

**NEW APPROACHES TO
ECONOMIC CHALLENGES**
TOWARDS A NEW
NARRATIVE

**OECD
FORUM
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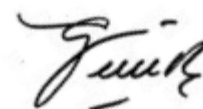
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The text presented here summarises debates and discussions that have taken place within the framework of NAEC. It does not necessarily reflect the views of the OECD or its members, or those of the other institutions to which the contributors are affiliated.

A handwritten signature in black ink, appearing to read 'Gabriela Ramos', with a horizontal line underneath.

Gabriela Ramos

Chapter 1. Causes and lessons of the crisis

Patrick Love, with Adrian Blundell-Wignall, Stefano Battiston, Bill White, Sony Kapoor

In 2003, the authors of the OECD's *Emerging Risks in the 21st Century* warned that: "In today's highly interdependent and networked world, even a local event can have substantial repercussions in distant regions of the world through its impact on technological or financial networks...". The financial crisis triggered by US mortgage market four years later and the Great Recession that followed showed that the warning was valid. Many of the trends underlying the OECD analysis have intensified since the report was written. At the time, the notional value of the entire credit-default swaps market (the value of the underlying assets of these contracts) was "only" about \$144 billion. At the end of 2007, it was over \$62 trillion. In fact, nobody actually knew how many trillions of dollars there were out there. One of the great shocks, in every sense, of recent times was the realisation that companies that seemed to be worth more than whole countries were in fact bankrupt. This fuels a widespread feeling, anguish even, of not understanding anything anymore. An impression that our destinies are controlled by market forces every bit as obscure and beyond human control as the natural and supernatural forces that impressed earlier generations.

So big and well-connected they failed

Stock market crashes and financial shocks over the years share a number of common features, blaming the machines for example - the telegraph in the 19th century, the ticker tape in 1929. Today, it's computers, with claims that algorithms taking decisions about financial instruments too complex for human understanding precipitated the fall. That may be comforting for the people who paid each other fortunes to manage financial firms. For the others, it sounds like "a bad workman blames his tools".

The crisis was not caused a failure of technology. Before the collapse, technology was even being praised for helping to integrate and coordinate the global financial system and spread risk so widely that nobody was going to suffer much if things went wrong. The crisis was caused by a failure to run and to regulate competently the global economy and the firms that dominate it. This allowed huge imbalances to build up, and, when they reached a tipping point where they could no longer sustain their own weight, failure was sudden and brutal. The crisis revealed how some of the very strengths that had allowed the economy to expand, such as interconnectedness in its many guises, could be just as potent in provoking or aggravating its downfall.

It also revealed how the tools economists used were not good enough. Bill White argues that the dominant school of economic thought prior to the crisis essentially modelled the national economy as a totally understandable and changeless machine (DSGE models). Moreover, the machine almost always operated at its optimal speed, churning out outputs in an almost totally predictable (linear) way, under the close control of its (policy) operators. But rather than being a machine, the economy should instead be viewed as a complex adaptive system, with massive interdependencies among its parts and the potential for highly nonlinear outcomes. Such systems evolve in a path dependent way and there is no equilibrium to return to. Several characteristics of complex systems are particularly relevant for understanding the crisis.

First, all complex systems fail regularly; that is, they fall into crisis. There were 195 stock-market crashes and 84 depressions between 1860 and 2006. Moreover, the distribution of outcomes is commonly determined by a power law. Big crises occur infrequently while smaller ones are more frequent. There were big crises in 1825, 1873 and 1929, as well as smaller ones more recently in the Nordic countries, Japan and South East Asia.

Second, the trigger for a crisis is irrelevant. It could be anything, perhaps even something trivial in itself. It is the system that is unstable. Governor Bernanke of the US Federal Reserve originally estimated that the losses from the subprime crisis would not exceed 50 billion dollars and they would not extend beyond the subprime market. Similarly, how could difficulties in tiny Greece in 2010 have had such far reaching and lasting implications for the whole Eurozone? Its GDP was only around \$305 billion compared with over \$16 trillion for the EU as a whole. The global crisis was in fact an accident waiting to happen, as indeed was the crisis within the Eurozone.

Third, complex systems can result in very large economic losses much more frequently than a normal distribution would suggest. Moreover, large economic crisis often lead to social and political instability.

Beyond the general features of the system, it is obvious that risk was badly managed in many companies. Information did not reach the board and even senior levels of management. Company disclosures about foreseeable risk factors and about the systems in place for monitoring and managing risk left a lot to be desired. Indeed, in a 2003 letter to shareholders, Warren Buffet warned: “No matter how financially sophisticated you are, you can’t possibly learn from reading the disclosure documents of a derivatives-intensive company what risks lurk in its positions.”

One surprise for many people was that “the bottom line” wasn’t an objective statement of a company’s worth or performance. For example, accountants move mortgages and other

items off the balance sheet for various reasons. Structured Investment Vehicles were actually invented by Citibank to keep some dealings off the balance sheet, but when things go wrong, they may have to be brought back on to cover losses. In November 2007, Citibank's shareholders only learned about \$25 billion of risky dealings when they were suddenly brought back on.

Another surprise would be a listing of the world's largest companies at the time of the crisis, such as the Forbes Global 2000 for 2009. Practically all the top 100 companies made nothing, apart from money, and some of them, such as RBS at number two, failed spectacularly to do even that. You have to search down the list to the 32nd place to find a firm that actually produces goods (General Electric), but then the litany of banking, insurance, diversified financials and so on continues until past 60th place, where another conglomerate appears, to be joined towards the bottom of the table by oil companies, utilities and telecoms plus a couple of car makers.

Nine of the top ten had assets valued at around \$2 trillion or more, including RBS, with \$2.7 trillion, behind BNP Paribas with \$2.9 trillion. To put that in perspective, only seven countries in the world had a GDP of \$2 trillion or more in 2008 before the worst of the recession hit (World Bank, 2010), including the UK, with a GDP of \$2.6 trillion - less than the "assets" of the bank British taxpayers bailed out.

The fact that these gigantic firms concentrate such a large proportion of global assets and speculate with them is one of the dominant features of the world economic order, and prompts the question as to how they got so rich. Former RBS chairman Sir Fred Goodwin's answer was given in *Masters of Integration*, a 2003 case study by the Harvard Business Review. "Hard work, focus, discipline and concentrating on what our customers need" allowed the bank to grow. In fact it was takeovers. The concentration of European banking into a few megacorporations was imitating what had happened earlier elsewhere. In the US, the number of institutions dropped by more than half in 20 years, falling from 17,325 in 1987 to 8430 in 2008. Likewise, in Japan over 1990-2004, there were 10 mergers by major banks, 9 by regional banks, and 97 by *shinkin* (cooperative) banks.

When the Masters of Integration disintegrated, along with Lehman Brothers and the others, a number of common features emerged. The Forbes list is based on assets, but most of these assets were probably worthless at best, and some were probably liabilities. The problem is, the true state of many firms' finances is impossible to know until disaster strikes. Lack of transparency isn't just an ethical issue. When there is a widespread feeling that many potential partners in a deal may be hiding something, or simply not aware of the true state of their own finances, confidence begins to crumble and the trust on which the credit system

relies evaporates. If, as happened with a firm the size of Lehman's, the mistrust turns out to be entirely justified, the impact is catastrophic.

Lehman's called into question one of the unspoken assumptions of global finance: some banks are too big to fail. This assumption was based on a double guarantee. First, they had enough assets to cover potential losses. Second, in the unlikely event of that not being so, the government would step in. Both guarantees proved to be illusory in the case of Lehman's, but when the entire global financial system threatened to implode, governments quickly acted to restore the second guarantee, while promising that at some time in the future they would do something to make sure it didn't happen again. Governments committed \$11.4 trillion according to OECD estimates, the equivalent to the 2007 GDP of Japan, the United Kingdom, Germany and France combined, or about \$1600 for every man, woman and child on the planet.

That commitment had to be funded by states that may have been facing a slowdown or recession and widening budget deficit already. Sovereign issuers needed to address the consequences of increased competition in raising funds from markets, leading to higher borrowing costs, and even in some cases fear that sovereign borrowers may not be able to meet their commitments, provoking a sovereign debt crisis. There's nothing new about sovereign debt crises in themselves, but they used to be a problem of developing and middle-income countries. Then in 2009 and early 2010, Greece showed that they can be a problem for OECD countries too.

Bill White points out that the proliferation of financial markets and the relative decline of intermediated credit in recent years have concentrated attention on underlying systemic questions, since surface indicators of good financial health can be seriously misleading. If market participants are hit by the same shocks, are similarly vulnerable and react similarly as well, the implications for the financial system as a whole and the real economy it underpins can be devastating. White argues that, similar to the earlier failure of price stability to deliver macroeconomic stability, financial stability is also not sufficient to achieve that objective. The imbalances caused by credit-driven booms go well beyond the financial sector, with the most serious being perhaps a misallocation of real resources.

In what seems like a paradox, too much investment, or too much of the wrong same kind of investment, can make the system more fragile. Cheap credit meant that in a number of economies, notably the US, consumption and housing investment rose to unprecedented levels as a proportion of GDP. In China, capital investment surged. The result is that following the crisis, Asia's export capacity was greater than what consumers elsewhere could afford to buy, the more so since during the boom, there was a build-up of excess global capacity in a whole range of sectors from automobiles to banking. During the time it takes

for labour and capital to be either written off or shifted into more profitable and sustainable endeavours, aggregate production potential is diminished and structural unemployment rises.

An OECD study from 2015 on *Finance and Inclusive Growth* looked in more detail at how growth in the financial sector affects growth in the rest of the economy. Initially, an expanding financial sector is beneficial, but it eventually reaches its ideal weight, and apart from contributing to inequality, “further increases in its size usually slow long-term growth”. This conclusion holds when you consider a range of other factors including country specificities, the business cycle, and even financial crises. In general, more credit to the private sector slows growth in most OECD countries, while more stock market financing boosts growth. Bank loans slow economic growth more than bonds. Credit is a stronger drag on growth when it goes to households rather than businesses.

The long-term increase in credit is linked to slowing growth through five channels, including bank lending increasing more than bond financing, and a disproportionate increase in household credit compared with business credit. The first channel the OECD identifies is excessive financial deregulation, while in 2008 the Organisation was claiming that: “Observing the changes that have taken place in the past 25 years, a consensus has emerged that a deregulated financial sector operating in a competitive, open environment with market-based supervision grounded in international norms, is optimal contribution for economic development.”

The current OECD strategy to reform the financial sector to stop it slowing growth and making inequality worse has three broad components.

First, use macro-prudential instruments (measures that address risks to the whole system rather than individual institutions) to prevent credit overexpansion, and make sure banks maintain sufficient capital buffers. Second, reduce subsidies to too-big-to-fail financial institutions through break-ups, structural separation, capital surcharges or credible resolution plans. Third, reduce the tax bias against equity financing and make value added tax neutral between lending to households and businesses.

Ultimately, the structure of the global financial system has to be changed. Contagion risk and counterparty failure were the hallmarks of the crisis. While sound corporate governance and a strong risk-management culture should enable banks to avoid excess leverage and risk taking, there are likely always to be some players eager to push complex products and trading beyond the sensible needs of industry and long-term investors in order to drive profits. Indeed, such activity is once again driving the rapid profit growth of some banks, with little having been learned from the past.

Robert Solow makes a similar point. While a functioning financial system is at the heart of a successful modern economy, this shouldn't be an excuse for financial firms to do whatever they like – especially as some of their activities seem to benefit almost no one but themselves: “I have read that a firm such as Goldman Sachs has made very large profits from having devised ways to spot and carry out favourable transactions minutes or even seconds before the next most clever competitor can make a move. Now ask yourself: can it make any serious difference to the real economy whether one of those profitable anomalies is discovered now or a half-minute from now? It remains hard to believe that it all adds anything much to the efficiency with which the real economy generates and improves our standard of living.” He concludes that our poorly regulated financial system is not only dangerously unstable, but also too big and too complex, absorbing talent and resources that could be better used doing something else.

Unruly alchemists

Adrian Blundell-Wignal sees complexity as central too, and thinks it is perhaps the most important lesson of the financial crisis. Global finance is the perfect example of a complex system, consisting as it does of a highly interconnected system of sub-systems featuring tipping points, emergence, asymmetries, unintended consequences, a “parts-within-parts” structure as Herbert Simon defined it, and all the other defining characteristics of complexity. It is shaped by numerous internal and external trends and shocks that it also influences and generates in turn. And as the system (in most parts) also reacts to predictions about it, it can be called a “level two” chaotic system (as described, e.g. by Yuval Harari).

Another way to think of it is of schools of unruly kids around the world in a global alchemy competition, trying to turn lead into gold and in great quantity. The teachers have little control, and don't even know what the bright young things are capable of. Some kids are following the textbooks, others are taking short-cuts, some are pouring in compounds never used before, while still others are bringing in cheap materials from new schools from around the world. Was the result to be endless mountains of gold, or an explosion of unstable compounds? With hindsight the answer is known today. But it is helpful to make a list of the ingredients that went into the mix:

- Risk will always be underpriced when banks mix deposit banking with investment banking, where it is usually cheaper to save the bank than to pay the deposit insurance. This is sometimes called the ‘Too Big to Fail’ problem.
- Financial markets innovate at rates that regulators can never keep up with. Synthetic leverage through derivatives is very complex and products built with them are continually evolving. The plumbing of the systems through which exposures and funding operates is in the main a mystery to most policy makers.

- Different countries have different financial systems—some more bank-oriented and some in which capital markets play a greater role. In some the state owns and directs most of the financial system. A one-size-fits-all regulatory approach can never really work in such a world because the starting points differ and governments compete, favouring their national champions, rather than being truly focused on financial stability.
- Liquidity shortage is a faster route to closing the doors of a bank than is a solvency problem. Banks are very adept at hiding insolvencies for years, and sometimes with the necessary forbearance of regulators.
- The corporate governance of banks has great difficulty in dealing with leverage. Bank shareholders and CEO's essentially have a "call option" written by depositors and other creditors. The value of equity cannot fall below zero on the downside but can increase without limit on the upside. In the event of failure, the value of operating assets that can be taken by creditors is very small compared to its enterprise value (debt and equity). In essence, CEO's and stockholders are incentivized to reduce the risk-adjusted value of the creditor claims on the bank and thereby reallocate wealth from creditors to stockholders. It is in creditors' interest to prevent excess risk taking by managerial stockholders, but remuneration incentives and complexity make this difficult to do.
- Consequently, financial firms will always "go for the gold", using the earlier metaphor, and they will arbitrage via leverage to the maximum amount possible every spread, tax or regulatory anomaly available to them.
- Moral hazard will always affect financial firm decisions, and the crisis shows that company boards are not able or willing to follow and control the risks being taken.
- The mother of all moral hazard in regulation is allowing banks to run their own internal models to determine risk weights that will affect the amount of capital they have to hold, and hence their return on equity.
- Hence, since the Basel system depends on this risk weighting approach for its capital rules, it will always have trouble controlling leverage. It is precisely because the leverage ratio does not distinguish between different levels of market, credit and operational risk (and instead focuses on banks having enough capital to absorb losses such as those of 2008 and to restrain leverage) that it is to be preferred as a transparent ex ante rule. In an age where the scope for regulatory and tax arbitrage, financial innovation, cyber risk, fraud, bribery, corruption and money laundering are

all very high, it is not plausible that banks' internal risk modelling can accurately capture these things.

