



WORLD COMMERCE REVIEW

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SOUL OF THE FINANCIAL
SYSTEM

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FOREWORD

Lack of accountability

We live in strange times. It's hard to get one's head round the fact that virtually the entire world has lost its marbles over many issues, whether it is coronavirus, geopolitics, freedom or climate change. Topics are no longer debated and facts are ignored for the greater good.

The developed world has now taken on board ill thought-out policy initiatives without explaining the costs to their electorates. However, what happens if they are wrong? What happens, for example, if carbon dioxide is not the existential problem 'experts' say it is? What happens if capitalism, despite its faults, is actually a positive force for good, for reducing poverty, religious bigotry and slavery? What happens if the anti-coronavirus measures enacted by most of the world were unnecessary, and that the scientifically accepted policies for dealing with pandemics in the past were correct?

On a smaller level we can see how the Biden pull-out from Afghanistan was badly handled, to say the least. There is no end of 'experts' saying it was the correct policy, but few admitting that the experiences of the Greeks, British and Russians previously could have pointed out the obvious.

Coincidentally, it was 'experts' who embroiled the West in Iraq and then Afghanistan, with their lies about weapons of mass destruction. It was also 'experts' who created the global financial crisis, covering up widespread criminal activity (how much in fines have been paid by the financial industry?), and it is 'experts' who have placed much of the world in house arrest for eighteen months.

All around us, the cultural institutions of the west are repudiating reason and evidence in the service of numerous ideologies which permit no challenge whatever to their driving idea and its control over peoples' lives. Our supposed age of reason is based on science.

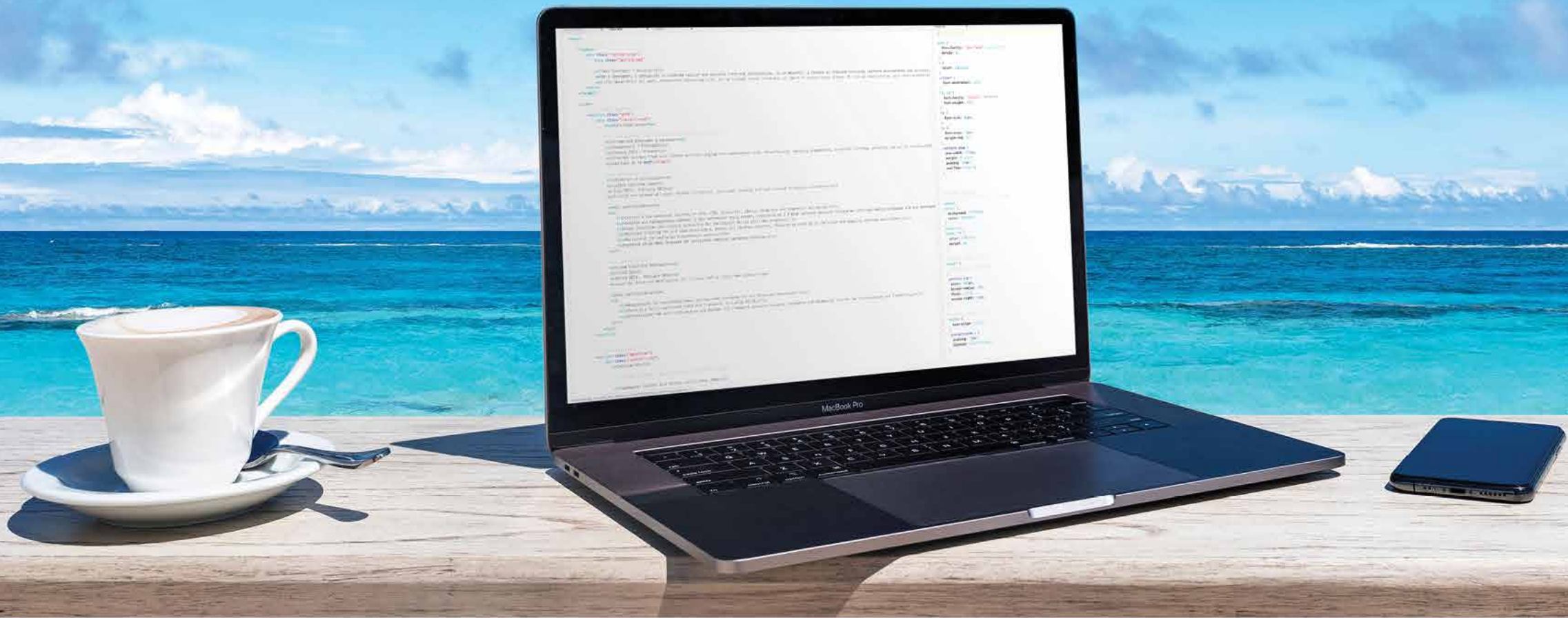
President Dwight D Eisenhower in his 1961 farewell address warned: *"In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex."*

Google, Apple, Facebook and their ilk have moved us into George Orwell's 1984, where the TV screen can watch you back. It's not even as if it requires any great imagination from the governments of the world because George Orwell wrote it all out in 1948. Reason has been reduced to net zero. Welcome to the new normal!

To finish, here is another quote, this time from Hannah Arendt.

"Evil comes from a failure to think. It defies thought for as soon as thought tries to engage itself with evil and examine the premises and principles from which it originates, it is frustrated because it finds nothing there. That is the banality of evil." ■

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Regulating crypto assets

Crypto assets and blockchain technology have triggered a huge debate. Daniel Dăianu believes that updating the current regulatory framework is a must for governments and central banks

There is a growing debate worldwide on the relevance of crypto assets for the financial industry, and for the economy as a whole. Crypto assets (digital assets that use blockchain technology), among which Bitcoin and Ethereum are the best known, have experienced an explosive growth after the outbreak of the financial crisis in 2008; their number is currently about 11,000.

Digitalization has clearly enhanced this phenomenon. Libertarian propensities, which mistrust governments/public authorities (central banks included), view crypto assets (crypto currencies is, arguably, a misnomer) as an alternative to central bank money, with ensuing decentralization and democratization of finance that would ensure anonymity in transactions, transgress regulations and borders, exchange rates risks, etc. But it is not the political philosophy of some people that matters mostly, but the phenomenon itself and its wide and profound possible repercussions.

As the volatility of crypto assets is extreme (illustrated by Bitcoin, glaringly), stablecoins have emerged, which are assets that rely on currencies issued by central banks and financial assets that are perceived as relatively stable; stablecoins can be considered as synthetic variants of crypto assets. Ironically, financial assets that are seen as alternatives to the currencies issued by central banks are related value-wise to currencies such as the US dollar and the euro.

Crypto assets, which have a pronounced speculative nature, pose a formidable challenge to central banks since they make up parallel transactional circuits which are (until now!) outside their regulatory ambit. Not a few central banks are considering issuing digital currencies (central bank digital currency/CBDC).

The Bank for International Settlements (BIS) has set up an innovation hub for digital currencies; many central banks study digital currencies/assets. But the challenge posed by crypto assets is not related to competition in money

markets in the main. The stakes are much deeper and concern the monetary transmission process in the economy as well as overall financial stability.

Monetary transmission

Crypto assets can be seen as an expansion of a 'shadow financial system', which is escaping regulation and supervision, at least until now. For years now, monetary authorities have been struggling to cope with the expansion of the shadow banking sector, which is represented by non-banking entities (eg. investment funds, high-tech giants – remember the Facebook Libra project) that offer banking and various other financial services.

The lessons of the financial crisis show that there is a need for strict regulation and supervision of the entire financial system, and, it goes without saying, of the shadow sector with the extensions represented by crypto assets

The problem here is related not only to poor regulation of the shadow sector, but also to the efficiency of monetary policy: the link between the monetary base (M0), the base money issued by a central bank and the overall amount of money (which has its counterpart in the volume of credit, of overall financial services) circulating in the system. It is known that the monetary base issued by a central bank is multiplied by commercial banks, which keep mandatory reserves at the central bank in local currency and hard currency.

To the extent that crypto assets are perceived as a means of payment and even of hoarding (some see crypto assets as 'a new gold'), one can speak of an expansion of transactions that are no longer mediated by the money supply itself, but, instead, by crypto assets that are improperly called quasi-currencies.

The process of monetary transmission, the control the central bank exerts through money creation (outside money/ high-powered money) over the money supply, gets a new twist of uncertainty and undesirable complexity; and the efficiency of monetary policy is impaired consequently.

It could be asserted that the relationship between the monetary base and the money supply (M2, M3), which had become increasingly unstable decades ago and which motivated the adoption of the inflation targeting regime (which uses as its main tool the policy rate, which replaced the quantitative control of monetary aggregates), would make this relationship, and the ensuing worry of central banks, irrelevant.

But central banks, either through quantitative controls of monetary aggregates, or through monetary policy rates, influence monetary/financial conditions in markets and they seek to ensure monetary stability and maintain liquid financial circuits.

It is true that a zero lower bound demands qualifications as monetary policy efficiency is dented by a very low natural interest rate and very low inflation. But the relationship between base money and the money supply does not disappear fundamentally.

Central banks can broaden and refine their policy instruments, can overhaul the monetary policy regime by taking into account the configuration of finance (the financial industry) and the objective of price stability.

The means of payment, financial assets, do not have the same liquidity (credibility) and they carry different risk premia; some of them can actually 'freeze' in times of crisis and trigger runs on them and on other assets.

As periods of crises show, it is only central bank money (outside money, base money, high powered money) that can unfreeze markets and make money flow again. I refer to credible central banks primarily, like those that issue reserve currencies. This is what happened in the financial crisis more than a decade ago, as well as during the current pandemic.

Crypto assets add parallel circuits that do complicate the monetary transmission. It is to be assumed that the ECB's new policy framework (as well as those of other central banks) will factor in the parallel circuits that are created by crypto assets.

Financial stability

Closely related to the issue of monetary transmission is financial stability, which is also likely to be impaired by crypto assets, including stablecoins (Tether is the best known among the latter). Stablecoins have as collateral the money issued by central banks, sovereign bonds and other financial assets (eg. commercial securities).

With a strong shock to financial markets there may be a flight from some assets which are behind stablecoins. An analogy can be made with the money market funds, which were supposed to offer quasi-safe investments with a very low degree of volatility, but which, in moments of panic, needed Fed intervention in order not to harm the stability of the financial system as a whole. As a matter of fact, the Fed, had to act as a lender of last resort in the capital markets as well (as a market maker too).

Stablecoins need to be regulated, and their functioning should be accompanied by adequate capital and liquidity requirements, as is the case with commercial banks. Crypto assets, all of them should be regulated and adequately supervised.

Central banks must cooperate in this regard with capital market regulators and supervisors (in the US these are the Treasury and the Securities and Exchange Commission mainly, in the EU it is ESMA - the European Securities and Markets Authority).

Macroprudential rules must take into account the number and volume of transactions operated with crypto assets. Disturbances in markets where crypto assets are used can have spillover effects on regulated markets, they can contaminate them and cause great damage in the absence of timely intervention. And in order for interventions not to be too costly to central banks, to governments, it is necessary that the regulation and supervision of crypto assets be adequate, that macroprudential rules be extended to them too.

The money issued by central banks is the foundation of the financial system!

The big moral is that, in the end, the money created by the central bank (Fed, ECB, BoJ, BoE, etc.) is vital, it is the one that guarantees credible support in times of great distress. This has happened in all financial crises in

developed countries. It also happens in times of stress in capital markets, as it occurred in March 2020 in the US, as in September 2019.

Only central bank currency can provide the function of lender of last resort, without which a viable, credible financial system cannot operate. The clearest evidence in this respect is, that during crises, commercial banks cannot issue the means of payment to unfreeze the system, to save the whole system; it is the central bank that must step in and be the mainstay of the system.

It goes without saying that I refer to developed economies, with credible central banks and strong institutions. In emerging economies, with a poor track record of central bank policies and heavy dollarization, the strength of central bank money is questionable and help from outside (from international institutions and from various countries, or their central banks, on a bilateral basis) is frequently needed in periods of deep crisis.

It can be argued that major central banks have invited the Great Recession, that 'boom and bust' cycles are part and parcel of the market economy. And it is unquestionable that the profound deregulation of the 90's (light touch regulation, whose trigger was set by the Big Bang of 1986 in the City of London and by the rescinding of the Glass-Steagall legislation in the US in 1998) is to blame in this regard, as are also the plethora of toxic financial products, the madness of speculations with fancy derivative products tolerated by market regulators in those years.

But myopia, a misguided paradigm embraced by central banks up to the Great Recession, do not obliterate the central bank's essential function as a lender of last resort. This situation has been seen across the Ocean, it has been seen in Europe with the ECB, which saved the euro area through its special operations. That such operations may be excessive and fuel speculative bubbles, aside from the moral hazard issue, calls for another discussion.

The lessons of the financial crisis show that there is a need for strict regulation and supervision of the entire financial system, and, it goes without saying, of the shadow sector with the extensions represented by crypto assets.

The big stake is not to allow a new era of free banking

I return to the idea that central bank digital currencies are not to be seen primarily as competitors of crypto assets, although, in a deep sense, they show the danger and risks posed by these highly speculative assets. As some central bankers' remark, monetary systems were hitherto largely digitized, with much of the transactions made electronically.

It is noteworthy, in this regard, how much the monetary base is in relation to money supply in developed economies (through the system of fractional reserves), and how many transactions are made electronically – in the UK, for example, M0 (monetary base) is about 3% of the entire money supply.

Digitization and digitalization are favoured by new technologies, by a Zeitgeist, by the desire of not a few people to decentralize financial systems and more. The fundamental problem for central banks, however, goes beyond being in step with new technology, to digitize money creation.

The big stake is not to let the financial system get into a binge of new free finance/banking, with a detrimental impact on financial stability and the economy; safe public money is a public good, on which economic and social cohesion depends. We must not go back tens, even hundreds of years ago in terms of the configuration of finance, allow by negligence/omission that a financial system in growing disarray amplify economic and social disturbances.

The deep, big stake for governments and central banks, when it comes to crypto assets, is augmented by the need to combat money laundering, financing of terrorism and organized crime, fraud of all kinds, cyber attacks, ransomware. A geopolitical dimension gets into the picture here too.

But I do not see how, for example, the competition between the US dollar, the euro, the Chinese currency, would be fiercer through the full digitization of money creation, the disappearance of cash. It is not digitization and digitalization in the financial industry that will dictate the dynamics of global clout in the end, but the economic and technological power of various societies.

The proposal by the European Commission for the regulation of crypto assets (MiCA) is to be welcomed, as are similar measures envisaged by authorities in the USA, Great Britain and other countries. (PS. The states where crypto assets are viewed with nonchalance most often have weak institutions, are heavily dollarized, and some of them have a clear status of tax havens.) ■

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The background of the slide is a solid purple color. Overlaid on this are several cutouts of US dollar bills, specifically the \$100 and \$50 denominations, made of a brown, textured material like cardboard or heavy paper. These cutouts are arranged in a scattered, overlapping pattern across the slide. The main title is written in a large, white, sans-serif font, centered in the upper half of the image.

The battle for the soul of the financial system

Stephen Cecchetti and Kim Schoenholtz argue that we don't need CBDC to solve financial system problems, and hope that central banks stop short of a universal, elastically supplied, interest-bearing digital currency

While the conflict is largely quiet and out of public view, we are in the midst of an epic battle for the soul of the financial system. Central banks are thinking about whether they should substitute publicly issued digital currency for the bank-issued digital money that people use every day¹. How this plays out can profoundly reshape the financial system and make it less stable.

The forces driving government decisions are unusual because there is a widespread fear of losing an emerging arms race. No one wants to face plunging demand for their currency or surging outflows from their financial institutions should another central bank introduce an attractive new means of exchange. But that pressure to prepare for the financial version of military mobilisation can lead to a very unstable global system that thwarts monetary control.

Central bank digital currency (CBDC) can take many forms. While some may be benign, the most radical version – one that is universally available, elastically supplied, and interest bearing – has the potential to trigger destabilizing financial shifts, weaken the supply of credit, and undermine privacy.

Our current monetary system and the irresistible drive toward CBDCs

Over the past century, a variety of forces gave rise to the financial structure we see around us. First, through a combination of punitive taxes and outright bans, officials hinder the issuance of private paper money.

Second, governments license private intermediaries (normally commercial banks) to issue liabilities that are convertible at par into central bank liabilities.

Finally, the central bank runs a wholesale payments system for banks, while the private sector runs the retail payments system for the rest of us.

In combination, this means that we are living in a world in which nearly all what people think of as money is the digital liability of a commercial bank.

For example, in the UK, where the total quantity of M3 is 148% of GDP, demand and time deposits – digital entries on the ledgers of banks – account for 97% of the total (or 144% of GDP). For the euro area, 91% of M3 is digital. And, in China, where broad money exceeds 200% of GDP, 96% of it is digital.

In the current financial circumstances, the bad equilibrium is a world of multiple CBDCs in advanced economies that threaten financial stability domestically and pose a severe threat to monetary control in developing economies

As Bank of England Deputy Governor Jon Cunliffe (2021) notes in a recent speech, most people do not know this. They are unaware that when they pay for groceries, purchase a new phone, or renew a software subscription, they are using bank-created digital money.

Importantly, it is the central bank that provides the foundation that enables us to rely on this system. To do so, authorities credibly promise to convert certain bank liabilities into the means of exchange – the safe, liquid instrument known as reserves – under as many states of the world as possible.

Experience teaches us that this is something central banks committed to price stability can do under more states of the world than private actors. As Cunliffe puts it, we rely on this framework to *“tether private money to the public money issued by the state.”*

Where does the system fall short? We see two principal shortcomings. Some payments are expensive and slow, and too many people lack full access to the financial system. Advocates see CBDC as the solution to both problems. In our view, we do not need CBDC and its attendant risks either to improve efficiency or to expand access.

Nevertheless, central banks are plowing ahead, often referring to motives such as payments efficiency, financial inclusion and monetary policy implementation². We see two other important drivers. First, there is a desire to supplant cryptocurrencies like Bitcoin and head off the issuance of private monetary instruments like Libra (now Diem).

But governments know from long experience how to handle such private currencies when they become salient – impose either punitive taxes or an outright ban. Second, there is the fear of missing out: central bankers want to make sure that, if others issue CBDC, they can, too – and without delay.

In our view, this creates instability: in theory, an unanticipated event could trigger many central banks to mobilise their digital currencies within a short period, so as not to be left behind.

CBDC: properties and problems

This brings us to a few details about CBDC. Before issuing retail digital currency, a central bank will need to make a series of design decisions. Is it an anonymous bearer instrument? Will there be quantity restrictions on an individual's holdings? Are only residents of the issuing jurisdiction eligible to hold it? And, like paper currency, will it have a zero interest rate?³

For paper currency, we know the answers to these questions. It is an anonymous bearer instrument. It is supplied elastically to allow the conversion of certain bank liabilities at par into the medium of exchange without limit in as many circumstances as possible. Anyone can hold paper currency. And, it bears zero interest.

The likely characteristics of CBDC are equally clear. To avoid facilitating criminal activity, CBDC cannot be anonymous. To truly substitute for paper currency, it will have to be supplied elastically.

Individuals will be allowed to hold unlimited quantities; otherwise, there would be circumstances when bank liabilities will not be convertible into CBDC at par. Restricting holdings to residents is a version of capital controls, which are both impractical and unwise.

Finally, we see two reasons that CBDC would have to bear interest. First, in our view, it is politically unsustainable for a central bank to pay interest on commercial bank reserve deposits but not on the deposits of individuals. Second, without it, policymakers who wish to lower nominal interest rates below the effective lower bound could not do so.

The issuance of such 'universal' CBDC creates four critical problems: disintermediation, currency substitution, lack of privacy, and the inability to ensure compliance. On the first, while inertia (combined with interest rate increases and service improvements) might keep funds in the banking system for a while, financial strains eventually would prompt uninsured deposits to flee private banks for the central bank (Monet *et al.* 2021).

And, for highly trusted central banks that operate in relatively stable political and financial jurisdictions, these inflows will come from abroad as well. Given the current high foreign demand for US paper currency, imagine what would happen if the Fed offered universal, unlimited accounts – the consequences of this could be catastrophic for emerging market and developing economies.

The fact that CBDC is not anonymous leads to the final, related, challenges: privacy and compliance. On the first, everything we do becomes traceable. While we are neither libertarians nor advocates of free banking, in this case we agree with White (2021) – there are enormous risks in allowing governments to have this level of detailed information about our activities. As a result, it is difficult to see why democratic countries would allow such a concentration of power⁴.

Turning to compliance, someone will have to do the work to ensure that the users of CBDC are law abiding. Such know-your-customer and anti-money laundering efforts are costly. We currently outsource these tasks to commercial banks. Banks also provide a host of other services. Who will do this, and who will bear the cost?

One way to manage the privacy and compliance challenges is through the creation of intermediated CBDC (Auer and Boehme 2021). In this framework, brokers (or banks) provide individual account services, guarding privacy, monitoring compliance and aggregating balances into accounts at the central bank (which would presumably bear interest).

However, this approach does not eliminate the risks of domestic disintermediation or currency substitution. Funds would still flow into the central bank, just indirectly through what are narrow banks in all but name (Cecchetti and Schoenholtz 2014).

Against this background, it is easy to see why the People's Bank of China is moving ahead of other central banks in creating a digital renminbi. Its large banks are typically state owned, so there is little risk of disintermediation – even in a financial crisis.

With stringent capital controls in place, there currently are effective limits on inflows into the currency. There already is little expectation of personal privacy. Finally, if the government wishes, state-owned banks can easily subsidize access.

We don't need CBDC to solve financial system problems

Returning to the question at hand: where is the current monetary system falling short? Our answer is that there is plenty of scope to improve the payments system and broaden financial access without turning to new digital currencies, either from central banks or private issuers⁵.

We already see public and private sectors moving to provide cheaper, faster, more reliable, and more accessible retail payments systems that operate both within and across borders. For example, the euro area has the TIPS system, with a processing time of 10 seconds at a cost of €0.20 per transaction.

In addition, the UK has Faster Payments, Canada is testing Real-Time Rail (RTR), and the US Federal Reserve is set to launch FedNow in 2023. None of these requires CBDC.

As for financial access, the case of India is instructive. Started in 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) provides no-frills bank accounts without charge, using the country's universal biometric personal identification to lower costs.

To date, over 420 million people have been brought into the system, with account balances averaging nearly US \$50. Again, India's success required subsidies, not the issuance of CBDC (Cecchetti and Schoenholtz 2017).

Putting all of this together, we conclude that it is imprudent for a central bank to issue elastically supplied, interest-bearing CBDC with universal access. Domestically, it could disintermediate private intermediaries, with inflows of deposits directly into the central bank creating the temptation for authorities to steer credit directly.

Even if the central bank were to re-circulate the funds to potential lenders through an auction process, the need for an extensive collateral and haircut system would vastly expand officials' influence on credit allocation.

Internationally, there may be a tidal wave of funds fleeing places perceived as less stable and into those thought to be safe, adding to inequality and to the influence of the rich recipients. Finally, there is privacy. While this problem can be addressed, CBDC would surely tempt authoritarian governments by providing access to everything we do⁶.

So, why are central banks preparing for CBDC?

This all leads us to be very concerned. To be clear, we are strong proponents of innovations that reduce costs and improve welfare. But the most important innovations – those that improve the payments system and the supply of credit – do not require universal CBDC and its inherent risks. So, why are central banks so intent on preparing? What is the purpose of such contingency planning?

