Megatrending: Opportunities Ahead

Exploring three megatrends with Pictet

mega.

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Foreword

The Greek philosopher Heraclitus is quoted as saying that "change is the only constant in life". This phrase rings true to many nowadays. In a world reeling from a global pandemic, lockdowns, political turmoil and geopolitical tensions, investors are yearning for a North Star to provide them with much-needed guidance.

It is useful to start by understanding the constants of change. Megatrends are a set of powerful social, demographic, environmental and technological forces that are reshaping our world. These forces are a crucial source of long-run revenue and earnings growth for the companies that are best positioned to capitalise on them. They can also be sources of existential risk for the parts of the economy that are maladapted to withstand the pressures created by them. As a result, megatrends have a bearing on long-term financial fundamentals and investment returns.

Identifying, analysing and monitoring megatrends is far from straightforward; it is equally challenging to draw investment implications from them. These are complex tasks that require experience and a broad range of skills. Yet this type of thought leadership is so crucial that Pictet has developed its own megatrends framework in collaboration with experts at the Copenhagen Institute for Futures Studies. It also draws on the insights provided by Pictet's 13 Thematic Advisory Boards. These groups of distinguished industry practitioners, academics and policy experts help us to monitor the structural trends that are transforming our world and ensure the continued relevance of our investment strategies.

For a trend to qualify as an investible megatrend, it must exhibit the potential to exert a lasting impact on large parts of the global economy over a period of at least a decade. It must also act as a catalyst for long-term growth and give rise to new business opportunities.

Resource scarcity, a shift towards a service-driven economy, and the crosscurrents of globalisation and deglobalisation are just some of the structural trends that are transforming the ways in which countries are governed, companies are run, and people's lives are lived. This report focuses on these three megatrends out of the 21 within the Pictet framework. Insights are provided by our in-house specialists and our network of external experts. We hope that you enjoy reading this report.

HANS PETER PORTNER
is Head of the Thematic Equities team at Pictet Asset Management and a member of Pictet's Stewardship and Sustainability Board.

A group of powerful forces is significantly – and, in many cases, irrevocably – changing the shape of the global economy, as well as how and where business and investment opportunities arise. These socio-economic, environmental and technological pressures can be referred to as “megatrends”. They shape the way that we live and trade, and they underlie how governments and businesses operate and plan. Some have existed for a while; others are just starting to emerge and will bear fruit in the future.

All of them will forge new business opportunities and alter the global economy. As with any major change to our society or economy, there will be winners and losers; businesses and industries that adapt will be in the former group. Paying attention to these megatrends is an important part of the investment process at Pictet across our asset management, wealth management and alternative asset franchises. Part of our success comes from placing a focus on industries and sectors which are made more dynamic by the megatrends that shape them.

Introduction

Pictet has picked out three megatrends to explore in depth in this report. We surveyed dozens of financial professionals from within our own ranks, esteemed members of our external thematic advisory boards and leading figures from business, academia and economics. This report unpacks the causes, current state of play and investable opportunities of each of the following three megatrends.

1

RESOURCE SCARCITY

Society's ability to function currently depends on its ability to extract fuel, food, water and other natural resources from the earth. A rising global population and increasing income per capita has put pressure on those finite resources in specific areas and that reality has been made starker by the impact of man-made emissions on the climate. Resource scarcity creates pressure for resource efficiency innovation, which is increasingly becoming a driver of economic growth.

2

(DE)GLOBALISATION

(De)globalisation describes the process that is reshaping an economic order that evolved over the final decades of the last century and the first years of the current one. During that period, businesses and governments collaborated across borders, making supply chains more efficient. From the developed world to the developing one, a huge shift in manufacturing and other skilled areas has lowered operating costs and boosted profits. That is now changing. Political upheavals in the West, the emergence of the Chinese economy as a serious competitor to the US, the global pandemic and the war in Ukraine have all played their part in exposing the frailties of a globalised economy. Businesses are starting to favour robust supply chains over efficient ones.

3

SERVICE ECONOMY

In the developed and developing worlds, the services sector is playing a rapidly growing role in the economy when held against manufacturing and agriculture. That is partly a function of growing urbanisation, which comes with rising levels of education, competitiveness and specialisation.

THE REPORT

While the service economy megatrend is important and influential, it is (de)globalisation and resource scarcity that will be at the top of the political and economic agenda in 2023 and beyond. This report will focus in more depth on those two trends.

The three chapters will follow the same structure. Each begins with an "observation" from one of our senior experts that lays out the challenges and points of focus associated with each megatrend.

Next come the findings from our extensive interviews and surveys. More than 50 experts in the world of finance and economics were consulted. These included professionals from across the Pictet Group, such as economists, strategists and senior investment managers. Added to that are leading external voices, including those of professors in world competitiveness, chief economists, urban designers, CEOs and founders of companies in spaces such as robotics, clean energy, hospitality and more.

To provide an extended external perspective, we then present a Q&A with one of those influential figures who adds colour and insight to the relevant megatrend. Each chapter is rounded out by a section that outlines the investment opportunities that arise from the findings.

To begin, we explain the wider framework in which these three megatrends can be found, setting out the six areas of focus and 21 total megatrends that Pictet has established in collaboration with the Copenhagen Institute for Future Studies.

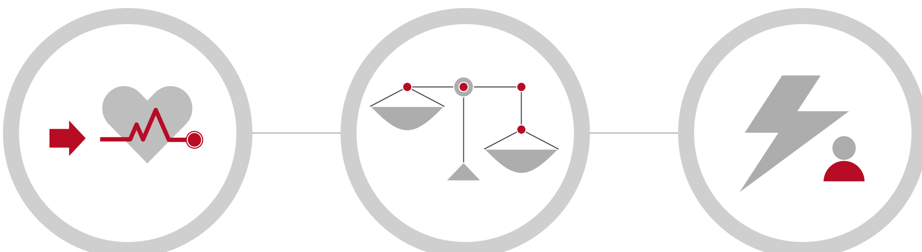
SETTING OUT MEGATRENDS

Framework

Together with the Copenhagen Institute for Futures Studies, Pictet has identified 21 megatrends that are laid out below and grouped into one of six relevant clusters.

Society

Shifts in the composition and characteristics of modern societies, as well as evolving attitudes and expectations within those societies, are influencing the ways in which people work, consume and spend their free time. This is sending shockwaves across many industries, putting some existing business models at risk while creating opportunities for new ones.



1. Focus on health
Interest in healthy lifestyles, preventive health, mental health and the primacy of public health is growing in most facets of society.

2. Growing disparities
Increases in economic and social inequality will likely drive consumer and political behaviour, which could contribute to growth differentials between various market segments.

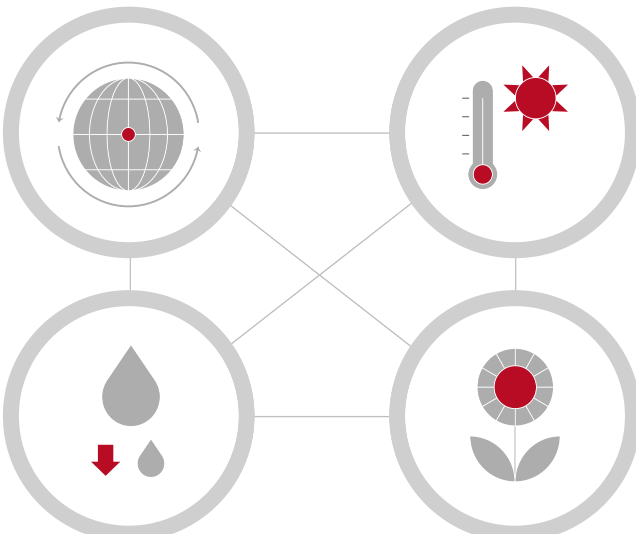
3. Individualisation and empowerment
Societies are focusing more on the individual and their desires and less on the collective. Subtrends within this include a fading trust in institutions and a tendency towards customisation.

Environment

Population growth and increasing human activity are vastly expanding our collective environmental footprint. Thankfully there is an awareness of these issues and an increased appetite for greater environmental responsibility at all levels, from the public to world leaders. Rising pollution levels, scarcity of resources and the impact of climate change are leading to changes in governmental policy, consumer attitudes and best practice among companies.

4. Environmental quality
Increasing levels of pollution mean adverse impacts on health and wellbeing that come at an economic cost. Environmental improvement and protection are growing priorities.

5. Climate change
The impact of rising temperatures and sea levels puts pressure on policymakers, individuals and businesses to limit greenhouse gas emissions and become resilient.



6. Resource scarcity
Demand for energy, water and raw materials is placing stress on resources and changing consumer behaviour, business decisions and policy choices.

7. Biodiversity and ecosystem services
The fast pace of biodiversity loss has been called the "sixth mass extinction". The costs and opportunities related to ecosystem services and natural capital are becoming better understood.

Technology & Science

The shift towards substituting physical objects and processes with digital ones continues at pace. Science and technology are increasingly significant areas in terms of driving economic and productivity growth. Yet while these developments are providing solutions to many problems in business and beyond, they are also a source of new challenges.

8. Virtualisation and dematerialisation
The trend towards replacing physical objects and analogue processes with digital equivalents has accelerated in recent years and will continue to affect a wide array of services.

9. AI and computing power
Harnessing the power of robotisation and automation with AI will see economies benefit from enhanced performance but also face challenges in adapting the current workforce.

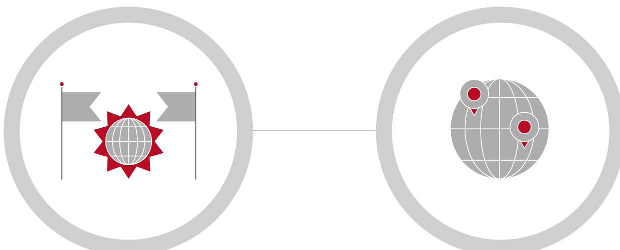
10. Greater interconnectedness
Increasing connectivity between people or objects means collapsing geographies and demand for greater reliability, speed and bandwidth.

11. Life sciences and applications
Advancements in research and development surrounding living organisms will continue in various fields of biology including biotechnology, genomics and neuroscience.

12. New materials
The demand for high-quality and high-performance materials with affordable and environmentally friendly attributes is leading to major innovation.

Global governance

The economic and political interdependencies that were built in the last half century are under strain. Some trade peaked years ago, and the growing rivalry between the world's superpowers is adding tension. Any smart investor knows that it is important to track these developments. It is often difficult to know which short-term shocks and issues are worthy of attention. A focus on long-term trends, such as the ebb and flow of globalisation, should be the priority.



13. Geopolitical tensions
Major geopolitical rivalries are expected to increase as China ascends to superpower status while the US cedes some influence.

14. (De)globalisation
Globalisation is no longer uniform. It continues in culture and information but remains unclear in investment and travel. Social and economic interdependence still grows, however.

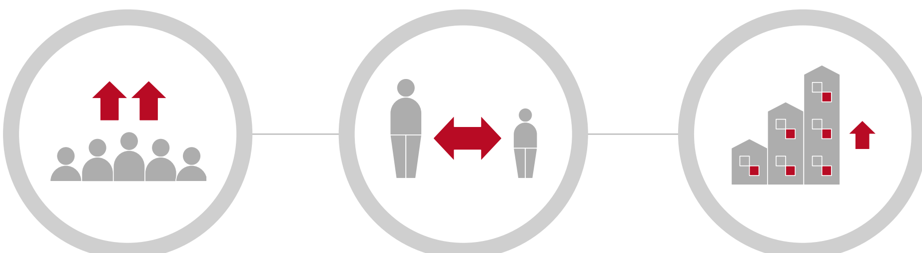
Demography

The world's population is set to grow at pace, particularly in the developing world. The "baby boomer" generation is ageing so wealth and influence are passing to younger digital natives. Other factors affecting these shifts include cohort size and other political and socio-economic conditions. These themes will impact how each group interacts with the global economy. Paying attention to how they evolve over time is crucial.

15. Population growth and migration
Global population has quadrupled in 100 years; Europe and parts of Asia declined as the bulk of the growth came in Africa. We believe that this will continue to influence future migration.

16. Generational shifts
Societal shifts are influenced by factors including cohort size, technological changes and times of war. They also affect how different age groups interact with the global economy.

17. Urbanisation
Employment opportunities, social benefits and services lead to productivity differentials between rural and urban areas, especially in the developing world.

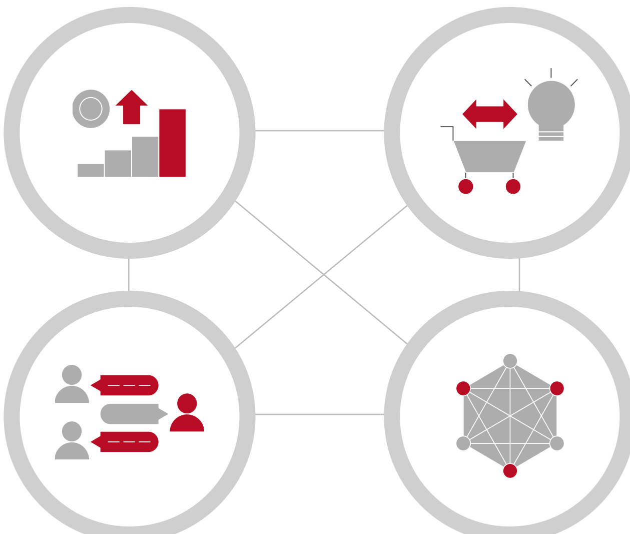


Economy

A focus on per-capita income growth masks increasing wealth inequality. Meanwhile, the privatisation of parts of the global economy continues and the share of activity devoted to services also grows. This will both drive and be driven by specialisation. Economic growth is also associated with an increasingly complex economic system and heightened specialisation. As the global economy becomes more complex, we will also need a wider, more diverse range of services in place to help us navigate the effects.

