1

The Conventional Outlook

Economic indicators augur lower global growth over the next quarter of a century. The main culprits are debt and falling productivity. At the same time, we are experiencing a shift in global economic power — to the disadvantage of existing economic heavyweights such as the United States, Europe and Japan — due to major trends in demographics and savings. Africa may turn out to be a major economic player, while Russia and the Middle East may diminish in power. All this will influence geopolitics, but it may also be instrumental in the economic sphere — forcing a change in global economic policies and the way people look at economics.

The Global Outlook Horizon, 2030

Over the next fifteen years, new or accelerating trends in debt, demography, urbanization, global savings, innovation, productivity and energy will transform the global power structure, with unprecedented speed, magnitude and impact.

Debt: Debt will lower the rate of global growth and limit the room to manoeuvre, especially for Japan, the United States, Britain and South Korea. In 2013 the Bank for International Settlements (BIS 2013) analysed how much fiscal tightening major countries will need to make in order to

achieve a sustainable position in their public debt by the year 2040. For the United States, the figure was 14.1 per cent, for Japan 14.9 per cent, Britain 13.2 and Korea 11.9. The eurozone countries — often considered to be languishing in a debt trap — presented a much more promising picture. Germany was expected to need only an additional 3.4 per cent of fiscal tightening, France 5.4 per cent, Italy 4.0 and Spain 11.4. China, meanwhile, will need 2.5 per cent and India 3.7 per cent.

When it comes to private corporate debt, it is the emerging markets and developing economies (EMDE) that appear to be in a more vulnerable position, compared to developed countries. Their share of world corporate debt has risen steadily in recent years, while in the industrial countries there has been a slight deleveraging in this segment of debt (*The Economist* 2015).

A more immediate concern is the proposed interest rate hike by the U.S. Federal Reserve, which threatens the position of industrial economies and EMDEs alike, though in different ways. For industrial countries it will add the burden of higher interest rates to their already sluggish economies. For EMDEs it will mean that public and corporate debt will have to be repaid in major currencies that are growing in value, while the revenue from which those repayments are made will be in currencies that are shrinking in value.

It is estimated that the outstanding mass of U.S. Treasury bonds (about $5 trillion) is completely renewed about every seventy months. This means that about six years after tightening, the cost of servicing the national debt, as a share of the U.S. federal budget, will rapidly balloon. The Congressional Budget Office (CBO) calculates that net interest payments will increase from 1.4 per cent of GDP in 2013 to 3.2 per cent in 2023 (CBO 2013, p. 4). If economic growth turns out to be lower than expected, or interest rates higher, the figure may surpass 3.2 per cent. A similar fate threatens Japan, Britain and South Korea.

As for corporate debt (excluding financial institutions), many corporations in the United States and around the world have taken advantage of the prevailing low interest rates to borrow more. It is debatable how vulnerable they will be to rate hikes as a result — the figures are not always transparent or comparable. But they will unquestionably face rising costs from any rise in interest rates and — as many may be exposed to exchange rate risks as well — it could turn into a crisis reminiscent of the Asian financial crisis of 1997.

It thus seems likely that governments will have to allocate revenue from taxes or sales to service a high and growing debt burden. Non-financial

corporations, and perhaps some financial institutions as well, may try to transfer their debt burden to the public sector, as many did successfully in 2008–9.

Economically, the long-term consequences cannot be anything but lower demand. Frequently, economists and policymakers see debt as a purely monetary phenomenon. It is not. Debt means over-consumption in the past compared to production. Repayment will inevitably take the form of under-consumption in the future, compared to production. The question is, who will be the one under-consuming — creditors or debtors? Some observers lament the present state of low inflation because it means the real value of debt does not go down. But inflation simply transfers the burden of debt-repayment under-consumption to creditors, since the purchasing power of their loans would fall compared to what it was when the loans were made. Deflation has the opposite effect, and transfers the under-consumption burden to debtors. An in-depth analysis might well discover that the savings rate of debtors is lower than that of creditors — an expectation supported by common sense. Total consumption over time will therefore be lower as repayment (future under-consumption) is shifted to creditors, who will consume less overall, especially compared to the over-consumption debtors enjoyed in the past.

Demography:[1] In 2050, Africa will be the continent with the most rapidly growing population — jumping from 1,200 million today to 2,400 million. Asia will rise from 4,300 million to 5,200 million, Northern America from 355 million to 466 million, Latin America from 617 million to just below 800 million. Europe's population will actually fall, from about 750 million to 700 million.