The problem, as we see it, is that central banks fear being left behind in a way that damages the interests of their jurisdiction. Their solution is to create a form of shovel-ready CBDC programmes. But, the resulting framework is unstable.

The situation is analogous to the one prior to WWI, when countries prepared to mobilise rapidly for fear that delay meant losing a war. In the early 20th century, in the absence of trust, an obscure event in a far-off land tipped this fragile balance into war.

In the current financial circumstances, the bad equilibrium is a world of multiple CBDCs in advanced economies that threaten financial stability domestically and pose a severe threat to monetary control in developing economies.

We see no easy steps to prevent this poor outcome. As in a classic prisoner's dilemma, there is little way to enforce the cooperative equilibrium in which no one introduces CBDC. First, central banks cannot credibly commit to never issue CBDC. Second, with China already headed down the CBDC road, others now view it as too late to resist – even with full knowledge of the risks, they feel compelled to prepare.

Perhaps the best hope is that central banks will all proceed very slowly and, as Duffie (2021) emphasised, try to 'get the design right'. In our view, that means stopping well short of universal, elastically supplied, interest-bearing CBDC. ■

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Endnotes

1. Shin (2021) and the latest BIS Annual Report (2021) provide a thoughtful case arguing that CBDCs “are an idea whose time has come.”
2. According to a [BIS-sponsored survey](#) last year, a majority of central banks already are working on CBDC (Boar and Wehrli 2021).
3. We ignore certain technical issues, such as whether it is account-based or token-based (Carstens 2021).
4. We grant that there may be technical solutions to this problem (Duffie et al. 2021).
5. In a recent speech, Quarles (2021) notes some of the same problems we discuss and concludes that the benefits of CBDC are far from clear.
6. See Fatas (2021) for a further discussion of the need for regulatory changes to accommodate the issuance of CBDC.

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Free trade under Brexit

Many economists have claimed that Brexit would damage the UK economy. Patrick Minford considers the assumptions made and Brexit benefits to the UK have been widely underestimated

was astonished during late 2015 to discover that most economists in the UK favoured staying in the EU on the basis of what appeared to be neo-protectionist arguments derived from recent 'gravity-related' trade thinking.

In late additions to the second edition of my book *Should the UK leave the EU?* Minford *et al* (2015) I pointed out that the gravity modelling was of a partial equilibrium nature (ie. did not include the full effects of Brexit) and that attempts hitherto made to turn it into general equilibrium (the full effects) were misconceived.

It soon became apparent that my professional colleagues were not going to take any notice of these points; and indeed the Treasury economists promptly enlisted help from the LSE's gravity trade group in developing the gravity-based case for retaining existing trade links with the EU regardless of the costs of its well-known protectionism.

I begin this article with some comments on the various rival 'gravity' approaches, all of which have had a strong bias against eliminating EU protection to get to free trade, arguing that the gains are trivial while the losses from abandoning protected trade with the EU are large.

I then go on to set out the quantitative analysis I reached on Brexit, using the models I developed with my Cardiff research group, together with realistic Brexit policy assumptions. As we will then see, these models with realistic assumptions find that there are substantial gains from free trade with the rest of the world.

Gravity trade models and Brexit: a review

At the heart of the Brexit debate there is a fundamental disagreement about how trade works and affects the economy. In the last few years debate has raged over whether EU trade arrangements are beneficial, in particular to the UK.

The EU is a customs union and so erects trade barriers around its Single Market where economic activity is regulated according to EU rules. The welfare effects of a customs union have always been controversial.

According to classical trade theory global welfare is reduced compared with free trade as is the average welfare of citizens inside the customs union; however one country's citizens may gain from the union if it is a net exporter to others in the union, as then its terms of trade gain may offset the losses experienced by its consumers (Meade, 1955).

According to [the classical] model there are big gains from free trade with the rest of the world and ironically a small gain from UK-EU tariff barriers

However, in recent times a new line of reasoning has become popular among trade economists: this 'gravity model' (eg. Costinot and Rodriguez-Clare, 2013) regards trade as an outcrop of internal trade, the only difference being that it crosses borders. Otherwise it grows naturally due to the specialisation and division of labour within neighbouring markets.

Viewed through the lens of the gravity model a customs union merely makes official what is already a fact of neighbourly inter-trade. Other sorts of trade, with more distant markets, grows analogously but more weakly, the greater the distance; size of distant markets may make up for their distance to some extent, because they are a 'neighbourhood' that naturally leads to inter-trade.

As part of this view of trade as dominated by inter-trade, substitutability between heterogeneous goods and services of different origins is treated as fairly low. 'Gravity' in trade creation can be thought of as a function of distance and size.

In this view of trade it makes no sense to put obstacles in the way of trade with close neighbours such as the EU in the hope of boosting trade with distant markets via new trade agreements that lower trade costs.

The disruption from the former will reduce welfare while the gains from the latter will be small, simply because the reduced trade costs will have little effect in switching demand from existing products in the presence of weak and imperfect competition.

Furthermore, protection is seen in a fairly positive light in the gravity model, because low substitutability between countries' goods implies that there is scope for protection to improve the terms of trade- the 'optimal tariff'

mechanism; He *et al* (2017) show that it pushes optimal tariff rates before and after retaliation above 100%- clearly a worrying policy implication, which in itself casts doubt on the model's realism.

Before we go further into the technicalities of different models and calculations of trade policy effects, it is worth spending a little thought on what light the history and structure of UK trade throw on the matter.

For centuries the UK has been regarded as the archetype of a 'trading nation', in that its great trading companies, such as the East India company, sought out trading opportunities around the world and in the process founded the British Empire, with trading links all over the world.

European neighbouring countries had little to do with it, other than the Dutch with whose Indies trading fleets the UK fought several wars, settled by the Treaty of Westminster in 1674.

In recent years UK trade has been dominated by services, whose weightlessness implies a total lack of 'gravity'; furthermore, the containerisation of goods transport has brought shipping costs down to almost trivial levels. The role of gravity, viz distance x size, seems on the face of it to be small in UK trade.

As for European trade, in spite of high EU tariffs against non-EU suppliers, the share of EU trade (imports plus exports) in UK trade has never gone over 25% of UK GDP. Currently it is running at 20% against around 30% with the non-EU world; so UK trade with the EU is about 40% of all its trade, in spite of massive trade barriers (around 20% in both food and manufactures) against non-EU countries.

It does not look as if gravity has much to do with it all, certainly European gravity. It is perhaps not a surprise that classical trade theory, with its strong relevance to far-flung UK and other Northern European (Swedish/ Dutch)

trade, was developed by British and northern European economists such as Ricardo, Heckscher and Ohlin, while the more recent gravity theory has mainly been developed by economists based in the US or continental Europe where distant trade plays a minor role in GDP.

Compare the UK with a country like the Czech Republic with limited trading activity other than with the EU by which it is surrounded; 80% of its trade is with the EU, reflecting its quite different trade opportunities, which are indeed naturally describable by gravity.

It would certainly be unsurprising if our test of UK trade rejected the gravity model; as indeed it does (Minford and Xu 2019; Chen *et al* 2021)

I next review the various attempts that have been made by different groups of economists, using different approaches, to evaluate the trade effects of Brexit.

'Gravity model' estimates of Brexit trade effects

Clearly these two models, the classical and the gravity models, are different and so may well have different welfare implications.

However, while trade economists have recently tended to favour the gravity model over the classical, there has been no convincing empirical test of the two models as overall predictors of the data.

Gravity modellers do point to the Tinbergen (1962) gravity regressions as evidence in favour of the gravity model: these are statistical correlations between the size of two countries' GDPs and their distance from each other on the one hand, and the size of their trade on the other.

However, these regressions have long been familiar to trade economists, and classical trade models too can generate trade data in line with these regressions. Thus we face here an 'identification' problem: two models can both generate the same data, at least that would be the claim of their proponents. We need an empirical test that can discriminate powerfully between the two models.

Plainly one has to use the underlying model (ie. one in which all the interactions within trade and the economy are allowed for) to calculate policy effects, since these work through all the channels of the model; one surely, so we would say, cannot use the Tinbergen and related regressions, since these are simply correlations and associations generated by the model, and are not causal.

So we would argue that we must uncover the true model- which requires a test. Not surprisingly, such tests reveal that the gravity model is widely rejected, while the classical model largely fits the facts. Chen *et al* (2021) sets out the evidence.

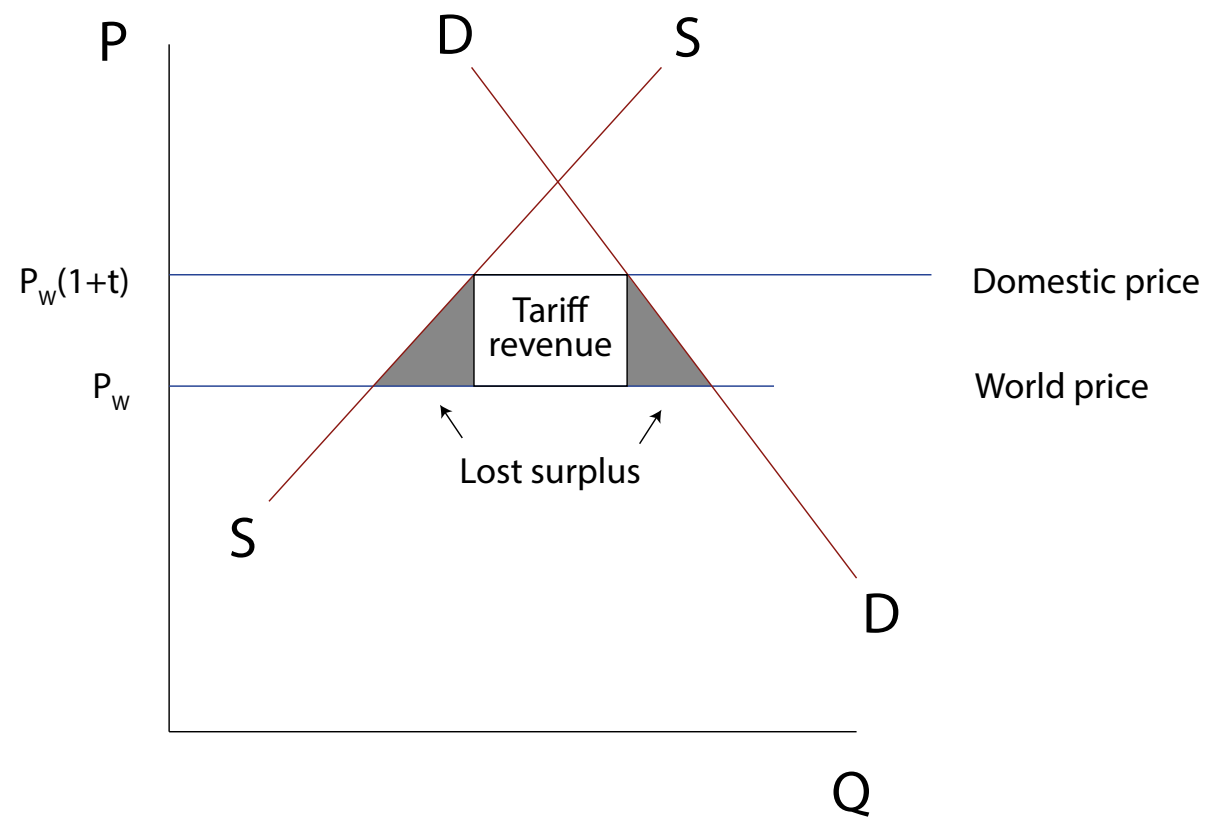
The gains from trade - how they are (mis)calculated

The effects of trade policies such as tariffs can be understood with the help of a simple diagram, showing demand and supply of imports. A tariff raises the home price of imports over the world price. Assume for now the world price stays the same. Then the loss of welfare is shown by the shaded area of reduced consumer surplus.

This shows the loss to consumers from higher prices, causing lower consumption, and also their loss as producer households from over-production, in which the extra output does not cover rising costs.

In effect the tariff revenue, redistributed by the Treasury to households after paying more to producers for uneconomic output expansion, fails to compensate households for their higher costs of purchase.

Figure 1. Loss of surplus due to tariff



If the tariff causes world import prices to fall, there is a countervailing gain from better terms of trade, viz a lower ratio of import to export prices. The size of this gain depends on substitutability between goods, as we will see.

In a classical model, there is only substitutability between different commodity types; every country sells identical goods of each type at the same price. So to get a reduction of import prices a tariff-raising country has to reduce demand for the commodity worldwide. But as its share of world demand is low any reduction in demand the tariff creates will have only a small effect on world prices.

However, in the gravity model it is assumed that the substitutability between goods of different origins is

quite low. So our diagram above applies to many different imports from differing origins.

We can now compute consumer surplus costs for each country-facing tariff; but also the terms of trade gain for each country-origin import. As each country now has a big import share in these markets, it can drive down the price in them by tariffs more strongly.

We see therefore that the temptation under gravity models to raise tariffs is high, owing to the low substitutability these models assume between goods of different origins.

On the one hand, there are losses of consumer surplus, but on the other there are terms of trade gains from protection. While all models differ in their exact assumptions, we can discern a pattern in the welfare estimates: gravity models will find a greater gain from the protection given by the EU customs union against the non-EU world, while it will find a consumer surplus loss from this and also from any EU-UK barriers. Because these barriers are mutual terms of trade effects favour the largest importer, namely the EU.

Hence we find that within a gravity model of the Computable General Equilibrium (CGE, ie. a full model that runs on the computer) type, there is a bias towards protectionism.

The latest Treasury calculations after the referendum, in which the Treasury uses the GTAP model, a gravity model in respect of low assumed origin substitutability, discarding its earlier pre-referendum methodology in response to our and others' criticism, find that Brexit is damaging in its trade effects.

However, in addition to using this gravity model, it uses policy assumptions about Brexit that we cannot accept as realistic. First and foremost, it assumes that there will be little adoption of free trade with the rest of the world.

Whereas on this GTAP model the full elimination of the 20% EU trade barriers (tariff and non-tariff) on food and manufactures would boost UK GDP by 4%, the Treasury assumes that only a twentieth of this would be eliminated in practice, so that the gain falls to 0.2%.

Table 1. Assumptions/models: differing estimates of gains/losses (% of GDP)

Model	Cardiff Classical		Cardiff Gravity		GTAP			
Policy assumption	Real(istic)		Real		Real		Treasury	
Trade deal	WTO	Canada+	WTO	Canada+	WTO	Canada+	WTO	Canada+
Total gains	15.6	15.0	1.5	3.0	2.6	4.0	-6.6	-4.7
Of which due to:								
Rest of World FTAs	15.0	15.0	3.0	3.0	4.0	4.0	0.2	0.2
EU barriers	0.6		-1.5		-1.4		-6.8	-4.9

Second, it assumes that the EU will erect non-tariff barriers both via standards and border difficulties even with a UK-EU Canada+ trade agreement. This causes a loss to the UK of no less than 4.9-6.8% of GDP, depending on the EU deal.

Yet this assumption is in fact illegal under WTO rules against discrimination and border inefficiency-so in effect it would not be allowed under the laws recognised by both the UK and the EU.

Thus under the Treasury's GTAP model, if realistic Brexit assumptions are inputted, then according to that model, there would be a welfare gain to the UK from Brexit due to the trade effects of 2.6% of GDP in an exit under WTO rules, or 4% in an exit with a Canada-plus EU FTA.

The Treasury assumptions yield losses under WTO rules of 6.6% of GDP and under Canada+ of 4.7% of GDP. So it can be seen that the Treasury's assumptions add an unwarranted 9% of GDP to the cost of Brexit, even if one accepts the gravity model.

Using the classical model, as estimated in Cardiff research, in place of the gravity one adds a further 9 or 10% of GDP to the calculated gains of Brexit.

If we assume that only half of the existing EU 20% protection of food and manufactures is abolished, then the gain to UK GDP is a bit over 7%, mainly via higher productivity, while consumer prices fall 6%; if we assume that the full 20% protection is abolished, these numbers double.

This is true both under the WTO-rules exit and the Canada-plus case; the reason these are the same is that once the UK has driven UK prices to world prices via FTAs with the non-EU world, it makes no difference what EU FTA we have.

EU producers, like our own home consumers and producers, can only sell and buy in our markets at world prices; EU trade barriers will simply be passed on to EU consumers, while UK trade barriers must be absorbed by EU suppliers.

Paradoxically, this implies that the UK Treasury can levy tariffs on the EU and gain at EU expense, while the EU can only raise any tariff revenue it gets from UK imports from its own consumers.

It is worth explaining how it is that these big gains come about. A key effect of agricultural protection is a large rise in the price of agricultural land. This acts as the base price in alternative use for all land that gets planning permission to be used in other sectors.

Hence it raises costs of production across the whole economy, strongly reducing services output. The non-traded sector also contracts, as costs and prices rise.

Capital and land are underutilised as outputs fall and we assume that they cannot realistically be sold off (eg. into foreign ownership), which if possible would create offsetting resource savings.

By moving to free trade through a comprehensive set of FTAs, these higher costs of land are swept away and both capital and land are supplied as needed to the different sectors as they expand.

Consumer prices fall generally as do costs of production; and at the same time the greater competition from falling import prices puts pressure on home producers to raise productivity.

Notice in all this that the gains from free trade come from abolishing our protection on imports, not-as widely suggested in popular writing-from the greater access to foreign markets granted reciprocally in these FTAs.

This greater access does give short run gains to our exporters, which helps to get political support for FTAs; however, in the long run these gains largely get eroded by the downward pressure on our export prices in other markets from other countries' exports displaced from the markets where we get better access.

We summarise these results in the table showing the gains/losses in % of GDP under the different model/assumption combinations; we label the assumptions we have argued reasonably represent the policy reality as 'real(istic)', which of course contrast with those used by the Treasury.

As can be seen, the failure to compute sufficient gains in trade from Brexit come about half from poor policy assumptions, half from the gravity modelling mistake. The poverty of the policy assumptions we have already explained.

Conclusions

Economists in the UK and in international organisations, as well as in the British Treasury and civil service, have widely claimed that Brexit would damage the UK economy.

To support these claims they have used trade models in which 'gravity' is a major feature; according to this gravity theory trade is caused mainly by size and proximity, not by comparative advantage and there is little substitutability between the products of different countries.

This model favours protectionism because tariffs can force down import prices a lot. Hence it also supports EU protectionism through its customs union. Also it implies that the UK loses a lot from any UK-EU trade barriers and gains little from free trade with the rest of the world.

However, the model does not fit the UK trade facts. The classical model based on comparative advantage does fit them. According to this model there are big gains from free trade with the rest of the world and ironically a small gain from UK-EU tariff barriers, which under WTO rules are the only ones erectable.

The British Treasury, which has strenuously opposed Brexit from the referendum debate onwards, calculates large losses from Brexit; the difference of these from the properly calculated gains comes half from using the wrong gravity-based model and half from using false policy assumptions. ■

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Strengthening the soul of our union

In the face of complex challenges Ursula von der Leyen emphasises the Union's unity and how Europe can become a more formidable actor on the global stage

Many are the people who feel their lives have been on pause while the world has been on fast forward. The speed of events and the enormity of the challenges are sometimes difficult to grasp. This has also been a time of soul-searching. From people reassessing their own lives to wider debates on sharing vaccines and on shared values.

But as I look back on this past year, if I look at the state of the Union today, I see a strong soul in everything that we do. It was Robert Schuman who said: Europe needs a soul, an ideal, and the political will to serve this ideal.

Europe has brought those words to life in the last twelve months. In the biggest global health crisis for a century, we chose to go it together so that every part of Europe got the same access to a life-saving vaccine.

In the deepest global economic crisis for decades, we chose to go it together with NextGenerationEU. And in the gravest planetary crisis of all time, again we chose to go it together with the European Green Deal.

We did that together as Commission, as Parliament, as 27 member states. As one Europe. And we can be proud of it.

But corona times are not over. There is still much grief in our society as the pandemic lingers. There are hearts we can never mend, life stories we can never finish and time we can never give back to our young. We face new and enduring challenges in a world recovering – and fracturing – unevenly.

So there is no question: the next year will be yet another test of character. But I believe that it is when you are tested that your spirit – your soul - truly shines through.

As I look across our Union, I know that Europe will pass that test. And what gives me that confidence is the inspiration we can draw from Europe's young people. Because our youth put meaning into empathy and solidarity. They believe we have a responsibility towards the planet. And while they are anxious about the future, they are determined to make it better.

Our Union will be stronger if it is more like our next generation: reflective, determined and caring. Grounded in values and bold in action. This spirit will be more important than ever over the next twelve months. This is the message in the Letter of Intent I sent to President Sassoli and Prime Minister Janša to outline our priorities for the year ahead.

We have all benefited from the principles of our European social market economy – and we must make sure that the next generation can do so to build their future

A Europe united through adversity and recovery

A year is a long time in a pandemic. When I stood in front of you 12 months ago, I did not know when – or even if – we would have a safe and effective vaccine against COVID-19.

But today, and against all critics, Europe is among the world leaders. More than 70 per cent of adults in the EU are fully vaccinated. We were the only ones to share half of our vaccine production with the rest of the world.

We delivered more than 700 million doses to the European people, and we delivered more than another 700 million doses to the rest of the world, to more than 130 countries. We are the only region in the world to achieve that. A pandemic is a marathon, not a sprint.

We followed the science. We delivered to Europe. We delivered to the world. We did it the right way, because we did it the European way. And it worked! But while we have every reason to be confident, we have no reason to be complacent. Our first – and most urgent – priority is to speed up global vaccination.

With less than 1% of global doses administered in low-income countries, the scale of injustice and the level of urgency are obvious. This is one of the great geopolitical issues of our time. Team Europe is investing one billion euro to ramp up mRNA production capacity in Africa. We have already committed to share 250 million doses.

I can announce that the Commission will add a new donation of another 200 million doses by the middle of next year. This is an investment in solidarity – but also in global health.

The second priority is to continue our efforts here in Europe. We see worrisome divergences in vaccination rates in our Union. So we need to keep up the momentum.

And Europe is ready. We have 1.8 billion additional doses secured. This is enough for us and our neighbourhood when booster shots are needed. Let's do everything possible to ensure that this does not turn into a pandemic of the unvaccinated.

The final priority is to strengthen our pandemic preparedness. Last year, I said it was time to build a European Health Union. Today we are delivering. With our proposal we get the HERA authority up and running. This will be a huge asset to deal with future health threats earlier and better.

We have the innovation and scientific capacity, the private sector knowledge, we have competent national authorities. And now we need to bring all of that together, including massive funding.

So I am proposing a new health preparedness and resilience mission for the whole of the EU. And it should be backed up by Team Europe investment of €50 billion by 2027. To make sure that no virus will ever turn a local epidemic into a global pandemic. There is no better return on investment than that.

The work on the European Health Union is a big step forward. And I want to thank the European Parliament for your support. We have shown that when we act together, we are able to act fast.

Take the EU digital certificate. Today more than 400 million certificates have been generated across Europe. 42 countries in 4 continents are plugged in. We proposed it in March. You pushed it! Three months later it was up and running. Thanks to this joint effort, while the rest of the world talked about it, Europe just did it.

We did a lot of things right. We moved fast to create SURE. This supported over 31 million workers and 2.5 million companies across Europe. We learned the lessons from the past when we were too divided and too delayed.

And the difference is stark: last time it took 8 years for the Eurozone GDP to get back to pre-crisis levels. This time we expect 19 countries to be at pre-pandemic levels this year with the rest following next. Growth in the euro area outpaced both the US and China in the last quarter.

But this is only the beginning. And the lessons from the financial crisis should serve as a cautionary tale. At that time, Europe declared victory too soon and we paid the price for that. And we will not repeat the same mistake.