- Accounting standards aren't comparable, compounding the job of supervisors and regulators to keep up. Knowing the true market value of a bank's assets versus the book value of its liabilities is always elusive.
- Financial issues interact with other global conditioning factors that affect inflation and the global saving pool which, in turn, affects the pricing of mortgages, securitized products and debt more generally. Interest rates also affect and the very profitability of financial firms which affects their risk taking behaviour.
- Monetary responses to the crisis do not address the key causal factors, but rather lower the bar for survival by allaying liquidity concerns. This may have the unintended effect of pushing risks into new areas.

Complexity arises from interconnectedness, but as Stefano Battiston, from Zurich University's Department of Banking and Finance has pointed out, before the 2008 crisis, the dominant view was that interconnectedness enables risk diversification and hence fosters financial stability both at national and global level. This view was in line with policies encouraging the liberalisation of capital flows and the deregulation of derivative markets. After 2008, interconnectedness has been associated with the risk of financial contagion. However, within mainstream economics, the understanding of the mathematical reasons why and when interconnectedness may increase stability or instability has remained fragmented, and fundamental contributions have come from works rooted in complexity science.

Battiston argues that many works on systemic risk are based on the pioneering work of Eisenberg-Noe, which elegantly addressed the problem of payment clearing in a network of obligations, but this model was not designed to study contagion. Moreover, stress tests based on the Eisenberg-Noe model concluded that contagion through the network of intra-financial exposures would be very small. Lehman's, AIG, or the Greek debt crisis show that this is not the case. One explanation could be that contagion would come from the exposure of financial institutions to common assets. This is part of the story, but when roughly half the assets of a large bank are obligations on other banks, and all banks suffer a loss on their external assets, the additional, intra-financial, loss that the bank could incur indirectly through its counterparties in other banks becomes crucial. And in fact analyses of losses during 2008-2011 suggest that re-evaluation of claims resulting from decreased ability of counterparties to meet their obligations caused larger losses than outright defaults.

Many works on systemic risk are based on the pioneering work of Eisenberg-Noe, which elegantly addressed the problem of payment clearing in a network of obligations, but was not designed to study contagion. This model has been also used to run stress tests, leading to the conclusion that contagion through the network of intra-financial exposures would be very small.

Trivially, if all banks have the same portfolio composition and the same leverage, then the default of a single bank coincides with a systemic default. More generally, the systemic effect of fire sales is stronger if the portfolio overlap is larger. This implies also that there is a tension between risk diversification (across a finite set of external assets) and systemic risk because of the procyclical linkage between asset prices and leverage.

Common asset contagion certainly explains part of the problem. However, when roughly half the assets of a large bank are obligations on other banks, and all banks suffer a loss on their external assets, under what conditions can we rightfully neglect the additional, intra-financial, loss that the bank could incur indirectly through its counterparties in other banks? Analyses of losses during 2008-2011 suggest that re-evaluation of claims resulting from decreased ability of counterparties to meet their obligations caused larger losses than outright defaults.

Models of contagion in financial networks based on the Eisenberg-Noe framework make implicit assumptions which exclude by construction that intra-financial contagion and network structure can have any role in systemic risk. So while Eisenberg-Noe is well-suited to understanding payment clearing, its assumptions are not always adequate to study systemic risk.

Intra-financial leverage also plays an important role for systemic default probability. More interconnected and leveraged networks not only tend to imply higher systemic default probability, they also tend to imply a larger inaccuracy in the estimation of systemic default probability. This means that small errors, for instance on the recovery rate, lead to larger errors on the probability of default.

Once a financial system becomes highly interconnected, this opens the way to a collective moral hazard. Market players anticipate that, altogether, they are too-big-and-interconnected-to-fail and this leads to excessive risk taking. In particular, external assets may become overvalued, implying that if the market readjusts, the losses could be devastating. Once risk materialises in potential losses, interconnectedness (which cannot be unwound overnight) is presented as a source of contagion that threatens the whole financial system and hence the real economy. This justifies the socialisation of losses through rescue

programmes. Overall, this process leads to increased financial instability, increased inequality, and increased political instability.

With respect to new risks looking forward, the lesson of history is that the next crisis—and there is always a next crisis—will not be the same as the last one. The chemistry experiment on looking for gold will go on with the students re-grouping outside of the re-regulated classrooms. In short, the risks of leverage, contagion between counterparties and liquidity mismatches are being rolled into new areas sometimes referred to as the “shadow banking system”. This comes about because banks are being re-regulated while the response to the crisis led to extreme monetary ease resulting in historically low interest rates.

These low rates undermine the profitability of banks and make it impossible for all cash rich entities to make money. Pension funds and insurance companies have difficulty meeting their liabilities. This has led to a wholesale change in the activities and the plumbing of the financial system. The process of lending and reusing assets is accelerating, and within these activities large systemic banks are focusing less on raw leverage and more on fees and spreads as facilitators. Shadow bank risk is rising, and its degree of interconnectedness with banks in terms of counterparty and indemnification risks will have to be followed more closely.

The crisis also led to actions within Asia to avoid its negative impact via credit expansion. Subsequently, attempts to rein in credit in recent years have stimulated very strong innovation via off-balance-sheet activity (so-called wealth management products). The robust investment demand in parts of Asia is stimulating innovation to avoid credit constraints in a manner reminiscent of the lead up to the 2008 Crisis in the West.

Governments should never forget that however big and complex the financial system, it is not an end in itself. Its role should be to help fund the economic growth and jobs that will contribute to well-being. But despite all the interconnectedness, paradoxically, as the *OECD Business and Finance Outlook 2016* argues, fragmentation is blocking business investment and productivity growth.

In financial markets, information technology and regulatory reforms have paved the way for fragmentation with respect to an increased number of stock trading venues and created so-called “dark trading” pools. Differences in regulatory requirements and disclosure among trading venues raise concerns about stock market transparency and equal treatment of investors. Also, corporations may be affected negatively if speed and complexity is rewarded over long-term investing.

Different legal regimes across countries and in the growing network of international investment treaties also fragment the business environment. National laws in different

countries sanction foreign bribery with uneven and often insufficient severity, and many investment treaties have created rules that can fragment companies with respect to their investors and disrupt established rules on corporate governance and corporate finance.

Complexity is in the nature of the financial system, but if we want this system to play its role in funding inclusive, sustainable growth, we need to put these fragmented pieces back together in a more harmonious way. International policy organisations can benefit from the recognition of the time-inconsistence inherent in the narrative on interconnectedness and of the associated collective moral hazard. Complexity science offers a set of concepts and tools to monitor and tame the effects of interconnectedness on financial contagion and provide policy insights by complementing standard approaches with targeted complexity-based policy dashboards.

From complicated to complex

Sony Kapoor takes up this theme, and stresses the important difference between “complicated” and complex”. A complicated system (such as a car) can be disassembled and understood as the sum of its parts. In contrast, a complex system (such as traffic) exhibits emergent characteristics that arise out of the interaction between its constituent parts. Applying complexity theory to economic policy making requires this important recognition – that the economy is not a complicated system, but a complex one.

Historically, economic models and related policy making have treated the economy as a complicated system where simplified and stylised models, often applied to a closed economy, a specific sector or looking only at particular channels of interaction such as interest rates, seek to first simplify the real economy, then understand it and finally generalise in order to make policy. This approach is increasingly out-dated and will produce results that simply fail to capture the rising complexity of the modern economy. Any policy decisions based on this notion of a complicated system that is the sum of its parts can be dangerously inaccurate and inappropriate.

A complex system can be roughly understood as network of nodes, where the nodes themselves are interconnected to various degrees through single or multiple channels. This means that whatever happens in one node is transmitted through the network and is likely to impact other nodes to various degrees. The behaviour of the system as a whole thus depends on the nodes, as well as the nature of the inter-linkages between them. The complexity of the system, in this instance the global economy, is influenced by a number of factors. These include first, the number of nodes; second, the number of inter-linkages; third, the nature of inter-linkages; and fourth, the speed at which a stimulus or shock propagates to other nodes. Let us now apply each of these factors to the global economy.

The global economy has seen a rapid increase in the number of nodes. One way of understanding this is to look at countries that are active participants in the global economy. The growth of China and other emerging markets, as well as their increasing integration into the world trading and more recently global financial systems, is a good proxy to track the rise in the number of nodes. The relative size and importance of these nodes has also risen with China, by some measures already the world's largest economy.

Simultaneously, the number of inter-linkages between nodes has risen even more rapidly. The number of possible connections between nodes increases non-linearly with the increase in the number of nodes, so the global economy now has a greater number of financial, economic, trade, information, policy, institutional, technology, military, travel and human links between nodes than ever before. The increasing complexity of supply chains in trade and manufacturing, ever greater outsourcing of services, rising military collaborations, the global nature of new technological advances, increasing migration and travel, as well the rise and rise of the internet and telecommunications traffic across the world have all greatly increased the number of connections across the nodes.

It is not just that the number of interconnections between nodes has risen almost exponentially. The scope and nature of these inter-linkages has broadened significantly. The most notable broadening has come in the form of the rapid rise of complex manufacturing supply chains; financial links that result directly from the gradual dismantling of capital controls; and the rise of cross-border communication and spread of information through the internet. These ever-broadening connections between different nodes fundamentally change the behaviour of the system and how the global economy will react to any stimulus, change or shock in one or more of nodes in ways that becomes ever harder to model or predict.

Last but not the least, it is not just the number and intensity of links between the nodes that has risen, but also how quickly information, technology, knowledge, shocks, finance or pathogens move between the nodes. This results, in complexity theory parlance, in an ever more tightly coupled global economy. Such systems are more efficient, and the quest for efficiency has given rise to just-in-time supply chains and the rising speed of financial trading and other developments. But this efficiency comes at the cost of rising fragility. Evidence that financial, economic, pathogenic, security and other shocks are spreading more rapidly through the world is mounting.

To sum up, the Dynamic Stochastic General Equilibrium (DSGE) models and other traditional approaches to modelling the global economy are increasingly inadequate and inaccurate in capturing the rising complexity of the global economy. This complexity is being driven both by the rising number of nodes (countries) now integrated into the global

economy, as well as the number and nature of the interconnections between these, which are intensifying at an even faster pace.

Global trade and financial linkages

The crisis therefore showed how some aspects of the world economy can be both positive and negative, notably interconnectedness, Sony Kapoor's "nodes". Global linkages across borders help the world to grow richer, but they also facilitate the spread of shocks. What started as a financial crisis in the United States degenerated rapidly into a global economic crisis with a dramatic collapse of international trade and foreign direct investment.

Securitisation as a means to distribute risk across a larger number of players had two major consequences. First, it resulted in an increasing interconnectedness across financial institutions, while the globalisation of the financial sector increased the connectedness of financial institutions across countries. Second, it gave the impression that the risk had diminished. It hadn't, but the individual shares in the risk, and responsibility for managing it had become diffuse, creating a sense of security that proved illusory until interconnectedness reminded markets that it could spread pain as well as gain. The financial crisis spread rapidly around the globe and reached the real economy, resulting in dramatic drops in stock markets and decreases in business and consumer confidence affecting all economic operators. Financial institutions were unwilling to lend to each other, while households cut back their consumption and started saving more; access to credit became more difficult and more expensive, undermining corporate investment especially among small businesses.

Falling demand caused international trade and inward investment (including mergers and acquisitions, M&A) to contract, spreading the crisis to the entire global economy: trade in the OECD fell on average 25% between October 2008 and June. While the fall in trade at the start of the crisis might have been similar to past downturns for individual countries, the synchronisation was not, as almost all OECD countries simultaneously reported drastic decreases in trade. Global interdependence and interactions among countries thus strengthened crisis propagation mechanisms and enhanced the impact on individual countries.

The main mechanisms of economic interconnectedness are global value chains, multinational enterprises, trade and investment. One difference from previous periods of globalisation is that migration plays a relatively minor role, except to some extent for the very highly skilled.

International trade and foreign direct investment are still the two key channels for economic integration across borders. But while these economic linkages between countries are not new, their scale and complexity has substantially increased during the last decades due among other things to the emergence of international production networks. Global value

chains have raised foreign direct investment flows and (intra-firm) trade in a complementary manner and have made them increasingly interdependent.

In addition to international trade and investment, the internationalisation of technology has become a key characteristic of today's globalisation. Rising technology flows between countries and complex relationships have emerged between knowledge actors (firms, highly skilled human capital, universities, governments, etc.) across borders. International cooperation in science, technology and innovation is on the rise as illustrated by several indicators along different dimensions (patents, co-authorship in scientific publications, formal cooperation arrangements).

The importance of global value chains is growing, as shown by the greater use of intermediate inputs in the production process, due to domestic or international outsourcing. Trade flows are dominated by products that are not consumed, but used in the production of other goods and services. Much manufacturing trade occurs within the same industry or even firm, owing to the integration of manufacturing production throughout international value chains: intra-industry trade. Typically, this occurs among rich countries with a similar economic structure and level of development that are geographically close. Intra-industry trade often accompanies FDI, as multinationals trade goods and services between affiliates and the parent company.

While increased trade is good for economic well-being (an increase of one percentage point in the share of trade in GDP is estimated to raise income level by 0.9% to 3%) trade links can help to spread the negative impacts of a crisis too, and trade itself is affected disproportionately by severe downturns, as the crisis showed. At the end of 2008 and early 2009, world output experienced its sharpest drop since the Great Depression, but global trade contracted even more sharply than during the 1930s.

The trade collapse shows how financial markets and the real economy now interact more closely and more quickly when a shock hits. Easy credit allowed US consumption and housing investment to rise to unprecedented levels as a proportion of GDP. In China, the upsurge was in capital investment. Taken together, this produced a situation where consumers in traditional markets could not absorb the exports made possible by all this capital investment, especially given the excess global capacity that had accumulated in a whole range of sectors.

Connectedness

The most striking feature many parts of the economic landscape share is connectedness. The high frequency trading Solow talks about for instance is only possible because of the density of communication networks. However, there is a downside to interconnecting practically the whole planet. Many businesses now judge cyberattacks a greater threat than theft, terrorism

and natural disasters combined. Criminals and hackers can exploit the very technologies and software that form the core of the numerous systems we now depend on. The Web and other computer networks would have remained expensive, specialised and limited if they had had to rely on proprietary technologies. The development of cheap, universal cyber systems was made possible by the economies of scale that commercial information technologies such as Ethernet, TCP/IP, and the Internet itself make possible. The control systems of electrical grids for instance used to be isolated, but now they can be linked using standard IT infrastructures and protocols, for both critical and non-critical communications. This has numerous advantages for network design, control and reliability, but at the same time, because the various hardware and software components are well-known, cyberattacks are made easier too, and they can target a number of installations all using similar equipment. In many cyberattacks, foreign powers are suspected of deliberately setting out to cause damage, but interconnectedness can alter outcomes whether bad intentions are at work or not in a complex system such as electricity supply.

The world energy system is in fact emblematic of how systems depend on other systems. Environment-energy interactions are usually discussed in terms of pollution and climate change. However, the interaction works both ways. The environment could have a growing impact on energy security, with many infrastructures lying in areas that are or could become environmentally unstable (Chatham House, 2009). Energy infrastructures have long lifespans, with 50 to 100 years or more not unusual, so the projected career of new installations puts them well within the timeframe for anticipated impacts of climate change, even though such changes were not anticipated in their design. Older structures could be doubly affected since many of them also suffer from a lack of maintenance. To complicate matters further, any future impacts are hard to predict with sufficient geographical accuracy and an installation that seems safe enough now, could find itself in a hazardous zone a century from now because, for example, flooding patterns have been altered by variations in precipitation and runoff.