The availability of labour determines where labour-intensive manufacturing will take place. We saw this in recent decades in Asia; first in Japan more than fifty years ago, and then China since 1980. No country has ever managed to achieve high and sustained growth without labour-intensive manufacturing providing the take-off platform. It only works, however, if supporting policies are implemented. The economic and industrial model must keep wage levels down, even if the price is inequality. Migration from rural to urban areas will expand the labour supply. Public investment in infrastructure and in facilities for basic training is imperative. Eventually, population growth will taper off, forcing wage levels up and eroding the support for the model. This is what the World Bank labels "the middle income trap", where a country is not "poor" enough to compete

with other low-cost producers, with their still-abundant labour force, yet not "rich" enough to take on the advanced economies in competition over technology, design, performance, accompanying services, branding, etc.

China's labour force is expected to peak in 2015, at 1,030 million, after which it will steadily fall, to reach 825 million in 2050. This will force a shift of competitive parameters. A rapid increase in research and development (R&D) — currently running at about 1.9 per cent of GDP — bears witness to that. India's labour force will rise from 800 million in the year 2000 to 1,000 million in 2025 and 1,100 million in 2050.

Africa faces an explosion in its work force — from 500 million in 2015 to 1,410 million in 2050, and 2,592 in 2100. The labour force of its most populous country, Nigeria, is expected to rise from 50 million in 2000 to 110 million in 2025, 240 million in 2050, and 602 million by 2100. The American labour force will likely remain strong — rising from 195 million to 230 million in 2050. Those of Japan, the main European countries and Russia will all see a sharp decline. In many European countries, a higher participation rate (as more women enter the labour market), as well as a rise in the pension age, may mitigate the negative repercussions of a shrinking population. A modest increase is on the table for the Latin American labour force, rising from 385 million in 2015 to 480 million in 2050, before falling to 361 million in 2100.

The dependency ratio (the share of population over 65 years of age, relative to that of the working-age population, aged 15 to 64) presents a similar trend. Japan's dependency ratio will hit 74 per cent by 2050, and the EU 48 per cent. That of China is expected to be 39 per cent, and after 2035 it will exceed even the American one, forecast to be 34 per cent. Meanwhile, India's will be about 21 per cent and Africa's a mere 11 per cent. Brazil's dependency rate in 2050 is expected to be 40 per cent — on a sharply rising continuum from 10 per cent in the year 2000 to 60 per cent in 2100. Argentina shows a similar though less steep rise, from about 20 per cent in year 2000 to 55 per cent in 2100, while Mexico rises from 10 per cent in 2000 to 35 per cent in 2050 and 60 per cent in 2100.

Thus, the relative size of the labour force and dependency rate unequivocally favours South Asia until 2050 and Africa until 2100, while Japan and Russia face an alarming demographic collapse. In between these extremes, Europe, China and the United States will all face some difficulties, though the outlook for the United States is slightly better than China's and significantly better than Europe's.

Urbanization: The overwhelming majority of economic activity and technological development occurs in very large urban areas — megacities and megaregions with 20, 30 or even 40 million people. In 2020, fifteen of the thirty biggest megacities will be in Asia. Three will be in the United States (New York, Los Angeles, Chicago) and three in Europe (Moscow, Paris, London), or four if we include Istanbul.

Analysts of urbanization expect 75 per cent of the world's population to live in cities by 2050, concentrated in a relatively limited number of megacities/megaregions. Yet these agglomerations will produce 66 per cent of global economic output and 85 per cent of technological innovation.

Urbanization is a driver of economic growth. Housing, infrastructure and economic foundations stimulate investment to a degree never seen before. Estimates of investment in urban infrastructure over the next decade run as high as US$8 trillion in Asia alone.

These vast new urban centres must achieve a much higher level of sustainability if they are to avoid collapsing under their own weight, from pollution, waste and congestion. Carbon neutral cities are certainly desirable, but soon total recycling — zero net waste — will be imperative. The race is on to shape that kind of city; and China, which is currently suffering the effects of high-speed urbanization, is also leading the quest for solutions.

