

New Approaches to Economic Challenges

EMNES ANNUAL CONFERENCE AGENDA

Introduction

- Twenty years ago, the 9/11 attacks revealed “four kinds of failures: in imagination, policy, capabilities, and management”. The 9/11 Commission stated that “Imagination is not a gift usually associated with bureaucracies.. It is therefore crucial to find a way of routinizing, even bureaucratizing, the exercise of imagination”.
- The New Approaches to Economic Challenges (NAEC) Initiative was established in response to “a psychology of denial” and “the failure to foresee the timing, extent and severity of the [Financial] crisis and to head it off, while it had many causes, was principally a failure of the collective imagination of many bright people, both in this country and internationally, to understand the risks to the system as a whole.”

The New Approaches to Economic Challenges (NAEC) Initiative was established in 2012 to distill lessons from the Global Financial Crisis and to provide a space to debate, critique and discuss economic ideas and the policies that stem from them. It has evolved into an effort to better understand how the economy works, how to adopt a systemic approach and build resilience to shocks.

Paul Krugman once said that OECD was conventional wisdom central and he said this was a good thing. Governments need a place to agree on common approaches with shared concepts, theories, models and data. He also described NAEC as a skunk-works for economics and policy – a place to experiment and try out new things. I think there is a need for both. NAEC has been variously described - mostly positively – but a recent blog suggested NAEC was facilitating the “assisted suicide of OECD economics”. While Avner Offer described it as an intellectual red light distract – it’s ok what goes on in there but it’s different, it’s separate.

NAEC has promoted tools needed to analyse the many, often irrational-seeming, behaviours that are generated by the uncountable interactions of billions of people, firms and institutions locally or globally, in small groups or as nations, at timescales ranging from nanoseconds to millennia. The objective was to understand the shortcomings of the analytical frameworks the Organisation had relied on before the Financial Crisis, and to establish the basis of a better way of producing policy advice based on new frameworks.

NAEC is trying to advance new approaches to economics. However, all systems have a certain inertia. There has been a great deal of investment in the techniques that have been used for some time and this leads naturally to take very seriously the problem of shifting to new and possibly less tested approaches. The role of NAEC is to put these new approaches and rethinking the framework, on the table. It is not to argue that there should be an automatic switch to any of the new approaches presented, but rather to put them in the picture so that they are taken into account.

The Four Horsemen of the Econopalypse

What is wrong with the ways economists think about the economy? Rick Bookstaber’s Four Horsemen of the Econopalypse provides a good guide. These are four characteristics of the real world, and consequences of actual human

behavior, that intertemporally optimizing, rational representative agent models are fundamentally incapable of capturing because the standard framework basically assumes them away. In addition, these same characteristics are also either essential features of financial crises, or of any model that has a reasonable hope of representing them. Bookstaber's Four Horsemen include computational irreducibility, emergent phenomena, non-ergodicity, and radical uncertainty.

1.) Computationally irreducible systems have outcomes that cannot be summarised by equations of motion. Instead, they must be experienced, or in the case of models, simulated, period by period in order to find out what actually happens.

Doyne Farmer from Oxford describes the “world economy where heterogeneous, global production networks (50 million firms with billions of physical links) interact with household networks (2 billion households, 3.3 billion workers and trillions of links to consumed products), a web of contracts (trillions), and ownership patterns where a few firms and individuals own almost everything.” It is not possible to reduce this complexity to a system of equations.

2.) Emergent phenomena are situations in which the system's actions differ from the actions of the individuals in it. In other words, the individuals' actions contribute to outcomes at the system level that deviate from the agents' actions, and in some cases, countermand the agents' actions or even bring harm to them, as with stampedes. Economic and Financial Systems are not self-stabilising where they get knocked off course by an exogenous shock but will converge back to a steady state or equilibrium. Instead the macroeconomy is inherently intricate and interlinked and offers complex interactions on individual levels, that give rise to emergent properties at the macro level and endogenous shocks.

3.) Non-ergodic systems' outcomes depend critically on history and context, so that every situation is different and can produce outcomes that differ significantly from previous situations that are similar but not the same. In other words, the future doesn't always look like the past.

