the "patience" of financial markets even further.

The persistence of the Covid-19 **pandemic** will pose a serious threat to the transition towards more sustainable systems. The rapid development of effective vaccines has been a triumph for science, but not all concerns have been eliminated. The degree and duration of the immunity given by the various vaccines remains to be determined, particularly in light of possible viral mutation. As well, logistical challenges remain in rolling out the vaccine, particularly at the global level. Finally, the false beliefs of anti-vaxers could well prove resistant to counterargument; as a result, the proportion of the population choosing to be vaccinated might be lower than desired. In short, while we are clearly on the road to "herd immunity", we are far from having arrived at that destination.

The need to live with the virus and the associated threat of illness implies that social distancing, whether government imposed or voluntary, will continue for some time. Unfortunately, social distancing has significant costs. Most obvious are the *economic costs* arising from impediments to both production and spending. The significant global recession we have already experienced could easily worsen if a debt-deflation dynamic were to take hold. The *social costs*, due to family violence and increased suicides, are also becoming increasingly evident. The *health costs* in terms of missed diagnoses, missed treatments and missed vaccinations are of growing concern. Mental health problems, associated with social isolation, are just beginning to receive the attention they deserve. Finally, there are *distributional and political* implications. It bears noting that people of colour, more poorly paid workers and women seem to be bearing a disproportionate burden of these other costs. Consistent with the discussion above of the problems of inclusiveness, these distributional inequities increase distrust of government and further threaten political instability.

What can be done to reduce the fear of personal harm that motivates social distancing and all its associated costs? The perceived threat to personal harm is the product of the fear of being infected, and the fear of serious consequences (even death) once infected. Both can be reduced by public policy.

Both could be reduced, in at least a subset of the population, by giving priority access to vaccines to those most vulnerable and to those who care for them. This does seem to be what is happening. In addition, fears of becoming infected, among the non vaccinated, could be reduced by increased measures to test and track, and by the increased use of on-the-spot-testing (antigen tests) to allow access to services such as concerts, plane travel etc. Fears of serious consequences once infected could be reduced by better treatment, better medicines, and the assurance that sufficient resources were being spent on the health system to ensure that it would always be able to cope with those needing its services.

While the costs of these measures might seem high, they would in fact pay for themselves many times over in terms of the costs avoided through social distancing. Evidently, as society approached herd immunity to Covid-19, and the need for hospital care diminished, the health care system would be left operating well below capacity. This outcome should not be disparaged. Measures such as closing "wet" markets and protecting natural habitats from human intrusion will reduce the probability of future crossovers of pathogens from animals to humans. Yet, scientists agree that future pandemics are inevitable. Today's excess capacity will eventually be seen as a vital contributor to the resilience of tomorrow's health care system.

5. HOW TO MAKE CHANGE HAPPEN?

The Canadian economist J K Galbraith once quipped "Politics is not the art of the possible. It is choosing between the unpalatable and the disastrous". Getting off the current path, and onto a path that leads us to where we want to go, will require policies that will seem unpalatable to the rich and the politically powerful within nation states, and to powerful nation-states as well. How can the powerful be convinced to do the right thing in pursuit of the greater public good?

At the **national** level, self interest is always a good place to start. The economically powerful must be convinced that the current state of affairs is not politically sustainable. Recent research convincingly shows that the "trickle down" theory, which suggests that all prosper when the rich prosper, is simply not true. Growing popular discontent with the status quo could then conceivably end in a social or political revolution that would cost the rich dearly. As Walter Scheidel has shown in "The Great Leveller", history is replete with examples of rising inequality being swept away in just such a fashion. Hopefully, the conclusion would be drawn that it makes sense for the economically powerful to accept small sacrifices to help avoid potentially much larger ones. This also implies reduced political support for policies favouring vested interests.

Political leadership in the democratic countries must also learn to lead again. In particular, they must try to convince the electorate of the need to pursue longer term goals when setting public policies. As President J F Kennedy put it in "Profiles of Courage", this is what real statesmen do whenever the people seem intent on doing something "dangerously foolish". Generating the will to act, even when there is some uncertainty about the best policies to follow, must also be preferable to policy inaction that will in all probability lead to disastrous outcomes. Once objectives have been agreed and have wide public support, experimentation and adaptation can further refine public policies to better serve those objectives.

Current governance practices and institutional arrangements will also require some changes. Pandemics and environmental concerns clearly require a global response, whether limited to establishing a global vision to guide action or extended to actually directing such action. Conversely, it seems to be the case that effective action often involves action by more local authorities. Going forward, such a "barbell strategy" would require sovereign states to cede power to supernational and subnational authorities.

Whether subject to current or improved institutional structures, "making change happen" will demand a substantial degree of **international** cooperation. Desired macroeconomic changes in one country could have undesired implications elsewhere, leading to retaliation and suboptimal outcomes. Regulatory easing in one country could lead to a race to the bottom with other countries. Tightening environmental controls in one country could just lead to production moving elsewhere. Put succinctly, cooperative solutions (remember the Prisoner's Dilemma Problem) generally offer better outcomes than solutions motivated by narrow state interest.

While there are many impediments to achieving the degree of international cooperation required, the pandemic has actually given some grounds for optimism. An unprecedented degree of international cooperation among scientists has produced Covid-19 tests, improved health care procedures and effective vaccines at a pace that has exceeded all previous expectations. International cooperation works at this level and can work at others. Moreover, these successes are working to overcome the fatalism of previous generations which saw the effects of pandemics as being essentially outside human control. Increasingly, the failure to control pandemics will be seen as a political failure. Governments that fail to reap the benefits of international cooperation seem increasingly likely to be held accountable.

Finally, the global nature of the pandemic has reminded us of the global, indeed existential, nature of the other challenges that nation states currently face. These global problems need urgent solutions based on global cooperation. As Benjamin Franklin once wrote to a group of fellow American revolutionaries "Gentlemen, we must all hang together, or we shall all surely hang separately". Perhaps it is that recognition which will provide the greatest impetus to "make change happen" at the international level.