Such considerations bring to light a crucial but little noticed factor in economic competitiveness: the quality of infrastructure. For instance, Americans concerned with competition with China have observed that labour arbitrage is increasingly tilting more towards the United States, making outsourcing and offshoring less and less attractive, and raising the possibility of "reshoring" — bringing manufacturing back to the United States. But this hopeful analysis ignores China's enormous investments in new and efficient infrastructure, compared to the crumbling state of neglect in the United States. Manufacturers will soon discover that the savings earned from relatively lower wage costs are quickly lost to queues, congestion and wasted time.

But perhaps the most intriguing challenge of urbanization is the social one. The movement of more than a billion people from rural districts to cities is a human migration on a massive scale, and it will change the way people live. In the villages, social order was anchored in the family, working in the fields together. Neighbours and village elders provided clear rules for behaviour, as well as benevolent and sometimes less

benevolent social controls. These controls were mutual ones, in which everyone shared, based on unwritten but well-known ethical norms which kept the community together. Power distance is low in the village. In the cities, power distance is high — families break up, relatives live far away, neighbours are strangers and sometimes foreigners with unfamiliar customs. Enforcement is in the hands of a faceless state, the police or the army, and the familiar unwritten behavioural norms are replaced by rules and regulations carefully written down but often incomprehensible to migrants.

Global savings: For years the majority of global savings have originated in China, Japan and the Middle East. The savers trusted in the competence of Western financial institutions to invest their money, which they did — though according to Western priorities, not those of Asia or the Middle East. This began to change when the financial crisis of 2007–8 weakened the world's faith in Western financial competence.

A country is considered a net international "saver" if its domestic savings exceed its domestic investment. China is the world's greatest international saver and will remain so for the next decade or two, barring any radical changes in its demography or domestic consumption, which does not seem likely. China has made massive investments in recent years, particularly in infrastructure and urban construction, but this investment has not exceeded its savings. The United States, in stark contrast, has over-consumed over decades, which in economic theory should push the consumption rate lower and the savings rate up as households try to free themselves from debt. There are no significant signs of that, however. Moreover, U.S. investment, particularly in public goods, has been extremely low for decades — even the massive investments in the shale gas and oil boom have not been enough to rebalance the savings gap. Any forecast beyond 2020 is increasingly conjectural, but the United States seems on-track to continue its role as a consumer of global savings — the global debtor. Psychologically, the household, business and government sectors have got used to living on debt, unshaken in their belief that the standard of living enjoyed by all sectors can be had for less than it actually costs.

Europe's future balance sheet is harder to predict — the Europeans have not over-consumed and the Euro-crisis has undoubtedly created a widespread desire for balanced books. The continent is likely to continue

as neither a borrower nor a lender. Japan has had an almost unblemished record for half a century as an international creditor, but this appears unlikely to continue much longer. Politically and psychologically it may come as a shock for Japanese politicians and citizens, who have never entered the global capital markets before as borrowers.

The salient facts are that China is likely to continue as a creditor and the United States as a debtor over the coming decades. The geopolitical question is whether China will choose to continue to feed funds into U.S. Treasury bonds. The answer is almost certainly no. At some stage China will be stronger and the United States weaker, and an abrupt return to reality will take place. Exactly how it will happen is open to conjecture — even should China decide at some point to exercise its power as creditor, it would hardly be in its interest to push the United States over a cliff.

But as China emerges as the world's largest investor, global investment patterns will increasingly follow Chinese interests. China and a few other international creditors/investors will emerge as the owners of a large and growing share of the world's production capacity. Currently, China invests around US$100 billion abroad (overseas foreign investment, outgoing = ODI), compared to a little over $100 billion entering China from abroad (foreign direct investment, ingoing = FDI). The West may be surprised at the outcome. It is open to discussion just how far Western multinational companies have acted in conformity with their national interests, but given China's political and economic setup, we may expect Chinese companies to align their corporate and political interests more closely.

Africa's growth prospects are excellent, starting from a very low base. GDP rose from US$1.6 billion in 2008 to a forecast $2.6 billion ten years later, with a trajectory for further growth above the global average. Aggregate FDI coming into Africa is about equal to that coming into China. But whilst for China it has probably peaked, it is still rising for Africa. The burning question is what will happen to Africa's savings–investment balance. The standard answer is that for an emerging economy, investment overshadows savings, leading to a savings gap as an international borrower. The snag is that the same would have been said about China in 1980, but we know that it turned out to be the opposite. The propensity to save among Africans is unknown — the continent is so diverse that people's behavioural patterns are far from uniform. Having said that, it seems most likely that Africa will turn out to be a borrower in view of

the demand for investment and the likely upwards trend in household consumption.