Multilateralism and global governance

Climate change is, like economic globalisation, an example of how the old frameworks for analysing, understanding and governing society are no longer adequate. Jürgen Habermas puts it like this: "... a state can no longer count on its own forces to provide its citizens with adequate protection from the external effects of decisions taken by other actors or from the knock-on effects of processes originating beyond its borders. In question here are, on the one hand, 'spontaneous border violations' such as pollution, organized crime, arms trafficking, epidemics and security risks associated with large-scale technology, and, on the other, the reluctantly tolerated consequences of other states' calculated policies, which affect people who did not help formulate them no less than people who did."

At the same time as the nation is losing its centrality to the economic organisation of the world, non-national identities are being reinforced. These can be based on age, gender, religion, culture, language, class or some other chosen or accidental trait. Some of these identities are militantly non-national, for example regionalism or Islamic fundamentalism. However, most of them are non-exclusive of other identities and one person can claim several simultaneously.

This can make it difficult to understand which identity is the most important when trying to respond to social issues, and mistakes can be costly. For example, if a town is hit by rioting, the media may portray the incidents as the work of youths of immigrant origin, implying that the explanation is to be found in the ethnicity of the rioters. If politicians exploit this explanation, the logical policy response might be to restrict immigration and deport immigrants. This may mean that the real cause (unemployment, boredom or whatever) is missed and the same problem will occur again. Likewise, people who feel excluded by society may consciously reject identification with the majority and cultivate another identity that only reinforces their exclusion.

There is though a counter-trend, or perhaps accompanying trend: the reinforcement of nationalism. Variations on “putting our country first” dominate public discourse, and elections, but the past century has also been marked by nationalism defined within borders other than those of the nation state, leading to the break-up of countries. In 1900, there were 57 countries in the world. In 1946, following decolonisation, there were still only 74. Today there are over 190 as well as 63 dependent territories and areas of special sovereignty. Increasing global economic integration seems to be accompanied by political disintegration. This can be spectacular as in the break-up of the USSR, but long-lasting struggles for independence can also finish by paying, as in East Timor, which finally achieved independence in 2002 after being occupied by Indonesia since 1975 and Portugal for four centuries before that. Most of the world's countries have small populations: 87 have fewer than 5 million inhabitants, 58 fewer than 2.5 million, and 35 fewer than 500,000.

The number of countries could continue to grow in the future if those countries tied to another by military force become free to choose, and if the trend towards greater regional autonomy evolves towards calls for complete independence that are accepted by both the central state and the population of the autonomous entity. While this would satisfy some local aspirations, it would complicate the task of international governance. Few areas of policy making are insulated from global influence, either because of the nature of the issue in question, as in the case of global warming or nuclear proliferation, or because national conditions are shaped by international influences, for example corporation tax or energy supplies.

The importance of multilateral organisations may be weakened by a tendency to seek bilateral agreements in a number of important economic domains, and as the global economy continues to expand and competition for finite resources intensifies, this trend is likely to be reinforced. As regional trade agreements show, this could be motivated by the desire to at least achieve some kind of co-operation without waiting for a large number of partners to agree, or to go further than a proposed multilateral accord. This trend will be mirrored by increasing instability in diplomatic relations, with ad hoc alliances gaining ground at the expense of more stable configurations. There may also be a growing tendency for states to opt out of organisations and agreements they disagree with, or never join them in the first place, making global responses more difficult.

The various phenomena discussed here have combined to produce a world where a volcano erupts in Iceland and as a result, a week or so later, thousands of African farm workers lose their jobs working for cut flower exporters who depended on airfreight. The world “system of systems” of economic, socio-political and environmental interactions is growing increasingly complex as its physical, subjective and virtual characteristics come to influence each other more and more. Perhaps the most common feature across all the factors is a blurring or merging of categories. It is now impossible to consider any major issue or trend simply in terms of its immediate causes and consequences. The most salient features of the accident that destroyed the Deepwater Horizon oil rig in the Gulf of Mexico for example are the consequences of the pollution on the natural environment and local businesses that depend on it, plus the drop in BP’s market capitalisation. Yet this latter aspect means that the many UK pension funds that invest in BP have to foot the bill for the clean-up and damages. In other words, a shrimp fisherman in Louisiana and a retired office worker in London are both affected.

New technologies, new fears

Ash and oil are reminders that society still rests on the physical bases of the natural world, but the way we consider and exploit these bases is changing. Here the more positive term “convergence” is used rather than “blurring”, but it’s describing the same phenomenon, as the old boundaries between scientific disciplines become increasingly meaningless in many domains, and the gap, or at least the time lag, between science and technology narrows. A couple of examples from everyday life show this. Until fairly recently, nanomaterials and quantum mechanics were the concerns of research laboratories and a handful of specialists. That’s still the case as far as the purely scientific aspects are concerned, but the storage in a computer or smartphone now uses nanotechnologies, while the sensitivity of the sensor in a digital camera depends on its quantum efficiency.

Technology comes with risks as well as benefits, but society seems prepared to accept the risks from any technology that is well-established and seen to provide immediate benefits, such as the mobile phone or car. When people express their fears of technology developments, they rarely mention the ones that, objectively, already cause the most damage and are likely to cause even more in the future, whether to human beings or the natural environment. Instead, they are more likely to cite genetic engineering, both in itself and as a kind of proxy for a whole range of concerns linked to the broad category of “new technologies”. Technology and innovation have always had their opponents, but in today’s opposition there is an unease that goes beyond the purely objective weighing of benefits and costs, or threats to traditions and lifestyles. More fundamental interrogations have to be addressed.

It is easy to forget how far back in the past we have to go to find the origins of many of the forces that shape the world today and thus its future. The legal systems in many countries are still based on the sixth century Justinian Code, itself incorporating over a thousand years of jurisprudence. Likewise, the view of nature and the natural, in the West at least, has changed little since the Middle Ages, when thinkers such as Thomas Aquinas developed ideas explored earlier by St Augustine, and Aristotle before him. The fact that Aristotle, Augustine and others shape our worldview, consciously or not, is because their way of thinking corresponded to reality until very recently. But suddenly science has given us the possibility of producing what would previously have been termed miracles and wonders on a daily basis. Doctors can now restore sight to the blind, make the crippled walk and easily cure leprosy and plague. Thanks to science, we can fly to the Moon. Such a rapid, profound dissonance between how we think and what we can do transforms how we see the world.

Amplified, asymmetrical, asynchronous: Triple A shocks?

Thanks to globalised media, local difficulties can become amplified to become global shocks, due to the increased physical and virtual mobility of people, concepts and things. But resilience has increased too. For instance, power failures rarely last long, in the developed countries at least, because providers have backups and can call on diversified sources. But is diversity necessarily a good thing? Cybersecurity in energy networks is made much more difficult because of the multiplicity of software platforms, infrastructures, telecom networks, norms, etc. a grid depends on. On the other hand, only one operating system means only one to hack.

The lonely hacker creating global chaos has yet to materialise, but the fact that a few badly-intentioned, or careless, people can provoke major disruptions reveals an aspect of the modern socioeconomic landscape that will grow in importance: asymmetry. There aren’t that many financial market traders in the world, but the destructive impacts of their actions are

amplified by the very tools that enable them to do their job. Or to take another example, in 2009 the Canadian nuclear authorities had to shut down the Chalk River reactor following leaks. This one installation produces a third of the isotopes used in medical imaging worldwide, provoking a global shortage.

This shortage was due to an accident, but the geographical distribution of natural resources is uneven across the globe, including high-tech raw materials. China produces 95% of all rare earth concentrates (needed for hand-held consumer electronics, displays and high performance magnets); Brazil 90% of all niobium (needed for steel alloys in gas pipelines and super alloys in high-performance jet aircraft); and South Africa produces 79% of all rhodium (needed for car catalysts).

In addition to asymmetry and amplification, a third “A” is likely to become more important: asynchronicity. This is to be expected as the complexity and number of interactions grow. It could take a number of forms, varying from lags between economic activity and commodity prices to decoupling of countries or regions from swings in the global economy. In the recent recession, China was a positive example of this. Asynchronicity complicates policymaking because it undermines the case for global solutions to a number of problems.

What can we do then, given the scale and intricacy of the challenges? The crisis was due to the unravelling of a number of tensions in the system. These tensions were not reduced thanks to any government policy, but built up until they exploded into a systemic shock that plunged the world into a recession and would have destroyed the financial systems if states had not pumped trillions of dollars into the economy. Is pay up and wait for things to improve the best we can do?

The social sciences have always been quick to adapt the metaphors and tools of the natural sciences to their needs. For a long time, this was the forces and flows of Newtonian physics, but for our less predictable world, where instability is constant and systems are constantly reconfiguring themselves, complexity theory could provide a means to analyse the various adaptive and dynamical systems we live in.

For Bill White, the policy lesson to be drawn is that if crises are indeed inevitable, then we must have mechanisms in place for managing them. Unfortunately, this was not the case when the global crisis erupted in 2007 and when the Eurozone crisis erupted in 2010. Another lesson is that policy makers must focus more on interdependencies and systemic issues. If the timing and triggers for crises are impossible to predict, it remains feasible to identify signs of potential instability building up and to react to them. In particular, economic and financial systems tend to instability as credit and debt levels build up, either to

high levels or very quickly. Both are dangerous developments and commonly precede steep economic downturns.

Policymakers should focus more on avoiding really bad outcomes than on optimising good ones. In many cases, we simply do not have the knowledge to do policy optimisation, as Hayek emphasised in his Nobel Prize lecture “The pretence of knowledge”. In contrast, policymakers have pulled out all the stops to resist little downturns over the course of the last few decades. In this way, they helped create problems such as debt overhang that we still face today.

Economic and financial crises throughout history exhibit many similarities but also many differences. As Mark Twain suggested, history never repeats itself but it does seem to rhyme. In part this is due to adaptive human behaviour, both in markets and on the part of regulators, in response to previous crises. While excessive credit growth might be common to most crises, both the source of the credit (banks vs non-banks) and the character of the borrowers (governments, corporations and households) might well be different. Note too that such crises have occurred under a variety of regulatory and exchange rate regimes. Moreover, prized stability in one area today (say payment systems) does not rule out that area being the trigger for instability tomorrow. Changes in economic structure or behaviour can all too easily transform today’s “truth” into tomorrow’s “false belief”.

The main conclusion to be drawn is that policymakers need eternal vigilance and, indeed, institutional structures that are capable of responding to changed circumstances. Do not fight the last war.

Chapter 2. Lessons from NAEC

William Hynes, with Robert Skidelsky, Anna Salomons, Guy Standing, Mark Blyth

The OECD's New Approaches to Economic Challenges (NAEC) Initiative launched in 2012 is a comprehensive organisation-wide reflection process to renew and strengthen the OECD's analytical frameworks, policy instruments and tools in the face of a rapidly evolving social and economic environment.

The financial crisis revealed the urgent need for a new economic paradigm for society and for policy makers. Economics in trying to simplify structures, behaviours, social networks and institutions failed to grapple with complex realities. This was echoed by then European Central Bank Governor Jean-Claude Trichet in November 2010: *“As a policy-maker during the crisis, I found the available models of limited help. In fact, I would go further: in the face of the crisis, we felt abandoned by conventional tools”*. Greg Mankiw from Harvard University even before the crisis lamented that *“macroeconomic research of the past three decades has had only minor impact on the practical analysis of monetary or fiscal policy”* (Mankiw, 2006).

More recently Paul Romer has attacked the corrosive *“indifferent tolerance of obvious error”* within the economics profession - *“the trouble is not so much that macroeconomists say things that are inconsistent with the facts. The real trouble is that other economists do not care that the macroeconomists do not care about the facts”* (Romer, 2016). Romer draws parallels with Lee Smolin's *Trouble with Physics* which criticised the dominance of string theory and its unhealthy near-monopoly on fundamental physics. Smolin argued in favour of the adoption of a diversity of approaches in physics, just as others have done in economics.

The NAEC agenda was timely and important when it was launched in 2012 but its emergence is prescient in 2017. Conventional analyses are struggling to explain and address ongoing economic, social, political and environment challenges. The NAEC Initiative¹ has already helped place the well-being of people at the core of OECD policy advice. It has led to the mainstreaming of issues such as inclusiveness, environmental sustainability, financial linkages and multi-dimensional objectives in OECD analysis and publications.² And NAEC has helped promote new analytical approaches based on complexity, behavioural insights³

¹ The main findings of NAEC can be found in the [Final NAEC Synthesis Report](#) and [NAEC Main Messages](#).

² An update on the mainstreaming of the findings of the NAEC Initiative was presented to Ministers at the Ministerial Council Meeting in 2016. The report can be found [here](#).

³ The OECD has launched a cross-Directorate project on Behavioural Insights documenting how policies across a range of areas are becoming more behaviourally informed.

and big data while encouraging a culture of greater experimentation. NAEC has questioned traditional ideas and methods challenging group-think and compartmentalised approaches. It has also provided a space for fresh thinking, engaging research, academic and policy institutions as well as the OECD's Key Partner countries.

While NAEC was established to investigate the roots and lessons from the financial crisis, the failure of economic thinking is far deeper, more profound, and more damaging than anyone realised. If 2008 was the year of the financial crash, 2016 was the year of the political crash. Indeed there are several crises coming down the track, the length and duration of which could dwarf the financial crisis. NAEC thinking is badly needed for this period of turbulence and change.

This chapter based on the first NAEC Roundtable held on December 14th 2016 and NAEC seminars and workshops assesses the progress to date and examines how the broader economic and policy debate has evolved in the ten years since the beginning of the global financial crisis.⁴ It discusses how economic and policy frameworks could be improved and outlines how the NAEC process could advance this agenda at the OECD and beyond.

With NAEC, we are preparing for the future, or possible futures. This requires OECD Committees and Directorates to keep asking hard questions and challenging assumptions about our understanding of the economy while constantly reviewing our analytical approaches. To ensure that policy objectives are met, we must collectively do the same. We must change our mindsets, approaches and ultimately our economies.

What are the lessons of the NAEC Initiative?

On September 18th 2015, the OECD Secretary-General launched a discussion on the NAEC Synthesis report with OECD Chief Economist Catherine Mann, Lord Robert Skidelsky and Jean Pisani-Ferry. The launch event was in the best tradition of NAEC seminars with hard questions being asked about the report and the OECD's policy approaches. OECD Chief of Staff and G20 Sherpa Gabriela Ramos put several questions to the panellists about the current state of economic policy and the progress made since the economic crisis.

Jean Pisani-Ferry talked about the difficulties of incorporating risk into policy-making. He also suggested that policymakers base what they do on particular theories shorn of nuances and assumptions which are accepted by the research community. This often means that policy is based on over-simplification. Catherine Mann questioned how far the agenda on complexity could be taken forward at the OECD.

Lord Robert Skidelsky recently criticised contemporary economists for their limited intellectual horizons, for eschewing inter-disciplinarily and for the monopoly of

⁴ A video recording of the Roundtable discussions can be found [here](#).

mathematics, “demanding and seductive”, over economics. “The economists are the *idiots savants* of our time” (Skidelsky, 2016). Economics has also been a detached amoral science but moral judgments should be central in social science. Similarly Andy Haldane has argued that one of the potential failings of the economic profession is that it may have borrowed too little from other disciplines – [a methodological mono-culture](#).