18. Economic growth
Driven by increasing productivity, this trend is characterised by a tendency towards a growing income per capita. It is often joined by subtrends, such as the convergence of emerging markets and faster income growth for women.

19. Commercialisation
Value is increasingly attached to parts of society that were deemed implicit or hidden. This is a process explained by commercialisation.



20. Service economy
A number of countries have shifted away from agriculture and manufacturing towards the service industry, significantly altering the global economy.

21. Specialisation and complexity
Economies are becoming more complex, driven by a diversifying of activities and specialisation, often accompanied by a need for new services.

MEGATREND

1

Resource scarcity

The world's economy and population are growing but the amount of available raw materials is not. Supply growth is also failing to keep up with rising demand, and this is creating pockets of scarcity. How consumers and policymakers respond to that will dictate economic flows for decades to come.

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How a turn-of-the-century water crisis and energy inefficiencies in California helped Pictet better understand resource scarcity.

FINDINGS
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In-depth insight into the wider repercussions of resource scarcity and the impact on businesses, governments and more.

Q&A
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InnovaFeed founder Clément Ray reveals why global warming and a loss of biodiversity led him to launch his smart new company.

OPPORTUNITIES
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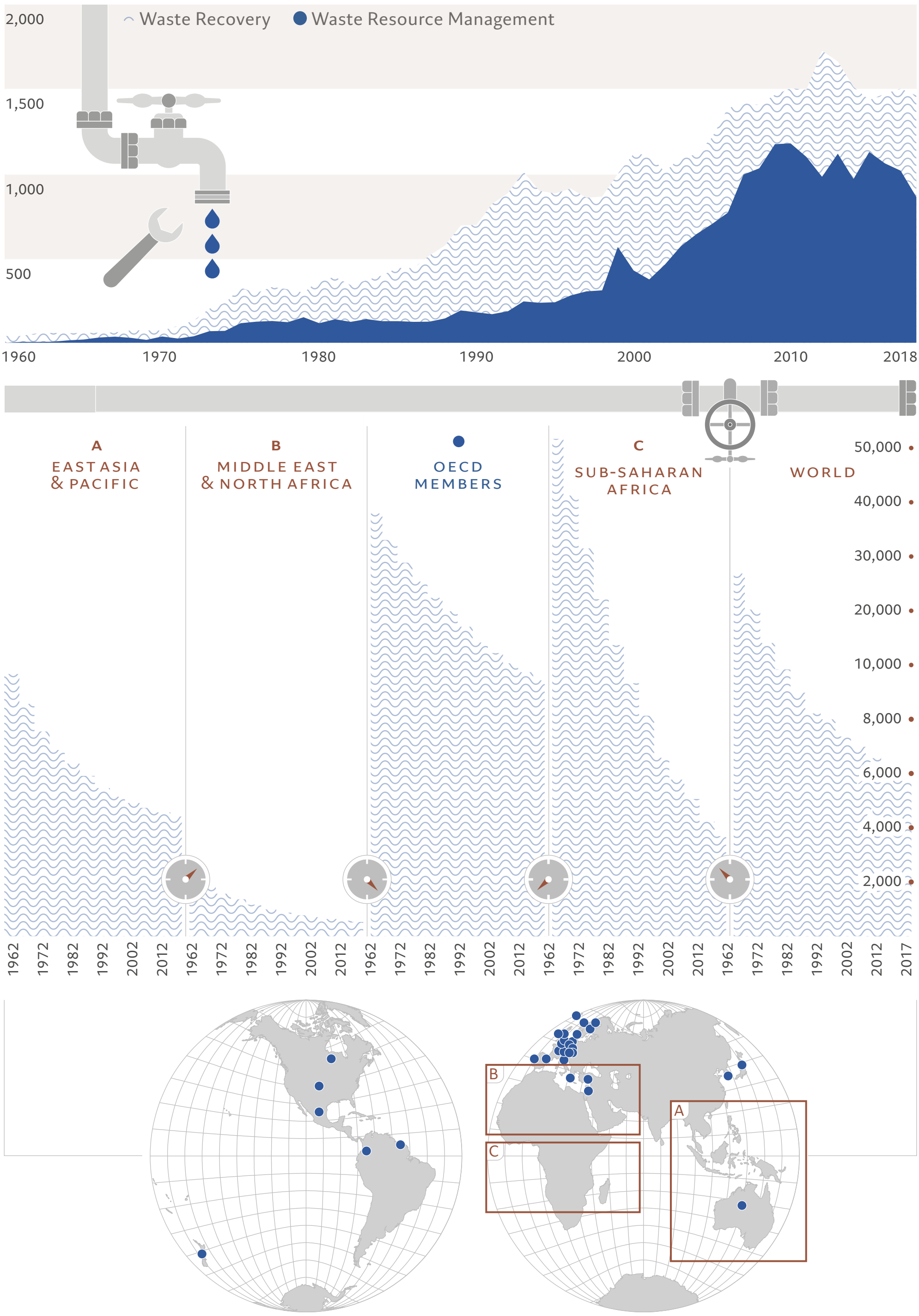
With a push towards self-sufficiency, sustainability and more robust supply lines, our experts outline areas of opportunity arising from the resource scarcity megatrend.

For the global economy to function, the resources that humans take from the earth need to be managed responsibly and sustainably. Companies and governments are depleting the world's non-renewable resources (such as fossil fuels and minerals) and exceeding the sustainable consumption of renewable resources (such as water and forests) to the detriment of the environment and climate. As the climate warms, oceans acidify and biodiversity diminishes, we're obliged to shift to a sustainable approach.

Thankfully, innovation in renewable resources and resource recovery programmes is helping to mitigate shortfalls. But we still have a way to go before we achieve parity in the sizes of the non-renewables and renewables sectors. Despite the damage that's already occurred, many opportunities are presenting themselves to imaginative investors who are reaping the rewards of an explosion in technological advances that mitigate resource scarcity.

The extent of water scarcity

The first graph shows the number of patents for waste recovery and water resource management technologies. The second shows global levels of renewable internal freshwater per capita (in m³). Both graphs are expected to continue that downward trend as new data is released.



Source: WIPO Green; The World Bank

MARC-OLIVIER BUFFLE

Observations

Beyond the doom and gloom that often surrounds the issue of resource scarcity lies a positive growth area. Companies involved in smart infrastructure projects and ways to improve resource efficiency are providing a wealth of opportunities. And it is here that long-term investors can take comfort from a forward-focused outlook on the world.

Resource scarcity is one of the key megatrends that Pictet follows. And when considering any thematic strategies, we always look for companies that can utilise an element of the current tensions and provide solutions that will generate a profit. Take water scarcity as an example. Twenty-two years ago, we identified a water crisis that had been building for decades. It was happening across regions where both the quality and quantity of the available water were decreasing. Given the extent of the crisis, the search was on for companies that offered services or products that would provide a "solution". This market was about to experience growth and such companies might make an attractive investment. It was thanks to our understanding of the various subtrends that we could put ourselves in a position to advise our clients on these specific opportunities.

EXTRACTING VALUE

With resource scarcity, one of the most interesting and investable subtrends that we have identified recently involves extracting value from big data. It has allowed us to focus on establishing how different systems are interconnected. We could then begin to find those firms optimising those links by either improving efficiency or minimising waste.

The opportunities provided by this subtrend are linked to technology. Investors could focus on the specifics, areas such as software or semiconductors. Alternatively, they could take the macro view and finance the infrastructure required to get systems working together more efficiently.

In terms of resource scarcity, California provides an interesting example. The State Water Project is designed to redistribute water, largely from rivers in the north of the state to the bigger cities or more arid areas in the south. Rising temperatures and groundwater depletion have exacerbated the shortages in recent years.

As a result, a large proportion of the state's electricity consumption is expended by the pumps and other machinery that are required to move water around. In many cases, this is not done in an optimal fashion. However, if you start to interconnect the data from the different systems – the pumps, processing plants, dams and so on – you can optimise the energy consumption. It is easy to imagine the benefits of this "big picture" approach, and the example can be extrapolated to many other situations, not just those involving resource scarcity.

DIMENSIONALISED ECONOMY

Let's take smart infrastructure as another example. Smart infrastructure is a system that uses a data feedback loop to improve decision making. In practice, this means utilising technology to improve efficiency and reduce waste. This is particularly useful in cities where mismanagement results in a tremendous amount of wasted resources.

In construction, it is now possible to catalogue every single material used in a new building. It requires a database, sensors and people on the construction site cataloguing every type of material that is being used. Alternatively, it could be done at the planning stage by the architect. This would require software that can design the structure and automatically furnish the database with details of all the relevant component materials.

When those same buildings are dismantled in the future, it would be possible to know exactly which raw materials were used – and where. And this means that they can be sold on before the demolition process has even begun. This is a form of recycling materials in the most efficient way.

Taken together these forms of planned recycling encourage scarce resources to be used in more efficient ways. This approach is sometimes referred to as the "dimensionalised economy". It is one area where opportunities lie because a solution has been identified (in this case, the material database) but it is yet to be widely adopted.

We are not yet at the point where either big data or smart infrastructure is being used ubiquitously – and certainly not on the scale where it can improve the efficiency of an entire city or region. As we move towards that direction, there are huge opportunities to be found.

MARC-OLIVIER BUFFLE
is the Head of Thematic Client Portfolio Managers and Research at Pictet Asset Management. He is also a member of Pictet's Environmental Policy Committee.

Findings

1

WATER EFFICIENCY IS REQUIRED

It's a misnomer to suggest that there isn't enough water in the world or that its quantity will change with the climate; it's the availability and quality of that water that is proving increasingly problematic for governments and businesses as weather cycles become more erratic and droughts more common.

The increased variability and severity of weather events have led to significant, interconnected challenges. Companies in the water-storage and collection spaces are attracting growing interest by producing storm-water systems and water tank solutions, such as Advance Drainage Systems. In a similar vein, water utilities can expect more interest from investors, as governments work to improve the efficiency of their systems.

We believe that companies offering leak prevention solutions, such as Xylem, will play a part in this investment space. So will those providing technological solutions within home appliance manufacturers and those involved with improving the efficiency of heavy water-use industries and irrigation. Agriculture provides a further solution to the scarcity – companies promoting water efficiency in this sector include drip irrigation specialists Netafim and pivot irrigation company Valmont.

Parts of Europe and North America had their warmest summer on record in 2022, but it might have been the coolest for some time to come. That has changed both water supply and demand. Start-ups that are involved with the recovery of water from unusual sources have the potential to be good investments, whether that involves repurposing water from agricultural waste, capturing it from the atmosphere or purifying it via desalination.

How widespread and accepted an issue is water scarcity?

"Water resources are a global challenge. Companies providing solutions might be a good investment, not only from a positive contribution perspective but also as significant opportunities."

MARC-OLIVIER BUFFLE
Head of Client Portfolio Managers and Research, Thematic Equities, Pictet Asset Management

"The recycling and reusing of water is gaining public acceptance, as we can see in California where Aecom has won two signature contracts for water reuse."

CÉDRIC LECAMP
Head of Water Strategy, Pictet Asset Management

2

DEMAND IS HIGH FOR RESOURCE-EFFICIENT AGRICULTURE

The world's population is set to reach 10 billion people by 2050, meaning we will require a 70 per cent increase in world food production from 2007 levels.

Achieving that won't simply be a matter of planting more fields and rearing more animals – it will also require a change to farming methods and the kinds of foods grown. In agronomics, the appetite for using genetically modified crops to improve food security is strong, as is demand for companies offering organic fertilisers.

As with water resources, there is a significant and growing market for businesses centred on precision farming equipment and, crucially, data solutions that can ensure an efficient use of land and as little product wastage as possible. One such example is the AI that helps to determine when a fruit or vegetable is about to be wasted and should be repurposed.

Despite the market for cultured meat substitutes, demand for animal protein is expected to continue its growth. Aquaculture companies are also set for windfalls: one in every two fish eaten globally is farmed, up from one in five 25 years ago. While wealthier consumers in the West are eating less meat, burgeoning middle classes in developing countries will continue to boost demand.

Companies such as DSM will only see the appetite grow for its Bovaer feed additive, which reduces animal methane emissions. Aside from specific farming methods, sales to the developing world will increase for farming logistics businesses. This will have a knock-on effect on infrastructure, adding to a call for more rail, port and road projects.

What are the challenges and opportunities for investors within the agricultural sector?

"Investors should watch precision farming equipment and software that improves crop yields while using fewer natural resources. They enable more food production and regenerative agriculture practices."

MAYSSA AL MIDANI
Senior Investment Manager, Thematic Equities, Pictet Asset Management

"Many agricultural resources endanger the integrity of the biosphere and the health of humans. Civilisations have been wiped out because of the overuse of resources."

GABRIEL MICHELI
Senior Investment Manager, Thematic Equities, Pictet Asset Management

3

ENERGY STORAGE TRANSITION MUST BE QUICKER

Solar panels and wind farms are increasingly widespread but they have insufficient capacity alone to decarbonise a grid that is under increasing strain from population growth and electrification. That process of electrifying more of the economy will boost demand for base metals and rare-earth metals (and highlight some questions about the sustainability of their extraction, both in the developing world and from the ocean floor).

Energy storage, battery production and the recycling of batteries are the standout areas that are not moving quickly enough. One particularly lucrative area will be the sending of excess renewable energy into the water-splitting electrolysers that are needed to make green hydrogen, which can then be used as an energy store. Hydrogen infrastructure – the means by which to make it, store it (whether in salt, fuel cells or disused natural gas fields) and transport it – were all sources of interest for our respondents.