Innovation: The global innovation indexes published by Cornell University, INSEAD, and WIPO,[2] reveal who will do well in this crucial economic characteristic over the coming decades.

As expected, the leaders are North America and a number of European countries, plus Japan, Korea, Australia, New Zealand, Israel, Singapore and Hong Kong. More interesting are the statistics for efficient versus inefficient innovators — measuring "input" to innovate against results per unit of GDP. In theory this is an omen of who will continue to do well, even move upwards on the scale, and who will slide downwards. And while all the innovation leaders are currently doing well, the United States, Japan and South Korea are rated as inefficient innovators, and may lose their leadership positions in the near future.

The group of learners — less innovative, but more efficient at the innovation that they do — includes countries from all continents. The pertinent observations to be made in looking for efficient innovators in this group, is that China is number 14, India number 11, and several Asian countries like Vietnam and Malaysia do quite well.

Russia finds itself close to the group of underperformers and an inefficient innovator; Brazil, Mexico and Argentina are not so far from Russia, but all three merit the label efficient innovators, as is also the case for Ukraine, which is close to getting into the leaders' group. Indonesia also catches the eye, closer to the learners than the underperformers, being ranked number 6 among efficient innovators.

Among the African countries, none are found among the leaders, and only a few are among the learners, with South Africa scoring the highest but classified as inefficient. Senegal, Uganda, Kenya and Mali make it into the group of efficient innovators. Nigeria is just above the group of underperformers but scores well with regard to efficiency, ranking number 7 globally.

Listings and rankings have to be taken with a grain of salt, but they cannot be completely brushed aside, especially when compared to common sense observations. The interpretation is good for Asia, with China, India, Indonesia and Vietnam all scoring, not only well, but on an upward curve. Results are mixed for Africa, but overall African countries are moving forward and fast — Uganda is the most improved low-income country.

Germany, France, Britain and a few smaller European countries not only score well but are highly efficient innovators as well. Italy is close to being the highest scorer on both counts. Spain innovates as well as Italy but does not do well for efficiency. Among the top-twenty high-income efficient innovators, seventeen are European countries.

The big losers would seem to be Japan and South Korea — whose heavy outlays on R&D make them leading innovators, but inefficient — and, more particularly, Russia, which is ranked low on both scales.

A strong rate of innovation takes decades to achieve, not only through investment in R&D but also, and more importantly, by embedding innovative and creative thinking throughout the social fabric. To a certain degree this is a self-reinforcing process, especially in a globalized world where there is an insatiable demand for talented leaders and efficient innovators.

Productivity: To lead the world out of the low-growth doldrums, the United States as the biggest economy would need to return to the trend of growth seen before the financial crisis. Yet, as the above arguments suggest, this is unlikely to happen. Gordon (2012, 2016) points to a number of elements indicating continued lower growth.

The first industrial revolution (steam engines, cotton spinning, railroads) started in the eighteenth century and was succeeded by the second (electricity, the internal combustion engine, indoor plumbing). This began about 1870 but took about a hundred years to percolate fully through the economy. After 1970, productivity growth slowed markedly, most plausibly because the second industrial revolution had changed the economy, production processes and consumer function to their full potential.

The computer and Internet revolution (in my vocabulary, the audio-visual revolution) began around 1960 and reached its climax around 2000, after which productivity gains are still being reaped but not to the same extent as before. Gordon offers the observation that in this century inventions have centred on entertainment and communication devices that are smaller, smarter and more capable, but do not fundamentally change labour productivity.

Gordon wrote this before some potential productivity game-changers appeared on the horizon. One is the industrial Internet — Industrie 4.0, and "the Internet of Things". The basic idea is to control the production process

through the Internet, exploiting capacity, communication, analytics, etc. This new technology is still embryonic, though it is rapidly developing, especially in Germany and the United States. Another potential game-changer is 3D assembling and, in the context of waste, 3D disassembling. A third is robots, with some forecasts suggesting the replacement of a third to a half of the workforce (Stewart 2015). If these new technologies really take off and deliver what the optimists hope, it might represent a new jump in productivity, with a spillover effect on economic growth.