4.) Finally, radical uncertainty (also known as Knightian uncertainty) means that not only are the probabilities of various events and disturbances unknown, but the event space itself is not fully known. As Ben Bernanke argued *“the best approach for dealing with this uncertainty is to make sure that the system is fundamentally resilient and that we have as many fail-safes and back-up arrangements as possible.”*

There are differing perspectives on how to respond to these fundamental problems. Some argue that economics needs significant reform, but it should be done essentially through extending and modifying existing frameworks. Specifically, the idea of the economy as an equilibrium system should be preserved, but more behavioral and institutional realism should be introduced, more allowance for various market failures made, political economy concerns should be revived, and more empirical data utilised.

Others and I think many speakers today believe a more radical reframing of the field is needed. Specifically, the equilibrium framework should be abandoned in favour of complex systems, dynamic, reflexive, and evolutionary approaches, high degrees of behavioural and institutional realism, and adoption of newer analytic methods such as computer simulation, network theory, and big data statistical approaches.

There are many similarities between pandemics and financial crises and the structure of our system is conducive to fragility, with short-term individualistic incentives within a framework that is increasingly interconnected and interdependent. As Andy Haldane’s prophetic comparison in 2009 put it:

“Both events were manifestations of the behaviour under stress of a complex, adaptive network. Complex because these networks were a cat’s-cradle of interconnections, financial and non-financial. Adaptive because behaviour in these networks was driven by interactions between optimising, but confused, agents. Seizures in the electricity grid, degradation of ecosystems, the spread of epidemics and the disintegration of the financial system – each is essentially a different branch of the same network family tree.”

What are the challenges?

The Covid-19 epidemic has shown how a health emergency can provoke severe economic consequences across the planet. The deep interconnectedness and interdependence of global systems means that any local crisis can rapidly scale up to contribute to planetary environmental, social, economic, and political emergencies. These emergencies also interact with and amplify each other.

The economic system is inherently intricate and interlinked through financial markets, global supply chains, social networks and a shared ecological foundation. Complex interactions at the individual level give rise to emergent properties at the macro level. Such a system is subject to crises and cascading failures, which can emerge from a variety of sources including financial crises, natural disasters, geo-political tension, cyber-attacks and pandemics.

These risks are amplified by several overarching trends: the intensification of inequality, the hyper-complexity of finance, the rise of digitalisation, concentration of critical capacities and monopolisation and environmental emergencies such as climate change and biodiversity loss. These are not only raising the frequency and intensity of certain shocks, but enabling their impacts to cascade from system to system. Furthermore, growth-enhancing policies can destabilise these systems and there should be more concern for systemic resilience.

Ongoing work at NAEC? Ambitions and biggest challenges?

Let me highlight three major initiatives:

- 1.) **Beyond Growth:** A recent NAEC report argued that we need to go beyond growth, to stop seeing growth as an end in itself, but rather as a means to achieving societal goals including environmental sustainability, reduced inequality, greater wellbeing and improved resilience. This requires updating the philosophy, tools and methods underpinning the analysis that influences economic decision-making. Drawing on developments across the modern field of economics and political economy, the report argues for a new approach which recognises the rootedness of economic systems and

behaviour in the relationship between people, social institutions and the environment.

- 2.) **Systemic Resilience:** Driven by a need to prepare for and recover from high consequence shocks on various social, information, and infrastructure systems, resilience has evolved as a concept dealing with how a complex system operates under stress. This is particularly relevant for the management of major risks. Resilience calls for a multidisciplinary approach, drawing on social sciences as well as natural science, and may lend itself to a variety of methodological approaches by which system resilience may be assessed. It has also been used as a concept to assess the capacity of economies and financial systems to withstand major shocks.
- 3.) NAEC is working with the PRODEO Institute and various actors on a **Neuroscience-informed Policy Initiative** on the concept of “Brain Capital” which considers brain skills and brain health as an indispensable part of the knowledge economy. NAEC promotes this concept as an approach for thinking about the economy and how it works in new ways and is laying some of the groundwork, looking at relevant metrics and building up a network of interested actors in the medical field, neuroscience, philanthropy and business. The initiative has entered a developmental phase examining the application of ideas from neuroscience and medicine to economic and social policy including topics such as productivity, gender equality, mental health, education and others.

The ambition for NAEC is to upgrade public policy – to improve the analytical approaches, to question prevailing narratives and to enhance the scientific underpinnings. We have had a lot of influence and impact, demonstrated by citations of our work in flagship publications and studies at the OECD and the uptake in governments and other International Organisations.