While the energy transition will birth new industries, it will also create a new group of nations that benefit from green investment. Oil-producing nations whose economies depend on fossil fuel revenues, such as countries in the Arabian Gulf, have an existential incentive to invest in green energy. Indeed, that's already being borne out with the region's national oil companies investing large sums in green hydrogen and synthetic fuels. At the same time, countries with either green-energy adjacent natural resources in mineral wealth, such as the Democratic Republic of Congo and its vast cobalt reserves, or geographical placement (Morocco and Australia are investing in solar power) will see a boom.

How will a lack of sufficient clean energy (and insufficient energy overall) carry through into investment in hydrogen, rare-earth metals and energy storage at large?

"Energy storage – and the integration of it – will cost. We are moving away from oil and gas, which is good. But we are going to have to move into synthetic gas and hydrogen, which will be more expensive."

TEDDY PÜTTGEN
Pictet thematic advisory board member and Georgia Power Professor Emeritus, Georgia Institute of Technology

"People don't realise how much copper we need. There are 1.2 billion cars on the road in the world. If even just 10 per cent are to be electric soon, start multiplying that by 85kg of copper per car and we'll need many more billions of kilos of new copper."

VACLAV SMIL
Pictet thematic advisory board member and Distinguished Professor Emeritus, University of Manitoba

4

CIRCULAR ECONOMY HAS PROMISE

Inefficiencies exist beyond food production and resource extraction. Our economic system exhibits a high degree of wastefulness. A recent report from the US Department of Energy, for example, found that only five per cent of the country's plastic waste is recycled. Many companies are increasingly exploring the development of the circular economy in order to decouple the use of resources from economic output. The circular economy is an extension of resource efficiency; in fact, it is its logical conclusion – an ideal where every output is also an input and hence there is zero waste.

It's difficult to forecast what the circular economy will look like a decade from now but it's likely to include increasing the life of products, upping the amount of repurposed and recycled waste, and switching input sources to more sustainable, low-carbon options. Overall, the circular economy will increasingly play a part in the profits of the companies that branch into it. The first thematic opportunity that we found involved the separating of recyclable and non-recyclable waste material. Expenditure in this space will include building more advanced sorting facilities closer to cities (so often the source of waste) and investing in AI technology that is better able to sort materials for recycling.

There is an energy angle to this as well. Pictet views the idea of a sustainable carbon circular economy with growing excitement. This refers to carbon capture technology, which extracts and stores carbon dioxide from energy sources. While this is still expensive, companies such as Climeworks have drawn significant investment in this space.

Which waste flows will be the most lucrative as the circular economy gathers steam?

"The waste companies that can utilise waste and convert it into a resource become raw material suppliers – and very well positioned to execute a large degree of influence over the circular economy."

BRYAN STALEY
Pictet thematic advisory board member and president, Environmental Research and Education Foundation

"It is advisable to invest in actions that support a circular economy. We need to close our material flows. Look at recycling phosphorus from sewage or concrete from infrastructure; these are important systems."

NICHOLAS GRUBER
Pictet thematic advisory board member and Professor of Environmental Physics, ETH Zürich

CLÉMENT RAY

Q&A

It is a little-known fact that insect farmers are helping to mitigate the effects that global over-farming is having on biodiversity. By producing insects to feed farmed fish and poultry, Innovafeed is spearheading an agricultural revolution.

Q How does resource scarcity inform what you do at Innovafeed?

A There are strong links between resource scarcity, the impact of global warming on biodiversity and the various challenges that we will face in the coming decades. A key trend that drove me to launch Innovafeed seven years ago was the impact of our current food system on both biodiversity loss and global warming.

The numbers are striking. Eighty per cent of biodiversity loss over recent decades is directly or indirectly linked to damaging practices such as overfishing, deforestation and pesticide use.

I wanted to tackle this by unlocking the potential of insects. In nature, the role of an insect is to consume waste and turn rotten fruit, for instance, into soil. In the process, nutrients are put back into the food chain because those insects are then eaten by birds and small mammals.

So it is one of the principles of nature that I wanted to bring back into our food chain in order to limit the impact of global warming on biodiversity.

Q How do you achieve this?

A We are targeting annual feed markets with a strong focus on aquaculture (fish farming). Aquaculture is the answer to fish scarcity.

Thirty years ago, one in every five fish eaten by the consumer came from aquaculture. Today, it is one in two and that ratio is predicted to remain the same. But there is a bottleneck coming for the industry that is linked to growth. And that is the question of how we feed the fish.

We are trying to solve this with the technologies that we have developed to provide a more sustainable fish feed. We could replace the products that are currently used, which is a soybean meal concentration derived from limited resources that themselves have to be farmed. Between seven and eight million tonnes of fish meal are required every year.

That is where Innovafeed comes in because our insect meal is the best alternative that will support the growth of a sustainable aquaculture in the future.

Q Do you apply a circular economy model to your operations?

A Yes, because the circular model is deeply linked to the nature of the insect protein industry. We use by-products of waste as the input and we produce high-value ingredients with this. The question is how can we further strengthen the circular economy approach. We believe there are two ways to do it. Firstly, we have to be as close as possible to the feedstock with a sharply closed loop and no logistics costs on products. The other way is to use lower-value waste to maximise the returns.

Q How does innovation play a part in your business?

A We knew from the beginning that if we wanted to have any kind of impact, our vision lay in scale. We had to develop a new technological platform to breed and grow huge numbers of insects.

To give a sense of the scale at which our facility currently runs, we are able to collect 20,000 insect eggs per second and we do this in a completely automated process. We had to quickly understand how to optimise the genetics of the insect by researching nutrition and the conditions at each stage, which in turn optimises the growth.

Some of the technology is similar to vertical farming. We have a strong internal EPC (engineering, procurement and construction) team that developed proprietary equipment and software. Data management is also key. We have more than 10,000 sensors that collect millions of data points each day. And finally, our workforce are our innovators. Out of the 350 people who work for us, 200 are post-doctorate engineers.

Q Where do the opportunities lie?

A The opportunities lie in developing technology that enables us to produce nutritious food with a low carbon footprint and low biodiversity footprints. That is my core belief. And the questions are: what is the value chain to have good performance in this aspect? And can we further optimise this value chain and reduce waste as well as energy consumption?

It is not clever for us to expend a lot of energy trying to optimise the beef industry; it has already gone too far. It is better to optimise poultry and aquaculture, which can get us closer to a sustainable food system.

CLÉMENT RAY
is CEO and co-founder of Innovafeed, a French biotechnology company and a leader in the production of insects for animal and plant nutrition. Innovafeed develops disruptive technologies that reproduce nature's processes on an industrial scale.

Opportunities

With shortages in raw materials at all levels of the business ecosystem, self-sufficiency is hugely important. Waste reduction, production efficiency and energy storage all dominate our investors' thoughts.

ENERGY STORAGE

As fossil fuels are phased out, investors look towards cleaner renewables and the means to store them.

The two most interesting dynamics when considering energy are the transition from carbon-based fuels to cleaner renewables and the issue of storage. We are currently witnessing a rush to close traditional fossil fuel plants without the capacity for clean energy sources to balance it out.

That trend is creating a distortion in energy markets that has been exacerbated by the war in Ukraine as Western allies reject Russian sources of fuel. The slowdown in fossil fuel investment is not being matched by enough of an increase in funds being attributed to renewable energy sources. This is creating a disparity, so the opportunity lies in solving the intermittency of clean energy – and effective storage is key to that conundrum.

Fossil fuels are relatively inexpensive to extract. Burning coal, oil and gas is much easier and cheaper than producing and storing energy from the sun, wind or hydrogen. Investment in the storage of these energies will be the key driver of innovation in the sector and potentially solve existential challenges of the future. "I see this volatility as a welcome challenge to rethink supply chains and resource efficiency," says Pictet Asset Management's Head of Thematic Equities, Hans Peter Portner. "The current crisis is painful but also useful as it accelerates an adaptation process." In that crisis comes opportunity.

Innovators are tripping over themselves to invent cheaper and more efficient ways to store renewable energy. There are a variety of encouraging developments that have already piqued the interest of the big energy players – compressed air and kinetic energy technologies included. But the real opportunity lies in hydrogen.

Energy traditionalists and more conservative investors will tell you that the efficiency of moving from electrolysis to hydrogen, hydrogen to fuel cell and fuel cell to electricity is poor. But our experts say that this efficiency question will dissipate when hydrogen is produced and used at greater scale. If we are to leave fossil fuels behind and make the transition to primarily photovoltaic and wind energy, we are going to require incredible levels of energy access that can only be achieved by adding hydrogen to the mix. Some experts are adamant that if we do not start deploying hydrogen in long-haul, heavy-duty transportation, then the chances of achieving an energy transition within the time period needed to mitigate the worst effects of climate change are reduced.

Discussions about hydrogen remain cautious, however. Currently, storage of this extremely potent energy source is costly, difficult, dangerous and highly inefficient due to its combustibility. But businesses that succeed in safely transporting and storing it as both a gas and (especially) a liquid, particularly later in the transition stage, could provide the much-needed breakthrough that the energy sector is counting on.

TIMBER

Natural, versatile and sustainable, wood has provided opportunity for millennia – and there are still avenues to explore.

The forestry industry is one of the oldest and best examples of a circular economy, having existed for centuries. Few natural materials can be considered as sustainable as wood: nothing is wasted and it is easily regrown. Material recycling is an important and booming industry, one that can be likened to keeping energy unspent, but we will never be able to recycle everything.

The forestry sector provides a slew of opportunities. The promotion of sustainable forest management and the development of new materials that can replace fossil-based materials – many of the products that are made from oil can be also made from a tree – are ripe for profit.

When looking for opportunities in this space, it is less a case of disruptive technologies and more about evolution and finding new applications for wood, from construction materials to wood-based chemical compounds. Nordic companies are at the forefront of this development. Finnish forest conglomerate UPM-Kymmene, for instance, is currently constructing an industrial-scale wood-based biorefinery in Germany for several hundred million euros.

FOOD EFFICIENCY

Reducing waste and extending shelf life will make our consumption habits less damaging. There is a healthy appetite for change.

Food waste is at a crisis point and, while improving agricultural techniques will prevent millions of people around the world from going hungry, preventing food waste in the first place will also save millions and make money for the sector's successful companies.

Up to 30 per cent of all food currently fails to get as far as our plates. In that context, our experts see a wide range of opportunities across food-waste solutions for the acute investor to gain.

Companies that reuse inedible food waste to make sustainable natural ingredients for food, pet food, animal feed, supplements, bioenergy and plant-health industries are booming. There are also investment opportunities in companies offering waste disposal and recycling services. In addition, a range of profitable, socially conscious enterprises have emerged that make money diverting food surplus from grocers and the hospitality industry to food banks and soup kitchens. Over a longer period of time, sensor-based food-sorting systems, which can help to determine when a fruit or vegetable that is about to be wasted can be repurposed (into sauce or juice), will play a growing and lucrative role. Similar systems can also find and remove aflatoxins, mycotoxins and other foreign material from food with infrared spectroscopy preventing product recalls.

"Corporates are responding to the urgent need to make our food systems more sustainable, and they are doing so via a new wave of investable technologies. Advancements that address the challenges of our food systems are emerging across the food value chain from farm to fork, creating attractive and impactful investment opportunities."

MAYSSA AL MIDANI
Senior Investment Manager, Thematic Equities, Pictet Asset Management

Asceptic carton packaging – sealed sterilised containers that allow food and drink to be stored at room temperature for up to 12 months without preservatives while preventing contamination – also contribute to extending shelf life.

The concept of food efficiency not only applies to wastage but also to its effectiveness as a fuel for life. "We believe that increasing our consumption of foods that have a high nutritional content relative to the resource intensity of their production will help optimise resources to enable global food security while tackling the disease and mortality burden relating to malnutrition and preserving our planet," says Mayssa al Midani, Senior Investment Manager in Thematic Equities at Pictet Asset Management.

There are opportunities to be found in all food groups that fit within human and planetary health boundaries, such as vegetables, fruits, legumes, wholegrains, fish and plant-based proteins.

MEAT SUBSTITUTES

The alternative-protein market is booming and the start-ups of today could become the major players of tomorrow.

Another inevitability of a growing population and the quest for sustainability is the need to reduce meat consumption. That need is in direct competition with a growing hunger for animal protein in Asia's largest developing economies. Meat and protein substitutes derived from other materials, such as mycoprotein and plant-based substitutes, are booming. Companies such as Ynsect in France are producing alternative protein for use in products such as burgers but also for pet food and animal feed. Veramaris is another example. Twenty per cent of global fish catch is fed to farmed fish. Veramaris has introduced omega-3 via bioengineered algae that can reduce pressure on marine life while maintaining the omega-3 content and nutritional quality necessary to farm fish. Such firms could become mainstream agricultural players with more innovation and opportunities ahead for the patient, long-term investor.

MACHINE VISION

Faster production lines require extra vigilance to avoid costly errors. Investment is needed in new technologies that improve quality control.