The good news is that with NextGenerationEU we will now invest in both short-term recovery and long-term prosperity. We will address structural issues in our economy: from labour market reforms in Spain, to pension reforms in Slovenia or tax reform in Austria.

In an unprecedented manner, we will invest in 5G and fibre. But equally important is the investment in digital skills. This task needs leaders' attention and a structured dialogue at top-level.

Our response provides a clear direction to markets and investors alike. But, as we look ahead, we also need to reflect on how the crisis has affected the shape of our economy – from increased debt, to uneven impact on different sectors, or new ways of working.

To do that, the Commission will relaunch the discussion on the Economic Governance Review in the coming weeks. The aim is to build a consensus on the way forward well in time for 2023.

We will soon celebrate 30 years of the Single Market. For 30 years it has been the great enabler of progress and prosperity in Europe. At the outset of the pandemic, we defended it against the pressures of erosion and fragmentation. For our recovery, the Single Market is the driver of good jobs and competitiveness.

That is particularly important in the digital single market. We have made ambitious proposals in the last year.

- To contain the gatekeeper power of major platforms;
- To underpin the democratic responsibility of those platforms;
- To foster innovation;
- To channel the power of artificial intelligence.

Digital is the make-or-break issue. And member states share that view. Digital spending in NextGenerationEU will even overshoot the 20% target. That reflects the importance of investing in our European tech sovereignty. We have to double down to shape our digital transformation according to our own rules and values.

Allow me to focus on semi-conductors, those tiny chips that make everything work: from smartphones and electric scooters to trains or entire smart factories. There is no digital without chips. And while we speak, whole production lines are already working at reduced speed - despite growing demand - because of a shortage of semi- conductors.

But while global demand has exploded, Europe's share across the entire value chain, from design to manufacturing capacity has shrunk. We depend on state-of-the-art chips manufactured in Asia. So this is not just a matter of our competitiveness. This is also a matter of tech sovereignty. So let's put all of our focus on it.

We will present a new European Chips Act. We need to link together our world-class research, design and testing capacities. We need to coordinate EU and national investment along the value chain.

The aim is to jointly create a state-of-the-art European chip ecosystem, including production. That ensures our security of supply and will develop new markets for ground-breaking European tech.

Yes, this is a daunting task. And I know that some claim it cannot be done. But they said the same thing about Galileo 20 years ago. And look what happened. We got our act together. Today European satellites provide the navigation system for more than 2 billion smartphones worldwide. We are world leaders. So let's be bold again, this time with semi-conductors.

The pandemic has left deep scars that have also left their mark on our social market economy. For nights on end, we all stood at our windows and doors to applaud critical workers. We felt how much we relied on all those women and men who work for lower wages, fewer protections and less security. The applause may have faded away but the strength of feeling cannot.

This is why the implementation of the European Pillar of Social Rights is so important – to ensure decent jobs, fairer working conditions, better healthcare and better balance in people's lives.

If the pandemic taught us one thing, it is that time is precious. And caring for someone you love is the most precious time of all. We will come forward with a new European Care Strategy to support men and women in finding the best care and the best life balance for them. But social fairness is not just a question of time. It is also a question of fair taxation.

In our social market economy, it is good for companies to make profits. And they make profits thanks to the quality of our infrastructure, social security and education systems. So the very least we can expect is that they pay their fair share.

This is why we will continue to crack down on tax avoidance and evasion. We will put forward a new initiative to address those hiding profits behind shell entities. And we will do everything in our power to seal the historic global deal on minimum taxation. Asking big companies to pay the right amount of tax is not only a question of public finances, but above all a question of basic fairness.

We have all benefited from the principles of our European social market economy – and we must make sure that the next generation can do so to build their future. This is our most educated, talented and motivated generation. And it has missed out on so much to keep others safe.

Being young is normally a time of discovery, of creating new experiences. A time to meet lifelong friends, to find your own path. And what did we ask this generation to do? To keep their social distance, to stay locked down and to do school from home. For more than a year.

This is why everything that we do – from the European Green Deal to NextGenerationEU – is about protecting their future. That is also why NextGenerationEU must be funded by the new own resources that we are working on.

But we must also caution against creating new divides. Because Europe needs all of its youth. We must step up our support to those who fall into the gaps – those not in any kind of employment, education or training.

For them, we will put in place a new programme, ALMA. ALMA will help these young Europeans to find temporary work experience in another member state. Because they too deserve an experience like Erasmus. To gain skills, to create bonds and help forge their own European identity.

But if we are to shape our Union in their mould, young people must be able to shape Europe's future. Our Union needs a soul and a vision they can connect to.

Or as Jacques Delors asked: *"How can we ever build Europe if young people do not see it as a collective project and a vision of their own future?"*

This is why we will propose to make 2022 the Year of European Youth. A year dedicated to empowering those who have dedicated so much to others. And it is why we will make sure that young people can help lead the debate in the Conference on the Future of Europe.

This is their future and this must be their Conference too. And as we said when we took office, the Commission will be ready to follow up on what is agreed by the Conference.

A Europe united in responsibility

This is a generation with a conscience. They are pushing us to go further and faster to tackle the climate crisis. And events of the summer only served to explain why. We saw floods in Belgium and Germany. And wildfires burning from the Greek islands to the hills in France.

And if we don't believe our own eyes, we only have to follow the science. The UN recently published the IPCC report, the Intergovernmental Panel on Climate Change. It is the authority on the science of climate change.

The report leaves no doubt. Climate change is man-made. But since it is man-made, we can do something about it. As I heard it said recently: It's warming. It's us. We're sure. It's bad. But we can fix it. And change is already happening.

More electric vehicles than diesel cars were registered in Germany in the first half of this year. Poland is now the EU's largest exporter of car batteries and electric buses. Or take the New European Bauhaus that led to an explosion of creativity of architects, designers, engineers across our Union. So clearly something is on the move. And this is what the European Green Deal is all about.

In my speech last year, I announced our target of at least 55% emission reduction by 2030. Since then we have together turned our climate goals into legal obligations. And we are the first major economy to present comprehensive legislation in order to get it done.

You have seen the complexity of the detail. But the goal is simple. We will put a price on pollution. We will clean the energy we use. We will have smarter cars and cleaner airplanes.

And we will make sure that higher climate ambition comes with more social ambition. This must be a fair green transition. This is why we proposed a new Social Climate Fund to tackle the energy poverty that already 34 million Europeans suffer from. I count on both Parliament and member states to keep the package and to keep the ambition together.

When it comes to climate change and the nature crisis, Europe can do a lot. And it will support others. I am proud to announce today that the EU will double its external funding for biodiversity, in particular for the most vulnerable countries.

But Europe cannot do it alone. The COP26 in Glasgow will be a moment of truth for the global community. Major economies – from the US to Japan – have set ambitions for climate neutrality in 2050 or shortly after. These need

now to be backed up by concrete plans in time for Glasgow. Because current commitments for 2030 will not keep global warming to 1.5°C within reach. Every country has a responsibility!

The goals that President Xi has set for China are encouraging. But we call for that same leadership on setting out how China will get there. The world would be relieved if they showed they could peak emissions by mid-decade - and move away from coal at home and abroad.

But while every country has a responsibility, major economies do have a special duty to the least developed and most vulnerable countries. Climate finance is essential for them - both for mitigation and adaptation.

In Mexico and in Paris, the world committed to provide 100 billion dollars a year until 2025. We deliver on our commitment. Team Europe contributes 25 billion dollars per year. But others still leave a gaping hole towards reaching the global target. Closing that gap will increase the chance of success at Glasgow.

My message today is that Europe is ready to do more. We will now propose an additional 4 billion euro for climate finance until 2027. But we expect the United States and our partners to step up too. Closing the climate finance gap together – the US and the EU – would be a strong signal for global climate leadership. It is time to deliver.

This climate and economic leadership is central to Europe's global and security objectives. It also reflects a wider shift in world affairs at a time of transition towards a new international order.

We are entering a new era of hyper-competitiveness. An era in which some stop at nothing to gain influence: from vaccine promises and high-interest loans, to missiles and misinformation. An era of regional rivalries and major powers refocusing their attention towards each other.

Recent events in Afghanistan are not the cause of this change – but they are a symptom of it. And first and foremost, I want to be clear. We stand by the Afghan people. The women and children, prosecutors, journalists and human rights defenders.

I think in particular of women judges who are now in hiding from the men they jailed. They have been put at risk for their contribution to justice and the rule of law. We must support them and we will coordinate all efforts with member states to bring them to safety.

And we must continue supporting all Afghans in the country and in neighbouring countries. We must do everything to avert the real risk of a major famine and humanitarian disaster. And we will do our part. We will increase again humanitarian aid for Afghanistan by €100 million. This will be part of a new, wider Afghan Support Package that we will present in the next weeks to combine all of our efforts.

Witnessing events unfold in Afghanistan was profoundly painful for all the families of fallen servicemen and servicewomen. We bow to the sacrifice of those soldiers, diplomats and aid workers who laid down their lives.

To make sure that their service will never be in vain, we have to reflect on how this mission could end so abruptly. There are deeply troubling questions that allies will have to tackle within NATO.

But there is simply no security and defence issue where less cooperation is the answer. We need to invest in our joint partnership and to draw on each side's unique strength.

This is why we are working with Secretary-General Jens Stoltenberg on a new EU-NATO Joint Declaration to be presented before the end of the year. But this is only one part of the equation.

Europe can – and clearly should – be able and willing to do more on its own. But if we are to do more, we first need to explain why. I see three broad categories.

First, we need to provide stability in our neighbourhood and across different regions. We are connected to the world by narrow straits, stormy seas and vast land borders. Because of that geography, Europe knows better than anyone that if you don't deal in time with the crisis abroad, the crisis comes to you.

Secondly, the nature of the threats we face is evolving rapidly: from hybrid or cyber- attacks to the growing arms race in space. Disruptive technology has been a great equaliser in the way power can be used today by rogue states or non-state groups.

You no longer need armies and missiles to cause mass damage. You can paralyse industrial plants, city administrations and hospitals – all you need is your laptop. You can disrupt entire elections with a smartphone and an internet connection.

The third reason is that the European Union is a unique security provider. There will be missions where NATO or the UN will not be present, but where the EU should be. On the ground, our soldiers work side-by-side with police officers, lawyers and doctors, with humanitarian workers and human rights defenders, with teachers and engineers.

We can combine military and civilian, along with diplomacy and development – and we have a long history in building and protecting peace. The good news is that over the past years, we have started to develop a European defence ecosystem.

But what we need is the European Defence Union. In the last weeks, there have been many discussions on expeditionary forces. On what type and how many we need: battlegroups or EU entry forces.

This is no doubt part of the debate – and I believe it will be part of the solution. But the more fundamental issue is why this has not worked in the past. You can have the most advanced forces in the world – but if you are never prepared to use them - of what use are they?

What has held us back until now is not just a shortfall of capacity – it is the lack of political will. And if we develop this political will, there is a lot that we can do at EU level. Allow me to give you three concrete examples.

First, we need to build the foundation for collective decision-making – this is what I call situational awareness. We fall short if member states active in the same region, do not share their information on the European level. It is vital that we improve intelligence cooperation.

But this is not just about intelligence in the narrow sense. It is about bringing together the knowledge from all services and all sources. From space to police trainers, from open source to development agencies. Their work gives us a unique scope and depth of knowledge. It is out there!

But we can only use that, to make informed decisions if we have the full picture. And this is currently not the case. We have the knowledge, but it is disjointed. Information is fragmented. This is why the EU could consider its own Joint Situational Awareness Centre to fuse all the different pieces of information. And to be better prepared, to be fully informed and to be able to decide.

Secondly, we need to improve interoperability. This is why we are already investing in common European platforms, from fighter jets, to drones and cyber. But we have to keep thinking of new ways to use all possible synergies. One example could be to consider waiving VAT when buying defence equipment developed and produced in Europe. This would not only increase our interoperability, but also decrease our dependencies of today.

Third, we cannot talk about defence without talking about cyber. If everything is connected, everything can be hacked. Given that resources are scarce, we have to bundle our forces. And we should not just be satisfied to address the cyber threat, but also strive to become a leader in cyber security.

It should be here in Europe where cyber defence tools are developed. This is why we need a European Cyber Defence Policy, including legislation on common standards under a new European Cyber Resilience Act. So, we can do a lot at EU level. But member states need to do more too. This starts with a common assessment of the threats we face and a common approach to dealing with them. The upcoming Strategic Compass is a key process of this discussion.

And we need to decide how we can use all of the possibilities that are already in the Treaty. This is why, under the French Presidency, President Macron and I will convene a Summit on European defence. It is time for Europe to step up to the next level.

In a more contested world, protecting your interests is not only about defending yourself. It is about forging strong and reliable partnerships. This is not a luxury – it is essential for our future stability, security and prosperity. This work starts by deepening our partnership with our closest allies. With the US we will develop our new agenda for global change – from the new Trade and Technology Council to health security and sustainability. The EU and the US will always be stronger – together.

The same is true of our neighbours in the Western Balkans. Before the end of the month, I will travel to the region to send a strong signal of our commitment to the accession process. We owe it to all those young people who believe in a European future.

This is why we are ramping up our support through our new investment and economic plan, worth around a third of the region's GDP. Because an investment in the future of the Western Balkans is an investment in the future of the EU.

And we will also continue investing in our partnerships across our neighbourhood – from stepping up our engagement in the Eastern Partnership to implementing the new Agenda for the Mediterranean and continuing to work on the different aspects of our relationship with Turkey.

If Europe is to become a more active global player, it also needs to focus on the next generation of partnerships. In this spirit, today's new EU - Indo-Pacific strategy is a milestone. It reflects the growing importance of the region to our prosperity and security. But also the fact that autocratic regimes use it to try to expand their influence.

Europe needs to be more present and more active in the region. So we will work together to deepen trade links, strengthen global supply chains and develop new investment projects on green and digital technologies. This is a template for how Europe can redesign its model to connect the world.

We are good at financing roads. But it does not make sense for Europe to build a perfect road between a Chinese-owned copper mine and a Chinese-owned harbour. We have to get smarter when it comes to these kinds of investments.

This is why we will soon present our new connectivity strategy called Global Gateway. We will build Global Gateway partnerships with countries around the world. We want investments in quality infrastructure, connecting goods, people and services around the world. We will take a values-based approach, offering transparency and good governance to our partners.

We want to create links and not dependencies! And we know how this can work. Since the summer, a new underwater fibre optic cable has connected Brazil to Portugal. We will invest with Africa to create a market for green hydrogen that connects the two shores of the Mediterranean.

We need a Team Europe approach to make Global Gateway happen. We will connect institutions and investment, banks and the business community. And we will make this a priority for regional summits – starting with the next EU-Africa Summit in February.

We want to turn Global Gateway into a trusted brand around the world. And let me be very clear: doing business around the world, global trade – all that is good and necessary. But this can never be done at the expense of people's dignity and freedom.

There are 25 million people out there, who are threatened or coerced into forced labour. We can never accept that they are forced to make products – and that these products then end up for sale in shops here in Europe.

So we will propose a ban on products in our market that have been made by forced labour. Human rights are not for sale – at any price.

A Europe united in freedom and diversity

And human beings are not bargaining chips. Look at what happened at our borders with Belarus. The regime in Minsk has instrumentalised human beings. They have put people on planes and literally pushed them towards Europe's borders. This can never be tolerated.

And the quick European reaction shows that. And rest assured, we will continue to stand together with Lithuania, Latvia and Poland. And, let's call it what it is: this is a hybrid attack to destabilise Europe.

These are not isolated events. We saw similar incidents at other borders. And we can expect to see it again. This is why, as part of our work on Schengen, we will set out new ways to respond to such aggression and ensure unity in protecting our external borders.

But as long as we do not find common ground on how to manage migration, our opponents will continue to target that. Meanwhile, human traffickers continue to exploit people through deadly routes across the Mediterranean. These events show us that every country has a stake in building a European migration system.

The New Pact on Migration and Asylum gives us everything we need to manage the different types of situations we face. All the elements are there. This is a balanced and humane system that works for all member states - in all circumstances.

We know that we can find common ground. But in the year since the Commission presented the Pact, progress has been painfully slow. I think, this is the moment now for a European migration management policy. So I urge you, in this House and in member states, to speed up the process.

This ultimately comes down to a question of trust. Trust between member states. Trust for Europeans that migration can be managed. Trust that Europe will always live up to its enduring duty to the most vulnerable and most in need.

There are many strongly held views on migration in Europe but I believe the common ground is not so far away. Because if you ask most Europeans, they would agree that we should act to curb irregular migration but also act to provide a refuge for those forced to flee.

They would agree that we should return those who have no right to stay. But that we should welcome those who come here legally and make such a vital contribution to our society and economy. And we should all agree that the topic of migration should never be used to divide. I am convinced that there is a way that Europe can build trust amongst us when it comes to migration.

Societies that build on democracy and common values stand on stable ground. They have trust in people. This is how new ideas are formed, how change happens, how injustices are overcome. Trust in these common values brought our founders together, after World War Two.

And it is these same values that united the freedom fighters who tore down the Iron Curtain over 30 years ago. They wanted democracy. They wanted the freedom to choose their government. They wanted the rule of law and for everyone to be equal before the law.

They wanted freedom of speech and independent media. To no longer be spied on by their governments. They wanted to combat corruption. And the freedom to be different from the majority. Or, as former Czech President Václav Havel put it, they wanted all those *"great European values."*

These values come from the cultural, religious and humanist heritage of Europe. They are part of our soul, part of what defines us today. These values are now enshrined in our European treaties. This is what we all signed up to when we became part of this Union as free and sovereign countries. We are determined to defend these values. And we will never waver in that determination.

Our values are guaranteed by our legal order and safeguarded by the judgments of the European Court of Justice. These judgments are binding. We make sure that they are respected. And we do so in every member state of our Union.

Because protecting the rule of law is not just a noble goal. Protecting the rule of law is also hard work and a constant struggle for improvement. Our Rule of Law reports are part of this process, with for example justice reforms in Malta or corruption inquiries in Slovakia. And from 2022, our Rule of Law reports will come with specific recommendations to member states.

Nevertheless, there are worrying developments in certain member states. Let me be clear: dialogue always comes first. But dialogue is not an end in itself, it should lead to results. This is why we take a dual approach of dialogue and decisive action. And this is what we will continue to do.

Because people must be able to rely on the right to an independent judiciary. The right to be treated equally before the law. Everywhere in Europe. Whether you belong to a majority or a minority.

The European budget is the future of our Union cast in figures. That is why it must be protected. We need to ensure that every euro and every cent is spent for its proper purpose and in line with rule of law principles.

Investments that enable our children to have a better future must not be allowed to seep away into dark channels. Corruption is not just taxpayer money stolen. It is investors scared off, big favours bought by big money and democracy undermined by the powerful. When it comes to protecting our budget, we will pursue every case, with everything in our power.

Defending our values is also defending freedom. Freedom to be who you are, freedom to say what's on your mind, freedom to love whoever you want.

But freedom also means freedom from fear. And during the pandemic, too many women were deprived of that freedom. It was an acutely terrifying time for those with nowhere to hide, nowhere to escape from their abusers. We need to shed light on this darkness, we need to show ways out of the pain. Their abusers must be brought to justice. And those women must have their freedom and their self-determination back.

This is why by the end of year, we will propose a law to combat violence against women – from prevention to protection and effective prosecution, online and offline. It is about defending the dignity of each individual. It is about justice. Because this is the soul of Europe. And we must make it even stronger.

Allow me to finish with one of the freedoms that gives voice to all other freedoms – media freedom. Journalists are being targeted simply for doing their job. Some have been threatened, some beaten and, tragically, some murdered. Right here, in our European Union.

Let me mention some of their names: Daphné Caruana Galizia. Ján Kuciak. Peter de Vries. The details of their stories may be different but what they have in common is that they all fought and died for our right to be informed.

Information is a public good. We must protect those who create transparency – the journalists. That is why today we have put forward a recommendation to give journalists better protection.

And we need to stop those who threaten media freedom. Media companies cannot be treated as just another business. Their independence is essential. Europe needs a law that safeguards this independence – and the Commission will deliver a Media Freedom Act in the next year. Defending media freedom means defending our democracy.

Conclusion

Strengthening Schuman's European ideal that I invoked earlier is a continuous work. And we should not hide away from our inconsistencies and imperfections. But imperfect as it might be, our Union is both beautifully unique and uniquely beautiful. It is a Union where we strengthen our individual liberty through the strength of our community.

A Union shaped as much by our shared history and values as by our different cultures and perspectives. A Union with a soul. Trying to find the right words to capture the essence of this feeling is not easy. But it is easier when you borrow them from someone who inspires you. And this is why I have invited a guest of honour to be with us today.

Many of you might know her – a gold medallist from Italy who captured my heart this summer. But what you might not know is that only in April, she was told her life was in peril. She went through surgery, she fought back, she recovered. And only 119 days after she left the hospital, she won Paralympic gold.

Beatrice Vio, Bebe, has overcome so much, so young. Her story is one of rising against all odds. Of succeeding thanks to talent, tenacity and unrelenting positivity. She is in the image of her generation: a leader and an advocate for the causes she believes in.

And she has managed to achieve all of that by living up to her belief that - if it seems impossible – then it can be done. Se sembra impossibile, allora si può fare.

This was the spirit of Europe's founders and this is the spirit of Europe's next generation. So let's be inspired by Bebe and by all the young people who change our perception of the possible.

Who show us that you can be what you want to be. And that you can achieve whatever you believe. This is the soul of Europe. This is the future of Europe. Let's make it stronger together.

Viva l'Europa. ■

Ursula von der Leyen is President of the European Commission

This article is based on the [2021 State of the Union Address](#), 15 September 2021

Climate change mitigation via trade policy

There is a need to limit greenhouse gas emissions.
André Wolf considers the potentials and challenges of
environmental protection in trade agreements

With his announcement of a radical turnaround in climate policy, US President Joe Biden has already sent a clear signal shortly after taking office. His concept for achieving the long-term goal of a climate-neutral US economy envisages not only national measures but also a new form of climate diplomacy, which should explicitly include the inclusion of climate issues in international trade agreements.

In parallel, there have been calls in the European Union to flank its own intensified climate protection efforts in the future with trade policy measures, specifically a CO₂ border adjustment.

In order to be able to evaluate the chances of success of such a combination of trade and climate policy from an economic point of view, it is necessary to address the questions of which climate effects emanate from cross-border trade and how possible control instruments work.

From economic theory, no clear effect of trade liberalization on the global emission of greenhouse gases can be derived. Basically, three types of partially contradictory impact channels are distinguished: scale, composition and technology effects (Charnovitz, 2010).

The scale effect manifests itself in the short term in that additional sales potential abroad directly enables improved utilization of domestic production resources. In the medium term, additional growth potential results from increased capital accumulation and productivity gains, as has been widely documented empirically as an effect of trade openness (Wacziarg & Welch, 2008).

Such trade-induced economic growth, taken in isolation, would imply not only an increase in absolute emissions in goods production but also in international transport. However, the purely expansionary effect of trade can be

overridden by compositional and technological effects. One important question is how, in a specific case, trade opening affects the specialization of individual trading partners in more or less emission-intensive goods.

If national regulatory regimes differ in their stringency with regard to CO₂ emissions, it is likely that countries with dirtier technology will see their comparative cost advantage in more emission-intensive traded goods and, with improved export opportunities, will shift additional resources to their production.