Skidelsky referred to the Queen Elizabeth II’s Question shortly after the world economy collapsed in 2008 - “Why did no one see it coming?”. In addressing the question to a group of economists, the Queen was spot on. As OECD Chief of Staff Gabriela Ramos said, “The crisis struck at the core of tightly held economic ideas, modules and policy”. Skidelsky went further - Crisis struck because of tightly held economic ideas, models and policies. The policy models used pre-2008 were wrong or seriously flawed; this contributed to the collapse, chiefly by omission. The OECD’s NAEC Synthesis report recognises this, arguing that the challenge is for economists to develop a better sense of how economies work; and for economic policy to develop policies which reflect this understanding.

To put the matter concretely, we have to determine under what combination of policies and institutions the macro economy will exhibit good performance, defined as cyclical stability, high employment, decent growth rates, stable prices, and human and planetary well-being. Skidelsky discussed questions which have occurred to him since 2008 along with “some observations from the latest NAEC report, which gives much food for thought”.

Skidelsky mentions that NAEC does not examine monetary policy. Orthodox macro policy before the slump consisted of “one target, one instrument”. The target was the inflation rate; the instrument was interest rates. This was clearly inadequate. But we haven’t yet sorted out what should be the proper aims of monetary policy, what is properly monetary and what is properly fiscal, what is macro and what is micro. For example, bank regulation is micro, but it increasingly counts as part of macro policy. Perhaps we should call macro any micro event or institution which has macro effects.

This issue was addressed at length in the 2014 NAEC Synthesis. The report argued that monetary policy contributed to excessive policy accommodation in the lead-up to the crisis. It called for further investigation into the effects of unconventional monetary policy noting that while successful, the long–run effects as well as the short-term effects of an eventual tapering of these measures needed to be closely monitored. A major lesson of the crisis is that both fiscal and monetary policies alone are not sufficient instruments, even more so when interest rates are close to the zero lower bound.

Financialisation

Skidelsky also argued that NAEC did not challenge the wisdom of financial innovation. What it does is to make the economy more financial – that is, enable more and more people to earn their living making money out of money. We have to ask further questions on money, starting with whether the central bank can control the credit system to avoid boom and bust. And if not, what is the alternative? What has been the impact of quantitative easing (QE)? The Eurozone is gaily embarking on a massive monetary expansion, when most of the evidence suggests very limited effect for reasons Keynes would readily have recognised.

Yet numerous OECD Secretariat papers in the NAEC process identified poor micro-prudential regulation, excessive leverage and too-big-to-fail business models as prime reasons for the financial crisis. The crisis emphasised the limits to regulatory capacities in the financial sector, and how fragmented regulatory frameworks generated information and implementation gaps. We have questioned not only the merits of financial deregulation but also financial innovation arguing that the rents were extracted to a very large extent for the financial sector itself.

More recently NAEC work on finance and inclusive growth has argued that if the financial sector grows too large, it can undermine growth and increase inequality. We have pointed to the need to ensure that the financial sector contributes to strong and equitable growth by avoiding credit overexpansion and by improving the structure of finance. Yet the launch event clearly indicated that the financial crisis exposed weak understanding of the inner workings of banks and financial institutions in the OECD. Analysis of financial markets and capital flows could also be strengthened.

Digitalisation and the future of work

The NAEC Synthesis report didn't mention the impact of automation on jobs. It talked about the need to enhance human skills and capital, which is simply conventional wisdom. Are humans destined to "race with machines" or "race against machines" to quote the question raised by Brynjolffson and McAfee. Dirk Pilat, Deputy Director of the OECD Science, Technology and Innovation Directorate responded during the debate that this issue is very much an issue on the table at the OECD, and at the heart of current discussions on productivity and inclusive growth. In fact a Labour Ministerial Meeting in 2016 and the Going Digital and Future of Work project tackle this very subject.

There are concerns that increasing automation and robotisation imply a jobless future with 73% of European citizens agreeing with the statement that "Robots steal people's jobs" (Eurobarometer, 2013). The OECD has been asking will the robots take our jobs? Together with Utrecht University's Institutions for Open Societies and the Bertelsmann Foundation a NAEC seminar was held on 25 January 2017 examining whether we are "Racing With or Against the Machines?" New production technologies and automation have always been disruptive with new jobs being created while others are lost all the time. The question remains if there is something new in terms of the amount of disruption caused by the next production revolution.

Professor Anna Salomons presented her empirical work which assesses the labour market impacts of new technologies. The economic literature argues that technological change can have labour-replacing effects but there are also substitution effects (reducing labour demand) and product-demand effects (increased productivity, reduced prices and increased demand for goods and services and thereby labour demand).

Salomons has estimated these effects using data from 1999-2010 across 27 European countries and found that the product demand (direct and spillover effects) dwarfed the substitution effects of technological progress. So the overall impact is a net increase in labour demand. However technological progress is a biased shock – middling jobs are most likely to be automated since they are intense in routine tasks. This implies job polarisation – increasing employment shares of both high and low paying jobs at the expense of middling jobs (Autor and Dorn, 2013; Goos, Manning and Salomons, 2014). Salomons concluded by suggesting that the debate should focus less on fears of mass unemployment and more on distributional concerns and institutions (e.g. education systems, minimum wages, safety nets) to optimally reap and share the gains offered by advancing technologies.

Dirk Pilat also noted that the losers of technical change are easier to identify as they are concentrated in regions and sectors. Those that gain are harder to see because they tend to

be young dynamic firms and those in new occupations. Citing Tim O'Reilly, he said that we should not be overly concerned about the future of work because we are not running out of problems to solve.

The precariat under rentier capitalism⁵

We are in the midst of the Global Transformation, analogous to Karl Polanyi's Great Transformation described in his seminal 1944 book. Whereas Polanyi's Transformation was about constructing national market systems, today's is about the painful construction of a global market system, in which the initial 'dis-embedded' phase was dominated by an ideology of market liberalisation, commodification and privatisation, orchestrated by financial interests, as in Polanyi's model. The similarities extend to today's challenge, constructing a 're-embedded' phase, with new systems of regulation, distribution and social protection.

A few common misconceptions should be acknowledged. Contrary to widespread claims, there has been no labour market *deregulation*, but rather state *re-regulation*. Occupational self-regulation has been displaced by state regulation through licensing, while labour market policy has shifted towards workfare, directing the unemployed and others to do state-determined activities to obtain means-tested benefits.

Fostering globalisation in a context of a technological revolution has been favourable for global growth, if not for the OECD. But governments and international bodies have signally failed to counter the adverse distributional outcomes of globalisation within countries. Similarly, in advocating labour *flexibility*, negligible attention was given to the economic *insecurities* this generated.⁶

Meanwhile, the neo-liberal phase of globalisation evolved into '*rentier capitalism*', in which more income is going to rentiers, those possessing financial, physical or so-called intellectual property.⁷ Ironically, advocates of *free markets* have overseen the construction of an unfree market system, in which more income derives from patents, trademarks, etc., that give monopolistic income for 20 years or more. Rental income has been boosted by the increased share of income going to 'super-star' firms within sectors, and by government action, notably by strengthening the intellectual property rights regime since TRIPS in 1995.

⁵ From Guy Standing who gave a NAEC Seminar in March 2017

⁶ During the 1980s and 1990s, this author repeatedly warned of the social and political consequences. See, for instance, G. Standing, *Global Labour Flexibility* (Harmondsworth, Macmillan, 1999). The OECD approach was epitomised by its flagship report, *The Jobs Study*.

⁷ G. Standing, *The Corruption of Capitalism: Why Rentiers thrive and Work does not pay* (London, Biteback, 2016).

This unfree market system has been further bolstered by the continuing growth of the subsidy state, in which governments compete by throwing more subsidies at large corporations and rich individuals. In so doing, they have regressively depleted public budgets. Consequently, in most countries, the share of income going to capital has risen sharply, the share going to labour has plunged. And within the share going to capital, the share going to the rentiers has risen; within the share going to labour, the share going to higher-earners has risen.

If we wish to escape from the regressive economic paradigm, we must nurture a narrative and vocabulary that focuses on emerging socio-economic groups. In that regard, a global class structure has been taking shape, in which the new mass class is the *precariat*. The precariat is defined in three dimensions. First, those in it are being pressured to accept a life of unstable, insecure labour, in which casualisation is being extended by indirect labour relations in the *concierge* economy, crowd labour and on-call contracts.⁸ Within the next decade, a majority of labour transactions may be of this type, with labour brokers and apps being ubiquitous.

But although many commentators claim the precariat is defined just by insecure labour. But more importantly, they lack an occupational identity or narrative, must do a growing amount of work-for-labour, which is neither recognised statistically nor remunerated in any way, and typically must do jobs below their education level.⁹

The second dimension is a distinctive *social income*. The precariat relies mostly on *money wages*, which have been falling in real terms while becoming more *volatile* and unpredictable. The precariat is also losing non-wage enterprise benefits (paid leave, medical leave, occupational pensions, etc.), which give labour-based security. Their loss means money incomes understate growing inequality.

To compound the insecurity, the precariat has lost rights-based state benefits, and has been hit by the drift towards means-tested, behaviour-tested benefits. The resultant *poverty traps* and what I have called *precarity traps* are powerful disincentives to taking low-wage jobs. There has been a failure to criticise this feature of social assistance, epitomised by calls for ‘reduced generosity of benefits’, when in reality rising income replacement rates merely

⁸ [The term *gig economy* is misleading; it implies a romantic vision of what is often degrading or insecure.]

⁹ For an analysis, see G.Standing, *The Precariat: The New Dangerous Class* (Bloomsbury, 2011). Since this was first published (and translated into the languages of most OECD countries), the author has received thousands of emails from people across the world who see themselves in the precariat. This feature is among the most mentioned.

reflected falling real wages. Now, the precariat often face what are in effect marginal tax rates of over 80%, which international bodies would deplore if applied to the salariat or elite.

The third dimension of the precariat is crucial. Those in it are losing all forms of rights – civil, cultural, social, economic and political.¹⁰ They are reduced to being *supplicants*, obliged to please people to gain income or benefits, depending on bureaucrats to make discretionary judgements in their favour. This is humiliating, and intensifies feelings of insecurity.

While these dimensions of the precariat are becoming clearer, we still lack the statistics required to analyse them. Just as the crisis of the Great Transformation led to a revolution in labour statistics, we need one now. We should approach the task from the precariat's perspective, not with imageries derived from the heyday of industrial capitalism. This should start by *reconceptualising work*, escaping from the 20th century prejudice that only labours counts. This is so fundamental that I made it the first of 29 Articles of a *Precariat Charter*, devised as an outcome of interactions with precariat groups in over 20 countries where presentations were made between 2011 and 2014.

Labour regulations must be reformed to correspond to new forms of labour relations, recruitment practices should be regulated, and the occupational regulation system must be overhauled, to strengthen the *right to practise*.

Since a large proportion of the precariat consists of migrants, a more mature debate is required on migration. It has been dominated by talk of walls and bans on benefits, and policy has evolved in regressive class-based directions. This is morally reprehensible. There is also a need to respond to the growth of *labour export regimes*. The OECD must take up these issues.

Most importantly, the 20th century distribution system has broken down. Across the OECD, real wages have stagnated for three decades and are unlikely to rise much over the next decade. If so, the options are to allow inequality to grow or to build a new distribution system that allocates income more equitably. This is not the same as devising a more *redistributive* fiscal policy. The new system should foster ecologically sustainable economic growth and give proper respect for free markets.

This perspective should lead to reconsideration of such emancipatory mechanisms as basic income and sovereign wealth funds, which should be attractive to governments, business folk, unions and the precariat in general. The perspective would enable the OECD to become an institution for shaping the re-embedding phase of the Global Transformation.

¹⁰ [On this, see G.Standing, *A Precariat Charter: From Denizens to Citizens* (London, Bloomsbury, 2014).]

Globalisation in an era of discontent¹¹

In economics and in engineering, it's sometimes hard to figure out what is signal and what is noise. What makes economic policy different from engineering, and makes that challenge still harder, is that policy is always political. There are always winners and losers.

Coming out of the crisis of 2008, the economies of the OECD have produced a few spectacular winners while very many citizens feel that they are definitely on the losing side. A lost decade of growth, massive youth unemployment combined with painful and often unrewarding fiscal consolidations, have produced creditor-debtor standoffs between classes, between generations, and increasingly between countries as the globalisation of the past 30 years is directly and aggressively challenged by a new global politics of populism. How can the OECD figure out what the signal is here so that policy can more effectively address this very real challenge?

One way to do so is to put today's discontent in a longer frame - all the way back to the 1970s when the Bretton Woods system self-destructed in a crisis of inflation. I emphasize 'self-destructed' because the policy regimes that existed in the Bretton Woods era were endogenously unstable.

The policy variable targeted in this period was full employment. To produce that outcome the OECD states built national economies with restricted financial markets stabilized by high tax and transfer systems. But sustaining this target over 30 years meant that the returns to labour rose as the returns to capital fell. Eventually, inflation and a consequent profit squeeze that led to the breakdown of the system as business and their allies in politics defected from the post war settlement.

In response, the OECD helped 'reboot' the system. Over the decade of the 1980s and into the 1990s, the OECD countries internationalized their economies, liberated finance, globalized labour markets, and cut back on taxes and transfers. As a result, labour's share of GDP, and their wages, fell, as this new 'neo-liberal' regime increasingly skewed the returns towards business.

To keep this asymmetric system stable, private borrowing, and hence systemic financial leverage, rose dramatically, while spreads narrowed as interest rates fell from abnormally high levels. This built great fragility into the system, fragilities that were brutally exposed in the crisis of 2008.

But this time around we bailed rather than failed the system. There was no 'reboot.' Massive private debt became massive public debt as government eased and central bank balance

¹¹ This section is based on Mark Blyth's contribution to a NAEC Seminar in March 2017.

sheets took the strain as bailouts, recapitalizations, recession costs and fiscal austerity programs effectively guaranteed the assets of the creditor classes with the future tax revenues of the already indebted. The result was a class-specific put-option of global proportions eased with massive liquidity infusions.

Stability bought this way has a limit and we have reached it. With interest rates and inflation rates at historic lows, and with wages stagnant for almost 25 years from many countries, exercising that option has suppressed volatility to be sure, but now that volatility beginning to be released in the form of a populist politics that seeks to renationalize markets, pull back from global trade, limit immigration, and raise wages through protection.

If this is the signal that we need to tune-in to. We may hope that recent OECD data suggesting that growth, inflation, and wages are rising may put the populist genie back in the bottle. But if this reaction has been 30 years in the making, then a few quarters of good numbers is not going to do it. Its consequences are already being felt in the tension between the North and the South in the Eurozone and in the fact of Brexit. So how can we preserve the good bits of globalisation while addressing the very real concerns of our citizens about the world built over the past 30 years without falling into the fallacies of populist economics?

The first thing to do is to recognize what globalisation has done. Branko Milhanovic calls the past 30 years ‘the greatest reshuffling of global incomes in human history.’ He is right. More than a billion people in the Global South have been lifted up by globalisation. But while the benefits of globalisation are global, the politics are always local. The losers need to be compensated in such a way that living with globalisation works for them too.