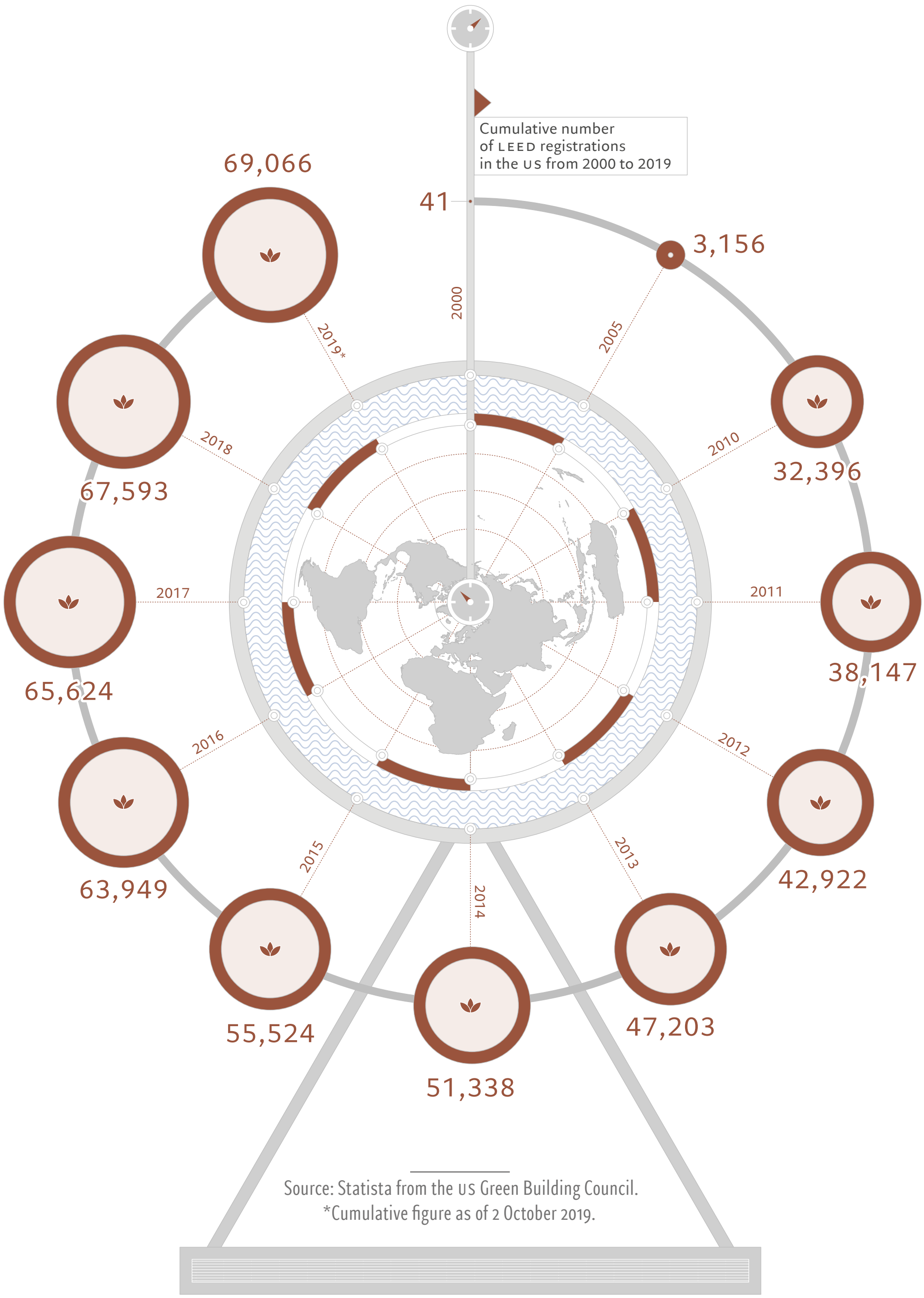
Efficiency begins on the production line. Robotics may have sped up the manufacture of goods but it has also reduced the margin for error. Automated inspection, analysis and process control are more important than ever when it comes to conserving precious resources. Machine vision provides an increasingly sophisticated solution – and a key opportunity for investment.

Companies that specialise in machine vision offer powerful and cost-effective ways to implement automatic quality assurance. This includes cameras used on modern production lines, which have become so fast that traditional quality control equipment can't keep up. In many situations, a factory might continue to produce textiles for hours or days before quality control discovers that something went wrong and an entire run of products must be scrapped. Machine vision cameras are now so advanced that they can detect a problem within a minute of it occurring and halt production before raw materials are wasted.

Resource efficiency can be found in everything; it is the smart investor who knows where to look.

America's shift to "green" buildings

This graph shows the number of Leadership in Energy and Environmental Design (LEED) registrations per year in the US. The programme is a means of certifying a building as "green".



Source: Statista from the US Green Building Council.
*Cumulative figure as of 2 October 2019.

MEGATREND

2

(De)globalisation

Global trade peaked in 2007. Since then globalisation has continued in some sectors, while trade has stalled in others and reshoring has occurred. The brackets are important here: (de)globalisation is a megatrend comprising complex cross currents – with opportunities rife for smart investors.

OBSERVATIONS

31 Global investment expert Alexandre Tavazzi explains why this burgeoning megatrend is not simply a reversal of globalisation.

FINDINGS

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37 World Competitiveness Center founder Stéphane Garelli shares his insider perspective on the roots and risks of deglobalisation.

OPPORTUNITIES

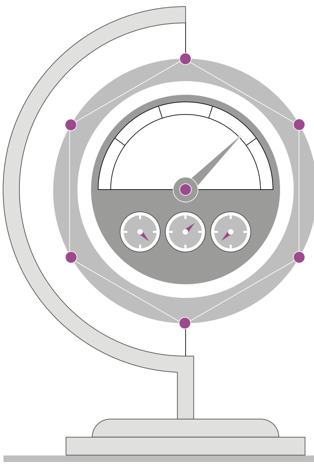
39 Diversification, digitalisation and defence are three of the potential growth areas within the realm of the (de)globalisation megatrend.

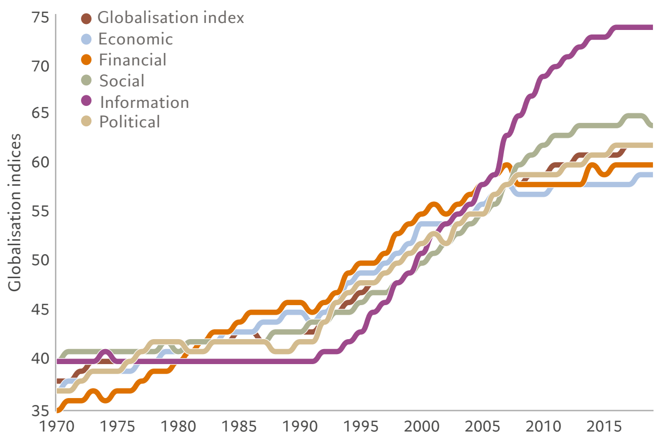
In the past 70 years, the world has shrunk. Governments and businesses have never been so interlinked and the trend of globalisation was relatively one-way until a few years ago. While it's still the overwhelming direction of travel for several parts of the global economy (informational and cultural exchange are just two examples), increasingly fractious geopolitics has meant that trade is splintering in some sectors, particularly those of strategic importance.

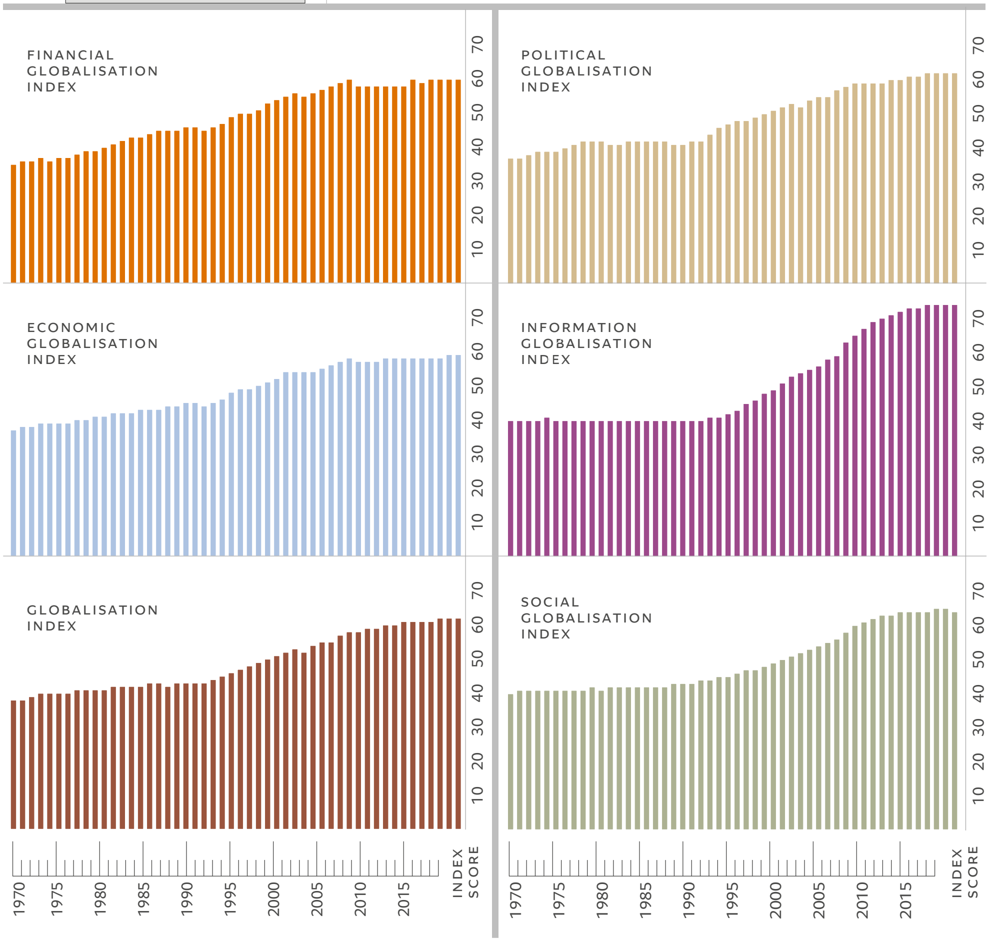
The trade war that erupted between the US and China during the Trump administration was one of the first flashpoints in this story. A change of leadership in the US has done little to reverse the trend. The diplomatic after-effects of Russia's invasion of Ukraine have only reinforced these divisions. What does this mean for the cost of doing business? Will all globalised production return to its regions of origin or will reshoring be partial and targeted? And what does it mean for employment and emerging markets?

The trend towards globalisation by sector

The KOF (Swiss Economic Institute at ETH Zürich) Globalisation Index scores economic, social and political factors, ranging from 0 (deglobalised) to 100 (globalised). These graphs run from 1970 to 2019.







Source: KOF Swiss Economic Institute, ETH Zürich

ALEXANDRE TAVAZZI

Observations

The Head of Pictet Wealth Management's CIO office discusses the burgeoning trend of (de)globalisation: how it is playing out, who are the potential winners and losers, and why it is not just a reversal of what has gone before.

There are two aspects to (de)globalisation. The first is trade. The globalisation index of the KOF (Swiss Economic Institute at ETH Zürich) shows that trade has stalled for a decade and more recently declined. The second is the fact that the interests of China and its allies are becoming less closely aligned with the interests of the US, Europe and their blocs. President Trump was essentially the catalyst for this trend when he imposed trade sanctions on China and said that the country was stealing content from US companies. Tariffs amounting to about 25 per cent on USD200 bn (EUR204 bn) of Chinese exports to the US remain to this day. We are increasingly seeing companies react to the consequences of that move.

The pace of globalisation is very different to a decade ago. China's 2001 entry into the World Trade Organization (WTO) was a major driver of globalisation: it made a huge number of workers available to international companies, which then decided to move their production bases. Apple is a prominent example. The technology giant doesn't produce anything per se but it relies on independent manufacturers mainly in Asia to create its products, and it has started to diversify out of China, increasing its production in Vietnam and India.

A BRAVE NEW WORLD

That world does not work seemlessly anymore. As we have seen in the last three years, the first reason is that the existing supply chains are unable to cope with volatile demand. The second is that, as a company, you need to be assured that the supply from other countries will materialise. Relying on countries with which your government no longer has a good relationship is a significant risk, so you need to rethink your supply chains. Broadly speaking, these considerations mean that we live in a world that is becoming less efficient. The biggest risks of deglobalisation are evident for companies established in countries that are perceived as unfriendly by the countries where those same companies are headquartered.

Of course, there will be plenty of countries that benefit. Asian countries outside of China received a boost to their production bases from companies moving away from their superpower neighbour. For diversification reasons, businesses want to produce goods in places such as Vietnam, which has been in the headlines a lot recently, and India, which is embarking on a multi-year infrastructure investment plan to become a credible alternative to China as a production base. Those Asian countries will be the main beneficiaries but other countries stand to prosper as well, depending on which ones offer tax rebates or other incentives.

The US is one such case. There is a race taking place today in high-end manufacturing, for example. Taiwan Semiconductor Manufacturing Company (TSMC) is building a factory in Arizona because tax rebates are offered there. The CHIPS and Science Act, signed into US law in 2022, puts USD52.7 bn (EUR53.7 bn) on the table to try to bring semiconductor manufacturing back to the country. This is a very important step forward because the US wants to diversify out of Taiwan.

THE COST OF ADJUSTMENT

You can see that same thinking in Europe, where there are incentives to bring back electric vehicle battery production. For European countries, there will be more diversification and incentives put in place to bring production closer to home. Places such as Poland, which have relatively low labour costs, will draw some manufacturing bases at the expense of China. Even so, it remains the case that labour costs are much lower in Asia, so it makes less economic sense to reshore heavy industry, as opposed to high-end manufacturing.

So (de)globalisation isn't a straightforward reversal of globalisation. Many companies have become more careful about where they base themselves, partly due to geopolitics and partly due to the supply chain frailties exposed by the pandemic. Government incentives to reshore are also accelerating this trend. Those companies are now adjusting – albeit at a cost.

ALEXANDRE TAVAZZI
is the Head of Pictet Wealth Management's CIO office and Macroeconomic Research. He is also a member of Pictet's Global Investment Committee.

Findings

1

DECOUPLING IS SHAPED BY GEOPOLITICS

The obvious inflection point for (de)globalisation was 2016. The year marked the start of the Trump administration, the Brexit referendum and Xi Jinping's consolidation of power. Beyond that, however, the ideals of a globalised community have been eroding for decades. The decreasing alignment between countries has had direct consequences at company level, with government prohibitions and incentives guiding business strategy.