Gordon's pessimistic outlook on the U.S. economy is more widely shared, however, and is supported by a number of other studies. Fernald and Wang (2015) conclude that the information and communication technology (ICT) revolution brought extraordinary productivity growth from the mid-1990s to the middle of the first decade of the twenty-first century. Over the last ten years this productivity growth has weakened considerably, with no signs of reverting to its earlier strong growth path. The implication is a long-term trend of lower growth for the U.S. economy. They estimate annual productivity growth of 1.9 per cent, annual GDP growth of 2.1 per cent and GDP growth per hour of 1.6 per cent.

Jorgenson and Khuong (2010) look at economic growth and productivity going back several decades, both for the United States and the global economy. They compare 1998–2008 to a forecast for 2009–19, and conclude that the base-case projections for both productivity and economic growth for the world economy are lower going forward. They forecast a fall in productivity growth for the United States from 2.1 per cent in 1998–2008 to 1.5 per cent for 2009–19. And, for the world, a smaller decline from 3.0 per cent to 2.6 per cent.

The worrying message is that the rest of the world will not compensate for the fall in U.S. productivity — on the contrary, productivity will fall everywhere, with few exceptions. All G7 members are expected to show declining productivity, with Britain and Japan suffering the strongest, and Germany and France the smallest, decline. For seven major EMDEs, the decline is less sharp, with India and Mexico actually expected to show higher productivity and China a comparatively small decline.[3] Looking at seven industrial countries, Hughes and Saleheen (2012) came to a similar conclusion: labour productivity has recovered slowly, and not to its former levels.

The figures available are fairly unambiguous, disclosing that (1) the ICT impact on productivity is petering out in the United States, and even

if it is still substantial, it does not have a similar effect on the rest of the global economy. And (2) no other new technology capable of reversing this trend is on its way. There have been candidates for this role — for instance, biotechnology — but none have lived up to the promise.

The conventional theory was that productivity growth went hand in hand with employment growth. The economy would be able to create jobs at a rate that more than compensated for the immediate replacement of labour through automation. This can no longer be taken for granted. Demographic forecasts are fairly solid and conclude that the global labour force will grow, albeit at a slowing pace, until around 2050. It will shift geographically from China to South Asia and Africa.

Applications of new technology may be more important for growth and productivity than the technology itself. The human capital — skills — takes over as the decisive factor for productivity. Thus, the ability of the education system to deliver a sufficient number of people with the skills that are in demand may well determine future productivity, economic growth and income equality. On the downside, a mismatch between supply and demand for the "right" skills acts as a brake on productivity, while contributing to high and rising income inequality.

Energy:[4] Forecasts of energy markets differ in detail, but not in their broad trajectory. From 2010 to 2040, world energy consumption is expected to increase by 56 per cent. This growth is extremely skewed geographically — in non-OECD (Organization for Economic Co-operation and Development) countries, consumption will grow by 90 per cent, and only 17 per cent in OECD countries. Fossil fuels, including natural gas and to a certain extent coal, will account for some 80 per cent.

China recently surpassed the United States as the largest energy consumer and, together with India, these two Asian countries accounted for 24 per cent of energy use in 2010, a figure expected to rise to 34 per cent by 2040 — an increase of 112 per cent. Africa follows, with an expected 85 per cent increase in its share of global energy consumption, then the Middle East with 76 per cent and Central and South America with 62 per cent. In last place we find Russia and the former states of the Soviet Union outside Central and Eastern Europe with a 42 per cent increase.

If present trends continue, the United States will soon be the world's largest oil producer, and will become self-sufficient in energy before 2030 — primarily through shale gas and oil, but including other sources as

well. Certainly, if this really happens — and it is too early to take it for granted — much of geopolitics and global economics will change.

The recent boom in production of shale gas and oil has intriguing implications for geopolitics. For the first time since the age of oil began about a hundred years ago, energy sources are available where the demand is — with the exception of Japan. Large economic and industrial centres in Northern America, Europe, China, and now also India, have access to energy inside their own territory. Economically, that presages decades of infrastructure investments that will boost economic activity. Nations that have invested in and built large fleets of oil tankers may suffer. Geopolitically, the fear of being cut off from energy sources may be a smaller consideration in strategic thinking.

A pillar of geopolitics for several decades has been the common interest among energy consumers — the United States, Europe, China, Japan, India — in keeping the oil price contained, and preferably low. The main producers, like Saudi Arabia, have mostly accommodated this policy, which is in their long-term interests. It is not too much to say that the oil price has never been set by the market, but rather by tacit negotiation between producers and consumers in a cartel-like fashion.