Second, to do that, we need to recognize that collapsed in wages for the many and colossal returns to the few has past the point of sustainability. For example, back in the Bretton Woods era corporations paid around 12 percent of total taxes. Today they pay around 3 percent. Income taxes on top earners have been lowered everywhere, and what taxes that are paid are washed through property markets, foreign incorporations, and tax havens.

Third, to reverse these forces, the OECD should embrace country by country reporting and full exposure of beneficial ownership. It should be more ambitious in base-erosion initiatives, and it should work with countries to close down the tax avoidance industry. It should highlight countries that act as global rent seekers by either undercutting tax rates or facilitating tax arbitrage. The OECD should work with countries to better and more uniformly regulate the shadow banking sectors of the world economy, where so much untaxed wealth is deposited. The OECD should encourage countries to increase the efficiency of their tax systems by eliminating tax expenditures that favour specific constituencies. For example, eliminating the top 15 tax deductions in the USA would raise nearly a trillion

dollars in revenue per year. Finally, the OECD should embrace the ‘Structural Reform 2.0’ agenda being pioneered by the European Commission where private sector rents are targeted rather than just private sector unions and wages.

The only way to defend globalisation against populism is to make it work for everyone, and that is going to take resources. Resources mean revenues, not more debt. Only then can investment in training - encouraging labour mobility and skills development – take place at an adequate scale. Only then can governments and firms move beyond the short-termism that dominates both spheres and invest in the green-economy technologies that we so desperately need. And above all, the wage share of GDP has to rise across the OECD, especially for the bottom 60 percent of the distribution, such that debts fall. Only then will the stresses of a world where labour is constantly told to adjust while capital is always protected be reduced. Globalisation can be saved, but it needs to be reformed. Accepting that simple fact and acting upon it is the most important thing that the OECD can do.

Working across silos

All speakers debated the merits and demerits of siloed approaches to research and policy-making. Gillian Tett from the *Financial Times* addressed the OECD community in a NAEC seminar on October 12th 2015 outlining her new book *The Silo Effect*. The NAEC process can help counter the Silo Effect – by encouraging a more systemic, integrated approach and the creation of cross-Directorate teams; promotion and support for horizontal projects and further inter-committee discussion.

This requires a more pluralistic approach to economics. Ha-Joon Chang at a NAEC seminar in February 2015 called for such an approach, based on diversity, dialogue, and cross-fertilisation. A unified theory is not necessary and different schools of thought cannot be fully integrated. Greater pluralism is the only way through which economics can fully realise its potential for real-world relevance. Approaches should be less deductive based on formalised and inflexible theories. Instead policymakers should take a more pragmatic inductive approach driven by data and evidence. John Kay, one of Britain’s leading economists noted a distinction between probabilistic risk, as embodied in rational expectations theory and radical uncertainty as the fundamental existential fact of our world.

Radical uncertainty or the things we don’t know we don’t know should be discovered or created as we go along, which is the mode of the entrepreneur, the researcher and the policy maker. Probabilistic reasoning is not applicable to a lot of situations we face requiring greater emphasis on other types of reasoning and again a more inductive approach. A single alternative model does not exist. A pluralistic approach is called for. Yann Algan, a Professor from Sciences Po contributed to the NAEC series in May 2015 presenting his paper on the

Superiority of Economists with his findings that economics is a relatively insular subject, with a hierarchical structure in the profession, and that economists hold more individualistic worldviews than other social scientists. Algan found this sense of superiority troubling in light of economist's deep involvement in the policy-making process. ¹²

How can economic and policy frameworks be improved?

New models

It would be easy to become very depressed at the state of economics in the current environment. Many experts, including economics experts, are simply being ignored. But the economic challenges facing us could not be greater: slowing growth, slowing productivity, the retreat of trade, the retreat of globalisation, high and rising levels of inequality. These are deep and diverse problems facing our societies and we will need deep and diverse frameworks to help understand them and to set policy in response to them. In the pre-crisis environment when things were relatively stable and stationary, our existing frameworks in macroeconomics did a pretty good job of making sense of things.

Hendry and Mizon (2014) suggest that the mathematical basis of macro-models fails when crises shift the underlying distributions of shocks. Like a fire station that automatically burns down whenever a big fire starts, macro models and specifically Dynamic Stochastic General Equilibrium (DSGE) models become unreliable when they are most needed. John Muellbauer (2016) argues that the flaws in these models stem from unrealistic micro-foundations for household behaviour and from wrongly assuming that aggregate behaviour mimics a fully informed 'representative agent'.

Andy Haldane, Chief Economist of the Bank of England has argued that the OECD work on new approaches to economic challenges could not be more pressing, more important, more timely and relevant. This is because the world these days is characterised by features such as discontinuities, tipping points, multiple equilibria, and radical uncertainty. So if we are to make economics interesting and the response to the challenges adequate, we need new frameworks that can capture the complexities of modern societies.

We are seeing increased interest in using complexity theory to make sense of the dynamics of economic and financial systems. For example, epidemiological models have been used to understand and calibrate regulatory capital standards for the largest, most interconnected banks, the so-called "super-spreaders". Less attention has been placed on using complexity theory to understand the overall architecture of public policy – how the various pieces of the policy jigsaw fit together as a whole in relation to modern economic and financial systems.

¹² The discussion can be viewed [here](#). Professors Wendy Carlin and Sam Bowles discussed new approaches to Teaching Economics at the OECD in November 2015. The video is available [here](#).

These systems can be characterised as a complex, adaptive “system of systems”, a nested set of sub-systems, each one itself a complex web. The architecture of a complex system of systems means that policies with varying degrees of magnification are necessary to understand and to moderate fluctuations. It also means that taking account of interactions between these layers is important when gauging risk.

What public policy implications follow from this complex system of systems perspective? First, it underscores the importance of accurate data and timely mapping of each layer in the system. This is especially important when these layers are themselves complex. Granular data is needed to capture the interactions within and between these complex sub-systems. Second, modelling of each of these layers, and their interaction with other layers, is likely to be important, both for understanding system risks and dynamics and for calibrating potential policy responses to them. Third, in controlling these risks, something akin to the Tinbergen Rule is likely to apply: there is likely to be a need for at least as many policy instruments as there are complex sub-components of a system of systems if risk is to be monitored and managed effectively. Put differently, an under-identified complex system of systems is likely to result in a loss of control, both system-wide and for each of the layers.

In the meantime, there is a crisis in economics. For some, it is a threat. For others it is an opportunity to make a great leap forward, as Keynes did in the 1930s. But seizing this opportunity requires first a re-examination of the contours of economics and an exploration of some new pathways. Second, it is important to look at economic systems through a cross-disciplinary lens. Drawing on insights from a range of disciplines, natural as well as social sciences, can provide a different perspective on individual behaviour and system-wide dynamics.

The NAEC initiative does so, and the OECD’s willingness to consider a complexity approach puts the Organisation at the forefront of bringing economic analysis and policy-making into the 21st century.

New approaches

The increasing complexity of the financial markets, economy and society requires ever greater levels of trust as a lot of complex technology-driven operations still essentially revolve around trust. Yet trust in government, institutions, businesses and even in experts are declining in what is fast becoming a post-fact society. Trust is asymmetric – it takes time to build it up but it doesn’t take long to break it down. Alan Kirman suggested that although trust is a critical element in the way societies operate we do not understand it well enough. Thus the concept of trust merits a lot of thought and study. A NAEC seminar took place on

23 January 2017 to discuss the OECD's Trust Lab which offers new ways of measuring and understanding trust. Technology can sometimes undermine trust but could also be part of the solution facilitating transparency, information exchange and broad stakeholder consultation.

Economics may be close to a tipping point – a transition to a new behavioural complexity paradigm. There is wide agreement among economists on the limitations and the shortcomings of the rational expectations paradigm and much discussion on how to move forward. Cars Hommes, a pioneer in complexity economics discussed how dropping rational expectations assumptions can already improve models a lot.

Behavioural expectations can be measured in laboratory settings. These experiments indicate that positive feedbacks exist in a whole range of markets leading to price bubbles and crashes. Stylised behavioural models can help identify robust cause-effect relationships and the mechanisms generating trends. Heterogeneous agent-based models with detailed microdata can unleash the potential of simulations. Thus dropping the representative agent assumptions offer an alternative paradigm for understanding a range of phenomena including financial crises.¹³

New goals

The inter-relationships between the economic and social domains need to be more clearly recognised. The NAEC Initiative has captured new insights into how our economies and societies actually work - a significant advance because traditional models have not realistically recognized the complexity of these inter-related systems. An integrated policy agenda and associated trade-offs and complementarities between economic, social and environmental objectives are set out in the OECD book published in September 2015, [*Debating the Issues: New Approaches to Economic Challenges*](#).

While global integration has been an engine of growth since the emergence of capitalism, the financial and economic crisis highlighted that the current level of interconnectedness between countries and its impact, positive or negative was poorly understood. This increased complexity has exposed the limitations of prevailing analytical tools, policy frameworks, and governance arrangements. It has also underlined the fact that global challenges can only be addressed through collective co-ordination and action.

The 2030 Agenda for Sustainable Development with the Sustainable Development Goals (SDGs) at its core are based on this new understanding. The goals are universal – applicable to all countries with targets adapted to national circumstances and context. The agenda

¹³ Rick's presentation prepared for the Roundtable can be accessed [here](#).

acknowledges that new approaches are needed to tackle an integrated set of challenges. The SDGs are also transformative – they contribute to systemic change and help anticipate future global threats.

The OECD is actively responding to the agenda with better policies for better lives – drawing on the cumulative experience of member and partner countries and capitalising on its value-added. The NAEC Initiative is helping OECD to prepare for the SDGs – through developing integrated analysis and policy advice for tackling an ambitious set of interlinked goals, as well as the forward-looking transformational agenda. As Doug Frantz has argued, the SDGs and NAEC are like Romeo and Juliet – they are meant for each other.

Consideration of these trade-offs should at the first instance be undertaken at the national level. This is where policy-makers can optimise among trade-offs between economic, social and environmental goals. Making policy choices on the basis of their inter-relationships requires systemic and long-term thinking, strategic foresight and strategic governance. Realising this vision has proved elusive but gradually the relevant policy signposts have been put in place. Through the NAEC, analytical frameworks have been broadened to assess better the nexus between economic growth and inequality on the one hand (inclusive growth), and between environment and growth on the other (green growth). Less progress has been made on the social-ecology nexus. Further work is needed to better examine the distributional, employment and skills implications of the transition to environmentally sustainable growth. Eloi Laurent has argued at a NAEC seminar that environmental challenges are in fact social problems that arise largely because of income and power inequalities.

Inequality is rising and indeed is far worse than perceptions revealed by opinion-polling. The top 20% have captured a far greater proportion of wealth than most people perceive and far more than what they would consider an ideal distribution. To understand the importance of inequality we should look at it through the lens of social psychology. Social networks are important in understanding group dynamics and behaviour as well as how people understand and process information. While adopting a more long-term perspective in placing country surveys on a medium-term footing would help policymakers better appreciate systemic change including environmental change.

People need to achieve and when they are robbed of this sense of achievement they feel anger – this is affecting political outcomes and feeds back into economic outcomes. Dennis Snower, President of the Kiel Institute for the World Economy, called for a new understanding of structural policies - in terms of empowerment and of nurturing where that

fails. In order to create an empowering state, we need to think differently about social support – social protection, social accounting, education and skills development.¹⁴

How can the NAEC initiative promote further improvements?

The NAEC Roundtable participants gave strong impetus to the project for the OECD, through the NAEC initiative, to help promote and socialise the use of new approaches as well as a new and broader economic paradigm. The external speakers stressed the uniqueness of the NAEC initiative and forum as facilitating a fundamental conversation on new thinking and methods that is not taking place anywhere else in the intergovernmental system. Gathering an external group of experts illustrated how proposals for new directions put forward by NAEC could be reinforced by providing assurance and expertise from the scientific community to help develop new thinking and methods. The Roundtable with external experts acting as devil's advocates also demonstrated the value of external scrutiny of what OECD is doing and proposing to do.

Mainstreaming the findings of NAEC

At the 2015 Ministerial Council Meeting (MCM), Ministers agreed that the findings and lessons learned from the NAEC Initiative should be mainstreamed in the work of the OECD. The overall objective of this effort is to transform the growth paradigm promoted by the Organisation to one that is more resilient, inclusive and sustainable.

An Update on the Mainstreaming of the NAEC Initiative presented at the MCM in 2016 indicated the extent to which NAEC findings are informing the current and future work of Committees and the Organisation as a whole. It demonstrated that NAEC is having an impact on OECD analytical work, data collection and publications and provides indications of how it will continue to do so, based on the interest demonstrated by many Members, Committees and the Secretariat, and current discussions regarding the 2017-2018 Programme of Work and Budget (PWB).

More generally, NAEC has helped change and should continue to change the culture of the Organisation, to outline research directions and enhance horizontality in the work of the OECD. NAEC has fostered a culture of experimentation and investigation into new relationships, deepening the analysis of trade-offs and complementarities across policies. It has helped strengthen quantitative integrated analysis and led to the adoption of new policy tools and approaches across the OECD. More than a programme, NAEC fulfils a role in encouraging the Organisation as a whole to strive for excellence in policy analysis. While not yet systematically integrated in policy analysis, well-being is increasingly used to assess

¹⁴ Veronica Boix Mansilla, Chair of the Future of Learning Institute, and Principal Investigator with Project Zero at the Harvard Graduate School of Education gave a NAEC seminar on global competencies on 2 February 2017.

policy performance, including through the Inclusive Growth Initiative. Economic Surveys are starting to incorporate this, as well as other analytical developments such as the job quality framework that is profoundly changing the narrative on labour market policies. Progress has also been made in better understanding the policy linkages between different dimensions of well-being, including through the analytical work done related to the Multi-Dimensional Living Standard (MDLS) Indicator.

Concerns about inequality have gained traction, with new measures enabling the mainstreaming of inequality concerns in different policy areas. The Inclusive Growth agenda has broadened the understanding of the impact of inequalities of income and wealth and expanded the focus to other dimensions of well-being. It has also shed light on how inequalities can accumulate heightening individual and regional disparities. As part of the MCM 2016 agenda, the Inclusive Growth initiative is looking at the connections between inequalities and the productivity slowdown and they can be addressed in a collective manner.

The influence of NAEC is also reflected in the resources that have been devoted to the mainstreaming of environmental concerns. Finance and financial linkages are better integrated, and complexity and systems thinking is increasingly addressed, with greater consideration given to resilience. More work is needed however to fully grasp the complexity of financial markets and systemic risks and to incorporate financial considerations in macroeconomic projections. The OECD is preparing for an uncertain future by investigating long-term scenarios in a range of policy areas as part of its upgrade of Strategic Foresight capacities, but more can be done to integrate the foresight perspective across Directorates. Country-specific institutional frameworks are being increasingly investigated, facilitating the better targeting of policy guidance.

New indicators, micro-data and data based on global databases are increasingly being used. The measurement and application of stock data is improving. Micro-data, big data and "smart" data are being used more extensively across the Organisation, enabling a better understanding of economic actors' behaviour at a granular level and shedding new light on a number of policy questions. This is informing proposed work on the digital economy which will investigate the way the Next Production Revolution is shaping the transformation of economic and social interactions and the future of work. Microdata are also enabling a better quantification of investment flows in the context of Global Value Chains (GVCs).