However, there is a lot of human capital investment in traditional approaches and a lot of inertia in the system and hard-wired understanding of the way things work.

Senior OECD leadership is ambivalent at best. While some Members – Greece, Mexico and Japan (our Friends of NAEC co-chairs) have been vocal in their support, others continue to have reservations about the role of NAEC in the OECD, preferring a more orthodox governance approach. We have also benefited from support from Foundations and Private Sector Donors as well as some Members (Sweden, Netherlands, Italy). NAEC’s role will probably never be secure and will be criticized but if this were not the case, it would probably mean we were not being bold enough so the criticism could be taken as a sign of success.

NAEC has held a number of discussions with emerging economies including China, India, Indonesia, and South Africa featuring Ministers and high-level officials as well as experts. We discussed economic frameworks in response to challenges, which we all share.

Together, we need to find new global and inclusive ways of addressing our current challenges through new growth models needed to seize the opportunities that the future offers us. With the ideas and the tools emerging from the NAEC initiative, and with the help of economists and analysts from the Global South, we hope to continue our progress on the design, development, and implementation of better policies.

New Thinking and the Next Crisis

The OECD’s contributions to COP26 focused on supporting progress at the climate negotiations and sharing OECD analysis and data to support climate action. The range of contributions from across the OECD was consistent with the UK COP26 Presidency’s call for a “whole-of-government” and “whole-of-society” approach to managing the impacts of climate change. OECD collates climate finance figures, covering flows in 2019, which will be released prior to COP26.

I think urgent changes in analysis and action are needed to tackle climate and environmental emergencies and global-scale systemic challenges would be an important outcome. Leaders at COP 26 must develop plans and strategies based

on new inter-disciplinary frameworks, concepts, models and narratives to confront not just climate but planetary emergencies.

It is 15 years since the original Stern Review of the Economics of Climate Change. Since then science has revealed much greater, escalating risks from climate change. Yet mainstream economics persists in rehashing decades-old, unjustified assumptions that levels of global warming which science would view as catastrophic, would only lead to modest reductions in global GDP. Alas, such erroneous work still strongly influences climate policy in critical jurisdictions. Hence, the economics of climate change needs urgent review in terms of values, models and policies.

Mainstream economic analysis continue to argue that the impact of even extreme climate change on human civilization will be mild. For example, economics Nobel Laureate William Nordhaus recently stated: “damages are 2.1 percent of global income at 3°C warming and 8.5 percent of income at 6°C warming.” (Nordhaus 2018). Such sanguine conclusions are based on invalid methodologies. Two key fallacies underpin the economic analysis of climate change: Firstly, that only “Economic activities such as agriculture, forestry, fisheries, and mining are exposed to the weather and thus vulnerable to climate change. Other economic activities, such as manufacturing and services, largely take place in controlled environments and are not really exposed to climate change.” (Arent et al. 2014, p. 688). Secondly, that the weak statistical relationship between temperature and income today can be used as a proxy for the impact of climate change on income: “making use of spatial variations in the existing climate as an analogue for climate change” (Maddison and Rehdanz 2011, p. 2438).

Much of the economic literature relies on variants of these false assumptions. Yet anyone who experienced recent extreme weather events will attest that essentially all human activity can be affected by climate – being in a ‘controlled environment’ is no protection when it is being flooded or burned to the ground. What we urgently need are better ways of assessing climate damages that go

beyond correlational econometrics based only on one or two crude measures of the climate that we experience and are already adapted to, and dubious extrapolation.

The current economics of climate change is bad science. Hence, its estimates should be rejected. Policymakers still urgently need credible guidance on the risks to human wellbeing from climate change. A new interdisciplinary review of the economics of climate change can start to rectify this situation.

Conclusions

The challenges that confront us demands a new, inter-disciplinary, global, scientific approach, which brings together experts from beyond as well as within economics. Alternative economic methodologies are already available which could help. There must be a role for process-based understanding and modelling, including the latest advances in understanding non-linear and cascading risks in complex, coupled human-environment systems.

It should embrace an inferential framework that does not just ignore huge swaths of potential impacts that it is not sure how to quantify, but rather assigns them an appropriate form and level of uncertainty, and stimulates research to address them.