As a consequence, comparative specialization can lead to a spatially disadvantageous distribution of international production of these goods in terms of climate policy, which is not compensated by a spatially reverse shift in the case of more climate-neutral products.

... the new US administration has the opportunity to put into practice its declared will to resume multilateral efforts

This would lead to an overall increase in transnational greenhouse gas emissions and at the same time to an increased shift to countries with underdeveloped abatement technology. Technology-related differences in emissions intensity between poorer and richer industrialized countries could thus be exacerbated in the course of an expansion of trade.

In such an environment, national climate policy threatens to fizzle out, since efforts to limit greenhouse gas emissions at the national level are not only counteracted to a certain extent by an outflow of emissions activity abroad (carbon leakage), but also weaken the competitive position of the country's own companies. This reduces the incentive to implement ambitious climate targets.

This has generated calls for trade policy corrective measures that extend the politically targeted internalization of climate externalities to imported goods. Customs policy offers itself as a direct control instrument.

The concept of a CO₂ border adjustment, which is currently planned at the EU level, provides for the customs clearance of imported goods depending on their CO₂ footprint. This is intended to guarantee that domestic companies burdened by emissions regulation measures do not experience a cost disadvantage compared to foreign exporters, while at the same time avoiding carbon leakage. The positive incentive effects of an emissions-based cost burden on investments in green technologies could thus ideally be transferred to foreign producers.

Economic research is divided in its assessment of the climate policy effectiveness of this instrument. Elliott *et al* (2013) conclude that the introduction of a CO₂ tariff significantly amplifies the global emissions effect of national climate policies in rich countries and does so more strongly the higher the CO₂ taxation for domestic firms in these countries.

In contrast, Larch & Wanner (2014) conclude that global CO₂ emissions would increase as a result of the tariff. The reason for this is the higher relative emission intensity of the import sectors in countries with higher emission taxation: the despecialization that sets in during the course of the tariff introduction thus exerts a detrimental influence on the global use of resources from a climate protection perspective.

On the other hand, the literature agrees that the introduction of such an instrument is accompanied by considerable global distributional effects, which are initially counterproductive from a development economic point of view: poorer countries are on average more affected, due to the higher CO₂ intensity of their industrial exports.

The global costs of emissions avoidance thus decrease only to a limited extent, as they are to a large extent merely passed on to poorer countries (Böhringer *et al* 2018).

Moreover, there are question marks from both a legal and a practical point of view. Legally, compatibility with WTO statutes is at least not obvious. This applies in particular to the principle of equal treatment of foreign and domestic companies and the most favoured nation principle.

The concrete form of the agreement is likely to be decisive. For example, the tariff burden must not be based on the source of origin, but on concrete product characteristics, for which the same criteria should also be used for domestic and foreign companies (Moore, 2011).

The fundamental question, however, is first whether CO₂ emissions can be used as a characteristic for differential treatment. And if so, may such a differentiating characteristic be applied only to the comparison of different products or also to different production processes for one and the same product?

From a practical point of view, the question of a suitable assessment basis arises. Against the background of today's international value chains, the quantification and allocation of greenhouse gas emissions turns out to be extremely complex and thus a sure source of dispute.

This is especially true for the question of how to deal with emissions from the production of intermediate inputs. A common recommendation is therefore to initially limit tariff collection to a few energy-intensive sectors of primary industry, such as steel, cement or aluminium (Delbeke & Vis, 2020). But even then, it is still open to what the assessment is spatially oriented.

With regard to the climate policy steering effect, it would make most sense if the emissions occurring in production in the exporting country were used in the tariff assessment for the good crossing the border.

From the point of view of the importing country, however, this would require a high level of information on the energy intensity and energy mix of production in the country of origin, and also harbours potential for conflict with regard to the resulting tariff differences between trading partners.

Alternatively, the emissions intensity in the importing country or even a global average value could be used as a basis. Although this would solve the above-mentioned problems, it would not have the same steering effect in terms of costs.

And above all, from a dynamic point of view, this would not provide an incentive for exporting countries to invest in the adoption of more emission-neutral technologies. All these are reasons why, at the international level, the CO₂ tariff has not yet progressed beyond the conception phase (Mehling *et al* 2019).

Hence, it seems more promising to integrate climate policy goals into trade policy through bilateral and multilateral channels, for example as integral components or ancillary provisions of regional trade agreements.

A wide range of options are available for this. For example, it is possible to agree on the mutual dismantling of trade barriers on goods that play a major role in the transformation of the energy supply toward climate neutrality, such as wind turbines and solar cells.

In addition to tariff dismantling, this can also involve non-tariff barriers, for example in the form of harmonization or mutual recognition of test standards in approval procedures. However, agreements can also relate to more far-reaching aspects beyond trade policy.

Specific target agreements could be reached on increasing energy efficiency or the share of renewable energies in the participating economies.

Trade agreements could also be a suitable vehicle for committing partner countries to a roadmap for the orderly reduction of national subsidies on fossil resources that avoids distortions of competition.

Conversely, legal certainty for the transformation of energy supply could be increased via recognition of existing national support systems in the area of renewable energy sources.

Finally, another aspect that has often played an important role in recent rounds of negotiations is public procurement. Bilateral acceptance of environmental and climate protection standards as a criterion in public procurement could be a means of defusing the ongoing debates on non-discriminatory market access in terms of climate policy.

Historically, the North American Free Trade Agreement NAFTA is considered to be the first regional trade agreement with a concrete reference to environmental protection. In a side agreement, the establishment of a commission for cooperation on environmental protection issues was agreed and the contracting states were granted the right to take trade-restricting measures in connection with obligations under international environmental agreements.

In the EU's trade policy, environmental protection requirements are present, among other things, in the form of special incentive arrangements in the Generalized System of Preferences (GSP), which unilaterally grant trade preferences to developing countries.

In contrast, recent regional trade agreements have offered little innovation from a climate perspective. Although the idea of climate protection is always present in the language, there is a clear lack of binding regulations.

For example, neither the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) nor the EU-Canada Comprehensive Economic and Trade Agreement (CETA) contain binding agreements on tariff reductions on environmental goods, reduced subsidies for fossil technologies, or harmonization of environmental standards. Instead, the treaty texts are dominated by general declarations of intent on future climate policy cooperation and compliance with existing climate agreements.

Only the EU-Singapore FTA at least includes the issue of subsidy reduction as an explicit goal, although it also does not specify concrete steps to achieve the goal (Fisher *et al* 2019).

In the worst case, these agreements could even limit the future scope for national climate policy, as the now common regulations on investor protection in principle give foreign companies the opportunity to sue via an external dispute settlement mechanism against what they see as discriminatory tightening of environmental law.

The same may apply to future agreements on the protection of intellectual property rights for internationally traded goods if they are designed to undermine the transmission of green technologies.

From a global perspective, future regional trade agreements will be able to make an effective contribution to climate protection if they prove to be successful test laboratories for innovative climate protection efforts, without relying on compartmentalization in their structure. Only in this way is there potential for expanding new regulatory regimes to the multilateral level.

At the same time, transparency must be created as to which trade-related measures really serve climate goals and which are merely disguised protectionism. This is particularly important to prevent the existing rifts between rich and poor countries in trade policy from widening even further.

At the WTO level, this would require finally arriving at a generally binding definition of the term environmental goods and associated special regulations. In this respect, too, the new US administration has the opportunity to put into practice its declared will to resume multilateral efforts. ■

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The background of the slide is a dark, abstract composition. It features a dense network of thin, glowing yellow and orange lines that crisscross the frame, creating a sense of interconnectedness. Overlaid on this network are various binary digits (0s and 1s) in a light blue or white color. The overall effect is reminiscent of a digital or technological landscape, possibly representing data flow or network infrastructure.

Why technology shapes European power

Technological change is already having far-reaching effects on the international balance of power. Ulrike Franke and José Ignacio Torreblanca argue that the EU needs to engage with the geopolitical implications of technology

Summary

- New technologies are a major redistributor of power among states and a significant force shaping international relations.
- The European Union has for too long seen technology primarily through an economic lens, disregarding its implications for its partnerships and for its own geopolitical influence.
- If the EU wants to be more than a mediator between the two real technological powers, the United States and China, it will need to change its mindset.
- For the EU and its partners, the vulnerabilities created by battles over technology divide into two types: new dependencies and openness to foreign interference.
- The EU and its member states need deeper engagement with the geopolitical implications and geopolitical power elements of technology.
- This engagement has an external element of reaching out to partners and an internal element of ensuring close cooperation between the EU and its member states.

Introduction

The European Union has [unveiled](#) the world's first plans to regulate artificial intelligence (AI). The publication of the rules is part of a frenzy of EU tech regulation and strategies: there is also the [Digital Services Act](#), the [Digital Markets Act](#), the [Digital Decade](#), the [Cybersecurity Strategy](#), the [Data Strategy](#), and more.

Most importantly, the AI regulation follows the implementation of another major EU technology regulation that anyone who accesses the internet has encountered many times: the 2018 [General Data Protection Regulation](#) (GDPR). The EU is doubling down on its role as a regulatory superpower.

Technology regulation may sound like (and, to some extent, is) a boring topic that should chiefly concern legal experts. But technology has found its way onto geopolitical battlegrounds. Throughout history, technology has not only transformed economies and societies but also been a [major redistributor of power](#) among states and a significant force shaping and reshaping international relations.

New technologies can massively boost a country's economy and, therefore, global influence. They can enable capabilities that provide a country with military advantages or even dominance. And the values and standards that tech products embody are determined by whoever manufactures them.

But the EU, for all its pathbreaking work on regulation, does not appear to have fully recognised just how geopolitical technology can be – or how geopolitical the current generation of emerging, primarily digital, technologies has become. At the 2020 Munich Security Conference (the last one before the pandemic), it was painfully obvious that the EU was widely considered to be – at best – [a mediator](#) between the two real technological powers, the United States and China.

Since then, some things have changed. For one, technological competition between the US and China is increasingly fierce. The US has imposed [export controls](#) on semiconductors, aiming to cut off China's supply lines, and has pressed its allies worldwide to kick Chinese companies out of strategic markets, such as 5G.

A [recent report](#) by the US National Security Commission on Artificial Intelligence mentions China a whopping 699 times (Europe appears 93 times; Russia 64). Meanwhile, China's central government wants Chinese AI to be the world's undisputed leader by 2030. And Chinese President Xi Jinping is [pressing](#) for greater independence from global supply chains. A fight for technological spheres of influence is playing out before our eyes, and the rhetoric around it is getting more heated.

It is crucial for Europe to recognise and consider the international second- and third-order effects of any actions it takes in the technological space

In Europe, there has been some encouraging movement. The EU has begun to speak more forcefully about *“digital and technological sovereignty”*; the European Commission has laid out a strategic vision or *“digital compass”*; the European External Action Service has started regarding technology, connectivity, and data flows as a key dimension of the EU’s external relations and partnership agreements; and a few member states’ foreign ministries have begun producing strategies on the geopolitical dimension of technology.

More recently, the European Council has called for a *“geostrategic and global approach to connectivity.”* And the US and the EU are looking into increased tech cooperation – most notably in the form of the Technology and Trade Council, which they **announced** at their June 2021 summit.

Nonetheless, Brussels and most member state capitals remain **primarily focused** on the economic, social, and labour implications of technology – almost as if they believe that, by ignoring tech geopolitics, they can escape it altogether.

But the technological is geopolitical. States might not need to care about who owns the technology in a market-orientated, rules-based world order governed by solid multilateral institutions that enforced international norms.

They could expect market forces and open and accessible global supply chains to take care of their technological needs, be it in the production of semiconductors or the construction of global networks to connect users to the internet.

Technological sovereignty becomes an existential question when the global market is hijacked by state actors, multipolarity and unilateralism replace multilateralism, and great powers turn interdependencies into vulnerabilities as they seek to set up spheres of influence.

European countries and their partners risk becoming playgrounds of technological competition between great powers, which attempt to coerce them into joining a bloc.

Countries could become economically dependent on others for key technologies, leaving them unable to influence standards in a way that corresponds with their values and even subject to direct foreign interference. Geopolitically speaking, technology is not neutral.

This is not just about Europe standing its ground – or choosing sides – in the Sino-American competition, which is what most European analyses now focus on. It goes beyond that. In fact, Europeans largely overlook two issues. Firstly, all EU action – and inaction – on tech has consequences that reach beyond the union. The EU has a long history of ignoring, and being surprised by, the external implications of its actions.

For instance, this was the case with the Common Agricultural Policy, which – despite being devised as a way to balance the Franco-German relationship – had huge global implications; the Ukraine Association Agreement, whose dramatic geopolitical consequences were not fully anticipated by EU policymakers; and, more recently, the GDPR, whose global impact was not foreseen by EU regulators.

Policymaking within the EU is so complicated and inward-looking that little time and space is left for anticipating the impact of EU regulations on external actors or, even more ambitiously, thinking strategically about which countries or regions may want to partner with the EU to pursue similar goals.

However, the sheer size of the EU's internal market means that external actors often have no option but to comply with EU rules even if they dislike them, see them as problematic and costly to implement, or had no role in their creation.

The EU rarely acknowledges ahead of time how its actions will affect non-EU states. When it does, this usually involves a positive reading of the *"Brussels effect"* – the idea that EU regulation, through the weight of the bloc's market, will automatically become a model for other powers.

European leaders often portray the Brussels effect as automatic, an almost magical occurrence rather than something that requires further thought. Generally, they pay little to no attention to second- and third-order effects on other players.

Secondly, the EU puts too little thought into the way in which its internal actions – or lack thereof – influence its geopolitical power, since this is a metric that rarely comes up in any European discussions. For others, AI means power: the US National Security Commission on Artificial Intelligence defines its own role as being to *"prescribe actions to ensure the United States wins the AI competition and sets the foundation to win the broader technology competition."* Russian President Vladimir Putin famously *declared* that whoever becomes the leader in AI *"will become the ruler of the world."*

But the EU, and most Europeans, do not think in these terms. This is partly due to issues of competency, but even more to the way the EU sees itself: despite much rhetoric on a *"geopolitical union"* – and the high representative for foreign affairs and security policy's *insistence* that the EU has to *"learn to use the language of power"* – Brussels remains largely uncomfortable with power politics.

The EU's ethos is that of a market-driven, technocratically led entity that, from the start, has left 'high politics' (security and defence) in the hands of member states. This means that the European Commission sees the world in terms not of power, coercion, or relative gain but as a game of market regulation.

Most member states are no different: on technology, few of them have picked up the geopolitical baton. It is possible to see this as one of the many civilisational advances of the EU – and these authors are not advocating that the EU take an adversarial, competitive stance – but the fact remains that, if Europe is not interested in geopolitics, geopolitics is interested in Europe.

The European Council on Foreign Relations is focusing on this external and geopolitical dimension of the development, adoption, and regulation of technology in Europe. In this dimension, it is important – and often necessary – for things to work at home: Europe needs to improve its connectivity; support its start-ups and established firms; invest in research, talent, and digital skills; strengthen its digital infrastructure; and more.

But, broadly speaking, the EU and European experts are paying enough attention to these issues. What they overlook are the geopolitical implications of technology, which are playing out on many battlegrounds and creating two main types of vulnerability.

Battlegrounds of vulnerability

Battles over technology are being fought in a growing number of arenas and are creating ever more vulnerabilities third countries can weaponise. The following assessment, therefore, only provides a snapshot of some of these battlefields, but it explains the origins of these vulnerabilities – which, generally, divide into two types: new dependencies and openness to foreign interference.

New dependencies

Countries around the world are pursuing AI, 5G, additive manufacturing, and other new technologies primarily because they promise to yield **significant economic gains**. Some of the ways in which governments try to support their domestic industries are already leading to concerns over protectionism and even **techno-nationalism**.

For example, on 5G, the effect of China's [protected home market advantage](#) is making Chinese telecoms giants almost unbeatable in third-country markets, creating an uneven playing field.

Geopolitically, these economic divergences are less important than the dependencies that result from particular states leading – or having monopolies – on some technologies. Such dominance can empower a state to give or withhold technologies from others, to pressure them to do its bidding, or to use these dependencies to force others to align or otherwise change its foreign policy.

Members of the EU need to be wary of technological dependence on non-EU providers, particularly non-democratic states – or else they will become digital colonies of others. If Europe loses ground on technologies, it could also lead to European partners finding themselves dependent on other actors, as others fill the gap left by Europeans.

Achieving technological sovereignty is, therefore, crucial for states that want to enjoy foreign policy autonomy. Two forms of critical infrastructure are of particular interest to the EU in this context: 5G and submarine cables.

5G independence

Europe's choice of vendors for the roll-out of 5G was at the centre of the first heavily and openly contested geopolitical struggle over a technological development since the end of the cold war. The US, under President Donald Trump, made the exclusion of Chinese suppliers from future European network infrastructure a test case for the transatlantic alliance. In many European capitals, Washington employed a 'with us or against us' logic that had a huge impact on an area previously deemed to be merely a commercial decision for European telecoms operators. The 5G debate thereby served as a [geopolitical wake-up call](#) for many EU member states in their thinking about technology.

Some, however, are still refusing to make hard choices on 5G, or are even continuing to play along with Chinese connectivity strategies and initiatives.

One odd feature of the debate is that, in fact, Europe is well placed on 5G – it has two companies that are global leaders in the area (to the extent that they are unrivalled even by US suppliers) and it could move to secure its 5G independence at a relatively low cost if it allocated additional resources to the task.

But, for Europeans, the debate demonstrated for the first time the importance of access to competitive tech players. And this remains an important topic for Europe, since the development of the telecoms industry is continuing with 6G.

Undersea cables

Submarine cables are essential to the functioning of all digital sectors. Ninety-seven per cent of internet traffic and \$10 trillion in daily financial transactions [pass through](#) these cables.

Broadly speaking, the greater the number of undersea cables and the routes they provide, the swifter and stabler the internet access for the countries they connect – and, therefore, the lower the risk of interruptions that could lead to a digital network collapse.

In the last few years, Chinese and American companies such as Huawei, Amazon, Microsoft, Google, and Facebook have increased their presence in the market for [undersea cables](#) linking both European and non-European Mediterranean states to parts of the world such as Asia and Africa.

European companies have adapted to this situation by forming consortia to compete with American or Chinese international groups. The [EU lacks an all-encompassing strategy](#) for a sector in which individual governments are still the key players.

However, an initiative such as the [BELLA submarine cable](#) – which links Europe and Latin America, and will boost data-driven business, trade, education, and scientific research between the two regions – is a good example of how the EU can get it right by using its budget to support private-public cooperation in this key area.

If the EU fails to project its power in the Mediterranean, other global players will fill this space and create dependencies for Europe and its partners. These players will be able to penetrate the digital economy of Middle Eastern and African countries, to the detriment of European economic interests.

Furthermore, there are also security risks associated with undersea cables. Companies often potentially have access to the data transmitted by the cables they manage.

In this scenario, the physical protection of this type of infrastructure is likely to become increasingly difficult for the EU and for all organisations involved in the sector. Physical damage to this infrastructure could be catastrophic.

Setting standards

The process of setting technology standards is a subtle way to create dependencies. These standards, once set, can be difficult or costly to change. Unbeknown to most members of the public, there is a race on to set the standards on which digital infrastructure will run.

Initially, the US mostly set up and administered digital standards, either publicly or via private firms. After a while, and with the support of the EU, countries 'multilateralised' technical standards to include stakeholders and government actors from third countries. This has largely served European interests well. Now, as globalisation fragments and China and the US decouple, the battle over technical standards has become critical.

If the EU does not set its own standards, it will be forced to adopt standards made by others – who may not share its values. Governance of the internet, including technical governance, is becoming increasingly bifurcated; the danger is that countries will be forced to choose between adopting the standards of a US internet or a Chinese internet, and to thereby give up access to the other market.

Artificial intelligence is one area in which an important standard-setting process is currently taking place. The EU chose early on to prioritise trustworthy or ethical AI. An EU high-level expert group developed [ethics guidelines for trustworthy AI](#) in 2018, and has since made policy and investment [recommendations for trustworthy AI](#).

The bloc's new AI regulation emphasises that it aims to become "*a global leader*" in the development of trustworthy and ethical AI, and concern about unethical AI is shared throughout the union.

If no ethical standards are established, AI-enabled systems could create or reinforce biases without allowing for any appeal or rectification. There might be no limitations on states' misuse of AI to, for example, control populations.

Individuals' lives could be destroyed or severely curtailed by opaque AI-enabled systems in areas such as the judicial system, law enforcement, or credit ratings. People would be unprotected from manipulation through AI-enabled disinformation.

While such developments might slightly hamper the adoption of AI, states would still likely use these systems extensively, creating an AI-enabled dystopia.

Alternatively, if the EU does not act, others will impose their AI standards. Many actors, including private firms, are already working on rules for ethical AI. Should they develop and promote these rules sufficiently, the EU would be reduced to following standards that it could not influence.

As such, there is a substantial upside for the EU if it gets trustworthy AI right. By ensuring that AI developed in the union is trustworthy, Europe can provide benefits to all users of AI-enabled systems.

Ensuring that all AI-enabled systems used in the EU are ethical is directly beneficial for Europeans, who can trust that their technologies will not be biased, illegal, or otherwise harmful.

This is likely to encourage and, therefore, increase AI adoption rates, which one can expect to have a positive economic impact. If the EU succeeds in encouraging others to adopt trustworthy AI standards, this would further widen the circle of beneficiaries.

Even better would be if the EU established itself as a leader in ethical AI, prompting others to follow its regulations. This would ensure that the ideals that Europeans value would be adequately reflected in AI systems.

Furthermore, the EU could gain a location advantage – meaning that, because of its leadership on ethical AI, “AI made in Europe” would be widely seen as following the highest standards, thereby becoming a sought-after commodity.

Another area of standard-setting is data privacy. Few topics are as important to the EU's [self-image](#) as the protection of individual privacy. The EU made history with its GDPR regulation – which has changed the way that millions, if not billions, of people engage with the internet.

But guaranteeing that everybody can be free in the digital realm is an ongoing effort. Privacy is under threat from [state actors](#) and [private firms](#), which are fighting [efforts](#) to curb their access to private data.

If the EU fails to secure data privacy, its citizens will see their data flowing out of Europe, treated according to the lowest privacy standards available, and used to feed the AI industrial development and surveillance capacity of third countries and their companies. Europeans' fundamental rights would be damaged, and European firms would lose their competitive edge, market opportunities, and revenue.

Apps with lax data privacy standards developed by third countries – most often authoritarian states such as China – are already collecting enormous amounts of Europeans' data, which may be used for surveillance, coercion, and aggressive marketing techniques. The EU's failure to act would aggravate these problems.

The worst-case scenarios of digital surveillance and [surveillance capitalism](#) running wild are [truly dystopian](#). People risk being [tracked](#) in every aspect of their lives and being influenced without realising it – be it in buying certain products or [voting for certain political actors](#).

If the EU does not export these regulations and ensure that the global governance of data is regulated according to European-like standards, its citizens will not be fully protected.

At the same time, billions of people will lose their rights to privacy. Surveillance regimes would be strengthened, and democracies weakened. This could undermine and even destroy the democratic process and embolden authoritarian regimes.

Foreign interference

Technologies can create not only dependencies but also direct ways for states to interfere with others.

The EU will need to protect itself against such interference – but should also keep in mind that it may be able to utilise these tools itself.

Disinformation and securing democracy

Back in 2010, at the time of the Arab uprisings, the belief was that the internet would help democracy spread and consolidate across the globe. A decade later, Freedom House is [reporting](#) a sustained global decline in democracy, and the World Health Organization is using the word “*infodemic*” to characterise the influence of disinformation on the covid-19 crisis.