Modelling and quantification tools are being upgraded but a greater variety of methods are needed, including more integrated approaches to grasp complex interactions. NAEC has mainstreamed new ways of working, reinforcing horizontal work based on stronger and

deeper dialogue and cross-Committee collaboration. It has also supported the expansion of engagement with other disciplines, promoted inter-disciplinary perspectives, while guarding against group-think.

The Report concludes with suggestions on how to continue progress and consolidate the NAEC spirit. NAEC provides a useful space for policy discussions among Members, Committees and the Secretariat. It helps the OECD reach out to external researchers. The OECD should retain a space for fresh thinking and cross-Directorate as well as cross-Committee exchange, shedding light on new questions while taking a hard look at policy instruments, tools and approaches. It could also continue to promote policy coherence and peer learning, while paying greater attention to emerging threats, future risks and policy spill-overs.

The OECD should continue to enrich traditional frameworks for economic analysis, with better analysis of the distributional and environmental impacts of policy choices and a deeper investigation of trade-offs and synergies among policy objectives. In line with the 21x21 Agenda of the Secretary General, the OECD should help further develop an integrated growth narrative focusing on the well-being of people.

New questions and new insights

At the NAEC Roundtable OECD Directors contributed their ideas, emerging approaches, and experience of applying new thinking. Suggested future themes for NAEC to explore in a cross-Directorate manner included the geography of discontent, the future of social protection systems to ensure they protect people against new risks, the circular economy and exploiting new sources of big and smart data.¹⁵

The crisis and the low-growth trap we are currently in has raised fundamental questions about the relationship between market mechanisms and framework policies, including with regard to market failures, and contagion; Attitudes of society regarding stability, growth, and equity need to be better accounted for and Individuals' behavioural role in expectation formation with implications for education, skills, job choice, entrepreneurship and macroeconomic outcomes and the role for collective action, contagion, policy mistakes for individual economies, their firms, and citizens.

Answering those questions is still work-in-progress, but valuable new insights have come from:

¹⁵ The OECD through the NAEC Initiative has engaged a number of collaborators to make progress on this broad agenda. The European Commission's Joint Research Centre is working with the NAEC Initiative in a number of areas and in particular on dealing with cross-cutting, nexus issues. The New America Foundation is working with the NAEC to better understand the drivers of social stability and the Austrian Institute for Economic Research (WIFO) has been exploring policies to promote a social-ecological transition. A conference bringing these issues and actors together was held in May 2017.

- more emphasis on the role of financial and credit cycles, and the role of finance (and the operations of financial institutions and policies) in growth, productivity, inequality, and resilience. However, more needs to be done to integrate these insights into macroeconomic models (OECD 3.0).
- greater awareness of policy trade-offs and synergies in many areas, including between growth and equity and also between growth and stability (e.g. resilience). However, more granularity in the data, more country specific analysis, and more examination of the inter-relationships between policies is needed.
- recognising a blurred distinction between the short- and long-run, where expectations of the future feedback in a rich way into current developments, making analysis of economy relationships less predictable using standard analysis. But more needs to be done, including integrating megatrends (demographics, climate digital) into assessments.
- incorporating international spillovers, which have become critical to understand developments at all levels. A more extensive work program on these spillovers and the implications of collective policy action is needed. EMEs need to be included on a more systematic basis.
- a greater use of micro data to understand what individual-behavioural drivers lie behind aggregate behaviour and to understand distributional outcomes together with other dimensions. Going forward, evaluating how big/smart data can be used to better understand the drivers of individual decisions may be fruitful
- incorporating the inter-relationships between policy makers and civil society and between different levels of government as key aspects of policy implementation, interaction and outcomes. More interdisciplinary work is needed.

Conclusions

Perhaps the most significant conclusion of NAEC is that we still need better models and narratives to understand better and explain how the economy operates, globally and nationally. A key theme of the NAEC Initiative in the last years has been the complexity and interconnectedness of the economy at both these levels. Later chapters will argue that complexity and systems thinking can improve understanding of issues such as financial crises, urban planning, processes and sustainability of growth, competitiveness and innovation. Recognising the complexity of the economy implies that greater attention should be paid to stability, resilience, policy buffers and safeguards.

The OECD should continue taking the lead in addressing problems that transcend national boundaries (such as international taxation, international regulatory co-operation and, in particular, how to regulate global natural monopolies). OECD should also be more forward-looking in assessing future impacts such as changing technologies, the digital transformation (e.g. Artificial Intelligence, Robotics, etc.) and the future of work and social protection.

NAEC can provide a bridge between academia and the work of institutions like INET and country-based economists and policy makers through OECD networks and structures. Thus the NAEC discussion will be taken to the Committee level in 2017 involving discussions on specific issues with delegates from capitals in an attempt to deepen the debate on new approaches and promote bottom-up innovation.¹⁶

The events of 2016, new analytical innovations, new challenges, and the promise of new answers to old problems suggest that the NAEC promise is still as important as ever. The Secretary General remarked on closing the first NAEC Roundtable that NAEC had led to a renewed “sense of purpose, direction, mission, vision and ambition” for the OECD to take forward its project to find new ways to address today’s complex realities.

¹⁶ For instance the Committee for Financial Markets could be accompanied by a NAEC discussion on new thinking and cutting edge research in finance: financial networks; systemic risk; macro-prudential policies; and new financial technologies (Fintech), including high-speed transactions and block chains.

Chapter 3. What's wrong with economics

Alan Kirman, with Mariana Mazzucato, Richard Bookstaber, Martine Durand, Eric Beinhocker

Shocks are not “exogenous”. They are in the very nature of the global social-political-economic-environmental system, and to fully understand this “system of systems” we cannot depend on our traditional models and tools based on general equilibrium and rational expectations.

Economic models that rely on inputs such as GDP, income per capita, trade flows, resource allocation, productivity, representative agents, and so on can tell a part of the story, but they fail to capture the distributional consequences of the policies we make, and do not address the perception that the growth process only benefits a few. Nor do they capture important dimensions such as justice, trust or social cohesion. In fact these models are based on an ideology or narrative that claims that people are rational, take the best decisions according to the information they have to maximize utility, and that the accumulation of rational decisions will deliver the best outcome.

But economic challenges are not just economic. That is why NAEC promotes a multi-dimensional view of people's well-being, calling for a new growth narrative that recognises the complexity of human behaviour and institutions. Sociology, psychology, biology, history, and other disciplines can help us to write this narrative and build better models to inform economic decisions

The 21st century has already been characterized by major shifts in the structure and functioning of the socio-economic system. The increasing interconnectedness of economies and societies and the speed of technical progress in the IT domain make it more and more difficult to analyse problems in isolation. This is where the complexity component of NAEC can make a real contribution to improving policy. Once it is recognized that the evolutions of our political, social and economic systems are highly interdependent, we cannot avoid looking at the consequences of policy measures for all three.

Till now the basic approach to the prediction of the consequences of any specific measure has been to analyse the reaction of individuals to such measures and to specify their “best response”, that is, the optimal action or decision for them to take. Adding the latter up would then reveal what the collective reaction to any policy measure would be. However, this is increasingly inadequate as a procedure. The basic reason for this is that individuals do not decide independently of each other. They are dependent on the actions that others take, they imitate, they conform, and they glean information from watching how their neighbours

behave. Game theory has given us an approach to understanding how individuals interact strategically but this attributes considerable analytical abilities to the actors, as they reflect, like chess players, on how to react to the present and future moves of their opponent. However, this is hardly appropriate for the everyday interaction between many individuals.

What is wrong with economic models?

Rick Bookstaber points to four characteristics of human experience that manifest themselves in crises and that cannot be addressed well by the methods of traditional economics, but his critique holds for aspects other than crises, too.

The first of these is computational irreducibility. You may be able to reduce the behaviour of a simple system to a mathematical description that provides a shortcut to predicting its future behaviour, the way a map shows that following a road gets you to a town without having to physically travel the road first. Unfortunately, for many systems, as [Stephen Wolfram](#) argues, you only know what is going to happen by faithfully reproducing the path the system takes to its end point, through simulation and observation, with no chance of getting to the final state before the system itself. It's a bit like the map Borges describes in *On Rigor in Science*, where "the Map of the Empire had the size of the Empire itself and coincided with it point by point". Not being able to reduce the economy to a computation means you can't predict it using analytical methods, but economics requires that you can.

The second characteristic property is emergence. Emergent phenomena occur when the overall effect of individuals' actions is qualitatively different from what each of the individuals is doing. You cannot anticipate the outcome for the whole system on the basis of the actions of its individual members because the large system will show properties its individual members do not have. For example, some people pushing others in a crowd may lead to nothing or it may lead to a stampede with people getting crushed, despite nobody wanting this or acting intentionally to produce it. Likewise no one decides to precipitate a financial crisis, and indeed at the level of the individual firms, decisions generally are made to take prudent action to avoid the costly effects of a crisis. But what is locally stable can become globally unstable.

The name for the third characteristic, "non-ergodicity", comes from the German physicist Ludwig Boltzmann who defined as "ergodic" a concept in statistical mechanics whereby a single trajectory, continued long enough at constant energy, would be representative of an isolated system as a whole, from the Greek *ergon* energy, and *odos* path. The mechanical processes that drive of our physical world are ergodic, as are many biological processes. We can predict how a ball will move when struck without knowing how it got into its present position – past doesn't matter. But the past matters in social processes and you cannot simply extrapolate it to know the future. The dynamics of a financial crisis are not reflected

in the pre-crisis period for instance because financial markets are constantly innovating, so the future may look nothing like the past.

Radical uncertainty completes the quartet. It describes surprises—outcomes or events that are unanticipated, that cannot be put into a probability distribution because they are outside our list of things that might occur. Electric power, the atomic bomb, or the Internet are examples from the past, and of course by definition we don't know what the future will be. As Keynes put it, "There is no scientific basis to form any calculable probability whatever. We simply do not know." Economists also talk about "Knightian uncertainty", after Frank Knight, who distinguished between risk, for example gambling in a casino where we don't know the outcome but can calculate the odds; and what he called "true uncertainty" where we can't know everything that would be needed to calculate the odds. This is not just a theoretical issue. Reinsurers Munich Re underline the practical implications in [a paper](#) on managing complex risks using an approach based on Knightian uncertainty: "Risk is generally more insurable than uncertainty. If the probability and consequences of occurrence cannot reasonably be estimated, related insurance products can only be provided on a restricted basis or at a higher price."

Competition as the motor for the economy and society

A further feature of the last century was the strong emphasis on competition which was supposed to be the mechanism by which the "Invisible Hand" would do its work if people and firms were left to their own devices. In a Laissez Faire situation the system was supposed to self-organise into a socially satisfactory state. Inequalities and excessive profits would be limited by competition. But, economists have never been able to show that this reasoning was justified empirically or theoretically. Like all complex systems the socio-economic system has a tendency to pass through periods of upheaval which are far from socially desirable. An important part of the problem is that the idea that firms enjoy a competitive environment is a myth, as Adam Smith already pointed out. The fact that anti-trust and competition law has led to the massive administrative structure to control and prevent monopolies appearing is *prima facie* evidence that the system does not tend to self-organise in the way which theory has claimed

Yet, one can think of the 20th century as the era in which the idea of competition reached its peak. Much of the emphasis was on making economies more "efficient" and "competitive". For firms and companies the most obvious route was to diminish labour costs and this, as we have observed, meant keeping wages down. However, such policies were myopic, as wages stagnated inequality grew and even in the countries that did well in aggregate, inequality worsened. This could have been offset by surplus countries allowing wages to rise, becoming less competitive in the process but finally handing some of the gains from economic

expansion to the lower end of the income distribution. The surplus countries would have purchased more from the countries that export to them and, in the process, would have moved towards a trade balance or deficit and would have stimulated the economies of the deficit countries. In Europe, this would have avoided violating the Maastricht limits on surpluses.

To have changed course in this way would have signified moving from a competitive to a more cooperative stance. It has been forcefully argued by some economists that the future evolution of the world's economies will be one where coordination and cooperation replace "competitiveness" as the leitmotif though such opinions have been far from those of the majority. But this shift would mean looking beyond the short-term mercantilist gains from being increasingly competitive to the longer-term benefits for society in terms of removing distributional unfairness. Using the lessons from the recent literature on the evolution of cooperation might help to understand better how certain problems which seemed insurmountable in the standard literature have been solved.

The failure of market failure

In a similar vein, Mariana Mazzucato rejects the mainstream discourse where 'market failure' is used to explain why suboptimal outcomes occur and how they can be improved, and to provide a rationale for government intervention to 'correct' these failures, as long as this does not entail government failures outweighing the benefits. The orthodox policy conclusion is that markets generally produce positive outcomes which increase welfare, and so should be allowed to operate with as little interference as possible. Many of the policy prescriptions which follow favour those in economic power, giving orthodoxy a powerful grip on public discourse. But markets are not the simple structures set out in economics textbooks; and 'market failure' is not a helpful concept for tackling major problems like climate change. These idealised theories assume away many of capitalism's key features, or treat them as 'imperfections' rather than structural, systemic characteristics. They ignore evidence on how different economies actually function, and why they perform well or badly. They explain none of the key problems of Western capitalism over recent decades.

Mazzucato provides three insights to underpin a rethinking of capitalism.

First, we need a richer characterisation of markets and businesses. It is not helpful to think of markets as pre-existing, abstract institutions which firms, investors and households 'enter' to do business, and which require them, once there, to behave in particular ways. Markets are concrete and differentiated outcomes arising from different circumstances.

Second, a theory of how capitalist economies work must include at its centre the dynamics of innovation, understanding both the specific nature of the public and private investments needed and the turbulent, non-equilibrium outcomes that result. This requires a more

dynamic and accurate understanding of how innovation occurs than is provided by the orthodox economic theories of imperfect competition.

Recognising the role of the public sector as a driver of innovation in a range of fields informs the third insight. As Keynes' argued, private investment is both too volatile and too procyclical. Creating expectations about future growth is a crucial role for government, and not just during downturns. The new technologies in the Apple iPhone, for example, were developed with government support. The interdependence of private enterprise and the public sector; of market and non-market activities has to be recognised. This has implications for the role of taxation as the means by which economic actors pay the public sector for its contribution to the productive process.

These arguments shape how we think about policy. Public policies are not 'interventions' in the economy, as if markets existed independently of the public institutions and social and environmental conditions in which they are embedded. The role of policy is not simply to 'correct' the failures of otherwise free markets. It is rather to help create and shape markets to achieve the co-production, and the fair distribution, of economic value. A more innovative, sustainable and inclusive economic system is possible. But it will require fundamental changes in our understanding of how capitalism works, and how public policy can help create and shape a different economic future.

It will also require a change in how policies are made and implemented. In many countries initiatives at the state or city level have helped to offset difficulties at the national level. As Elinor Ostrom the late Nobel Prize winner in economics argued, the "Tragedy of the Commons" involving over exploitation of natural resources has been successfully resisted at the local level by cooperative arrangements. Failure to reach an overarching international agreement on greenhouse gas emissions can be offset by self-organisation on a local or regional level. In too many of our models there has been a stark division between "government" and individuals, but, in fact individuals and firms organise themselves at many levels. This makes life more complicated for decision makers but helps to explain why national policies can be either thwarted or enhanced by the reaction of local communities to those policies.