A change of leadership in the US has done little to reverse the trend of slow decoupling. The Inflation Reduction Act is focused on local manufacturing and likely to create supply issues. Under the new regulations, electric vehicle-makers, for example, will not qualify for tax credits if they use parts or technology from countries such as China. The war in Ukraine also intensified decoupling, with countries using sanctions to economically isolate Russia. Still, while companies are reshoring and moving their operations and connections away from China and Russia, there's little evidence that their overall global footprint is shrinking. If anything, reshoring, near-shoring or indeed 'friend-shoring' (moving production to allies) means that their footprint is actually growing, both in terms of supply but also demand as new market opportunities continue to present themselves amid an accelerating digital transformation.

There is substantial potential for US companies to do more in Central America and Europe. Numerous car manufacturers are expanding; for example, some are shifting more production to Mexico. Likewise, successful examples have been set by Intel and Tesla as they expand operations in Germany.

To what extent is deglobalisation already happening? And what are the challenges facing countries as they try to decouple from global partners?

"You must choose who you are going to do business with not based on economic terms but on political ones. Self-sufficiency is a key issue and this will keep increasing in the coming years."

ALEXANDRE TAVAZZI
Head of CIO Office, Pictet Wealth Management

"People are talking about moving to more friendly countries, and reshoring to a limited extent, but it's going to be a messy picture."

JAMES ARROYO
Director, Ditchley Foundation

2

PANDEMIC'S IMPACT ON LOGISTICS WILL ENDURE

The economic implications of coronavirus were hardly a surprise to our experts. They had been warning long before the pandemic hit that manufacturing essential products and services on the other side of the world presented a significant risk in times of crisis. Goods produced in China, for example, could not be shipped during the pandemic due to restrictions. Even when the goods reached Western countries, it was difficult to bring them to the end-consumer smoothly. There were many logistical constraints and regular congestion at ports.

The global pandemic highlighted an "every country for itself" approach that was contrary to previous internationalism. In the EU, knowledge-sharing on healthcare and vaccinations was not as cooperative as might have been hoped. Several experts pointed out that companies with the ability to manage geographic diversity at scale will outperform and outlast those with lean and fragile supply chains.

Attitudes towards inventory levels have altered as well. Before the 2018 financial crisis, most firms operated on a "just in time" production basis: depleting inventories and producing on an as-needed basis. Following the supply difficulties faced during the pandemic, companies are playing it safer. We are likely to see them holding higher inventory levels for longer – a policy of "just in case" rather than "just in time", at least for now. Some pandemic-proof sectors have emerged: chip manufacturer NVIDIA, sustainable energy supplier Enphase and the online marketplace Etsy have all rolled out of lockdown with heroic resilience.

As we come to terms with the coronavirus pandemic, do you believe that the world is globalising or is the opposite is happening?

"The coronavirus crisis had a deep impact on the global supply chain as goods produced in China could not be shipped. But reshoring has not happened in a major way because it is still cheaper to produce goods in low-cost countries."

GREGORY KUNZ
Corporate Financial Analyst,
Pictet Wealth Management

"The pandemic showed many industries that globalised supply chains had become too lean. Part of the reshoring effort is also to build future resiliency but that will lead to inefficiencies."

PETER LINGEN
Senior Investment Manager, Thematic Equities,
Pictet Asset Management

3

SUSTAINABLE SUPPLY CHAINS ARE THE SMART CHOICE

We are seeing a restructuring of the global dependency on China. Alongside that comes a rebalancing of the global manufacturing capacity for the electronics and technology sectors. The focus is now on resilience and sustainability rather than efficiency; a move from a supply chain to a supply network.

New incentives such as the US CHIPS and Science Act and the European Chips Act are making it easier for certain non-domestic companies to set up new facilities in the US and Europe. We have now seen multi-billion-dollar commitments from Micron in Idaho, Samsung in Texas and Intel in Germany to build new plants.

As a result, a European company that previously relied on a single supplier in China might increasingly look to secure three: one each in Asia, Europe and the US. The aim of this diversification is to mitigate potential interruptions. A significant percentage of supply will still come from Asia, where costs are lower, but the secondary options will be crucial.

These switches add layers of complexity to the manufacturing process. The race for changes to supply lines is inflationary, requiring additional investment and resulting in higher costs.

Several of our respondents noted that the big opportunity for industries lies in taking the long view and building a sustainable supply-chain road map.

To reap the benefits, companies must align themselves with science-based climate targets and develop the mechanics to measure the returns on sustainable supply chain activities.

Who are the winners and losers as existing supply chains are restructured?

"In the US, there were 1,300 companies that reshored in 2021; a third of those were in IT or medical care. There are also limitations to this trend because of lost competitiveness."

PATRICK ZWEIFEL
Chief Economist, Pictet Asset Management

"Automation and robotics are potential winners from deglobalisation as reshoring from lower-wage countries will accelerate automation."

STEVE FREEDMAN
Head of Research and Sustainability, Thematic Equities, Pictet Asset Management

4

SOUTHEAST ASIA IS THE KEY BENEFICIARY

Higher production costs in Western countries limit the scope for reshoring en masse. Even if governments provide capital, there remains a knowledge and talent deficit. Costs are also higher than they are in established supply locations such as Taiwan – at least until scale is reached.

Most experts agree that the beneficiaries of the shift away from China will be its southeast Asian neighbours. Some US companies have not fully reshored production but rather moved out of China. Apple provided a good example when it shifted its iPad production capacities to Vietnam.

In most cases, a shift to reshoring production will have a positive effect on employment levels by creating local or regional jobs. At the same time, inflation and higher labour costs mean that workers can command better salaries, conditions and greater flexibility.

The experts pointed to automation, AI and robotics as the most viable ways to bridge the gap between cheap offshore labour and sustainable reshoring. Manufacturing, logistics, supply chains and energy efficiency will all improve immeasurably from machine learning.

Companies such as Siemens are betting big on digital twins and the "industrial metaverse", an online space where humans can collaborate, invent, plan and simulate in a virtual world.

Far from Facebook's vision of the future, the industrial metaverse will enable organisations to optimise any process in the real world. Smart investors would do well to heed its rapid evolution.

Retool or reshore: is it a question of how or where to make the change?

"Businesses now need multiple suppliers to ensure that if one fails, there are alternatives in place. This is inefficient and it's going to be more costly but it is resilient."

JAN-EGBERT STURM
Director, KOF Swiss Economic Institute, ETH Zürich

"Vietnam stands out as one of the most popular destinations for investment in manufacturing. Another example is Mexico, which will benefit due to its proximity to the US."

DONG CHEN
Executive Director and Head of Asia Macroeconomic Research, Pictet Wealth Management

STÉPHANE GARELLI

Q&A

The founder of the World Competitiveness Center sat down with Pictet to talk about the (de)globalisation megatrend, its effect on the flow of global capital and what this means for businesses and investors in the coming months.

Q To what extent is the world deglobalising? And if it is, what does that look like?

A We are in a global world but one that is fractured and operating in a different way. The fundamental question is how the open world – the US, Europe, Japan, Southeast Asia – and the fractured world can speak and trade with each other?

If you think of globalisation as a book, we're in a new chapter. The golden age came between 1978 and 2018, when the world was open and cost efficient; if this were a book chapter, you could title it, "Just in time." The consequence of that open world has been that this era witnessed the emergence of extreme specialisation everywhere, exemplified by a heavy reliance on China for manufacturing, the US for advanced technologies, Europe for consumer goods, and OPEC1 for energy.

The problem with specialisation is that it has generated vulnerability, and now suddenly people have realised that we cannot be so dependent on one or two suppliers. And we are in a transition period in which the name of the game is the decoupling of economies and the application of technologies.

Q How has that fracturing played out?

A Decoupling means not relying heavily on one or two countries, especially for supplies and technology. That goes for both sides: the US, Europe and also China have said, "We don't want to be over-dependent on one another." In this transition period, we have moved from a business model focused solely on cost efficiency to one emphasising business reliability. That was the case for a short period of time before the Russian invasion of Ukraine. We've since moved into what we have now: an era of globalisation becoming fractured and a world that is split. In the old days, we were all using Swift for financial transactions and the same company could operate everywhere. Now it is a case of countries like China, India and Russia saying, "We want to have our own operating platform and credit cards and we want to have our own system.

Q What would you say are the main consequences of that shift?

A Commerce is going to be much more political and the key issue for all companies will be access to markets. In the old days, access to markets was an economic debate monitored by the WTO in Geneva. Today, access to markets depends on governments;

they are the ones deciding whether you can come and under what conditions. If you are, say, Elon Musk and you are building a factory in Germany and you fight with the government or with German competitors, then you go to court.

If you are not happy with the outcome of that hearing, you go to arbitration with the International Chamber of Commerce. But if you are operating in China, then the Chinese government can say, "Thank you very much, but now we have our own company making electric cars and we are fed up with you." It is a political decision.

Q Where do the roots of this current fracturing lie? Are they found in the US-China trade war?

A To a certain extent, the rise of populism was bred by a feeling of vulnerability. People started to play on that, saying things like, "We cannot tolerate being dependent on China," for example.

Q What would you say to investors about the risks that are involved in the changes that you are describing?

A They will have to be far more careful about where they invest. And they are probably going to be much more short-termist in their thinking: you should be ready to get out very quickly. You also have to prepare for the anticipation of others. Everybody is trying to predict what the mood is going to be in a few months' time and that makes it very difficult to foresee where the markets are heading.

The key issue is that we are going to be in a world where the major economic decisions are political. Just take energy, for example, which is becoming weaponised as a political instrument. If you look at the largest energy companies around the world, very few are private now. National oil or gas companies are being used by governments, which was not the case during the golden age of globalisation. I am very concerned that this fractured world is no longer a multilateral one. Governments are putting pressure on companies with windfall taxes, which means that they can affect a lot of business decisions in this new environment.

The business community needs to understand that they must work better with governments because they are under pressure from society on issues like transparency, climate change and gender equality. And this big revolution is not coming from the companies; it's coming from society.

Q And what about the opportunities?

A Asset security is going to be important and we are going back to a world in which we'll say, "We want to operate in some countries but we don't want to operate with 100 per cent of our own investment." We may have more joint ventures and local distributors. Duplication of technology will mean more investment, which would have to be done in Europe and the US to increase the reliability of supply.

The good news is that this means investment but the bad news is rising costs. Reshoring or near-shoring means that there will be a lot of investment going back, maybe not home, but near home or into countries that are compatible with your own. That means more jobs in Europe and the US. And the resulting inflation will result in plenty of conversations about wage demands.

STÉPHANE GARELLI
is founder of the World Competitiveness Center at the International Institute for Management Development and Emeritus Professor of Competitiveness at the University of Lausanne in Switzerland. Prior to these current roles, he was managing director of the World Economic Forum.

Opportunities

When our experts considered (de)globalisation, security was the watchword, with investment opportunities to be found in companies setting up robust supply lines and tackling cyber threats.

DIVERSIFICATION OF SUPPLIERS

An over-reliance on a single supply chain can cause costly production delays. Opportunities await in more robust networks.

In the wake of the coronavirus pandemic and the logistical frailties that it revealed, companies want to guard against the risk of a single broken supply chain more than ever before. Recent years have seen a clear diversification of suppliers, most notably away from China. While the rebuilding of entire industry ecosystems will be costly for businesses and sometimes require multiple attempts, such systems are inherently more resilient.

So what does that look like in reality? Conversations with our experts and studying the data show that a full-scale reorganisation of supply chains is taking place, with major suppliers shifting their operations nearer to their final markets and to politically friendlier countries too. Friendly countries with low labour costs, especially ones situated near to the US and Europe, such as Morocco and Mexico, are also already benefitting from greater demand for skilled workforces. Meanwhile, companies are building local production plants in Europe and the US where new tax rebate incentives are in place. They might be sacrificing efficiency and inexpensive labour but they are gaining reliability. That in turn brings investment opportunities for steady, stable profits.

Our experts see supply chain separation as particularly important when it comes to products that are considered to be of strategic importance – ones that hold implications for national security. Local farming is one example of this. The semiconductor industry – the lifeblood of efforts to automate industry – is another.

Taiwan Semiconductor Manufacturing Company (TSMC) is building a factory in Arizona; Micron and Samsung are doing the same in Idaho and Texas, respectively. Companies like these will have a degree of visibility on demand and will therefore make good investments. In total, about 1,300 companies were reshored to the US in 2021.

It's not all bad news for China. New US production is largely happening in addition to, rather than instead of, Chinese production. That global shift has also provided a spur to research and development (R&D). Chinese manufacturers have already halved the size of semiconductors in a bid to compete, providing further investment opportunities.

CYBER DEFENCE

Security in all its forms will present prospects for investors with deep pockets and a strong stomach.

The war in Ukraine has already passed its first anniversary. The conflict has injected plenty of volatility into energy markets and forced central banks to grapple with the ensuing inflation. As North America's geopolitical tensions with Russia and China continue to escalate, defence companies will benefit. The war in Ukraine has already sent defence contractors into overdrive but, looking further out, cybersecurity businesses in particular should expect more research funding as the risk of hacking and cyber warfare increases. With their comparatively low overheads, cybersecurity businesses provide a uniquely firm opportunity for profit in the years ahead. Too many developed democracies, and the businesses and institutions that service their economies, have left themselves open to deception.

European demand for cybersecurity products is rapidly growing. We predict that the continent's investment in cybersecurity will accelerate in the short and medium term as it works to catch up with the US and Asia. Israeli security start-ups in particular offer a chance for investment given the country's large pool of skilled cyber professionals and unique geopolitical and economic conditions.

> "The companies that could do well will be the ones that find the right balance between labour costs, efficiency of production and geopolitical risks. The right answer will depend on the extent and speed of decoupling – and the companies that get this question right and move quickly will benefit the most."
>
> YVES KRAMER
> *Senior Investment Manager, Thematic Equities, Pictet Asset Management*

DIGITALISATION

There is no escaping the onslaught of digitalisation so we suggest that you find your niche.