Contrary to the expectation that the open, horizontal, and decentralised nature of the internet would help citizens connect with each other and push for democracy, authoritarian governments have successfully mastered digital technologies to enhance their power and control over their citizens, help other authoritarian or illiberal governments control and repress their citizens, and undermine democracies.

While citizens in established democracies have lost faith in democracy and supported populist or illiberal forces, authoritarian regimes have turned social media and digital technologies into effective tools of surveillance and social control, suppressing democratic opposition.

Social media companies' business model of advertising to captive audiences and harvesting user data has led to an economy of attention that prizes emotion, increases political polarisation, and erodes trust in institutions.

And, because of a lack of adequate regulation, these companies are vulnerable to foreign influence operations and electoral interference designed to fuel extremism, undermine citizens' trust in political institutions, and suppress criticism of authoritarian regimes.

However, the problems of disinformation and the use of emerging technologies for interference in the political process go beyond social networks. AI-enabled "*deepfakes*", for example, have already been used to [trick EU politicians](#), a tactic that one can expect to become an ever-greater problem.

Unless democracies curtail foreign influence operations and electoral interference, they risk decline as more and more voters lose trust in political institutions. Citizens might stop supporting democracy – at home and abroad – and human rights promotion policies, alliances of democracies, and rules- based multilateral solutions to world problems. All this could lead to a values-free EU foreign policy.

At the same time, authoritarian regimes could tighten their grip on their citizens by showing them that democracy is not a model they should aspire to. If democracy and liberal values lose their pre- eminence, this will undermine the liberal multilateral order – helping authoritarian regimes capture or weaken global governance institutions.

Much as authoritarian governments export AI surveillance technologies to like-minded partners and allies, the EU should, apart from protecting democracy at home, provide struggling democracies abroad with the technology to protect their public sphere and elections.

Military and defence

There have been moments in history when warfare changed because of the introduction and innovative use of new military technology. From the crossbow to gunpowder, tanks to nuclear weapons – when technologies are introduced and used in novel ways, they can have a fundamental impact on how wars are fought, militaries are organised, and strategies are developed.

New technologies, particularly AI, might initiate such a fundamental change. Artificial intelligence can enable new types of **military systems** in everything from logistics and sustainment to cyber operations and autonomous weapons.

The adoption of AI in the military realm could change the global balance of power, by giving new actors decisive military capabilities. Military AI is emerging as a new frontier for great power rivalry.

If Europe does not address the changes in warfare that AI is likely to bring about, it will become vulnerable to new forms of attack. In the worst-case scenario, Europe's defences could be fundamentally compromised (through, for example, the **erosion of nuclear deterrence**).

European countries' interoperability with the US, their most important NATO ally, would be weakened and their opponents militarily emboldened. Even if it avoids this scenario, Europe will be unable to shape the debate on the use and possible regulation of AI-enabled military systems if it avoids the issue.

In contrast, by engaging with the military applications of new technologies such as AI, the EU could strengthen its capabilities, thereby helping guarantee the safety and security of its citizens. Europe's military-industrial base could receive a boost through work on cutting-edge technology.

AI-enabled capabilities could become an important area of cooperation between European companies, thereby strengthening common European defence.

Working with allies to streamline the use of AI within NATO would not only guarantee a continuation of interoperability but could also improve interoperability between allied forces – through the use of AI-enabled command and control.

Finally, by engaging in the debate on the military applications of AI, Europe could help mitigate the most problematic uses of systems such as lethal autonomous weapons.

What Europe needs to do

ECFR has put forward recommendations on how to address all these sources of vulnerability, from 5G and [undersea cables](#) to [military AI](#). The EU needs to improve its data sovereignty by adopting strict regulations on data privacy and ensuring that these are exported to countries and companies that access Europeans' data.

EU member states should create an ecosystem in which smaller 5G players that focus on software and virtualisation can scale up their operations and cooperate effectively with larger European and US companies.

The EU should heavily invest in exporting technologies and practices that protect democracy and help achieve technological sovereignty, and in learning from others' experiences in this realm.

But more important than these individual fixes is deeper engagement with the external implications and geopolitical power elements of technology. This engagement has an external element of reaching out to partners and an internal element of ensuring close cooperation between the EU and its member states.

Outreach to partners

The EU needs a global strategy for improving its partners' access to reliable and safe technology. Otherwise, the bloc will leave a space that others will fill. Democracies would be further weakened and impoverished. Autocracies would thrive. Europe would be wrong if it thought it could set out its own rules and standards and let the rest of the world adapt.

The Brussels effect, by which Europe silently exported its data privacy regulation to the rest of the world, will not easily repeat itself. GDPR happened when technology was still under the geopolitical radar. Now, technology has been (geo)politicised and both governments and industry actors know how closely intertwined power, technology, and regulation are.

Both China and the US are reaching out to third countries. The US has programmes such as [The Clean Network](#), which aims to help its allies end their use of Chinese 5G. The Chinese Belt and Road Initiative includes a digital component. And Chinese firms, with governmental support, export facial recognition and surveillance techniques to [autocracies](#) around the world.

The challenge for the EU is in working with like-minded countries and multilateral bodies – such as the Organisation for Economic Co-operation and Development (OECD), but also regional arrangements such as those in Latin America, Africa, and the Indo-Pacific – to develop fair, open, and values-driven technological standards.

The EU should deploy the incentive of access to its digital market to strengthen its alliances. The bloc should use its financial institutions to incentivise EU firms to invest in countries that are seeking to adopt these critical technologies but, at the same time, want to reduce their technological dependence on China.

The EU should also consider establishing a comprehensive and compelling tech package that would allow it to become a geopolitical player in the area.

This 'tech compact' should include: upgrading existing or prospective trade agreements to grant improved access to the EU digital services market to countries that comply with EU standards in areas such as data flows, privacy, and AI; offering technical assistance to governments and parliaments wishing to align with the EU on regulatory issues; offering funding guarantees for connectivity investments; coordinating positions on technical standards in multilateral organisations; and offering cyber security and democracy-protection packages.

In contrast to other great powers, whose tech offers are often based on coercion and the exploitation of weakness, the EU should stand for a principled approach based on partnerships, mutual interests, consent, and solidarity.

Also, as it is already doing, the EU should continue scanning its internal market for vulnerabilities in critical technological sectors, identifying high-risk vendors, and ensuring reciprocity in market access to these technologies for countries that restrict or curtail digital trade.

It will not be sufficient for the EU to merely approve internal regulations in the expectation that others will accept them, such as in the case of the GDPR. For example, the bloc is already operating on bilateral agreements with like-minded countries such as [Japan](#) to implement data privacy clauses that ensure the free and safe flow of data. But this is not enough in itself.

The EU should aim higher – through multilateral institutions such as the OECD and the International Monetary Fund, or through groupings such as the G20 – to establish a global data privacy regime whose standards are valid for most democracies, if not for all countries (as those ruled by authoritarian regimes may opt out).

A key component of this is the transatlantic relationship. A major agreement on data privacy with the US would help break the current dynamic of regulatory fragmentation, helping both the country and the EU jointly take on China and other illiberal regimes.

The importance of cooperation between the EU and its member states

The European Commission and other Brussels institutions are positioning the EU as a powerful actor in the global debates about tech regulation. But not all member states appear to feel the same sense of urgency.

As of today, 21 member states have now published AI policy documents in which they identify areas of focus, develop recommendations, and decide funding priorities.

These strategies reveal that most EU member states primarily see AI through an economic lens. Almost all the strategies were written by or under the leadership of economics ministries (or variations thereof) or, less often, ministries of innovation.

With very few exceptions – such as France – most EU countries do not engage with the challenges posed by the way that the development and use of AI might affect the international balance of power. Even fewer discuss or even mention the impact of AI on defence.

If the EU moves forward on technology issues without the support of its member states, it risks losing credibility and the capability to influence others. Worse, it could leave empty spaces in Europe that external actors fill. But, if the EU and its member states work together closely on technology issues, the bloc will be strengthened – and will lead by showing that its rules and regulations, such as those on privacy or trustworthy AI, work at home. In this, the EU can benefit from member states' diplomatic reach in various regions.

It is crucial for Europe to recognise and consider the international second- and third-order effects of any actions it takes in the technological space. It needs to acknowledge that these actions have an impact on its geopolitical power.

They influence the EU's soft power as a role model, its positioning relative to other major players' plans, and its geopolitical room for manoeuvre. ■

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Public finances in the EU

COVID-19 has led to governments borrowing at unprecedented levels. Mehmet Burak Turgut discusses EU government finances as well as relevant policy priorities to ensure healthier public finances in the future

The COVID-19 pandemic, which broke out in March 2020 and continued through subsequent waves in fall 2020 and spring 2021, resulted in a fallout in the global economic activity and world output contraction by 3.3% during the last year, as shown by the recent IMF survey.

The losses in the output led to lower income and revenues of the taxpayers, which in turn diminished the tax revenue generating capacity of the governments. At the same time, the governments responded to the crisis with extensive fiscal support measures, amounting to more than USD13 billion globally¹. These increasing expenditures paired with decreasing tax revenues pushed the governments to borrow at unprecedented levels, causing a huge spike in global public debt.

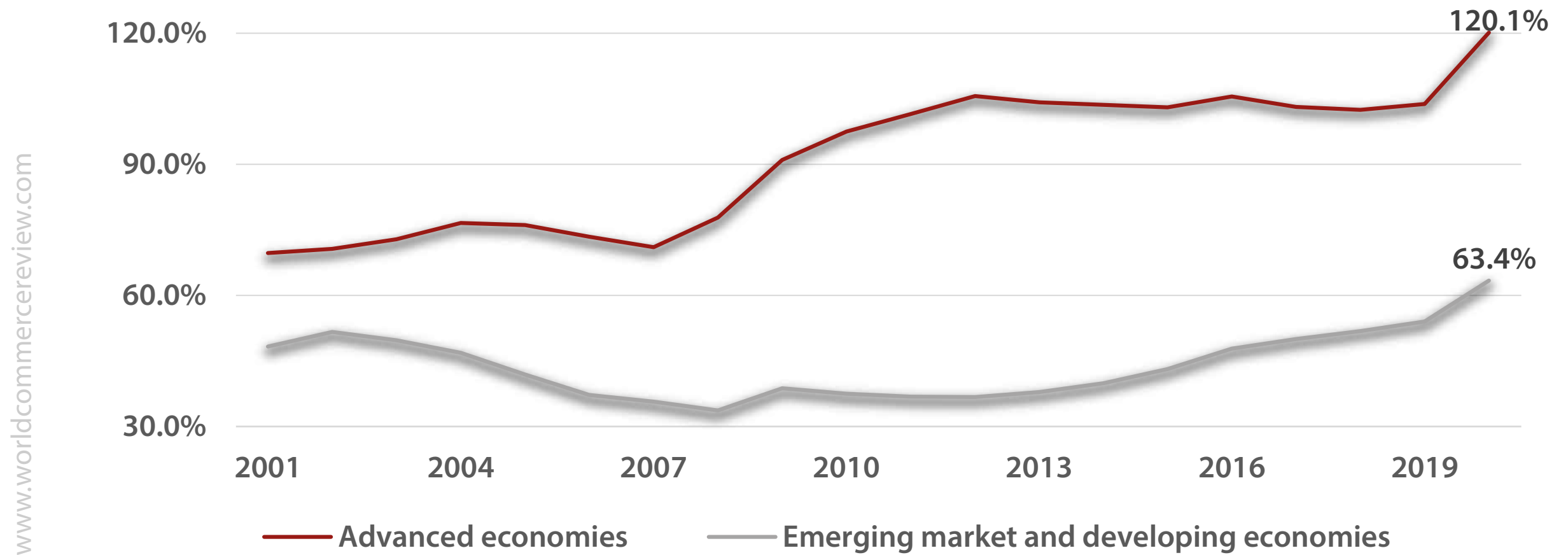
Figure 1 depicts the evolution of debt-to-GDP ratio over the last two decades for advanced (in red) and emerging market and developing (in grey) economies. The impact of the pandemic is visible for both groups – the debt-to-GDP ratio increased by 16.3 pp y/y for advanced economies and by 9.3 pp y/y for emerging market and developing economies, reaching, respectively, 120.1% and 63.4% in 2020.

During the same period, government expenditures increased, respectively, from 38.6% to 47.4% and from 31.0% to 34.0% of GDP with the government revenues halting at 35.0% and 26.0% for advanced and developing economies². The higher borrowing needed to finance the increasing expenditures during the pandemic time thus fuelled the debt and elevated global government indebtedness to unprecedented levels.

The European Union perspective

The governments in the European Union swiftly responded to the COVID-19 pandemic with substantial fiscal measures. As of April 2021, the sum of the EU-wide announced support amounted to more than €4.6 billion³,

Figure 1. The debt-to-GDP ratio in advanced and developing economies



Source: [International Monetary Fund Fiscal Policy Responses to COVID-19](#), January 2021.

including €1.7 billion above-the-line measures such as additional spending or foregone revenues as well as liquidity measures mostly in the form of loan guarantees and asset purchases.

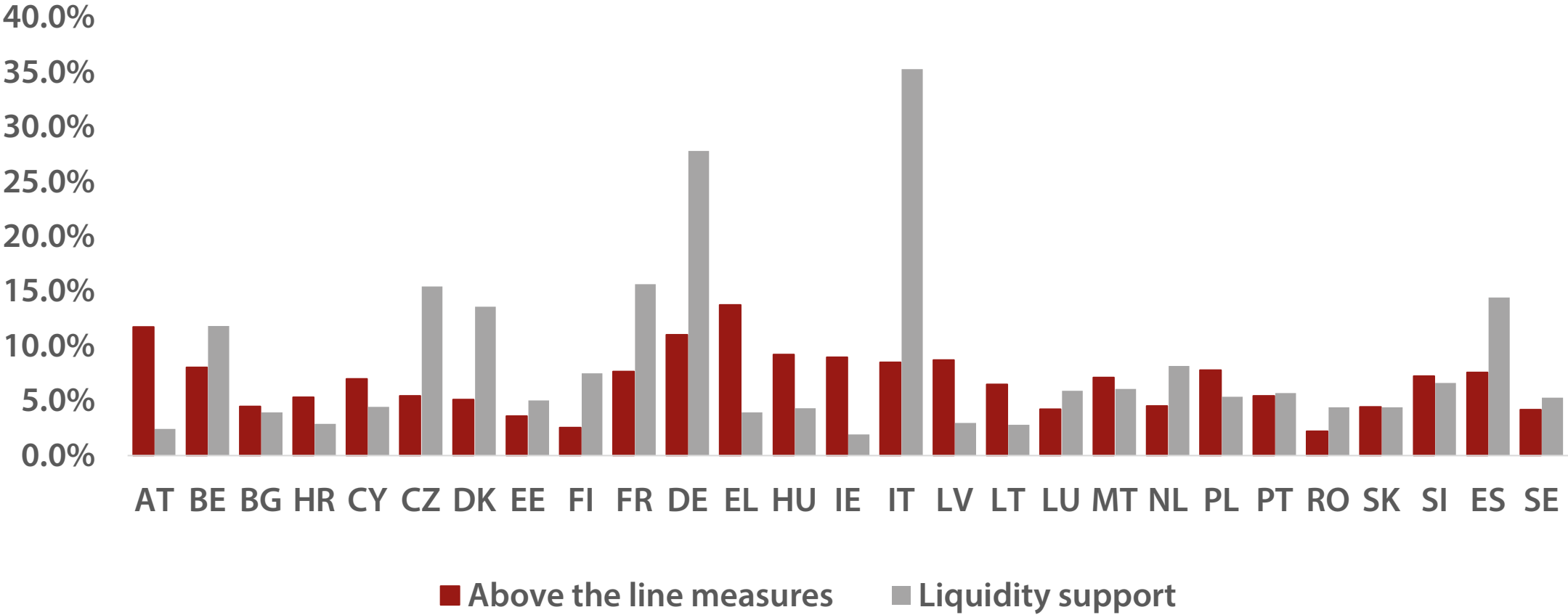
Figure 2 shows the distribution of these fiscal support measures throughout the EU member states (MS) as a percentage of GDP. The liquidity measures largely surpassed above-the-line measures in the four largest EU economies – Germany, France, Italy, and Spain – as well as Belgium and Czech Republic.

On the contrary, additional spending or foregone revenues highly exceeded liquidity measures in Austria, Greece, and Latvia. The allocation of fiscal support between the above-the-line and liquidity measures was balanced throughout the rest of the EU member states.

*...the governments [in the European Union)
responded to the crisis with extensive fiscal support
measures*

Figure 2. The fiscal support measures in the EU

www.worldcommercereview.com



Source: Author's own elaboration based on data available at [Eurostat](#).

The scale of the national measures varied among the MS – from 8.2% in Croatia to 43.7% in Italy. Besides the individual country actions, the EU also introduced support measures from the Union's budget that made up approximately 10% of total EU GDP for year 2020⁴.

How have these fiscal support policies affected and will affect the finances of the governments in the EU? The majority of the liquidity support measures is in the form of guarantees and the impact of these contingent liabilities on public debt depends on the extent to which the guarantees will be activated.

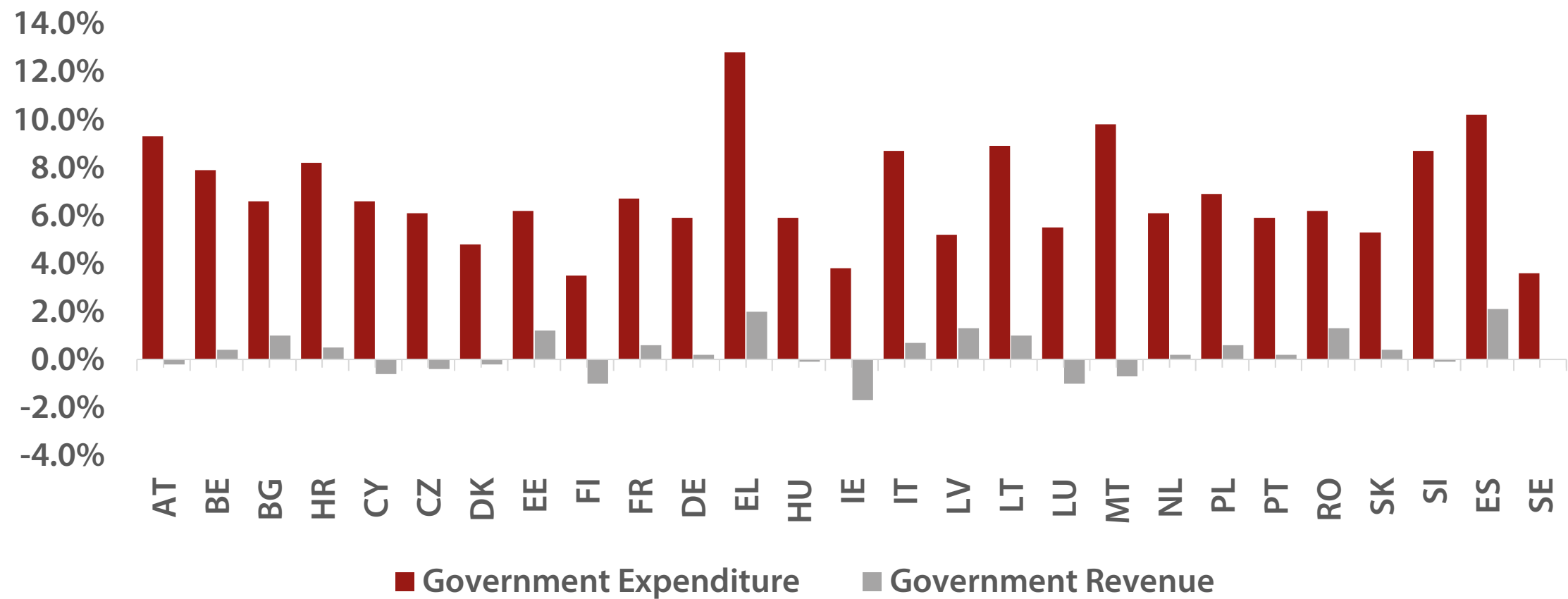
Moreover, some parts of the above-the-line measures will be unfolded throughout 2021 and 2022 and may require additional amendments subject to the progress of economic recovery which means that their real impact on public debt is not yet certain.

Figure 3 shows the changes in the government expenditures and revenues of the EU member states measured as their share of GDP between 2019 and 2020. The government expenditure-to-GDP ratio increased in all MS in 2020 with y/y changes ranging between 3.5% (Finland) and 12.8% (Greece) throughout the EU. The automatic stabilizers and discretionary fiscal measures used to stabilize the economy in the wake of the pandemic are the main reasons behind the higher government expenditure-to-GDP ratio in the EU.

On the other hand, government revenue-to-GDP ratio did not experience substantial change in 2020 with y/y variations ranging between -1.7% (Ireland) and 2.0% (Greece). The main reason behind the relatively stable government revenue-to-GDP ratio during the pandemic was a proportional decrease in the levels of both components that resulted, respectively, from lower tax collection (fuelled by the marginal drop in consumption and introduction of tax relief measures) and a comparable fall-out in economic activity.

Figure 3. Change in the government spending and revenue in EU member states in 2020

www.worldcommercereview.com



Source: Author's own elaboration based on data available at [Eurostat](#).

Figures 2 and 3 also showcase that not all of the announced fiscal support measures in the EU became government expenditure because only part of the liquidity support measures were realised in 2020⁵. As a result of the spike in expenditures paired with the slack in revenues, the EU governments needed to borrow funds to finance these expenditures which has driven up the public debt.

Figure 4 compares the public debt-to-GDP ratios of the EU member states in 2019 and 2020. The y/y change of the ratio varies between 2.1% (Ireland) and 25.1% (Greece) with the 13.2% y/y change for the EU-27 which raised average levels of public debt in the EU to 90.7% of GDP in 2020.

Even though spikes were observed between March and May 2020, the surge in indebtedness of the EU member states did not bring an increase in the sovereign debt risk premia which remained low in the major EU economies⁶.