GDP and well-being are not synonyms

On a more fundamental level, there is also a problem with what we are measuring and modelling and why. The one economic metric practically everybody has heard of is GDP, and it is often taken as a proxy of how well an economy and the people contributing to it are doing. Before GDP was invented by Simon Kuznets in the 1930s (and it seems such an obvious, natural measure it's hard to believe both that it was invented and invented so recently) governments did have some objective data about the state of the economy on which

to base policy. In the 17th century already, William Petty established the bases of national accounting, essentially for tax purposes, although his *Political Arithmetick* also has many other lessons that are still relevant today, for example on how “a small Country and few People, by its Situation, Trade, and Policy, may be equivalent in Wealth and Strength, to a far greater People and Territory”.

Despite the centuries separating them, Petty and Kuznets, like economists today, were responding to a similar need to understand a changing situation. Petty’s concern was that although money rather than barter was starting to dominate economic transactions, national wealth was still counted as it had been for centuries in terms of gold and silver. In Kuznets’ time, the US government’s role in the economy was growing after the Great Depression, but as [Richard T. Froyen](#) points out, its interventions were being guided by a sketchy set of indicators such as freight car loadings or stock price indices.

The beauty of GDP was that it included so many different things in a single figure, and despite the suspicion and even outright hostility any innovative approach attracts, it became the standard measure of national economies following the 1944 Bretton Woods conference. The main criticism was, and still is, that it is not a measure of well-being since production can increase while leaving most people no better off in any way. However, as Martine Durand reminds us, in a report to the US Senate in 1934 Kuznets observed that: *Economic welfare cannot be adequately measured unless the personal distribution of income is known. And no income measurement undertakes to estimate the reverse side of income, that is, the intensity and unpleasantness of effort going into the earning of income. The welfare of a nation can, therefore, scarcely be inferred from a measurement of national income as defined above.*¹⁷

Speaking to the [OECD Observer](#) in 2005, François Lequiller, head of National Accounts work at the Organisation, also defended GDP as doing very well what it was designed for, but admitted that it left out a number of key topics such as environmental degradation. He argued though that it’s probably impossible to design a single GDP-like figure for a wider application that would reflect the many different aspects in any meaningful way, and including them in GDP would damage its usefulness as a measure of output. A suite of indicators is more appropriate in these cases.

The OECD’s Better Life Index (BLI), part of the [Better Life Initiative](#) launched in 2011, follows this logic to allow citizens to establish their own measure of well-being. A major breakthrough of this work has been the recognition of the inherent subjectivity in assessing

¹⁷ National Income, 1929-1932: [Letter from the Acting Secretary of Commerce Transmitting in Response to Senate Resolution No. 220 \(72nd Cong.\) a Report on National Income, 1929-32](#), p. 7. Kuznets’ authorship is acknowledged on p. 11.

well-being. This means, first of all, including measures of people's perceptions. But it also extends to the basic design of the initiative. Users "weigh" a number of topics – community, education, environment, governance, health, housing, income, jobs, life satisfaction, safety, and work-life balance – to generate their own Index from a collection of 20 indicators based on what they think is the most important for a good life. Another innovative OECD web-tool also helps explore people's perceptions of income inequalities. And over the past two years, we have enriched our initial framework by examining in detail subjective well-being; wealth inequalities; job quality; health inequalities, regional inequalities, and short-term developments in aggregate measures of household economic well-being.

There is much more work to be done, however, to deepen and harmonise these efforts and exploit new big data sources to expand the coverage, frequency, and timeliness of well-being indicators. The OECD will again be taking the lead in developing new measures that will inform on key aspects of well-being, such as trust, governance, the quality of the working environment, social connections, work-life balance, and mental health. Many of these new indicators will also help fill key information gaps to monitor the 17 goals and 169 targets of the UN Sustainable Development Goals.

Along with governments, business also contributes directly to people's well-being – from the goods and services that firms provide, the taxes they pay and the working relations they have with their employees and their suppliers, to their impact on the environment, the regions and communities where they operate. The OECD has developed strong standards related to Responsible Business Conduct and there have been many initiatives to foster a multi-stakeholder, not just a shareholder, approach to business activities. Yet, very little exists regarding analytically sound measures of business well-being impacts. This is a new area, where in collaboration with the business sector, the OECD should take the lead and play a catalyst role for achieving convergence between indicators used by governments and businesses so that the impact of public policies and companies' actions can be assessed with similar metrics.

We have made huge strides in the measurement of well-being in its multiple dimensions over the past decade and in changing the growth narrative. We need to continue to be at the forefront of progress in the years ahead to exploit new data sources, develop new tools and models and systematically use these in policy evaluations and advice. This is the only way forward to achieve well-being for all and deliver better policies for better lives.

Conclusion

The ambitious aim of General Equilibrium theory which is still claimed to be the foundation of modern economics was to model a system in which all the components interacted with each other and to show that the result had satisfactory properties. This aim was never

attained because the formal analysis that has been developed over more than a century was logically inconsistent with the properties of the system we were trying to model. The emphasis on strict assumptions about the “rationality” of individuals undermined the hope of obtaining results about the functioning of the system as a whole. This has however, changed and with the advent of new computational tools we can now build and simulate models with which to analyse the direct and indirect impact of policy measures. We can build models in which aggregate behaviour emerges from the interaction between simple and non-optimising agents. This means taking an algorithmic approach and examining carefully the robustness of these models. This will not provide us with neat “solutions” but will help to guide policymakers in evaluating the potential consequences of their actions.

It’s also worth stressing that not only the intensity and frequency of interaction are changing, so are the means by which it takes place, as people interact through social media and rely less on older media such as television and newspapers. This has modified the political scene since people have a tendency now to cluster around rather specific themes rather than position themselves on the classic right wing spectrum. This means that the standard tendency for a party to move “towards the centre” when it is behind, may be a thing of the past. This will certainly help populist movements which can establish a niche and the policy problem which will now face governments is how to develop answers which will cater to this fragmented landscape.

For Eric Beinhocker, one lesson from history is that populist waves can lead to disaster or to reform. Disaster is certainly a realistic scenario now with potential for an unravelling of international cooperation, geopolitical conflict, and very bad economic policy. But we can also look back in history and see how, for example, in the US at the beginning of the 20th century Teddy Roosevelt harnessed populist discontent to create a period of major reform and progress.

So how might we tilt the odds from disaster to reform? First, listen. The populist movements do contain some racists, xenophobes, genuinely crazy people, and others whom we should absolutely condemn. But they also contain many normal people who are fed up with a system that doesn’t work for them. People who have seen their living standards stagnate or decline, who live precarious lives one paycheque at a time, who think their children will do worse than they have. And their issues aren’t just economic, they are also social and psychological. They have lost dignity and respect, and crave a sense of identity and belonging.

They feel – rightly or wrongly – that they played by the rules, but others in society haven’t, and those others have been rewarded. They also feel that their political leaders and institutions are profoundly out of touch, untrustworthy, and self-serving. And finally they feel at the mercy of big impersonal forces – globalisation, technology change, rootless banks

and large faceless corporations. The most effective populist slogan has been “take back control”.

After we listen we then have to give new answers. New narratives and policies about how people’s lives can be made better and more secure, how they can fairly share in their nation’s prosperity, how they can have more control over their lives, how they can live with dignity and respect, how everyone will play by the same rules and the social contract will be restored, how openness and international cooperation benefits them not just an elite, and how governments, corporations and banks will serve their interests, and not the other way around.

Rational economic models are of little help on these issues where a deeper understanding of psychology, sociology, political science, anthropology, and history is required. Likewise, communications is critical – thick reports are important for government ministries, but stories, narratives, visuals, and memes are needed to shift the media and public thinking.

So what might such a new narrative look like? It should be based on the best facts and science available, and contain four stories:

- A new story of growth
- A new story of inclusion
- A new social contract
- A new idealism.

This last point doesn’t get discussed enough. Periods of progress are usually characterised by idealism, common projects we can all aspire to. Populism is a zero-sum mentality – the populist leader will help me get more of a fixed pie. Idealism is a positive-sum mentality – we can do great things together. Idealism is the most powerful antidote to populism.

Economics has painted itself as a detached amoral science, but humans are moral creatures. We must bring morality back into the centre of economics in order for people to relate to and trust it. Some might question whether this is territory the OECD should get into. But the OECD was founded “to improve the economic and social well-being of people around the world” and provide a forum for governments to “seek solutions to common problems.” These issues will dramatically impact the well-being of people around the world for decades to come and are certainly a common problem.

Chapter 4. Towards an empowering state

Gabriela Ramos, with Roberto Unger, Veronica Boix Mansilla, Dennis Snower, Gillian Tett, Ron Gass, Edmund Phelps

The previous chapter argued that the roles and practices of the state and government should be redefined. The notion of the “empowering state” is central to this, a state whose role is not simply to remove barriers to opportunities, but also to give people the skills and confidence to seize them and live meaningful lives. Achieving this requires a thriving business sector and the state has a role to play in guiding and leveraging investment, and in helping to diffuse innovation.

Adopting such an approach will require changing the way we design and implement policies, with particular care taken to avoid the entrenchment of vested interests. Another aspect is ensuring that policy and government initiatives take regional and local circumstances into account. Ensuring that policies are coherent and are working in harmony means that the traditional “silo-based” approaches to policy making have to be abandoned.

If we want to save open markets and globalisation, we need to re-write the rules of the economic system to make them work for everyone. We also need to bring back that much neglected concept, fairness, to the heart of the policy debate. The role of the state is absolutely key to this discussion. We need to redefine and reimagine its role, to ensure that it is prepared for contemporary opportunities and challenges and is set up to empower people.

To begin with, we need a new approach to welfare that goes beyond just mitigating risk. The work of behavioural economists like Amos Tversky and Daniel Kahneman has shown us that people are not “risk averse” so much as “loss averse”. If we are to create entrepreneurial societies that encourage everyone to fulfil their productive potential, we need to deploy this insight via welfare policy to reduce the consequences of failure.

To be sure, providing people with a social safety net is vital, but it is not enough. We need to move beyond this approach, to create an “empowering state” that serves its citizens as a launch pad by furnishing them with capacity enhancing assets. Such a state would also seek to prevent disadvantage cascading down generations. It would recognise that its role was not simply to remove barriers to opportunities, but also to furnish people with the capacity to seize them. Crucially, it must see redistribution and social expenditure in vital areas like education and healthcare not as operating costs, but as investment in our most valuable assets – people.

In practice, this would mean deploying a coherent approach to intervention across individual’s life-cycles to provide high-quality early years education, comprehensive training

throughout adult life, income and skills support to help people transition between jobs and perhaps even a universal basic income. But it wouldn't stop there, because, when all is said and done, there is more to life than money. The key role of the state should be to support people helping them to have meaningful lives.

Inclusive vanguards

As Roberto Unger puts it, if the main objective of the economy and society is to be a more fulfilling life for people, you need flexibility, innovation and the capacity to experiment in an inclusive fashion that runs contrary to the neoliberal dogma. To achieve this would require reshaping the market economy along three convergent paths, the first of which is the new style of production emerging from the decline of mass production, whereby the flexible destandardisation of goods and services transforms production into permanent innovation. However, this is usually confined to isolated vanguards in each national economy, with the vast part of the labour force excluded. To address this requires a growth strategy and industrial policy that focus on SMEs. This will instigate a change in the institutional framework. The principal tool should not be the distribution of subsidies but the expansion of access to technology, credit, knowledge and advanced practice. The aim is strategic coordination between government and SMEs that is decentralised, competitive and experimental, disseminating advanced practices to large parts of the economy.

The second strand concerns the status of labour. Current forms for the organisation, representation and protection of labour are rooted in the ascendancy of mass production in the mid-19th to mid-20th century, favouring a large labour force in large productive units within large corporate entities. This system is giving way to a scheme that in many ways resembles the regime that preceded this form of organisation. Labour begins to be organised on the basis of decentralised networks of contractual relations on a global scale.

The third path is to reshape the relationship between finance and the real economy through tax and regulatory changes to encourage financial activity related to the expansion of output and the enhancement of productivity, and discourage financial activity that is unrelated to those goals. At the same time, the state should attempt to both encourage private venture capital and to create parastatal forms of intervention that mimic the activity of private venture capital, so that finance is coaxed into performing in the service of the real economy.

In sum, it is not enough to regulate the market or try to balance the inequalities generated in the market through retrospective tax and transfer. It is necessary to transform and democratise the institutional content of the market economy, rather than just compensate for its inequalities.

This implies a style of democratic politics that can master the restructuring of society so that the structure is not just there on a "take it or leave it" basis. Politics should not require crisis

and trauma as a condition of change. And politics must be high energy - it must raise the temperature of political activity and hasten the rapid resolution of impasse. Achieving this depends on both bottom-up and top-down change. From the bottom up, “vanguardism outside the vanguard” would establish a superior form of agency and innovation in daily life. The state should also help to engage civil society in the provision of public services. Devolution can play a vital role, with more power devolved in a way which does not slow down politics but which instead allows for radical innovation and experimentation.

The whole aim of such a project is the provision of public goods and making people “bigger”. The question then becomes: how are we to do this? Provision of public services today could be described as an administrative counterpart to mass production: the provision of standardised low-quality public services by the bureaucratic apparatus of the state, “administrative Fordism”. (Low-quality meaning services that are of relatively lower quality than analogous services that can be bought on the market by those who have money.) The only alternative to administrative Fordism appears to be the privatisation of public services in favour of profit-driven firms.

But there is another option: the state guarantees a universal minimum of public services to everyone on the one hand; and also operates at the ceiling, developing the services that are most complicated, most costly and most advanced, and beyond the reach of particular social groups. In the broad area between this floor and this ceiling, the state should engage independent civil society not for profit, but in the experimental and competitive provision of public services without ever endangering the universal minimum. The state should help to organise civil society so that it can act in this way through finance, equipment, training and monitoring.

This approach is not only the best way to enhance the quality of services, it also represents a powerful stimulus to the independent self-organisation of civil society outside of the state. This enhancement of the powers of agency of civil society is not simply an instrument but a value in itself, an enrichment rather than an abandoning of a high level of investment in people.

A society in which the governing principle is the experienced agency of creation and construction needs a form of education oriented chiefly to the acquisition of analytical capabilities, and capacities for verbal and numerical analysis and synthesis. It should also prefer cooperation in teaching and learning to the combination of individualism and authoritarianism. It should be radically dialectical in its approach; every subject should be taught at least twice from contrasting points of view.

The family says to the child “become like me”. The state says to the child “serve me”. But the school in a democracy has to be the voice of the future. It has to treat every child as a tongue-tied prophet and give them the equipment for engagement and transformation through a form of education that is rigorous but not narrow.

We are always tempted to squander our supreme good, life right now. The dominant ideas and tradition always locate the good in the future, whether it is the providential future of divine redemption or the historical future of the better society. But we don't have a future, we only have right now. It is giving people a better chance to do more with their lives in their own time, so that they won't sleepwalk through life. They will have a chance to awaken and to do something with their time within a broad range of human alternatives. That is the most important thing that the state can do for its citizens. It's a bit like the relation of a parent to a child. The parent says: “I love you unconditionally, and as a result of my unconditional love you have a secure place in the world. Now go out and raise a storm”. That is what we should desire from society for everyone - not just for an elite of heroes, geniuses and saints, but for ordinary humanity.