It is likely that the oil price decline over the second half of 2014 was engineered by Saudi Arabia in order to drive home the message that non-OPEC producers like the United States and Russia would have to rein in production and share the burden as well as the benefit of being an oil producer, even if they are not members of OPEC. Neither country got the message. Until they do, Saudi Arabia will likely continue to pump, engineering an oil price that may go very low compared to $100 per barrel, its price in summer 2014. This will undermine the profitability of some offshore operations, especially in the Arctic, and hold back development of shale gas and oil in a number of countries, including the United States. And that is what Saudi Arabia wants. Investment in these projects is long-term and expensive. Knowing that the major producer can and will step in to create havoc in the market is bound to dampen ardour among investors, which serves the Saudi purpose.

However, China, India and the EU will certainly draw the conclusion that self-sufficiency is more vital than ever — stimulating domestic sources, increasing development of sustainable energy sources, and favouring coal — inevitably pushing world demand for oil, and its price, downwards.

The losers include most of the Middle East countries, Russia and countries embarking on marginal projects. The winners will be the energy importers such as China, India, Japan and Europe. The effect on the United States will probably be positive, but the surge into higher production, and even the export of energy, makes the net benefit difficult to calculate. It will probably be smaller than that won by most other energy importers.

One uncertainty with large potential negative consequences for the United States is the role of the U.S. dollar. The break-up of the U.S.–Saudi alliance could pave the way for a switch away from the dollar as the oil industry's unit of account. If this move gains momentum, it may not stop there but spread to other resources. China and Russia may be entertaining ideas of that sort. This could precipitate a large-scale crisis of confidence in the dollar as a global reserve currency, which would be difficult for the United States to manage in view of its existing internal and external debts.

Conclusion: China scores well in all categories. The demographic problems — inter alia dependency — will not really be felt until sometime in the 2030s. Investment in urbanization works as the main driver of growth. The endeavour to swing the Chinese economy around from labour-intensive manufacturing to more sophisticated higher-value products is under way. The energy and resource problems are challenging, but will not be likely to derail China's expansion. China's score for its overall quality of infrastructure according to the World Economic Forum is not good — ranking 69 out of 142 countries — but backward rural districts weigh down the average.

The question is whether the Chinese Communist Party (CCP) can avoid major social unrest. Numerous policy statements suggest that the CCP leadership is well aware of the danger, but Chinese history repeatedly shows that defining policies is much easier than implementing them.

China's main tool for assuaging social problems is money. Yet, at the same time the country buys large proportions of its energy, food and resources from abroad. This creates vulnerability. The current liberal rules governing the world's foreign direct investment are important to Chinese stability. But if resource-rich countries change course and put up barriers, China will face a new and dangerous situation.

Southeast Asia, admirably situated geographically and with a diversified economy, may plug into the continued Chinese expansion.

Africa is on the verge of a big jump forward of its own — almost analogous to China from 1979 onwards. The opportunities and the risks, however, are both on a much grander scale. It can go awfully wrong.

Africa's main assets are a vast potential labour force, equally vast resources — food, energy, minerals — and nascent political change, liberating markets and countries from the extractive political systems and misguided economic policies that have held much of Africa back.

The main question is whether the most can be made of these assets, given the political, economic, ethnological and topographical divisions that criss-cross the continent. Governance will be crucial, as will a growing economic integration, to share benefits across borders.

Europe will do well in the foreseeable future, but gone are the days of high growth and flamboyant policies. Its demographic situation looks bad at first glance, but Europeans are capable of alleviating the negative impact by raising the pension age and enhancing the participation rate in the labour market. Economics, demography and behavioural patterns point to continued savings keeping the eurozone a net international lender, in contrast to the net borrowing United States.

Much will depend on the eurozone's attempt to reconcile Europe's welfare societies with the exigencies of the global competitive environment. Structural programmes have been launched, but it is too early to know whether they will be successful.

The European Union faces severe tests in the coming decades. Events such as the terrorist attacks in Paris and Brussels underline the identity issue brought to the fore by immigrants adhering not only to another religion — primarily Islam — but applying a different set of values (societal norms) in their lives and communities. Another is the attitude of Britain towards European integration and its commitment to Europe. External to the EU, Russia's policies and instability in adjacent countries — Ukraine, Turkey and North Africa — present a formidable challenge that calls for a determined European response.