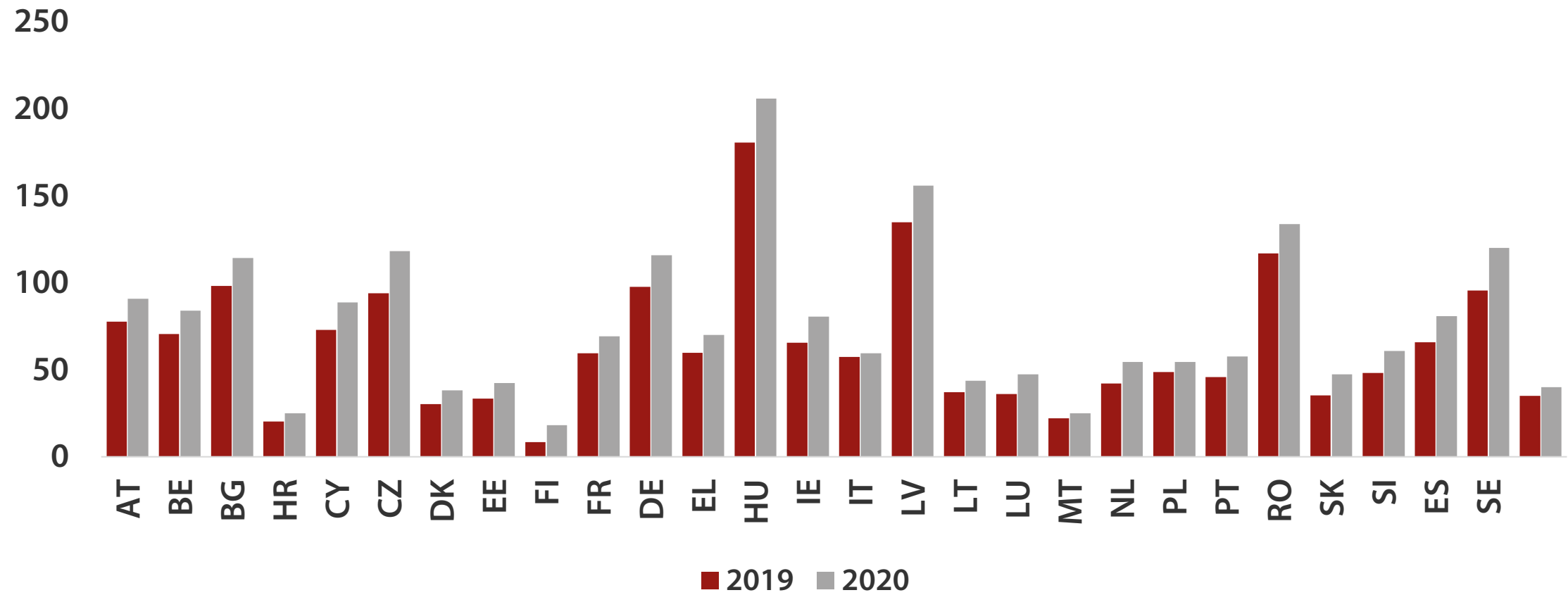
This is partly due to (i) low interest environment which kept the debt costs manageable and (ii) decisive actions of the EU and member states that repressed further collapse in economic activity. The rise of the public debt from the beginning of the pandemic has thus not exposed the EU economies to a higher sovereign debt risk so far.

Poland in the spotlight

The Polish Parliament introduced fiscal legislation packages titled 'Anti-Crisis Shields'⁷ in March 2020 that, as of January 2021, have already amounted to PLN 312 billion⁸ support in the form of additional spending, deferred revenues, loans and guarantees.

This drove the government expenditures from 41.7% of GDP to 48.7% of GDP between 2019 and 2020 whereas the government revenue remained at 41.7% of GDP⁹. These changes in the two main blocks of fiscal policy moved the deficit from -0.7% to -7.0% of GDP¹⁰ between 2019 and 2020.

Figure 4. Public debt-to-GDP ratio in EU member states



Source: Author's own elaboration based on data available at [Eurostat](#).

As a result, the debt-to-GDP ratio in Poland jumped by 11.9 pp y/y reaching 57.5% in 2020¹¹. Despite such notable change in the debt-to-GDP ratio in 2020, it was still below the average EU change of 13.2 pp y/y¹².

The future

The current debt stock of governments is historically high and is approaching the post-World War II levels. Even such high level of debt, however, can be sustainable as long as the global trend on the sufficiently low interest rates continues.

Hence, what poses risks for the affordability of the public debt is a potential fast rise of the interest rates. Such a scenario would lead to large tax hikes and spending cuts that could curb the growth over the long term.

Other than that, there are still some risks present due to the elevated public debt, including:

- limited ability to implement counter-cyclical fiscal policy during economic crisis;
- decreased ability to respond to unexpected events, like wars, financial crises, and natural disasters which could result in larger negative effects on the economy and on people's wellbeing;
- private sector under-investment due to uncertainty about future taxes and crowding out of private debt.

Despite the presence of the aforementioned risks, the start of mass vaccination campaigns in all member states in 2021 has accelerated the return to a 'new normal' with the expected increase in economic activity.

While this will help to improve public finances, the recovered economy should, nonetheless, be supported with policy efforts for healthier public finances. These efforts can focus more on building resilient and inclusive economic structure to curb the rising inequality, boost productive capacity, and raise potential output.

For example, the Recovery and Resilience Facility of the Next Generation EU¹³ plan allows countries to finance such policy efforts with non-repayable support which will make it possible to finance growth-enhancing public investment projects and cover costs of productivity-enhancing reforms without inducing higher levels of deficit and debt.

Besides, monetary policy can also play a role in strengthening these efforts. The ability of the central banks to maintain low interest rates despite rising inflation will allow to maintain price stability to serve the debt and prevent its further accumulation. ■

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The inherent value of IFCs toward more sustainable finance

IFCs facilitate the efficient flow of capital required by the global economy. Phil Graham argues that they are ready to support the transition to sustainable investing

Sustainable finance and the integration of Environmental, Social, and Governance (ESG) considerations into financial decision-making is fast becoming an integral feature of the global investing environment, with a rising and palpable expectation on the part of investors for action on issues that deeply impact our world.

Indeed, this will be a key topic as leaders across the world meet in Glasgow in November for the United Nations Climate Change Conference, also known as COP26. With a track record of international collaboration on a wide range of global issues, International Finance Centres (IFCs) are ready to play a role in supporting the shift to a more sustainable global economy.

Defining sustainable investing

Sustainable investing is fundamentally motivated by organisations and their investors seeking to do business in a way that helps solve the world's most pressing challenges. These solutions can range from green bonds to thematic investing approaches that are aligned to specific environmental outcomes, for example the UN Sustainable Development Goals.

Interestingly, the world's largest asset manager, Blackrock, divides its focus into two main strategies for sustainable investment; 'avoid' or 'advance'. Avoid involves the removal of companies and sectors from the investment portfolio that are associated with negative ESG risk or violate certain fundamental values. Advance focusses on companies and sectors that have strong ESG credentials, targeting specific positive outcomes.

Time to make the change

Sustainable investing is no longer the future of investing – it is today's reality, widely recognised as creating favourable social and economic outcomes.

Investment funds and asset managers are continuing to enhance standards, increase transparency, and use the power of their capital and investment decisions to address key issues facing governments and global citizens alike - all while also of course trying to ensure that they generate better returns for shareholders. According to BlackRock's *2020 Global Sustainable Investing Survey*, over half (54%) of global investors consider sustainable investing to be fundamental to investment processes and outcomes.

In many ways, the COVID-19 pandemic has fuelled demand for sustainable investments. It has been a stark reminder of future exogenous risks that can shatter our world as we know it.

For the investment funds industry, many of which have vehicles domiciled in IFCs, non-financial sustainability is an increasingly important element of fiduciary duty

Historically, sustainable investing was simply about 'negative-screening', for example the exclusion of certain types of companies from investment mandates. But this is no longer the case. Across the investment community there is active consideration of non-financial impacts as well as pecuniary returns.

For the investment funds industry, many of which have vehicles domiciled in IFCs, non-financial sustainability is an increasingly important element of fiduciary duty.

Opportunity for IFCs

According to the Global Sustainable Investment Alliance (GSIA), global sustainable investment is now over US\$35 trillion, accounting for over a third of global assets.

This incredible growth and mainstreaming of sustainable investments drives institutions to look at areas that will achieve the greatest possible outcome (both morally, socially and financially), which in turn provides numerous opportunities for IFCs which act as the essential plumbing for the international financial market.

A rapidly growing share of the opportunities are concentrated in markets well outside the well-trodden paths of Europe and North America and instead focus acutely on the emerging markets sector, especially where the opportunity to make a true impact is vital. But to cater for unstable political environments and investor bases many thousands of miles away, it is essential that the vehicles used to meet the needs of the industry fit certain key criteria.

Companies incorporated in the BVI are, by most measures, the most popular offshore holding structure in the world. BVI Business Companies hold approximately US\$1.5 trillion of assets. Furthermore, investment mediated by

its international business and finance centre supports around 2.2 million jobs worldwide and, each year, contributes over US\$15 billion to government coffers around the world.

Whilst vehicles domiciled in IFCs are of course used for a wide variety of different purposes, there are a number of common factors which feed into the success of the BVI product and make them highly advantageous in this environment.

These include the jurisdiction's essential tax neutrality, the speed and efficiency of its world-renowned Corporate Registry its common law legal system with final appeal to the Privy Council in London, and cost-efficiency as compared to any other equivalent IFC.

The BVI is also committed to ensuring that it meets the constant demands of international standards around money-laundering and international crime, whilst also ensuring that the right to confidentiality is protected at all times.

The jurisdiction's adaptable and sophisticated legislative framework, which includes a focus on ensuring that anything from joint ventures, M&A, ListCos, and fund vehicles are adaptable to both international markets and the private and public sector, guarantee that in this very fast moving ESG environment, the products available to clients are constantly fit for purpose.

In fact, this final point is critical. The speed with which the market is growing and changing plays to one of the many strengths of all IFCs, but the BVI in particular: a commitment to innovation and adaptability that has been consistently demonstrated for over 35 years now.

It is with that in mind that IFCs are seeing the ESG momentum become an industry sector in its own right and indeed, the BVI has seen a significant uptake in the number of fund vehicles and joint ventures formed and launched this year with a green and sustainable focus.

IFCs: nurturing sustainable finance and ESG projects

The in-flows and out-flows of vital capital through BVI vehicles has facilitated domestic investment in homes, factories, hospitals, railways, broadband, machinery, entrepreneurs and a host of other assets which otherwise would not have found proper funding.

The BVI's robust legal system provides not only the neutral platform, but also a critical layer of protection for global investment to take place into these emerging economies.

What's becoming more and more clear though, is that we need to commit to ensuring that sustainable finance truly works. To do this, the regulation in this area needs to be smart – flexible to meet the challenges without putting up roadblocks, but still penalising irresponsible behaviour at a systemic level.

Such regulation doesn't need to be onerous, and for the BVI this fits well with its robust regulatory framework that provides protection, without unnecessary complexity.

From the side-lines to centre-stage

In the last five years, the importance and value placed on sustainable finance has increased dramatically and shows no signs of slowing down.

IFCs have always looked to provide the critical framework to facilitate the efficient flow of capital that the global economy needs, and their role now has never been more important. IFCs are ready to play their part in supporting the transition to more sustainable investing. ■

Phil Graham is Global Head of the Investment Funds & Regulatory Department at Harneys British Virgin Islands

Sitting between two stools?

Christian Valenduc considers the agreement to reform taxation of multinational companies and asks if the resulting tax system will be stable?

Last July, an important agreement was concluded under the auspices of the OECD and the G20 to reform international corporate taxation. The rules for international taxation have been considered, since a long time, as out of date. This enables multinational companies to reduce their tax bill, what is largely considered as unfair and inefficient from an economic point of view.

Following the agreement on measures to counteract base erosion and profit shifting (BEPS) in the autumn 2015, the taxation of digital economy has been put on the agenda. The recent agreement has however a broader coverage.

It consists in two pillars. The first one is on the allocation of taxing right and will partly redistribute the tax base to 'market countries' what will reduce tax planning and move the tax base out of low tax jurisdictions. The second one is on a minimum level of effective taxation.

Lines have been shifted. From a political point of view, the changes are significant. But the international tax system seems now to be seated between two seats. The prevailing rules have been adjusted at the margin.

Consolidation and formulary apportionment have been introduced, but to a limited extend, and coexist with the basic rules of tax treaties and transfer pricing. Is it the achievement of BEPS? Or the first stage of new era, with more radical changes in the future? The debate is far from over.

On 5 June 2021, the G7 reached agreement on a minimum taxation rate for multinational companies. The second stage took place on 1 July 2021, 130 (Now 134) of the 139 (Now 140) members of the 'inclusive framework'² approved the agreement.

Among these 140 members are 66 developing countries and most tax havens. This was described by the press as historic. A few weeks earlier, on 18 May, the European Commission had published a Communication on business taxation for the 21st century, which also supports fairer taxation and a reduction in tax competition.

Are the lines definitely shifting? In a G20 meeting at the heart of the economic and financial crisis, President Sarkozy, commenting on the decisions of the Head of State, stated *"It is the end for tax havens."* Despite that, Panama papers and Dubai papers shed the light on large tax evasion practices later on.

In terms of principles, it is the first time that a formulary apportionment approach will, albeit partially, replace transfer prices in the determination of taxable profits at the international level

But the 163 members of the Global Forum on Transparency and Exchange of Information for Tax Purposes - another body working under the auspice of the OECD and G20 – have committed to automatic exchange of information and have engaged in a peer review process to check the compliance of its members.

Regarding corporate income tax, it is worth mentioning that, at the start of this century, the European Commission confined its comments on taxation to stigmatising 'tax obstacles', such as barriers to the internal market while the policy stance is now on fair taxation.

Background

International taxation is based on very old rules, some of which date back 100 years. These rules come from a time when the proportion of goods traded within multinational companies was low and trade was a matter of clearly identifiable intermediate goods or finished products. It was easy to establish where a product was manufactured, where an economic activity gave rise to a profit and the residence of a shareholder.

A company established itself physically in a country in order to sell and make profits there. These days, a company can make profit in a country without being established there. A given final product incorporates parts that may be manufactured in different places. Intangibles have become significant, in terms of both company assets and in the design and manufacturing processes of a good.

A large proportion of trade takes place between companies in the same group and applying the market price to them – the basic rule for transfer pricing – has become a challenge, when the main point is the singularity of a particular part of the product.

In this context, it is an economic fiction to regard the various companies within a multinational group as separate entities, even if this is still in line with the legal reality: they are parts of a whole.

Tax avoidance has swept into the gaps in the current system. By exploiting transfer prices, the location of intangible assets and their income stream, and the financing structures of the group's businesses, multinational companies shift the tax bases to low-tax jurisdictions and/or take advantage of preferential regimes established in countries with 'normal' tax regimes, primarily patent boxes.

In this way they can significantly reduce their effective taxation. This leads to downward pressure on corporation tax revenue and unfair taxation. Beyond these strictly tax aspects, their dominant position may be economically ineffective (Sorbe and Johansson, 2017).

From the BEPS plan to minimum and destination-based taxation

In 2013, the OECD and the G20 countries took stock of the situation and adopted an action plan against Base Erosion and Profit Shifting known as the BEPS plan.

This plan was based on 15 actions, intended to address the various aspects of the problem: taxation of the digital economy, transfer pricing rules, preferential regimes, the improper use of bilateral agreements to secure zero taxation, excessive interest deductions and hybrid arrangements. The action plan also provided for an economic evaluation of the extent of tax avoidance and its impact.

In 2015, an agreement was reached comprising three decision-making levels, four binding minimum standards, an upgrading of the transfer pricing rules and basic rules for international agreements and recommendations for best practices, in particular to neutralise the effect of hybrid arrangements and counter excessive interest deductions.

The European Commission took this up and, soon afterwards, put forward a proposal for an Anti-Tax Avoidance Directive (ATAD), which went further in some areas, including as regards interest deductions. The proposal for a Directive was adopted within just a few months, which is an extremely rare event in tax matters.

At the OECD/G20 level, the 2015 agreement left the issue of the digital economy unresolved. Work on this subject resumed, and an interim report was published which, among other things, included a very interesting economic analysis of business models.

This report raised some important points regarding taxation in the digital economy, in particular the role of the market in value creation and the economic rent received by the sector but did not draw any conclusions about reforms.

The discussions stalled but later resumed, structured around two pillars: Pillar One on profit allocation to the country of the market and Pillar Two on minimum taxation for multinational companies.

Pillar One is designed to address the problem of the digital economy. One of the latter's characteristics, highlighted in OECD is the capacity to generate profits in a given country without the company having a physical presence there, in particular by creating value from the user data that it collects.

Despite basic rules for allocating taxing rights that are based on the concept of 'permanent establishment', the fundamental principle of the BEPS project is that, to counter profit-shifting, the tax must be levied where value is created. The role of the market in value creation provides a policy rationale for destination-based taxation when there is no physical presence.

But how is this to be determined? The basic idea is to tax part of the 'non-routine profit' in the country of the market. Discussions on Pillar One swing between two models: building on the transfer pricing rules or opting for the unitary taxation model and fixed apportionment of profits (formulary apportionment). Behind this seemingly highly technical alternative lies a fundamental choice that we will briefly discuss later in this article.

Regarding scope, the debate was between targeting the GAFA (Google, Apple, Facebook, Amazon) companies or having a broader scope, with no distinction regarding the economic activity. The debate on the scope is inevitably connected to the policy rationale for a destination-based taxation.

In a conservative view - limiting departures for current rules - destination based taxation should be limited to the case in which there is value creation but no physical presence. Those who promote destination-based taxation as such would call for a larger scope.

Pillar Two is intended to establish a minimum taxation level without removing the right for each country to determine its tax rate. The basic idea is as follows: if, in a given country, the effective taxation of a subsidiary of a multinational group is below a critical threshold (say 15%), the country of the parent company may tax these profits up to the level of the difference between the effective rate and the 15% threshold, even if the profits have not been distributed to the parent company.

There are two rules to achieve this: an 'income inclusion rule' and a 'denying payment rule', according to which payments from a high-taxation country to a lower-taxation country can be denied. The income inclusion rule gives taxing right and allocates tax revenue to the residence country while the "*denying payment rules*" does it for source country.

Discussions stalled in late 2020 because of the position of the Trump Administration, but the change of presidency opened up the way again. The Biden Administration was very quick to table new proposals. Under the final agreement, Pillar One will apply to 100 largest multinationals, irrespective of the nature of the economic activity, with a threshold of US\$2 billion of consolidated turnover and a profitability threshold of 10% to determine the excess profit partially attributable to the country of the market.

For Pillar Two, the agreement reached within the inclusive framework refers to a rate of 'at least 15%', to accommodate with the intention of the US to increase the CIT rate to 21%.

Discussion and assessment

A key characteristic of the agreement is that it departs from current rules in significant ways while not fully implementing reforms suggested by tax economists, such as destination-based taxation, cash flow taxation, formulary apportionment, or coordination instead of competition in tax policy setting.

Taxing in the country of the market had already been proposed by economists under the name 'destination-based cash-flow tax'. It was also part of the Trump Administration's initial tax reform proposal, but was later abandoned³.

A destination-based cash flow tax would incorporate two fundamental changes compared to an usual corporate income tax: taxation of cash flow rather than profits and taxation in the country of destination rather than in the country of production. Both elements are partially to be found in the Pillar One proposal and agreement.

In the case of the former, we are not talking about cash flow taxation as such, but a mechanism that ends up with a partly similar result. A cash-flow tax has the effect of exempting the normal return on capital⁴ and limiting taxation to the part of the return constituted by the economic rent ('excess return').

Pillar One simply separates the return into two components with a part of the 'rent' allocated to the country of the market. The agreement builds on transfer pricing concepts, that make a distinction between 'routine' and 'non-routine' profit.

Those concepts belong in the taxation specialist's toolbox (Devereux *et al* 2019) and applied on a case-by-case basis. It is certainly difficult, if not impossible, to translate into the basis for a new taxation system.

An economist tends rather to speak of the normal return on capital (the long-term risk-free interest rate plus the risk premium) and 'excess return' (remaining component of the rate of return). The agreement still uses the terminology of the transfer pricing glossary but operates in a different way by fixing the profitability threshold that determines non-routine profit.

As regards the second aspect, taxation in the country of destination recognises the principle of value creation independently of a physical presence of an economic entity in the country of destination. This point is particularly welcome for taxation of the digital economy.

From an economic point of view, this kind of taxation formula is superior to sales taxation which is independent of profitability. The other advantage is the lower mobility of this tax base: sales to final consumers are less relocatable than production, which, for its part, is less relocatable than the location of the intangible assets, currently a determining factor for the taxation of companies in the digital economy.

A too small step towards unitary taxation?

By defining the rate of return separating 'routine profit' from 'non-routine profit' and the proportion allocated to the country of destination on a fixed basis, Pillar One is taking a step towards unitary taxation.

This comes down, in actual fact, to a formula separating profitability into two components, allocating the first on the basis of the transfer pricing rules and the second on a fixed basis according to sales by destination.

There is no denying the conceptual leap: Pillar One introduces a fundamental innovation, in that it proposes to apply the principles of consolidation and fixed apportionment to some of the profit of a multinational group at a broader level than a federal (or confederal) state or than a supranational body such as the EU.

Its excessively limited scope, with very high consolidated turnover and profitability thresholds, is regrettable, but the reform's supporters will respond that the main thing is to take the conceptual leap and, once this has been done, the scope could be extended.

In any event, it marks the end of the absolute reign of separate taxation of the entities of a multinational group and the establishment of their profits by the rules on transfer prices.

Is the minimum tax set too low?

In the context of tax competition that has prevailed over the past few decades, the introduction of a minimum tax by Pillar Two is for sure a significant change. Proposals for a minimum taxation on profits has up to now been disregarded while others forms of minimum taxation are more widespread.

These authors also notes that minimum taxation based on sales or assets has been effective in increasing average tax rate and corporate income tax revenue for governments. Will the Pillar Two agreement have the same consequence? and will this reduce tax competition?

Details – that are still to be negotiated - will of course matter. A much-discussed question is the possibility of leaving certain preferential regimes out of scope.

Patent boxes, which are still compatible with the nexus rules of the BEPS agreement, were safeguarded in this way for a long time. The safeguarding of patent boxes was abandoned in favour of a formula making it possible to leave regimes granting a low rate for real economic activities out of minimum taxation. This option is less detrimental, but it can be argued that it leaves the way open to tax competition.

Pillar Two requires also a common definition of effective taxation requires a common definition of the denominator of the fraction giving the effective tax rate, and hence the profit.

One of the objections of the opponents of unitary taxation was the impossibility of securing a sufficiently broad agreement (in terms of the number of countries) on the definition of the tax base. On this point, the technical discussions on Pillar Two might pave the way for further steps in formulary apportionment.

The effect on tax revenue could be significant, according to the assessment. OECD indicates, for the proposal that was on the table at that time⁵, revenue gains around 2% of CIT revenue and from 1.8 to 3.2% including estimated pockets of low taxed profits in high tax jurisdictions⁶.

Simulations including dynamic effects (reduction in profit shifting, interactions with Pillar one and increase in nominal rates) concludes in effects of the same magnitude but with a different distribution across jurisdictions. The effect of the minimum rate on tax competition is a disputed question. OECD indicates that the result is theoretically ambiguous, based on a recent literature survey. In the post-COVID context, fiscal space for cutting CIT rates will however be limited in a significant number of countries.

Tax competition not only occur through nominal rates but also through preferential tax regimes. The minimum rate will put a limit, as those who result in an effective tax rate lower than the threshold will be neutralised. There will be no interest for multinationals to lobby for the introduction of such regimes and no interest for countries to compete in this way.

So, Pillar Two could make CIT more uniform and less distortive, within and between various jurisdictions.

The debate is far from over

The recent agreement on taxation of multinational companies is for sure innovative and indicates a new tax policy stance favouring fair taxation and putting at least limits to tax competition. Details have still to be negotiated, that could have a significant effect on the outcome.

In terms of principles, it is the first time that a formulary apportionment approach will, albeit partially, replace transfer prices in the determination of taxable profits at the international level.

The tax system that will result from the implementation of the agreement could look as sitting between two seats, what is typically unstable. For the first time, MNE's are considered as a single entity for tax purposes.

Formula apportionment is introduced, but at the margin. Concept of permanent establishment and transfer pricing rules still operate: the agreement only departs from them in limited circumstances.