Educating for global competence

Veronica Boix Mansilla echoes Unger's call when she says that “globally competent” students seek to make a difference in the world now, not “when I grow up”. They see and create opportunities to act today, in their neighbourhood or on the global stage; alone or with others. To succeed in this new global age, students need capacities that include but go beyond reading, mathematics and science. They need to be far more knowledgeable and curious about world regions and global issues, attuned to diverse perspectives, able to communicate across cultures and in other languages, and disposed to acting toward the common good.

Global competence is the capacity and disposition to understand and act on issues of global significance. Specifically, globally competent students are able to investigate the world beyond their immediate environment, framing significant problems and conducting well-crafted and age-appropriate research; recognise perspectives, others' and their own, articulating and explaining such perspectives thoughtfully and respectfully; communicate ideas effectively with diverse audiences, bridging geographic, linguistic, ideological, and cultural barriers; and take action to improve conditions, viewing themselves as players in the world and participating reflectively.

Caring economics

In arguing for “Caring Economics” Dennis Snower also emphasizes the importance of education in shaping attitudes and actions. He points out that a large and rapidly growing body of evidence suggests that we automatically represent the mental and feeling states of

others in our own brains and bodies and that we are thereby become affectively interconnected. But even more importantly, research in contemplative and social neurosciences provides evidence that our human brains are plastic and trainable not just in younger years but also later in life and not just in primary domains such as language, memory or motor actions, but also in higher cognitive and social functions such as empathy, compassion, emotion regulation, attention, and cognitive perspective taking of others.

First though, Snower contends that economists have done significant harm to public policy by defining economics as, in the words of Lionel Robbins, “the science that studies human behavior as a relationship between ends and scarce means which have alternative uses”. This conception of economics as the study of how people use scarce resources to satisfy their unlimited desires implies, first, that people’s wants are exogenously given when they make their economic decisions, hard-wired in the brains and, second, that people’s wants are necessarily unlimited.

Insights from psychology and the neurosciences indicate that this conception of economics – resting on exogenously given and unlimited desires – is both misguided and harmful. It is misguided because our desires are demonstrably not exogenously given. On the contrary, they are profoundly influenced by our economic activities – working, consuming, saving, investing. When we choose to conduct these activities in a social setting that is individualistic, grasping, materialistic, competitive, and selfish, we stimulate our appetitive and competitive motivations. But when we choose to make our decisions in a more cooperative, supportive, kind and compassionate setting, we stimulate our caring motivations. Different motivations are associated with different desires. We have more choice over our desires than economists have led us to believe. Moreover, these desires are not necessarily unlimited. There is only so much food that we can eat and only so much clothing that we can wear.

What is potentially unlimited are our positional desires. The struggle to outdo the others is endless. For every winner, there is a loser whose positional desires have remained unsatisfied. But we have some choice over our positional desires as well. By choosing our social setting, we can get locked into battles for power and status, or live in mutually supportive communities of care. There is nothing natural or inevitable about this. By defining prosperity less positionally, centred more strongly on human cooperation, we direct our lives towards more balanced, healthy states of being.

The research programme on Caring Economics of the Institute for New Economic Thinking (INET) founded on a cooperation between the Kiel Institute for the World Economy and the Department of Social Neuroscience at the Max Planck Institute for Human Cognitive and Brain Sciences addresses these challenges by integrating knowledge from social

neurosciences and psychology focusing on the interdependence of human beings and their ability to empathise and care for each other.

The project is based on a novel motivation-based computational model of decision making. Drawing on a thorough integration of scientific knowledge derived from diverse disciplines ranging from social and motivation psychology, social and cognitive neurosciences, neuro- as well as micro-economics, this approach to cooperation and decision making is organised around the claim that humans are subject to multiple, discrete motivational systems, associated with different decision making patterns. Seven motivational systems integrating biological and psychological perspectives are proposed: Consumption-/Resource-Seeking; Care; Affiliation; Power-Status; Achievement; Threat Avoidance; and Threat Approach. Each of these motivational systems corresponds to distinct behavioural tendencies that can be characterised as self-interested, prosocial, conforming, competitive, defensive or aggressive, respectively. The model allows linking the different motivational systems to different aims (economic or non-economic) through the formulation of corresponding utility functions that in turn enable clear quantifiable predictions for behaviour in psychological experiments in the context of specific game theoretical paradigms such as a common good game. Further, the activation of the different motivational systems depends partly on people's context and partly on the individual's appraisal of this context.

The insights emerging from this research enable us to understand how our economic and social aspirations can become misaligned. It suggests that societies which focus primarily on the expansion and satisfaction of wants are ones where social prosperity may suffer. It is a sense of prosperity that connects us to our conceptions of the good life. The policy implications of Caring Economics are profound. Caring Economics seeks to create incentives and institutions that will promote our motivations for altruism, compassion and loving-kindness and widen our circle of moral responsibility to include all living things. There are many ways of doing this, ranging from compassion training for school children to classes on emotional literacy; from conflict resolution workshops to reconciliation commissions; and from cross-cultural education programmes to compulsory civic duty for school leavers.

In encouraging pro-social motivations, the research on Caring Economics uncovers new avenues for achieving a deep sense of prosperity that includes social cohesion, as well as resistance to social injustice and environmental destruction. It points to a sense of wellbeing that extends beyond our material concerns. It builds on the strength and breadth of our social relations and is meant to help us generate a sense of shared meaning and purpose.

Overcoming silos

Achieving this will require changes to the way we design and implement policies, with particular care taken to avoid the entrenchment of vested interests. There is also an urgent

need to overcome traditional ‘silo-based’ approaches to policy making. This will require a renewed ‘whole-of-government’ push, where different government departments, agencies and ministries work together to deliver integrated solutions as part of a coherent systemic approach. Gillian Tett approaches this through a basic question: Why do humans working in modern institutions collectively act in ways that sometimes seem stupid? Why do normally clever people fail to see risks and opportunities that are subsequently blindingly obvious? Why, as [Daniel Kahneman](#), the psychologist, put it, are we sometimes so “blind to our own blindness”?

For Tett, this question is central to understanding how the financial crisis of 2007-2008 had come about. There were lots of potential reasons. Before 2008 bankers had taken some crazy risks with mortgages and other financial assets, creating a gigantic bubble. Regulators had failed to spot the dangers, because they misunderstood how the modern financial system worked. Central bankers and other policymakers had given the wrong economic incentives to financiers. Consumers had been dangerously complacent, running up huge credit card debts and mortgage loans without asking whether they could be repaid. Ratings agencies misread risks. And so on.

But there was another reason for the disaster: the modern financial system was surprisingly fragmented, in terms of how people organised themselves, interacted with each other, and imagined the world. In theory, pundits often like to say that globalisation and the Internet are creating a seamless, interlinked world, where markets, economies, and people are connected more closely than ever before. In some senses, integration is under way. But the 2008 crisis revealed a world where different teams of financial traders at the big banks did not know what each other was doing, even inside the same (supposedly integrated) institution.

Government officials were hamstrung by the fact that the big regulatory agencies and central banks were fragmented not just in terms of their bureaucratic structures, but also their worldview. Politicians were no better. Nor were the credit rating agencies, or parts of the media. Indeed, almost everywhere in the financial crisis it seemed that tunnel vision and tribalism had contributed to the disaster. People were trapped inside their little specialist departments, social groups, teams, or pockets of knowledge. Or, it might be said, inside their silos.

That was striking. But as the 2008 crisis slowly ebbed from view, it became clear that this silo effect was not just a problem at banks. On the contrary, it crops up in almost every corner of modern life. The silo syndrome cropped up at gigantic companies such as BP, Microsoft, and (later on) at General Motors. It plagued the White House and Washington

agencies, not to mention large multilateral groups such as the World Bank and International Monetary Fund – and the OECD too.

Large universities were often beset with tribalism. So were many media groups. The paradox of the modern age is that we live in a world that is closely integrated in some ways; but fragmented in others. Shocks are increasingly contagious. But we continue to behave and think in tiny silos.

So why do silos arise? And is there anything we can do to master silos, before silos master us? If there is one thing that the Great Financial Crisis showed it is that finance and economics are not just about numbers. Culture matters too. The way that people organise institutions, define social networks, and classify the world has a crucial impact on how the government, business, and economy function (or sometimes do not function, as in 2008). Studying these cultural aspects is thus important. And this is where anthropology can help. What anthropologists have to say is not just relevant for far-flung non-Western cultures, but can shed light on Western cultures. The lens of anthropology is also useful if you want to make sense of silos. After all, silos are cultural phenomena, which arise out of the systems we use to classify and organise the world. Telling stories about the silo effect as an anthropologist-cum-journalist can shed light on the problem. These tales may even offer some answers about how to deal with silos, not just for bankers, but government bureaucrats, business leaders, politicians, philanthropists, academics, journalists – and perhaps OECD officials too.

The empowering state

Former OECD Director Ron Gass picks up on Gillian Tett's point, agreeing that insights are most often the product of lateral thinking across policy silos. Indeed, despite all the hype about artificial intelligence, the neurosciences are spelling out the complexity and plasticity of the human brain, capable of wedding imagination and intelligence to find new pathways out of crisis and dilemma. The OECD has a long history in this.

Cornelius Castoriadis, Head of Division in the Economics Department, and in his private life an influential philosopher, is attracting renewed attention because he dealt with the central problem of democracy – the relationship of the individual to the state. For Castoriadis, the anathema is hegemony – the social norms imposed by the political autocracy and religion (heteronomy) on the free individual (autonomy). The citizenry of a democracy is, he said, capable of creating the social norms to which they would adhere, until changed by the democratic process.

Castoriadis' concept of "social imagination" rings a bell with the notion of "social intelligence" advanced by former OECD Chief of Staff John Llewellyn who argues that there is a wide range of cognitive and non-cognitive skills that "even smart machines will find

challenging”: manipulation and perception (the arts and crafts, for example music, dance and theatre); creative intelligence (philosophy, science and culture); and social intelligence (the political, social and organizational constructs which act as filters between technology and society). In sum, the humanistic limits to the hegemony of technology.

Drawing on decades of work by the OECD on the complex itinerary of pervasive technico-economic paradigms, under the leadership of Christopher Freeman and inspired by Kondratiev’s theory of long economic waves, Llewellyn points to the economic, legal and societal hurdles that stand between technology and the marketplace, ultimately with pervasive effects on society. This sequential view of the science-technology-economy-society process founded the OECD Innovation Strategy, but it stands to be transformed by the reality that, in the Fourth Industrial Revolution, these sequential stages are telescoped by the speed with which knowledge-based capital can easily cross national borders to take advantage of low-wage locations in less developed countries.

This raises a fundamental issue: whether the West is entering a period of decline (as in Toynbee’s analysis of the rise and decline of civilisations), or whether the response to the challenge can now be seen. It is interesting to note that the signs of a positive response are coming less from national states, but rather from people power across the world. It is as if the “social intelligence” (Llewellyn) or “imaginaire social” (Castoriadis) of educated, democratic populations is bubbling up to find proximate solutions to problems such as joblessness, inequalities and climate. Note that this flourishing of civic society’s initiatives is the concomitant of an interconnected global society. Social and political ideas, and not only technico-economic ideas, now cross national borders via the Web and social media.

This is where the Empowering State comes in. Post-World War II, two conceptions of the national state have been pursued: “laissez faire” which assumes that the market will lead to the Good Society; and the Soviet-style planned economy which subordinates economic to political and social goals. The fall of the Berlin Wall put a nail in the coffin of the latter. The 2008 Crisis has evolved into a crisis of Progress and showed the limits of the former. The Empowering State is not the “third way”. It is a different way for two reasons. First, it seeks to build on and go beyond the welfare state stimulating the resilience of stranded individuals and communities, thereby helping them to build their own projects (or a better future). Second, it seeks to promote systemic change by developing a strategic framework which can act as a compass for the various economic and societal stakeholders, and empowering them to act accordingly.

The foundation stone of such an approach could be the UN 2030 Agenda for Sustainable Development, and in particular the Sustainable Development Goals which constitute a shared vision of the future. What will count is whether this initiative is evolving into a global,

popular movement involving national states, regional and local authorities, civil society and the citizenry. If so, this would constitute a bulwark against the retreat into nationalist populism. If inclusive growth is to become a reality, national states will need to foster and connect with the grassroots responses to problems, inequalities and environmental disaster that are already in action in cities, towns and regions across the world. This is the role of the Empowering State.

To develop this role, policy-makers will need to recognize that the technology-economy-society linear model of progress has broken down. Technology has produced economic abundance, as Keynes foresaw, but economic growth has not produced the good life for his offspring. The more complex and open-ended interactions between the political, economic, social and ecological systems mean that policymakers need access to a wider range of systems sciences and techniques. This is not to dethrone macroeconomics as a dominant policy science, but it does call for a more eclectic and disaggregated approach to policy analysis.

A more fundamental question is whether capitalism itself is undergoing a mutation, or even being threatened. A form of social capitalism, interacting with the Empowering State, may be the most likely trend. Central to this is the future of work and the quality of working life. The impact of digitalisation and transhumanism will be mediated by legislation, regulation and collective bargaining, and depend on organisational and managerial innovations. The current negotiations on “Uberization” are a typical case. It is an illusion to think that a life of leisure based on universal basic income will lead to the good life. On the other hand, as the 2006 Nobel Laureate Edmund S. Phelps argues, the good life should be founded on work satisfaction, meaning better jobs and worker participation, rather than management by stress. This is the fundamental challenge now facing modern capitalism. For, in the words of the historian Arnold J. Toynbee: “the supreme accomplishment is to blur the line between work and play”.

Conclusion

In the meantime, we need to face up to the big global challenges of dealing with concentration of wealth, international tax and competition issues, the mobility of tax bases, labour rights and regulatory standards. We need to ensure that globalisation is based on international rules that are respected. We have to create trade agreements that are comprehensive and, crucially, also inclusive. We must hold global firms to higher standards of responsible business conduct. OECD work on taxes, responsible business conduct, due diligence and anti-corruption will be key to ensuring better functioning global rules.

To restore the faith and trust of people in the role of governments, a priority for an empowering state must be to focus on the bottom 40%, who risk being trapped in a cycle of

deprivation and lack of opportunity. We need to deploy targeted policies to help these groups access quality education, healthcare and the benefits of innovation, finance, and entrepreneurship.

Of course, giving people the chance to make the most of these opportunities is reliant on a thriving business sector. The state has a role to play to “crowd in” financing in young and innovative sectors and in investing in basic R&D that will see positive spill-overs into countless other domains. We also need policies which support the diffusion of innovation through the economy, ensuring a level playing field for incumbents and challenger firms, enabling small companies to access finance, technology and high-quality skills.

Adopting such an approach will require some changes to the way we design and implement policies, with particular care taken to avoid the entrenchment of vested interests. One aspect of this will be ensuring that policy recommendations take regional and local circumstances into account. Regions and cities have a key role to play by adapting economy-wide policies to the characteristics of local communities, as well as by promoting local policies that reduce or remove the barriers limiting access to opportunities.

There is also a dire need to overcome traditional ‘silo-based’ approaches to policy making. This will require a renewed ‘whole-of-government’ push, where different government departments, agencies and ministries work together to deliver joined-up solutions as part of a coherent systemic approach.

The challenge before us is clear. Succeeding in our endeavours will demand a new approach, where political parties, and leaders from civil society and business come together to recognise that the long-term prosperity of a society depends on the success of its individual parts. The state can empower this.

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