Countries around the world are becoming more self-sufficient by using digital information to improve their economic efficiency. As such, digital financial services (and the profits that they generate) are growing thanks to the increasing level of sophistication in the fintech space.

In Indonesia, about half the adult population, some 90 million people, remain unbanked. Yet 74 per cent have access to the internet via smartphones. Companies with exposure to mobile banking, especially in the developing world, are a prime opportunity for investment.

Other e-services that rely on digital finance are rapidly growing too. For example, e-commerce is growing at a rate of 25 per cent and 23 per cent respectively in the Philippines and Malaysia. That means there are opportunities not only in online finance in the developing world but also adjacent industries such as online retail.

"There is scope for evolution between various services," says Sabrina Khanniche, a senior economist with Pictet Asset Management. "For instance, Ant Financial, a leading Chinese mobile and online financial services company, started as a payments service before expanding to provide digital credit." Investors should pay close attention to companies that are expanding within – or pivoting into – this sphere.

Start-ups in the world of DeFi (decentralised finance) also present an interesting new growth area. "A new wave of innovation breakthroughs is on the horizon, which could bring profound changes to the world," says Dong Chen, Executive Director and Head of Asia Macroeconomic Research at Pictet Wealth Management. "A good understanding of this future innovation trend is essential for any forward-looking investment strategies."

This shift towards DeFi may still be in its early stages but related financial technologies will almost certainly provide potential growth areas, particularly during a period of volatility and instability for traditional markets.

AUTOMATION

Increased automation because of reshoring and a need for more self-sufficient efficiency will take hold in many more sectors.

A number of developed nations are experiencing labour shortages, partly due to an ageing population. That is incentivising business owners to automate even faster, especially in their logistics and warehousing operations. We see a strong need to automate this segment further with collaborative solutions such as "co-bots", which allow huge productivity gains and improved working conditions.

"A secondary driver to deglobalisation beyond geopolitics is climate change and the concerns about the impact of global versus local supply chains," says Peter Lingen, investment manager for the Pictet Robotics Fund. "The increase in environmental concerns is pushing companies to provide greater transparency on supply chains and the distances travelled by products before they reach consumers."

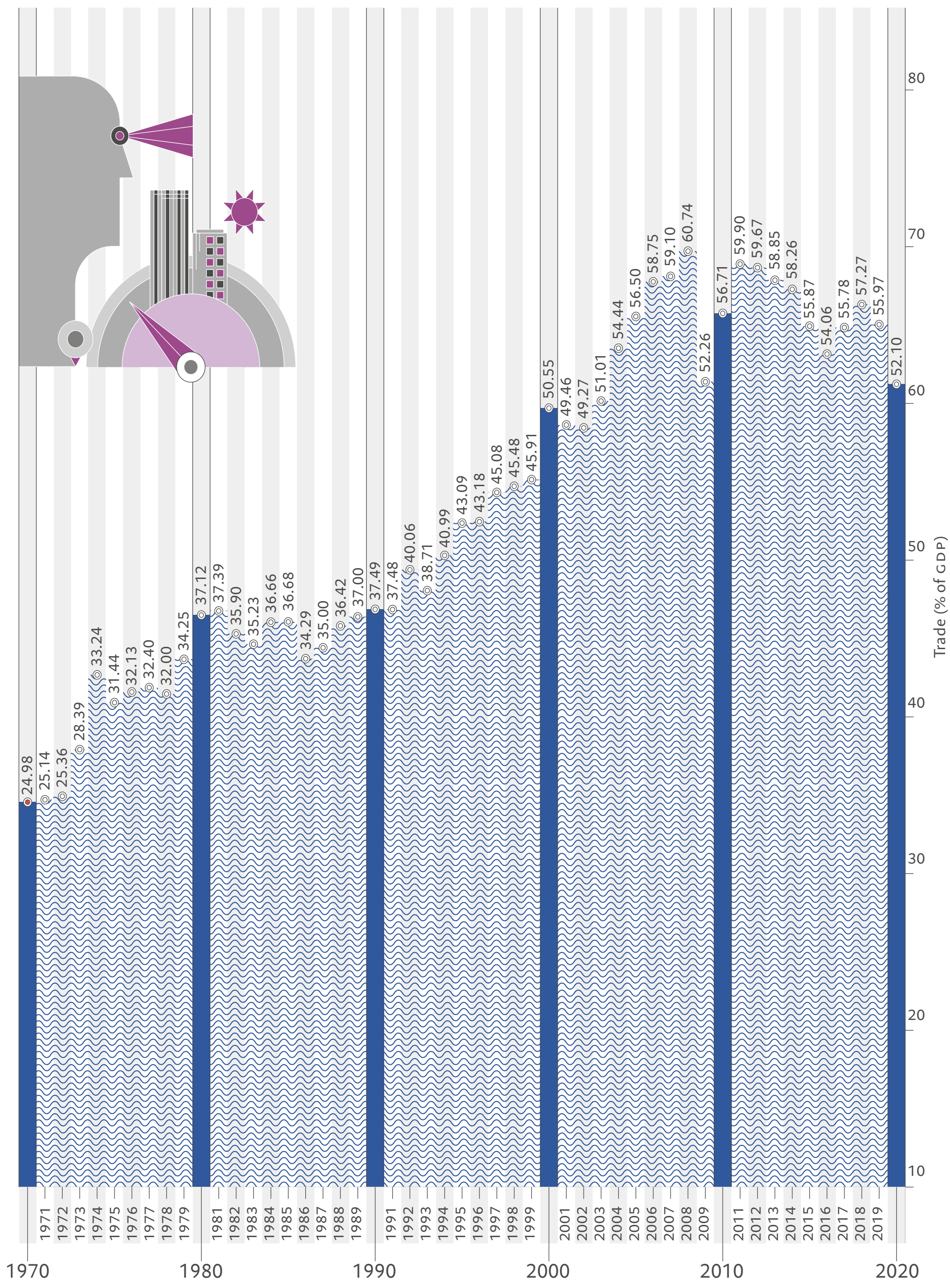
The effort to reduce dependence on fossil fuels is a priority for businesses and consumers. One clear beneficiary of that shift has been the electric vehicle (EV) market. A newer class of EV manufacturers is looking to establish vertically integrated, at-scale production. Whether they succeed in their own right or are acquired by larger, more established players, they are increasingly worthy of investors' attention and investment.

Companies that produce key components in-house – those that are vertically integrated – are likely to provide the most secure returns on investment. "Vertical integration could create fantastic opportunities in some sectors like automobiles, as producers are now building their own battery plants," says Pictet Wealth Management corporate financial analyst Gregory Kunz, who also points to the example set by another boom industry. "The computer sector in the US is 50 per cent more vertically integrated today than it was 20 years ago."

The speed of decoupling is key here. The companies that move quickest in terms of near-shoring manufacturing capabilities and automation will be the ones that are best positioned to benefit.

The importance of global trade to a country's GDP

This graph, which peaked in 2008, shows global trade levels in the period 1970–2020 (calculated as a sum of the exports and imports of goods and services), measured as a percentage share of GDP.



Source: World Development Indicators

MEGATREND

3

Service economy

With each passing year, services represent an increasingly larger share of the world's economy when compared with agriculture or manufacturing. That shift holds deep and potentially lucrative consequences for the financial sector, education and subscription-based business models.

OBSERVATIONS

46 Telemigration is changing where and how we do business, write's Pictet Asset Management's Chief Economist, Patrick Zweifel.

FINDINGS

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Q&A

50 The World Trade Organization's former chief economist shares his thoughts on the challenges and benefits of the service economy.

OPPORTUNITIES

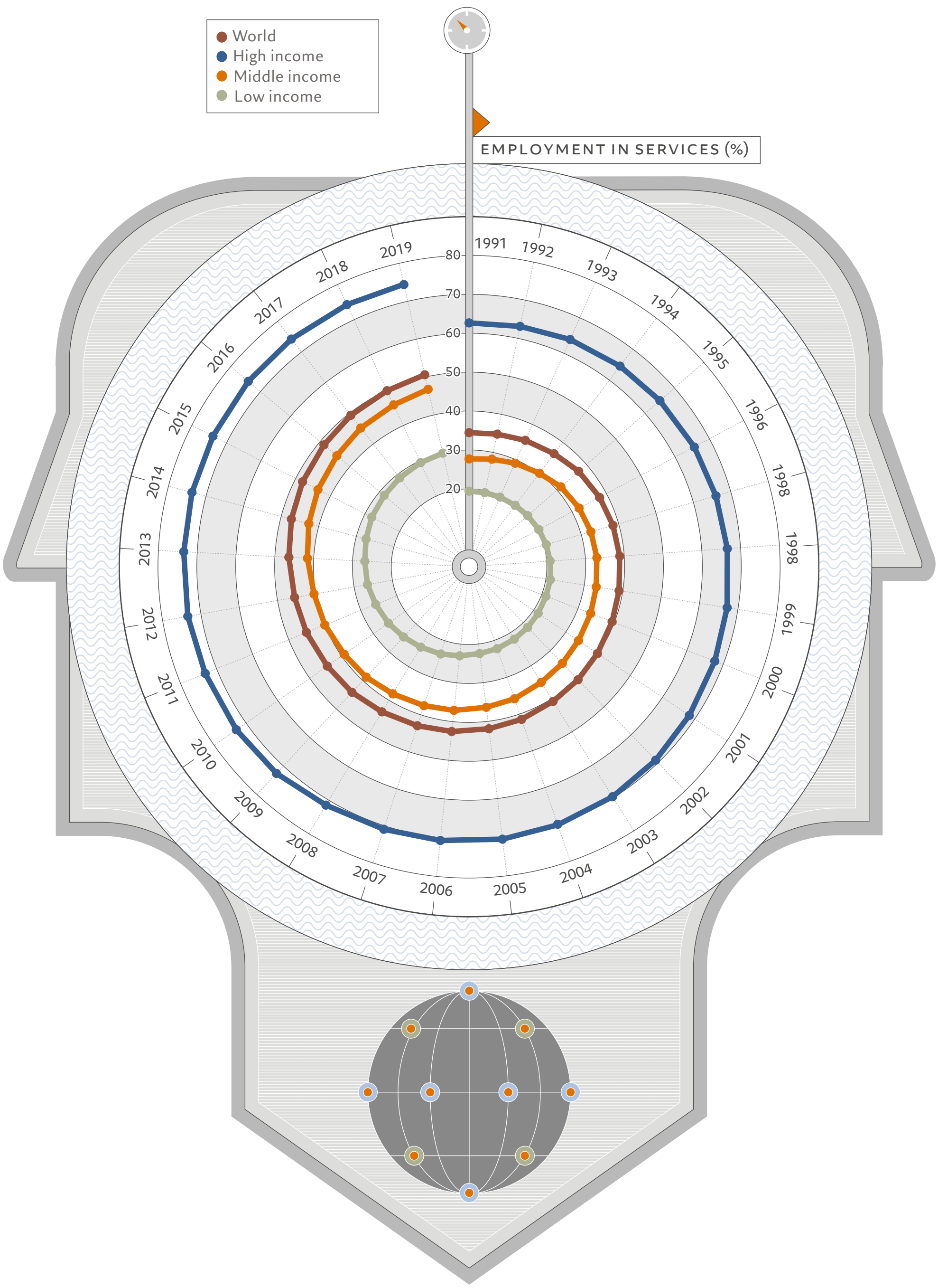
54 From the gamification of learning to an alternative to hospitality reward schemes, we outline the service economy's most interesting investment prospects.

The world's major economies are rapidly shifting away from being dependent on industries such as heavy manufacturing while technological advances are beginning to streamline sectors such as agriculture and transport. At the same time, the service economy is seeing remarkable growth. In the years ahead, the share of the world's value generated by services – as opposed to agriculture or manufacturing – is expected to jump. This structural shift has major implications for the global economy's make-up. Included within the broader issue of the service economy are factors such as financialisation, the rise of the "knowledge society" and the concept of "everything as a service", all of which are revolutionising the way that traditional industries operate.

So, what are the realistic, concrete innovations that will drive such growth and create positive change? The broadening and deepening of the financial sector, higher knowledge content embedded in economic and social relationships and a shift towards subscription-based business models are all contributing towards the service economy cementing its place as a major sector in the future of global economics.

How income drives the service economy

This graph shows the growing share of services employment in a percentage of total employment between 1991 and 2019, arranged by the income grouping of countries.



Source: The World Bank

PATRICK ZWEIFEL

Observations

Pictet Asset Management's Chief Economist discusses the rise of the service economy, the sectors most likely to be affected by its growth and the impact of telemigration on where service providers conduct their business.

The changing nature of services is becoming an increasingly important trend for the global economy. In the broad arc of history, globalisation has generally happened when the invention of technologies – steam power, for example – has reduced the cost of transportation and logistics, allowing us to increasingly move goods from one nation to another. That trend is now being repeated in the case of information and services.

This is not a universal trend, however. The wholesale retail sector, for instance, is less likely to be affected. It is probable that the only differences in that world will be seen in emerging markets, such as India and South Africa, where e-commerce is taking off. That said, it is certainly the case that information technology is a driver of growth in the service economy. One prime example of that comes in the education sector as regards e-learning. The finance industry would be second, although perhaps for slightly different reasons that relate to digitalisation and artificial intelligence. And business services come third.

MIGRATING SERVICES

The global response to the coronavirus pandemic has accelerated a trend we call telemigration because the cost of not being face to face with a client or customer has fallen. Previously, everyone thought that services could only be delivered between two people who were facing each other, but we now know that this is not necessarily the case. Today, you can join an online meeting from anywhere in the world and the acceleration of telemigration is ongoing to allow entire professions to be based elsewhere in some sectors. Developed economies can outsource work to places where the cost of labour for business services is much cheaper.