The debate on the common consolidated corporate tax base in the EU indicates how it is politically difficult to go beyond that. The optimistic view is that the first step is the more difficult and that the agreement might open

the door to more radical changes in the future. More radical, proposals have been made, such as those of Barake, Zucman, Cobham. ■

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Endnotes

- 1. Christian Valenduc was also Head of the Tax Policy Directorate at the Federal Ministry of Finance, Belgium, until the end of 2020.*
- 2. The 'inclusive framework' was established in 2016, on the initiative of the OECD (Organisation for Economic Co-operation and Development) and the G20, to lead the discussion on reforming the taxation of companies at international level. The remaining 6 jurisdictions that – this stage- did not approve are Estonia, Hungary, Ireland, Kenya, Nigeria and Sri Lanka.*
- 3. OECD, 2007, pp. 93 et seqq., and Auerbach et al 2017.*
- 4. The same result can be achieved by an allowance for corporate equity, as implemented in Belgium in 2005 (and recently reformed) and by Italy later (Valenduc, 2008). The 2016 proposal of the European Commission on a common consolidated tax base included a similar provision and it is still included in its recent proposal as a "Debt-Equity Bias Reduction Allowance" (DEBRA). (European Commission, 2021).*
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A sustainability-focused industry looks to its exciting future

Ed Bolen believes that despite challenges from the pandemic the business aviation industry has continued to make progress in moving toward a truly sustainable future



Business aviation has always been characterized by a spirit of innovation and resilience, and we've certainly seen both qualities on display throughout the past 18 months as we've continued to adapt to the ongoing COVID-19 crisis. Despite challenges from the pandemic, however, our industry has continued to make progress in moving toward a truly sustainable future.

Among the most significant advances we've seen of late have been in efforts to promote greater access to sustainable aviation fuels, or SAF. Partly derived from a diverse array of renewable sources, SAF holds the potential right now to reduce lifecycle carbon emissions from the aviation sector by as much as 80 percent, and work continues to improve on that impressive figure even more.

For example, fractional ownership provider NetJets, one of the largest operators of business aircraft, has committed to purchasing 100 million gallons of SAF over the next 10 years. Through this program, NetJets has reduced more than 112,000 metric tons of carbon dioxide (CO₂) and cut more than 43 million metric tons of CO₂ through its Blue Skies initiative enabling customers to offset emissions from their flights.

Earlier this year, the NBAA-championed Sustainable Skies Act was introduced in the US Congress that would create a new, 10-year performance-based tax credit for production of SAF, capped at a \$2 per gallon credit on production of SAF demonstrating a 100% emissions reduction.

As we've seen with other tax credit programs for other alternative fuels, such as biodiesel, such a program would markedly incentivize production of SAF, significantly expanding its availability while also helping to reduce costs for the fuel for flight operations. We're further encouraged to see this measure included in upcoming budget legislation on Capitol Hill.

That said, building a sustainable business aviation sector takes far more than the use of SAF. Our industry has also long embraced such sustainable practices as developing highly-efficient airframes and powerplants; utilizing renewable, reusable and recycled products throughout their companies and flight operations; and building environmentally-responsible hangars and terminal facilities.

Indeed, many Fortune 100 companies that use business aircraft have also set aggressive targets to cut their carbon, water and waste footprints in half by 2030. Further, more have committed to offsetting 100% of emissions attributable to their business aviation flights.

SAF holds the potential right now to reduce lifecycle carbon emissions from the aviation sector by as much as 80 percent

Fixed base operators (FBOs) have also embraced sustainable practices. When the need for a second hangar became apparent, Gary Jet Center (GJC) at Gary/Chicago International Airport (GYI) opted to construct the facility with Leadership in Energy and Environmental Design (LEED) certification from the US Green Building Council in mind, through such measures as a refrigerant-free ventilation system, LED lighting and exterior surfaces and hangar flooring that are moulded in colour and require no additional paint or sealant to finish.

These and other sustainable practices are key to further reducing business aviation's already low carbon footprint, which comprise just 0.04% of global man-made carbon emissions. But our industry has embraced the desire to do even better.

Sustainability is key to our industry's future in other ways, as well, as seen through growing interest and investment by industry stakeholders in the emerging advanced air mobility (AAM) industry. AAM aircraft now in development are powered largely by all-electric or hybrid-electric propulsion systems that offer the promise of drastically reduced CO₂ and noise emissions over conventional rotorcraft.

AAM can operate and complete trips in close proximity to where they begin, particularly in dense urban environments, many of which currently lack efficient transportation options. They also hold tremendous potential for business aviation, offering new options for short- to medium-range trips that, in addition to offering greater convenience, are also environmentally sensible and emissions-free.

Business aviation's environmental focus to be showcased at NBAA-BACE

Sustainability will also be front-and-centre throughout NBAA's upcoming Business Aviation Convention & Exhibition, taking place October 12-14 in the brand new, 600,000 sq. ft. West Hall of the Las Vegas Convention Center in Las Vegas, NV.

Held in conjunction with the show, the second annual Business Aviation Sustainability Summit will spotlight the benefits of SAF and other methods by which business aviation flight operations may reduce their carbon footprint. NBAA-BACE will also feature a new AAM Zone showcasing hybrid- and electric-powered, vertical takeoff and landing (eVTOL) vehicles from both new and familiar names across business aviation.

An impressive variety of business aircraft of all sizes and for all missions, from OEMs including Airbus, Daher, Dassault and Textron Aviation, will be showcased at the show's expansive Outdoor Aircraft Display at nearby Henderson Executive Airport (HND).

Also at HND will be the new NBAA Owner/Single-Pilot Operator Pavilion, where single-pilot operators to connect with their peers and engage with useful, relevant content designed specifically for this key part of the industry.

These exciting exhibits and presentations are in addition to the dynamic roster of featured presenters, education sessions and product displays that are hallmarks of NBAA's annual convention. For those unable to travel to Las Vegas, a full program of valuable educational content will be available for streaming by at-home attendees.

More than two dozen education sessions taking place at NBAA-BACE will be recorded and made available on NBAA's online Learning Management System within 24 hours following the in-person presentation, in addition to several on-demand-only sessions.

Additional content, and other events yet to be announced, will also be made available online. NBAA will also expand its online networking platform to allow business aviation professionals attending the show from their home or office to interact with their peers in real-time video and audio.

Whether you attend in-person or digitally, I expect the 2021 edition of NBAA-BACE to be nothing short of a transformational event highlighting our industry's resilience against adversity, its continued path toward innovation and our embrace of a truly exciting, and sustainable, future. ■

Ed Bolen is President and CEO the National Business Aviation Association (NBAA)



Hydrogen development strategies: a global perspective

The EU, UK, US, China and Japan all expect hydrogen to play a significant role in the decarbonisation of their economies. Alicia García Herrero, Simone Tagliapietra and Victor Vorsatz appraise their approaches

Nearly all global decarbonisation scenarios agree that the future is electric. There are two basic reasons why electrification is the primary and most cost-effective pathway to decarbonisation. First, after decades of subsidy-driven technological innovation, solar and wind have now become the cheapest electricity generation sources in most of the world.

Second, rapid technological advances enabling cheaper batteries, heat pumps, electric motors and similar technologies are now allowing electricity to enter sectors traditionally dominated by fossil fuels such as transport, heating and industry.

As global energy systems become electrified, the key challenge for system operators will be to keep up with electricity demand in real time to avoid blackouts. But as the share of solar and wind power increases, matching becomes more challenging: how do you meet electricity demand when the sun isn't shining or without wind?

One of the two main reasons hydrogen is now 'in vogue' is that, as a chemical energy carrier, it meets the storage and flexibility needs of a renewable energy. Also, hydrogen can be used to decarbonise hard-to-abate sectors, such as heavy industry, trucking, aviation or shipping.

Hydrogen appears to be the perfect complement to renewables in the path to decarbonisation, but only if produced via electrolysis based on electricity from renewables themselves.

Since 1975, global hydrogen demand has grown more than threefold, reaching **70 million tonnes per year in 2018**. It is currently used as a feedstock in either oil refining or ammonia production. On the supply side, hydrogen is currently almost entirely supplied from fossil fuels, which makes it an emitter of **830 million tonnes** of carbon dioxide per year, equivalent to the combined CO₂ emissions of Indonesia and the United Kingdom.

However, renewable hydrogen is now looking increasingly viable thanks to reductions in the cost of wind and solar technology usage. While the production costs of fossil-based hydrogen are currently estimated at €0.8-2.7 per kilogram, renewable hydrogen can already be produced at €2.5-6.3 per kilogram with further cost reductions projected. Given this, countries around the world are gearing up to develop a renewable hydrogen strategy.

Below, we provide a first comparison of the plans in the European Union, the United Kingdom, the United States, China and Japan to draw some initial perspectives on the current status of hydrogen development strategies globally.

Hydrogen appears to be the perfect complement to renewables in the path to decarbonisation, but only if produced via electrolysis based on electricity from renewables themselves

European Union

The EU expects hydrogen to play a significant role in delivering the deep emissions reductions required between **2030 and 2050** to achieve climate neutrality, and for this reason is predominantly focusing on the development of renewable hydrogen.

However, the EU also envisages a temporary use of other forms of low-carbon hydrogen to decarbonise existing fossil-based hydrogen production. Overall, the EU foresees a gradual trajectory for hydrogen deployment in Europe with three different phases (Table 1).

Table 1. The EU's hydrogen strategy

Period		Installed renewable hydrogen electrolyzers (gigawatt)	Renewable hydrogen production (million tonnes)	Main sectorial target
Phase 1	2020-2024	6	1	Decarbonise existing hydrogen production in industry
Phase 2	2025-2030	40	10 (1% of EU final energy demand*)	Take-up in new end-use applications
Phase 3	2031-2050	Large-scale	Large-scale (10% of EU final energy demand*)	Reach all hard-to-abate sectors

**Note: this is the role of hydrogen in EU final energy demand envisaged in different EU long-term energy and climate scenarios. See European Commission (2020), p 56*

Source: Bruegel on European Commission (2020)

The EU strategy envisages two main lead markets for hydrogen: industrial applications and mobility. An immediate industrial application would target the reduction and the replacement of the current fossil-based hydrogen in refineries and in the production of ammonia, as well as the partial replacement of fossil fuels in steel making.

In the longer run, a greater utilisation of hydrogen would fully decarbonise the European steel making process. In transport, hydrogen is promising where electrification is more difficult. In the short run, it can be used in city buses, specific parts of the rail network where electrification is not feasible, or in heavy-duty road vehicles.

The EU sees a role for hydrogen in the decarbonisation of the aviation and maritime sectors. Here, a role may exist for hydrogen via fuel cells, but also in the production of synthetic kerosene and ammonia.

The EU strategic vision is additional to national hydrogen strategies and investments. A number of EU countries – [Germany](#), [France](#), [Italy](#) and [Spain](#) – adopted a hydrogen strategy in 2020

They also committed around [€11.5 billion](#) to hydrogen from 2021 to 2026 in the framework of Next Generation EU, with €3 billion of spending planned in Germany, €3 billion in Italy, €2 billion in France, €1.5 billion in Spain and around €1 billion each in Poland and Romania.

Furthermore, an EU Important Project of Common European Interest (IPCEI) on hydrogen was also [launched in 2020](#) to help accelerate the creation of a European hydrogen value chain. The level of ambition of national strategies varies but is clearly high in some cases (Table 2).

Table 2. EU main national hydrogen strategies: targets and pledged funding

Period		Installed renewable hydrogen electrolyzers (gigawatt)	Renewable hydrogen production (million tonnes)	Main sectorial target
Phase 1	2020-2024	6	1	Decarbonise existing hydrogen production in industry
Phase 2	2025-2030	40	10 (1% of EU final energy demand*)	Take-up in new end-use applications
Phase 3	2031-2050	Large-scale	Large-scale (10% of EU final energy demand*)	Reach all hard-to-abate sectors

Source: Bruegel on national hydrogen strategies

Germany aims to build up 5 GW of electrolyser capacity by 2030, contributing to the national energy consumption goal of **90-110 TWh** by then. This is around 4% of the final energy consumption of Germany under the **JRC 'Fit for 55'** energy scenario. To achieve this, Germany has made €9 billion available through its national hydrogen strategy.

France's plans are even more ambitious with a target for electrolyser capacity of 6.5 GW by 2030 and with €7 billion of public funding up to 2030 to promote hydrogen applications in industry and transport.

Italy has also adopted a national hydrogen strategy, primarily targeting 5 GW of electrolyser capacity by 2030 – or 2% of final energy demand, to be scaled-up to **20% of final energy demand by 2050**.

Lastly, Spain is aiming for 4 GW of electrolyser capacity, to be reached with €9 billion of public and private investment by 2030.

United Kingdom

The UK unveiled its strategy to develop what the government defines as a *“world-leading hydrogen economy”* in August 2021, which identifies hydrogen as a key ingredient for its energy transition, especially in electricity, industry and parts of the transport sector.

On the supply side, the main target is to develop 5 GW of low-carbon hydrogen production capacity by 2030 (similar to Germany and Italy), leading to 20-35% of the country's energy consumption being hydrogen-based by 2050.

On the demand side, the target is to let hydrogen play an important role in decarbonising those sectors that currently use hydrogen based on unabated fossil fuels, such as the chemical industry and oil refineries, as well as residential heating, electricity and certain transport segments.

It is interesting to note the high expectations the UK has on the role of hydrogen in the residential heating sector. It expects around 1 TWh of domestic heating demand to come from hydrogen by 2030, which would allow 67,000 homes to switch from natural gas to hydrogen each year.

The strategy then aspires to rapidly scale up to 45 TWh by 2035, to cover 10% of domestic heating demand with hydrogen by 2035.

On transport, it is important to mention that the strategy does not envisage using hydrogen in cars, but only those segments that will be more difficult to electrify, such as shipping, aviation, trucks, buses and trains.

The strategy estimates the UK-wide hydrogen economy to be worth £900 million and create over 9,000 jobs by 2030, potentially rising to 100,000 jobs and £13 billion by 2050.

United States

In contrast to the EU, the US will only start to develop a national clean hydrogen strategy after the passage of the bipartisan [Infrastructure Investments and Jobs Act](#).

So far, the [Hydrogen Program Plan](#) and the [Hydrogen Strategy](#) by the Department of Energy (DoE) have offered a strategic framework to turn hydrogen into an *“affordable, widely available and reliable”* technology and *“an integral part of multiple sectors of the economy across the country.”*

To fulfil its strategic vision, the US focuses on both fossil fuel-based and renewables-based hydrogen production. Hence, the US plans to utilise carbon capture and storage (CCS) to reduce emissions while still relying on production from natural gas.

The Infrastructure Investments and Jobs Act foresees the creation of at least four *“regional clean hydrogen hubs”* producing and using the fuel for manufacturing, heating and transportation. At least two would be in US regions *“with the greatest natural gas resources,”* according to the bill. One hub would produce from fossil fuels, one would use renewable power, and another nuclear power.

Coal is also listed a potential source. No target to increase the production of renewables-based hydrogen has been included in the bill. Furthermore, the legislation uses a highly debated definition of clean hydrogen, according to which a kilogram of hydrogen produced with CO₂ emissions of up to two kilograms is **defined as 'clean'**.

Similar to the EU, the US envisages the continued and increased use of hydrogen in oil refining in the short term. Additionally, the US aims to employ hydrogen as a portable power storage option.

In the medium term, hydrogen is to be applied to distributed stationary power generation, in fuel cells for medium- and heavy-duty vehicles and in the production of synthetic fuels. At the same time, hydrogen will substitute fossil fuels in industrial processes, for example in the production of steel and cement.

In the long term, hydrogen is expected to be integrated into energy systems, providing mid- to long-term storage, stabilisation services and the coproduction of hydrogen for end-uses other than electricity.

The US notably aims to utilise research and development investments to overcome technical barriers and validate hydrogen prototype applications by providing grants to research and development and demonstration projects.

While public hydrogen investments by the DoE were limited to about **\$150 million per year in 2017**, the Infrastructure Investments and Jobs Act introduces future investments of up to \$9 billion from 2022 to 2026. Hence, US investments are similar to the ones in the Next Generation EU programme.

Out of the \$9 billion, \$8 billion will go to the development of the regional hydrogen hubs using the fuel for manufacturing, heating and transportation. The additional billion will be assigned to research and development and demonstration projects for electrolyzers.

If the US can keep up with its ambitions, the DoE estimates a four- to six-fold increase in hydrogen consumption by 2050. This increase would translate into hydrogen potentially accounting for up to 14% of US total energy demand by 2050.

China

China currently is the world's largest hydrogen producer but not of green hydrogen, as most is based on coal. In addition to more common uses of hydrogen such as feedstock for oil refining or ammonia production, the country also has targets for hydrogen applications in the [transport sector](#).

As part of the recently released 14th Five-Year-Plan, hydrogen has been identified as a prioritised emerging industry in China, with an aim to increase the share of renewables-based hydrogen to 50% of total hydrogen production by 2030.

This represents a significant commitment, considering the country's current reliance on coal for hydrogen production. CCS technologies are also envisioned to play an important role in the decarbonisation of hydrogen production, similar to the approach followed by the US.

Future applications of hydrogen are expected to be specified in a national hydrogen development strategy, still to be published. At the provincial level, Shandong, for example, is aiming to develop industrial hydrogen clusters, in which the different application opportunities of hydrogen are intertwined. Pilot programmes to produce steel using renewables-based hydrogen have also been launched.

Moreover, the provincial plans include accelerated hydrogen refuelling station construction and continued fuel cell vehicle subsidies. Additionally, [market observers](#) expect current subsidies and investment programmes

in the transport sector to be extended to hydrogen delivery and storage infrastructure as well as to CCS and electrolysis technology. However, the extent of these investments also remains unclear until the national hydrogen development strategy has been outlined.

Japan

Japan adopted its *Basic Hydrogen Strategy* in 2017. This strategy envisions using hydrogen in both households and in industrial applications. Moreover, hydrogen is integrated into 10 of the 14 priority technology areas in the Japanese *Green Growth Strategy* published in 2020. Japan's hydrogen strategy is part of the country's desire to become independent of imported fossil fuels.

Japan aims to increase its hydrogen consumption twenty-fold till 2030, from around 300,000 tons currently, to **6 million tons**. This rapid expansion reflects a rise in the share of hydrogen in current primary energy consumption from 0.2% to about 4.5%.

The increased demand is supposed to be covered by 300,000 tons of domestically-produced renewable hydrogen in 2030 and 5-10 million tons in 2050. The remaining demand will be met by imports of natural gas-based and renewables-based hydrogen.

While the share of renewables-based hydrogen in the imports is so far not subject to a quantitative target, domestic production is **aimed to be 100% renewable-based by 2030**.

Similar to China, Japan has been pursuing the application of hydrogen in the transport sector since the 2000s. By 2030, Japan aims to have 800,000 fuel cell vehicles, representing about **1% of currently registered vehicles**.

Interestingly, Japan also foresees the use of hydrogen in the residential sector. By 2030, 5.3 million fuel cell units are expected to supply local power and heat households and power the industrial sector.

To achieve this wide-ranging application of hydrogen in the economy, Japan pursues quantitative targets for cost reductions and power efficiency increases, with significant research and development programmes being linked to these milestones.

Supported by significant public investments, Japan is working on the development of hydrogen infrastructure in the country, accompanied by relevant regulatory reforms, subsidies as well as the establishment of an international hydrogen supply chain, currently being envisioned in two demonstration projects in Australia and Brunei.

Conclusions

The EU, the UK and Japan currently have the most detailed hydrogen strategies, while, despite starting early, China's national strategy remains undefined and unfocused on renewable hydrogen. The US, however, is in the process of formulating its strategy which will be published soon.

When looking at planned investments, Japan, the US, and the EU all project similar levels of per capita public investment. In terms of future applications, all countries aim to deploy hydrogen in industry. The UK focus on residential heating is peculiar compared with other strategies.

All players envision a gradual transition to low-carbon hydrogen, be it by focussing on renewable hydrogen, in the EU and the UK, or CCS technologies, most notably in the US. Japan takes on a special role as it plans an international hydrogen supply chain given the country's limited domestic resources.

All in all, and notwithstanding these differences, it is clear that all players want hydrogen a significant role in the decarbonisation of their economies. ■

ABOUT THE AUTHORS

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Beyond the pandemic

WCR interviews Ray Jones, who says Bermuda can look ahead with confidence thanks to a solid foundation in technology, innovation and business support

The small island territory of Bermuda has set itself some big objectives. Steady economic growth can be hard to maintain, especially in today's environment of unpredictable events and constant change. But with a solid foundation of business and an infrastructure that invites resiliency and innovation, and that promotes self-reliance, there is no reason why Bermuda can't go from strength to strength.

What are your top priorities as you take on the leadership of the Department of Economic Development?

The EDD's mission is: *"to advance the sustainable growth, development and diversification of Bermuda's economy."* My team and I are ready to take on the challenge, keeping our eyes on the dual priority of job creation and revenue generation.

In more practical terms, the EDD is working on achieving Bermuda's economic development and diversification goals by prioritising the competitiveness of the Island globally and by ensuring its attractiveness internationally as the place to move to individually and organisationally.

In relation to the pandemic, as the world turns the proverbial corner, governments worldwide will be able to focus their attention to local and international post-COVID recovery: looking beyond the pandemic.

In Bermuda, we will do that by making sure the jurisdiction continues to build on its solid foundation with respect to innovation, the tech economy, and unrelenting support for small and medium-sized enterprises.

Economic diversification is a key element of economic development. How is Bermuda advancing in that area?

If anyone did not know this before, the pandemic has proven to all that a lack of diversification can increase an economy's vulnerability to environmental shocks. That would jeopardise the jurisdiction's long-term economic growth and sustainability.

In Bermuda, we are building on a long history of innovation and adaptation - and of taking a wider perspective when it comes to economic diversification. Not only is the EDD considering shifts towards more varied domestic production, we are also deliberately placing self-sufficiency and self-sustaining growth as the true north for our compass.

Bermuda is not just a beautiful island. It also wants to be the home of innovation, the Silicon Valley of the Atlantic Ocean, the Davos of the deep blue sea

This is leading us to explore diversification in many forms: encouraging the creation, development, trade, and export of new goods and services, shifting/using existing goods and services to new markets, and finally, upgrading existing goods and services in innovative ways.

What is Bermuda's strategy in those areas?

Bermuda has been successful in defining its strengths and opportunities and appreciates, as economies worldwide have, that it must, now and incrementally, move away from merely making more of the same thing.

The government is therefore working with the private sector to identify niche areas where Bermuda can capitalise on previous successes as it builds new sectors. It is also working closely with foreign investors who recognise its strong suits and who wish to partner in order to develop these strengths even further.

What is drawing foreign investors to partner with Bermuda?

Bermuda is not just a beautiful island. It also wants to be the home of innovation, the Silicon Valley of the Atlantic Ocean, the Davos of the deep blue sea.

For over a year now, digital nomads have been taking advantage of the jurisdiction's one-year residency visa, which presents significantly favourable terms and renewal options.

Companies are also domiciling and building a footprint of essence in the jurisdiction. They are benefiting from several arms of the local economy that strive to make their transition on-Island seamless and advantageous.

Corporate service providers are giving foreign investors timely and relevant strategic and tactical advice, regulators are collaboratively helping clients along the way, and the Government is ensuring that on-coming organisations find here a technology and start-up friendly government that is befitting their ambitions while remaining in line with best-in-class international standards of fiscal transparency. ■



Ray Jones, Director of Bermuda's Department of Economic Development

Diversity and gender equality: do we really want it?

David Bernard asks why, if we are losing the battle for gender equality in the FTSE 100, we should expect to see diversity, equity and inclusion successes across a much wider cross section of the business community

We live in a world where equality, in numerous forms, continues to reside at the forefront of many people's minds. From gender to race and everything in between, things have certainly improved, but there is still a very long way to go.

Today, there are a mere [six female CEOs](#) in the UK FTSE 100, with the average male CEO earning 17% more than the average female CEO. Gender equality has been in the spotlight far longer than other protected characteristics such as race, religion, sexual orientation, disability, age and it continues to remain prominent.