Telemigration is a trend that will also benefit emerging market economies, provided that they can find the people with the right skills and education. Take legal research: this is something that could be done from South Africa, an English-speaking country with high education rates. On top of that simple transfer of labour, there are also software robots, which are to the service sector what physical robots are to the manufacturing sector. Software robots increasingly using AI allow you to automate parts of those outsourced jobs. Taken together, these developments will reshape the future of the service economy. However, not all jobs will be easily automated or telemigrated.

TRADING SERVICES

A broader trend that is shaping the way we trade services is how we as a society perceive our vulnerability. Climate change is one major element within that. More broadly, however, in the global economy, we are seeing increasing protectionism and the impression that we all need to be less vulnerable and less dependent on certain countries for key sectors. That trend is revealing itself in two services in particular: one is medical care and the other is IT-related products. Having said that, the world's largest free trade agreement, the Regional Comprehensive Economic Partnership Agreement (RCEP), only came into force in early 2022. The RCEP aims to provide a framework for lowering trade barriers and securing improved market access for goods and services to benefit businesses based in the 16 participating Indo-Pacific countries.

While we have been seeing signs of deglobalisation as far as the trade in goods is concerned, when you factor the services trade into the equation, which is likely at the beginning of a globalisation cycle, it starts to become a much more nuanced picture.

PATRICK ZWEIFEL
Pictet Asset Management's Chief Economist examines broad trends in the way that goods and services move around the world. He uses his findings to inform the firm's analysts and portfolio managers.

Findings

1

THE CONCEPT OF "SERVICE" NEEDS RETHINKING

Service is a human activity. However, rather than replacing humans, digitalisation and virtualisation are providing new opportunities for the growth in service-based business models. The challenges of resource scarcity are further supporting a shift towards a more service-based economy. As a result, we are seeing the service economy broadening, deepening and taking up an increasing share of global economic activity.

Companies are increasingly combining goods with services to offer more value. Take John Deere, the world's largest tractor manufacturer, for example. Beyond selling farm vehicles, the company is also offering service contracts. Additional products, such as GPS planting data to help increase farmers' yields, allow John Deere to sell their tractor and develop a robust after-sales income stream.

By leveraging digital services, emerging markets could decide against becoming manufacturing centres (a slower, more resource-intensive form of development) and instead focus on services. Rather than investing in resource extraction or manufacturing, those markets can provide back-end or final product services. Emerging markets with the requisite skills and knowledge are best placed to benefit, so education is emerging as a key factor in a service economy.

The trend of telemigration can be included within digitalisation. While many manufacturing jobs are being re-shored, developed countries continue to outsource services jobs to those with lower labour costs. Yet frustration with automation and offshored human resources is at an all-time high. Opportunities lie in a wholesale rethink of what "service" really represents.

How can automation and machine-learning equal or better the benefits of human service?

"Automation and digitalisation often make higher value propositions for firms as the cost of producing goods falls because of economies of scale, automation and productivity gains."

ROBERT KOOPMAN
Former Chief Economist, World Trade Organization

"Lifelong learning is becoming increasingly important given the rise in workplace automation, modernised technology, changing attitudes to work-life balance and demographic shifts."

STEVE FREEDMAN
Head of Research and Sustainability, Thematic Equities, Pictet Asset Management

2

FINTECH IS WIDENING THE MARKET

In the developed world, talk of blockchain and cryptocurrencies has reached saturation point. But the penetration of this new technology is opening finance to those previously left out of the system. Mobile financial services are making rapid inroads in countries where high proportions of the population are unbanked. Alongside these developments, the traditional banking system is also becoming more sophisticated, offering a greater array of services that are targeted at those now able to access their finances from anywhere.

Initially focused on spending, digital financial inclusion is also moving towards lending: fintech is replacing banks in acting as the new intermediaries in providing credit. Decentralised fintech platforms allow individual online lenders to interact directly with borrowers in either a peer-to-peer lending model or a marketplace for loans. Fintech innovations have made it easier to switch from borrower to lender (and vice versa).

Several respondents singled out "everything as a service" as a sub-sector with huge potential. This phrase describes a consumption-based business model, rather than one based on licensing or outright purchase. Benefits include predictable revenue streams, higher customer retention and greater agility in developing innovative solutions. It is an extension of other models: "software as a service" (where vendors offer cloud-based software via subscription) is highly scalable and easy to both use and manage; "platform as a service" (where vendors provide operating systems and database management) is also increasing in popularity as companies modernise applications with cloud capabilities.

What is the allure of fintech?

"While the use of cash is expected to decline everywhere, digital financial services are rapidly making inroads thanks to technological innovation in the financial sector."

SABRINA KHANNICHE
Senior Economist, Pictet Asset Management

"Innovations in fintech have given anyone with a mobile phone the access to financial services. From a societal perspective, that is one of the biggest advantages."

IVO WEINÖHRL
Senior Investment Manager, Thematic Equities, Pictet Asset Management

ROBERT KOOPMAN

Q&A

The growth of the service economy has wide-ranging benefits, from empowering developing countries to a greater opportunity for green technology, says the World Trade Organization's former chief economist.

Q Where does the growing service economy have its roots?

A The servicification [or migration to service-based systems] of advanced economies is a long-term trend and, with automation and digitalisation, that aspect of economic activity often becomes a higher value proposition for businesses as the cost of producing manufactured goods falls because of economies of scale and productivity gains.

Many firms are turning towards selling a stream of economic activity because the profit margins are higher on, say, the services supporting manufactured goods. Firms will make money on the sale of a product but they really want to target that stream of after-sale care by selling a service contract.

Q What about digitalisation? How does that differ from – and complement – the service economy?

A Digitalisation is making services increasingly tradable and accessible so that you no longer have to be situated alongside the final product. You can sell services from pretty much anywhere in the world. We will increasingly see the service economy broadening and deepening – and taking up an increasing share of global economic activity.

Q What does the service economy mean for the poorest economies?

A I suspect that if many developing countries can navigate this entry into the service economy and connect to the global economy, they may be able to skip the stage of industrialisation during which you build large manufacturing plants and things like that.

This will allow these countries to put more of their economic focus on providing services, whether those are back-office services or selling a final product service to worldwide consumers.

Q Do you see the service economy being harnessed as a means to handle environmental challenges?

A There is a great opportunity here. First of all, the service economy tends to be far less carbon intensive than the manufacturing economy. And secondly, you can combine technological advancements in the manufacturing sector with deeper and more capable service provision. That provides a greater opportunity for green technology to make a positive contribution to the transition to a decarbonised economy. There is a need to learn and weed out competing ideas and products but, in general, the synergies between the technological changes in manufacturing and more easily delivered services is promising. But there has to be a policy environment that supports this integration across different countries. Many of the existing trade agreements are much more focused on manufactured goods.

The challenge of service agreements hasn't been looked at in depth at the WTO level. There are also security or privacy issues around the data that require global solutions to help ensure that users feel their privacy is secure.

Q We also have the financialisation [the development of financial capitalism] of the global economy. What risks are apparent in that process?

A The relatively free flow of capital and ideas has encouraged economic convergence around the world, and many new financial instruments have supported that. These innovations have made important contributions but they also bring a pretty significant element of risk because they often operate outside the purview of global and national government oversight. Those risks may be much bigger than the traditional financial risks that come about through governments making loans to other governments for economic development because they are usually carefully monitored. But the private sector can often innovate in ways that fly under the radar; we saw this happen during the financial crisis. There are a number of concerns about how we find a balance between allowing innovation and undertaking some fairly objective risk assessment.

Q What do you sense are the more investable sides of the service economy?

A Many companies are trying to use new technologies to do their own risk assessments from the people who use their services. If those companies are lenders, they are trying to combine those technologies with big data to make faster and more accurate risk assessments. In terms of which sides are going to benefit, it will be players in sectors for whom the cost of their access to finance will be reduced by these new capabilities. Cost reduction will allow them to attract more finance and build their businesses. Sectors with high concentrations of underrepresented groups are most likely to benefit.

Q Is there a potential for the service economy to benefit people typically less engaged in the financial system?

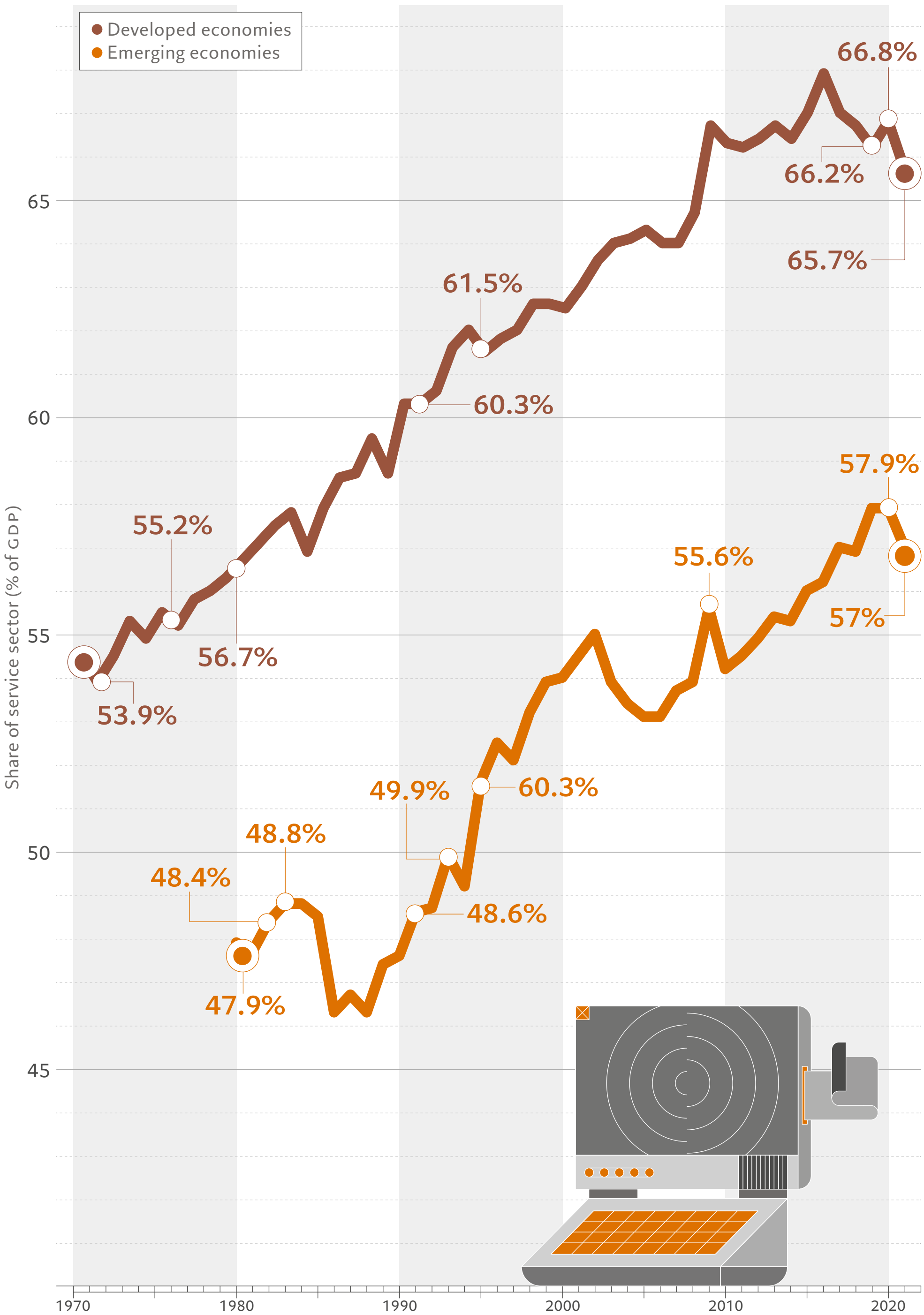
A There could be. Much of the innovation is about trying to find ways to increase inclusion, bankability and things that often hold back small and medium-sized enterprises (SMEs) in developing and developed countries. So many of these innovations are very, very helpful for them.

Do keep in mind that the innovators of some of these financial products are mainly interested in getting as big a share of the value as possible. And the fact that they are somewhat opaque in their design and how they operate may allow those innovators to extract more rent than might be reasonable, especially given the underlying risks that might be embedded in their products.

ROBERT KOOPMAN
is currently Hurst Senior Professorial Lecturer at the School of International Service, American University, but when he spoke with Pictet about the burgeoning global service economy, he was finishing his term as chief economist at the World Trade Organization.

The importance of the service economy

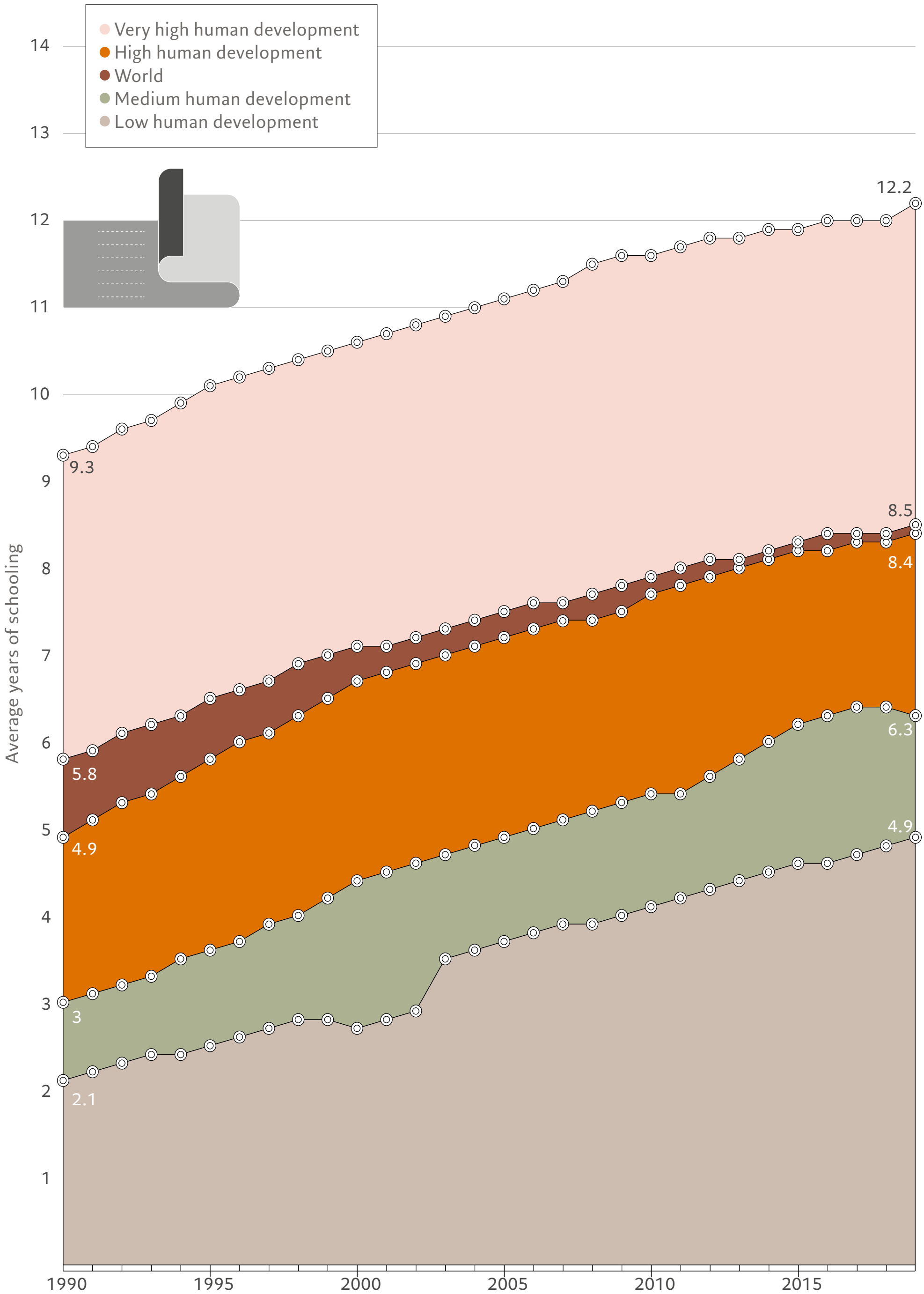
This graph shows the share of service sector as a percentage of GDP. The brown line shows the median of 23 developed economies; the orange line shows the median of 30 emerging countries.



Source: The World Bank

How education impacts human development

This graph shows the average number of years of schooling in relation to the human development levels of countries in the period 1990 to 2020.



Source: UNESCO Institute for Statistics

Opportunities

If "everything as a service" is the buzz phrase, look no further than hospitality and a creative approach to subscriptions for the cutting edge. The gamification of learning is also set to be the next big academic trend.

INFORMATION SERVICES

Tied to a fractured global outlook, digital services are increasingly replacing in-person alternatives from online banking to human resources.

For businesses around the world, digital systems are growing in importance and number. They are also becoming increasingly integral to the operations of those businesses, not least in terms of finance. The world of blockchain technology is widely seen as having the potential to disrupt the traditional financial sector. Despite its application in the world of cryptocurrencies – a sometimes lucrative but often volatile space – blockchain technology is gaining broader acceptance as it smooths and dramatically improves the ways in which companies operate.

While DeFi (decentralised finance) projects remain immature, they stand to gain wider acceptance as the traditional centralised financial system faces its own problem of instability, with major economies increasingly rejecting foreign platforms. Rather than relying on the Swift international payments system, China, India and Russia have moved to create their own payment systems, credit cards and companies. New companies are taking the opportunity to branch out into this growing and hungry market. Much of the innovation in financial instruments of recent years has come as businesses push to increase inclusion and bankability and slash the restrictions and inefficiencies that hold back small and medium sized companies.

Another sizable investment opportunity comes with the companies offering personal online banking in the developing world. Some 66 per cent of unbanked people own a mobile phone, giving them access to both the internet and potential mobile money accounts. But if consumers are to be encouraged to use those systems, the companies offering them must be able to reassure them that their personal data is secure.

In the online services space, Edenred is a good example of a leading provider of digital employee benefits such as prepaid meal programmes and mobility solutions. The platform connects more than 50 million users and two million partner merchants across 46 countries. The company's sustainable development policy is a key part of its strategic plan and is centred on three pillars: improving quality of life, preserving the environment and creating value responsibly. While Edenred is benefiting from certain current economic developments such as rising fuel prices, wages and interest rates, it's also, in a broader sense, a best-practice example of a firm finding new markets for itself – and allowing its users to benefit from uncertain times.

HOSPITALITY

Hotel firms are moving on from cumbersome rewards programmes to tempt customers with subscription services instead.

In order to tempt new customers and retain existing ones, hospitality sector players are moving away from traditional rewards programmes and towards subscription models. Much in the same way as Netflix charging a monthly fee to view its content, hotels are introducing subscriptions that guarantee loyal customers big discounts and creative perks. For decades, hospitality followed the airline industry by offering frequent traveller rewards points to retain their customer base.

That model holds problems for both the provider and the user. For travellers, the benefits are generally minimal, unwanted and expensive because they must still pay for the accommodation to enjoy them.

For companies, the recurring revenues of a subscription model have the potential to bring in far more capital than a points system that is only of internal use. Companies such as the Accor hotel group have realised this and developed a two-tier subscription service.

The first is connected to its basic Ibis brand, which costs EUR90 per year and includes 10 per cent off any stay and 5 per cent off non-refundable rates; 10 per cent in bars, restaurants and spas; and instant access into their gold frequent flyer programme and other discounts. For EUR80 more per year, the group offers a 20 per cent discount on weekends and a 15 per cent discount on any stay in any hotel in the Accor portfolio.

"Human services companies can adapt and personalise their offering much faster than companies that rely on a product line, thereby creating pricing power and repeat purchase habits," says Steve Freedman, Head of Research and Sustainability at Pictet Asset Management. "This enables superior growth and better profitability, leading to a higher free cash flow return on investments."

Freedman believes that the services industry is more sheltered than others from the bulk of negative inflationary pressures and supply chain challenges that are expected to continue into the medium term. "Services are highly flexible business models that can better adapt to macroeconomic changes," he adds. "Labour market dynamics are expected

> "While physical wellbeing remains important, individuals have started to care more about their mental wellbeing. People realise that they need a sense of purpose in their lives and have a job that aligns with their moral values. They consume more services as a way to enjoy life and maximise their most valuable asset: time."
>
> STEVE FREEDMAN
> *Head of Research and Sustainability, Thematic Equities, Pictet Asset Management*

to be in flux, having parted ways with precedence over coronavirus. Many labour market dynamics are set to remain tight, with increasing pressure for employers to find and retain talent, offering opportunities for recruiters and additional employee benefits."

> "The future of learning is a dynamic blend of personalised experiences, interactive technology and lifelong curiosity. It transcends boundaries, empowers individuals and embraces collaboration, preparing us to thrive in a rapidly evolving world of knowledge and innovation."
>
> MARIEN-BAPTISTE POUYAT
> *Senior Investment Manager, Thematic Equities, Pictet Asset Management*

With the pandemic having slipped into the rearview mirror and both business and leisure travel nearing 2019 levels in several regions, the companies that offer subscription services to frequent users stand to be able to exploit a major new revenue stream and, with that, reap rewards.

EDUCATION

Software developers are pioneering new forms of accessible, incentivised education for free – and on a global scale.

The gamification of learning, best demonstrated by the language app Duolingo, is revolutionising the way that we educate ourselves. Today, there are 1.5 billion people trying to learn a language and, for anyone who has attempted to do so, the hardest part is staying motivated.

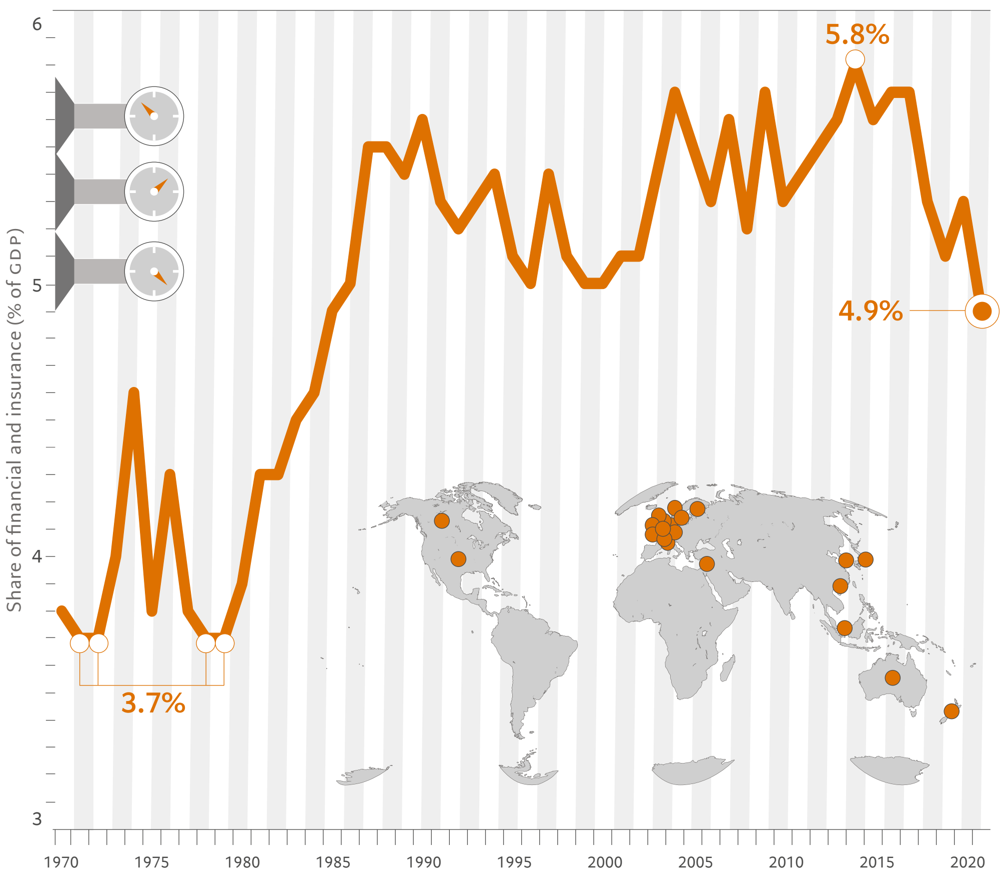
Duolingo offers accessible language tuition for all by harnessing the power of learning and sharing the knowledge for free. It taps into the understanding that the brain processes story-led learning much more effectively than attempting to memorise facts. By also aiming to be a proficiency standard worldwide, the company provides a unique solution for humans to achieve self-fulfilment through education. Duolingo is, therefore, becoming part of the future of society and over time could become the "Google or Amazon of languages" and a learning reference in the world of schooling and self-education that enables reskilling and upskilling. From a human and social perspective, Duolingo's app is freely accessible to consumers and has been downloaded more than 500 million times. It is competing with social media for people's screen time and attention. It is therefore also a great social investment and a benchmark for how education could evolve.

Microcredentials (the certification of small short-term learning experiences) and, more widely, a pivot towards human-focused services looks set to be the direction of travel for the education-as-a-service market. As automation increases and labour pools become smaller and more competitive, the acquisition of skills for ever-changing careers or outsourcing daily chores to free up valuable time will become increasingly lucrative.

More broadly this trend offers a key area of opportunity: human-focused services provide an opportunity for developing market workers looking to skill up. For investors, they could deliver a persistent return in the long term.

The rise and fall of financial and insurance services

This graph shows the contribution of the financial and insurance sectors as a percentage share of GDP. The line represents the median percentage across 23 developed economies.



Source: OECD

FINAL THOUGHTS

Close analysis of these three megatrends reveals a number of investment opportunities but the global picture continues to shift, which makes the expertise of Pictet's research teams a constant resource in changing times.

Of the 21 megatrends identified by Pictet and the Copenhagen Institute for Futures Studies, this report has focused on resource scarcity, (de)globalisation and the service economy that are key to international politics and the global economy today.

The investors, businesses and industries that remain most alert to shifts in these trends and respond to them in agile and dynamic ways will be the ones that are best placed to capitalise on this ever-changing landscape.

Resource scarcity is being felt at every level of society, whether that is an advanced development, such as the use of robotics to conserve resources on a production line, or a basic human right, like having access to clean running water.

Emphasis is being placed on resource recovery and finding renewable alternatives, which will be helped by innovation in energy storage and the development of smart infrastructure projects. In sectors as varied as food production and waste management, the focus is on reducing inefficiency – and the circular economy provides a natural conclusion to this. It is not simply a case of refining existing systems, either. As we saw in the example of Innovafeed, disruptive technologies that offer sustainable, industrial-scale solutions to specific problems, such as biodiversity loss, can also provide dynamic opportunities.

When it comes to the contrasting flows of (de)globalisation, our experts point towards the diversification of suppliers as a key area of opportunity. Reshoring is taking place, yet many businesses are widening and strengthening their supply chains too, shifting operations to politically friendly countries with low labour costs.

A rethinking of the service economy is also providing a wealth of opportunities, such as combining subscription services to the sale of goods and extending personal online banking in the developing world.

While this report draws attention to some of the most prominent megatrends, the specifics are forever shifting. By identifying and analysing these changes, Pictet's research teams can find long-term opportunities in global markets.

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