A race to equality and diversity

The business case for gender, cultural and ethnic diversity is strong, and is only getting stronger.

Since 2015, McKinsey has conducted [extensive research](#) and produced compelling reports that demonstrate ironically, whilst the business case for diversity is robust, international progress is weak.

The latest reports show that those pushing ahead with gender diversity are 25% more likely to financially outperform companies in the bottom quartile. What's more, for ethnic and cultural diversity, the top quartile companies are 36% more likely to be profitable than bottom quartile companies.

The UK (aside from the US) leads the way with gender equality on executive teams. But representation here only grew by 5% between 2014 and 2019. McKinsey's global data set for 2017-2019 shows a mere 1% increase. This pitiful and indeed slowing progress is a problem. We need to do better.

Yes, the UK and the US lead the way with gender diversity, but there is still a long way to go, and neighbouring countries need to make quick and impactful changes.

And, let's not forget, whilst gender equality is of pressing importance, businesses and leaders should ensure that other cases, such as culture and ethnicity, are considered no less important.

A knock-on effect

I see a lack of diversity and equality in workforces as a psychological manifestation of who we are. We, as are all humans, are programmed to find differences in our perceptions distasteful. We just do not like change - even if we adapt to it in the end - and even 'feedback' on our actions is naturally offensive to us.

So, with that in mind, it is inevitable that we have ended up in a situation where we have an echo chamber of talent that isn't necessarily supported by objective performance data.

... as the UK economy stirs back to life within what feels like the closing chapters of 'crisis', we can also bring the equality gaps to a close with renewed urgency

The problem manifests itself everywhere; from the executive hires in the world's biggest companies to the latest bartender pulling pints at the local pub.

Conventional hiring and recruitment, such as only using a CV to identify and rank talent, is part of the root cause of bias decision-making (however implicit it may be) because the initial filter sifts candidates based on their upbringing, education, experience, or even appearance.

We are, thankfully, at the start of a movement of change. But this is a problem that is hundreds, or maybe even thousands, of years in the making. We need to unpick that problem with a collaborative and collective effort.

COVID-19 impacted diversity, equality and inclusion progress

There has been a polarisation of diversity, equality and inclusion efforts, also known as DE&I, as a fallout of COVID-19, the ongoing pandemic and the ensuing lockdowns.

In the spring of 2020, companies rightly turned their attention to the COVID-19 crisis. Most have continued to do so – either to stay afloat or even gain a competitive advantage – which meant DE&I became more of a focus for some whilst a matter of less significance for others.

Those that deprioritised DE&I - perhaps as a short-term measure to consolidate HR and hiring resources - have weakened their position; whether that is in their ability to retain, recruit, or mobilise their workforce, or even all those stages in the talent lifecycle.

Diverse talent is often most at-risk during times of challenge and hardship, as downsizing can have a disproportionate impact on roles held by those from more diverse backgrounds. And with increased home-working

practices, all manner of inequalities can manifest in ways that will hit the bottom line and badly impact minorities.

For example, those who are managing childcare responsibilities during periods of isolation or school closures or those who are living in shared accommodation may be frequently working against the odds in order to keep pace with their peers.

Without a diverse collective of perspective catering to a diverse workforce, these problems can multiply to cripple performance from the ground up.

The acceleration of DE&I

The generational leap of tech-first remote working for so many companies provided an opportunity to build inclusive and agile cultures. Though we may be coming out of the 'crisis', there remains a golden opportunity – and one that businesses should seize.

Traditional management structures, reinforced by physical office environments, have been fundamentally changed forever - even if we see a hybrid home-office working pattern become the norm from this point onward.

With this revolution, HR departments find themselves in a situation a pathway to achieving diversity and inclusion goals seems more realistic.

Make or break: what's next?

There is no silver bullet. There is much to consider and even more to do. But, with a few simple changes, real and meaningful progress is possible. What encourages me is that with all the companies that I speak to, particularly

within the UK, there is almost wholesale agreement that this is an important issue - notwithstanding the economic arguments.

However, the same cannot be said for all other countries across the globe. The most common question I receive from those who recognise the criticality of this however is, *"But, where do we start?"*

And to that, my response is always the same; *"What is the data telling you? What is your workforce saying about your DE&I efforts?"*

We must know what the scale of the problem is before we can tackle it. Every single company is unique, and the manner of their ideal solution is unique to suit.

Once the problem is identified, I recommend a few ideas that can be considered to start spinning the wheels of change:

1. Get unbiased views of candidate potential (internal and external)
2. Consult with your DE&I team, committee, or lead when publishing job descriptions
3. Implement DE&I training for your workforce
4. Offer remote working opportunities where practical and appropriate

I'm proud that AssessFirst continues to help companies of all shapes and sizes with their DE&I goals through our data-led psychometric technology. We practice what we preach with our own remote workforce and using this technology as part of our own talent lifecycle management. But I recognise that fantastic technology is most effective when it is embedded as a part of a wider reaching strategy.

I have hope for the future, though there is ongoing work to do, and there will be for quite some time. But as the UK economy stirs back to life within what feels like the closing chapters of 'crisis', we can also bring the equality gaps to a close with renewed urgency. ■

David Bernard is CEO and founder of AssessFirst

Working in partnership with a handful of partners in the UK, we created a Diversity and Inclusion strategy guide. Whether it is for you or a colleague, you can get it for free by clicking the [link](#)

Equal pay?

There is a gender pay cap in sport. Robert Oulds examines the evidence and finds financial disparities are market driven, and not entirely due to an innate prejudice

Arguments over the inclusion of athletes that identify as women, but were born male, has overshadowed the more traditional inequalities in sport, namely the gender pay gap. The patriarchy, if it exists, and certainly some sports bodies are dominated by men, could not have obscured that issue better if they had tried.

Nevertheless, disparities in earning still exist. Prize money in major international football tournaments [illustrates](#) the difference in winnings.

Change however is coming. In 2019 FIFA [announced](#) that they will be investing a staggering \$1 billion in the women's game in the build up to the year of the Women's World Cup. That tournament, which will be held in 2023, and takes place in Australia and New Zealand, will also see the [winnings pool doubled](#) to \$60 million. Still far from equal. This disparity need not be so; other sports have led the way.

Tennis managed to equalise competition earnings of those winning its male and female major competitions. The prize money for grand slam tennis tournaments has been levelled. Such a change ignored the fact that the women's game has less matches, they play the best of three sets, as opposed to the best of five in the men's branch of the sport.

According to the labour theory of value, female tennis players are earning more than their male counterparts; perhaps that is what they call progress. In the United States, female tennis players earn more than their American [male counterparts](#). This gap between the sexes is due to the market rewarding the dominance of Serena Williams.

Football has a different culture and values its male and female professional participants differently. In England there are twelve teams in the FA Women's Super League.

Many in the media blame any difference in pay between male and female athletes on sexism. However, this does not prove to be the case on closer examination. A good example of this is the [difference in wages](#) of the US men's national soccer team and the US women's national soccer team.

Soccer is the slang term for Association Football. It originated in England's public (private) schools and is used in the English-speaking world, bar Britain and New Zealand. Both teams have different pay structures, while the men's earnings depend heavily on game bonuses women are paid a guaranteed salary with benefits.

"US Soccer guarantees WNT contracted players receive \$100,000 per year...atop which they can earn from game and tournament bonuses." There is no similar salary guarantee for the men's team.

Many in the media blame any difference in pay between male and female athletes on sexism. However, this does not prove to be the case on closer examination

Players on the women’s team also receive *“a robust package of benefits that are not provided to the men,”* including *“fully-paid health, dental and vision insurance; severance; a \$401,000 retirement plan; paid maternity leave; guaranteed injury protection; and assistance with childcare.”*

According to CBS *“it’s a pay structure the women themselves wanted.”* When the women’s team was asked if they want the same pay structure as the men they reply *“We want the same [bonus] money that the men are making, exactly.”*

If the women’s team players made the same bonus money as men, this would not be equal pay when added with the *“guaranteed salaries and range of fully paid benefits”* (which men do not receive).

Table 1. World Cup earnings growth

	2010 Men’s World Cup	2011 Women’s World Cup
Prize money	\$420 million, \$30 million winner’s share	\$5.8 million, \$1 million winner’s share
	2018 Men’s World Cup	2019 Women’s World Cup
Prize money	\$400 million, \$38 million	\$30 million, \$4 million winner’s share

According to an independently reviewed fact sheet (covering the period of 2010-2018) released by the President of the US Soccer Federation (USF), the USF paid the women's team \$34.1 million (salaries and bonuses) while the men's team received only \$26.4 million.

However, even if the men's team earned more than the women's this would not mean that this was the result of sexist discrimination against women. Between 2009 and 2019, the women's team *"brought in \$425,446 of gross revenue per game in comparison to the men's team, which brought over twice that amount (\$972,147 per game.)"*

The difference would be the result of the men's team being more *"commercially successful."* When salaries and benefits paid by the USF are taken into account, the reverse is true women earn more than men.

Back in England, despite the women's game being granted more airtime and rewards given to fans that watch their club's female players, the pay of women outside the USA still lags the largess thrown at their male counterparts. Little more can be afforded. Salaries in the men's game are [unsustainable](#).

Until such time as the demand to see women's football matches that of the men there will be little possibility for a substantial increase in pay for female players. The lion's share of the rewards for partaking in the beautiful game, once known as the working man's ballet, will remain skewed towards the men.

Familial, cultural, and social norms determine what sport one is interested in. Should one be interested in Rugby Football the region where a fan is brought up largely determines which code one subscribes to, namely League or Union, 13 men or 15. The example of the United States shows that the financial disparities are market driven, and not entirely due to an innate prejudice.

England's Lionesses may find that like women's tennis the real rewards will come from sponsorship, where they will be employed, like their male counterparts, by corporations for marketing opportunities promoting brands.

It will take a substantial change in the culture of the country for women's football to be of greater prominence. Both men and women will have to change what sports, if any, excite them.

Such a radical shift is not on the immediate horizon; sporting traditions and heritage are deeply ingrained. However, soccer was once seen as an almost exclusively female game in America, and now the men are muscling in.

Shifts can happen, but in the USA it took the brave and highly rewarding decision by FIFA to award the honour of hosting the 1994 World Cup to America to accelerate male interest in soccer. There has also been substantial and sustained investment in bringing over footballing superstars to play in Major League Soccer. FIFA's investment in women's football is not enough.

For the time being female footballers will have to rely on a deft use of twitter, and other social media, to burn their presence onto the psyche of the paying public, and consumers, for them to accrue benefits that are more than just a fraction of what men are given.

Perhaps then women will reap the rewards of football. Yet, as business guru Chester L Karrass stated, "*...you don't get what you deserve, you get what you negotiate.*" ■

Robert Oulds is the Director of the Bruges Group

Could the Employment Bill pose a risk to businesses?

With the Employment Bill back in the limelight, Amanda Badley urges employers to find a synergy between business need vs business want

The proposed Employment Bill (Bill) has been in the pipeline for some time, being first announced in 2019. One of the fundamental elements of the Bill is to make flexible working the default position; effectively flipping the current situation in which employees' only have a *right* to request flexible working.

Over the last 18 months, the Bill was placed on the back burner, as a result of the COVID-19 pandemic. However, the Labour party are now pushing for the Bill to be at the forefront of the Employment Law agenda.

The pandemic has forced both businesses and their employees to work differently, changing the working landscape considerably. Unsurprisingly, many more people (including business owners) now want the option to work from home, at least for part of their working week.

The Office of National Statistics (ONS) has reported that the number of people working from home in 2020 [increased to 37%](#), up from 27% in 2019. Further, job adverts [referring to homeworking](#) are three times above that which were recorded in February 2020, suggesting that many businesses are going to adopt permanent hybrid working arrangements for their office-based staff.

This trend is likely to encourage the implementation of the Bill and therefore flexible working as the default position. It is therefore important that organisations consider what this means for them, and how they will navigate the potential difficulties this presents.

When speaking with clients, I advise them to first consider how flexible working fits with their business operations currently. While it is important to embrace the changes on the horizon regarding flexible working, there has to be a balance with ensuring businesses continue to run efficiently and effectively, as there is no one size fits all.

Employees are likely to push for flexible arrangements that suit their lifestyle, or give them a better work/life balance, and while a positive attitude from employers is key when considering these requests, compromise between the parties is essential. There may also be times where flexible working simply cannot be accommodated, and others, where the employer has no justification for not permitting it.

... it's more important now than ever before, for employers to demonstrate themselves as innovative and forward-thinking in the face of continual change, while helping with the retention of morale, motivation, and mental health in the workplace

Whilst my experience is that most employees have, at a minimum, wanted to return to office- based working on a part time basis, there are still employees that are reticent to return to office working. This has been for a number of reasons; however, health and safety concerns are prominent due to the pandemic. Some employees have raised issue with working alongside colleagues who are not vaccinated.

Unsurprisingly, employees who are vulnerable or pregnant have also raised concerns about returning to the workspace. More generally, employees may have strong views about the policy decisions of the employer, for example, lateral flow testing and the wearing of masks. These latter issues have been raised with me regularly.

I always reassure clients that juggling government guidance and regulations will be difficult and there will always be employees to challenge policy decisions made. As long as employers have well thought out policies and procedures in place to protect staff, and they have justifiable reasons for requesting employees to return to the workspace, they should not be afraid to request them to do so.

When approaching the concept of flexible working, there are certain considerations and steps that I recommend businesses take:

1. Approach flexible working with a can-do attitude. Remember that currently, you can always trial an arrangement and if it does not work, then there is no obligation to make it permanent.
2. Forward thinking is key – It is important that time is taken to consider how the business can effectively run if all or the majority of its staff had some type of flexible working arrangement. If consideration is not given from the outset, there is a risk that decisions will be made without thought for the business as a whole.

3. Applying a consistent approach to dealing with flexible working is crucial to minimising the risk of discrimination claims. If requests will not be dealt with centrally, managers should be given training and guidance to ensure that the business is operating as one.
4. Be reasonable. If your employees can work successfully under flexible arrangements, this could be a positive for a business and could improve morale and productivity.
5. Don't forget mental health. Out of sight, out of mind is a concept all too familiar to many. The pandemic has certainly seen businesses adapt to virtual means of communication and this should not lapse.
6. Where necessary, undertake risk assessments. These may be in the workplace or at the employees' home but either way, the employer has a responsibility to ensure a safe working environment for all its staff.
7. Put policies in place that deal with all of the above. This way employees will know where they stand and be reassured that everyone is being treated equally. If adopting hybrid working arrangements, having a specific policy that sets out how this works is advisable.

The way in which people work has drastically changed over the past two years. With offices being redesigned, the increase in remote Zoom meetings and many businesses undergoing structural changes, it's more important now than ever before, for employers to demonstrate themselves as innovative and forward-thinking in the face of continual change, while helping with the retention of morale, motivation, and mental health in the workplace. ■

Amanda Badley is a Partner at BHW Solicitors, where she heads the Employment & HR department

Paradoxical leadership

Ecosystems are fluid and complex. Steven Poelmans, Bart Cambré and Wouter Van Bockhaven focus on how common elements across ecosystem traditions challenge conventional leadership wisdom

We live in a complex, rapidly changing world that constantly confronts us with new challenges. Governments, companies and social profit organisations are constantly looking for new solutions. Often, they do so from within the structures and with the methodologies that have proven their worth for decades. This is understandable. Why should what worked yesterday and led to good results, suddenly no longer work today?

Established frameworks, such as the make, buy, or ally principles, are and will remain useful. In more and more situations, however, it is gradually becoming clear that *“more of the same”* no longer works. Some issues turn out to be so complex that a conclusive and effective answer can only come from an equally complex framework.

For the challenge of *“wicked”* problems such as global warming, migration, fighting pandemics and poverty, we need to tap a different keg, a network keg and the perspective of an ecosystem. This constitutes another framework, and it marks the beginning of the ‘join’-era¹.

Because knowledge and competences are spread out over different organisations, only the joint forces of otherwise independent organisations can work towards finding effective solutions to wicked problems. Solutions that would otherwise not be found.

Ecosystems

The wicked problems faced by today’s leaders require mental models other than the ones that created them. Ecosystems provide a mental model attuned to the simultaneous needs for variety and alignment to tackle wicked problems in global networks.

An ecosystem lens challenges conventional management wisdom by replacing simple, zero-sum oriented action principles with complex, co-opetitive and generally paradoxical ones.

Even though it's hard to pinpoint exactly what an ecosystem is, amid a wilderness of viewpoints on an inherently complex concept, this article tries to draw implications for leadership by focusing on how common elements across ecosystems traditions challenge conventional leadership wisdom. These challenges require business schools to equip leaders with new mental models.

Ecosystem leadership involves complex goal setting with no authority and mere partial reach, unpacking goals into simple action rules to nonetheless stimulate local initiative, all while aligning with initiatives across subsystems

In line with ecosystems' open, yet functionally bounded scope², their interdependent yet adaptive co-evolution³, their emergently distributed yet intentionally market-centric self-organisation⁴, and their cross-sectorally diverse, yet externality-reducing reach⁵, we offer the following non-exhaustive definition of an ecosystem as an open but self-contained, functional multi-stakeholder system of interacting and co-evolving actors and institutions, characterised by a meso-specific goal-directedness and partial formalisation.

Leadership in ecosystems faces specific challenges as it implies mobilising others to act in the ecosystem's interest. Ecosystems' partial formalisation⁶ implies that leaders need to motivate others who are not contractually bound to follow.

This calls for trust-building, by being empathic and fair to create goodwill, and by formulating a shared vision that engenders a deep meaning and direction. The neutrality required for trustworthiness in turn conflicts with the expected drive for fast results, as quick wins provide social proof to mobilise ecosystem followers. Ecosystem leadership is most relevant when entire industries or regions need to be mobilised to face wicked challenges.

To achieve critical mass, leaders are required to support an innovative coalition of the willing, without aggrieving the late majority and to be patient for returns, but impatient for tangible project results.

Their legitimacy derives from their ability to broker exchanges and empower others to take initiative. Such servant leadership is paradoxically the indirect way to push others for aligned collective action, learning and purpose-driven development in the ecosystem.

Ecosystems cannot be "*pushed*", but rather effectuated by "*setting a rhythm*" for the ecosystem to let a shared interest, commitment and results grow from interactions between members.

Moreover, the leadership role in complex systems is polycentric and distributed across self-organising subsystem hubs. As such, ecosystem leadership involves complex goal setting with no authority and mere partial reach, unpacking goals into simple action rules to nonetheless stimulate local initiative, all while aligning with initiatives across subsystems.

Enacting as “one” in this way is, furthermore, set in an ecosystem, whose composition, context and one’s own role in it is in constant flux.

For leaders at business schools, we argue that the challenge is even more profound. As knowledge hubs and leadership beacons in the ecosystems around them, they have a responsibility to prepare their own organisation, as well as the ecosystem, for the new realities ahead.

Their role is that of the ideal-typical ecosystem leader who enacts the required mindset and practices for other hub leaders to follow, signposting the transformations needed and reporting on the ecosystem’s current state.

They are the chairmen of the virtual, distributed board that sets the ecosystem’s direction and designs its governance without formal authority to do so, nor with any of the other formal governance levers that boards typically possess.

As such, business school leaders must become masters of paradox, embracing the simultaneous yet paradoxical needs for emergence and intentionality, for direction and distributed initiative, and for increasing connectedness and interdependency while remaining adaptive.

Table 1. Paradoxes of leadership in ecosystems

Competition	Cooperation
Autonomous, open, distributed agency	Interdependent agency
Short-term drive for results	Long-term vision transcending organisations
Organisational benefits	Shared benefits of the ecosystem
Strong Initiative to create an ecosystem	Distributed leadership to maintain an ecosystem
Intentionality	Emergence
Context as constraint	Context as enabler

Table 2. Paradoxical leadership behaviours in ecosystems

Self-centeredness	Other-centeredness
Keeping distance and perspective	Seeking closeness and connection
Uniformity in application of policies, rules	Individualisation of solutions
Enforcing work requirements	Allowing flexibility
Keeping control	Delegating autonomy
Informing, persuading	Inquiring, listening
Task-orientation	Relation-orientation
Focus of exploitation	Focus on exploration

Leadership paradoxes

In order to meet the complexity and multiple paradoxes characterising their context, leaders of ecosystems will need to reflect this complexity in themselves and develop paradoxical leadership.

Based on research in the NeuroTrainingLab™ we have proposed a theoretical framework of paradoxical leadership behaviours⁷. Everything starts with *“integral leadership complexity”*, the interaction and integration of cognitive, emotional, and social-cultural complexity in the individual.

This is a necessary condition to develop behavioural complexity, function of one’s behavioural *“library”* or *“repertoire”* of accumulated, visceral, first-hand experiences, scripts and protocols of how to actually deal with situations that require simultaneous and contradictory approaches and how to respond to a host of ambiguous and contradictory forces, including the simultaneous presence of opposites.

Effective leaders can draw from a broader repertoire of potentially conflicting leadership behaviour than less effective managers. Behavioural complexity will, in turn, determine the level of competency of the person in balancing multiple paradoxical behaviours, which will co-determine leadership effectiveness, both in terms of getting results and building trust. We can distinguish eight dimensions of paradoxical leadership behaviours (see Table 2).

Switching between paradoxical leadership behaviours requires cognitive ability, flexibility and self-regulation, all needed for balancing the paradoxes; to be calm and mindful to take perspective and consider the different sides of multiple paradoxes, and switch between different poles of paradoxes just at the right time.

These are all executive functions, run by the resource-intensive pre-frontal cortex. This means that self-regulation is much needed, but also costly, as it can result in loss of time, energy resources, fatigue and stress.

This explains why managers can run out of fuel quickly and fall back on automatisms to save resources, getting stuck in one leadership style, the one that is most familiar and easy to execute.

Implications for research and practice

As extant research on ecosystem leadership is predominantly conceptual and lacking synthesis, opportunities for future research are vast. Given the complexity of the ecosystem concept, it remains an elusive phenomenon, with each new advance still raising more questions than it answers. To avoid remaining stuck in purely academic definitional explorations, researchers are invited to delve into the messy and dynamic context of ecosystems with a phenomenological lens to identify complex ecosystem leadership dynamics.

The best way to do so for business schools, as bridges between scientific discovery and wise business practice, is to engage in performative ecosystem research projects enacting the ecosystems around them for the wicked problems affecting them and the future markets embedded within those problems⁸.

From a more traditional stakeholder perspective, a business school should (and will) focus on the alumni community, the university, fundraisers, future students, faculty, governments and companies.

However, much more is needed from a contemporary network perspective when value propositions can and will be formulated at the network level. None of the participating stakeholders can achieve these alone, but together they can.

Business schools therefore need to shift from an ego-perspective (with themselves in a central position) towards a network perspective in which they participate as a necessary but insufficient partner to obtain answers for wicked problems that no single organisation can obtain.

A business school's unique knowledge contribution, bridging academic rigour with practical relevance, will then be key to face challenges that require collaboration, not competition.

Conclusions

To conclude, we need a radical mind shift and the necessary development of integral complexity and paradoxical leadership in agents of ecosystems in order for them to meet the challenge.

Business schools can contribute to the development of ecosystems in many ways, of course by taking the lead in building bridges between multiple stakeholders in society, but also by developing integral complexity and paradoxical leadership in students, in order to help them develop the required mindset and exacted leadership competencies to build and participate in ecosystems themselves.

Collaborating in complex ecosystems may well be the only way to address some of “wicked”, enormously complex, and in many cases existential challenges that our contemporary society faces. ■

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