The United States remains in its leading role, but faces severe challenges to its ability to stay there. Demography is a neutral factor, with a growing labour force more or less cancelled out by a higher dependency ratio. Urbanization works against the United States. Its cities have been built to serve the car, yet higher petrol prices and rising environmental awareness eats into the cost advantage of car use and damages U.S. competitiveness. Debt — domestic and international — continues to rise

in absolute figures and as a share of GDP, diverting sums from productive use to servicing debt.

The worst challenge is the crumbling of the United States' once-supreme status in innovation. Figures suggest that the U.S. rate of innovation is no better than that of most European countries, while its innovation efficiency is low. Added to this is a dependency on foreigners — mainly Asians, living temporarily in the United States — for a large part of the innovation the country does manage. The large numbers of foreign students at the top universities narrow the hopper for talented Americans. Energy is a bright spot, but even if it reduces costs it will not be able to reverse the depressing trend of the U.S. balance of payments, and will leave the negative savings–investment balance in place. Infrastructure does not look good, with the United States at number 24 on the quality list.

Latin America's demography is more or less neutral. Urbanization is coming to the continent, as for China and India, but the benefits have to be weighed against the continent's inability — going by experience — to turn it into a growth factor. Innovation is far from promising. The continent will do well as a supplier of food and a number of resources, but not well enough to get it on to a sustainable growth pattern exceeding previous decades.

Russia is losing heavily in all areas except energy and some other resources. But even here, the rundown economy makes it doubtful whether revenue will continue to flow into the country, as maintenance and updating have been so neglected. The demographic outlook is dismal (its 2015 labour force of about 90 million falling to about 65 million in 2050 and 55 million in 2100). Innovation is low, and agriculture has not been developed to take advantage of the rising global demand for food. It is number 100 on the infrastructure quality list.

Japan's demographic situation is the worst among the major countries. It is almost 100 per cent dependent on energy and resources, while it defends a high-cost domestic food production system. Innovation could make up for that, but Japan has never really managed to get out of the box as a producer of high-price and high-quality investment goods — an economic sector that was lucrative until the 1980s, but not anymore.

The Middle East is relying on oil and the oil price. The forecast points to an oil price which will maintain the economy, but not boost it. Economic diversification is slow and opportunities outside the oil sector are limited.

South Asia has posted fairly good growth over recent years, but behind the curtain looms a number of serious risks. Demography may help in the short to medium run, by attracting labour-intensive manufacturing, but supportive government policies — training of the labour force, housing, infrastructure, etc. — have not been sufficient to develop the competitive advantage. Urbanization will be difficult to manage given the sheer scale of migration into cities and governments that are particularly weak on sustainability. Innovation is quite good in India; properly encouraged it may bring real benefits, but government policies will be crucial. The resource outlook — food, energy and minerals — is extremely worrying. As for quality of infrastructure, India is number 86, Pakistan 109, and Bangladesh 129.

The global geopolitical structure has largely been forged by economics and economic interests — or to use a broader perspective, by societal systems — seeking together to defend their political and economic interests. The Atlantic alliance is the best example.

Yet it is unlikely that these alliances and partnership will survive unscathed in a fundamentally different economic environment. The rising superpowers (China and India) may form their own alliance, to which other nations could be attracted in preference to aligning themselves with Western economic power. These two new economic superpowers will be compelled to defend their global economic commitment, as were Britain and the United States before them. It is not a question of whether a power wants to do so or not. Events and interests dictate policies.[5] The question is how far and fast it will go, and how the declining powers will react.

It cannot be taken for granted that the United States and Europe will gracefully accept a realignment of the economic world. They may acquiesce under pressure, seeing no viable alternative. They may also discover down the road that, even if the Euro–American alliance is held together by shared economic and military values, their interests are far from as congruent as they once were during the Cold War.

The United States classifies China as a challenger to its hegemonic position, and continues to wrestle with the problem of whether to accept the rise of China and seek an accommodation or to block it with the assistance of hemispheric allies (Japan, Australia, perhaps India). So far no decision appears to have been made, which has made U.S. allies uncertain how far they will support policies they do not know much about, and which may change. It does not help that the United States continues to operate

in a fairly autocratic way — taking allies' support for granted, but rarely bothering to consult them.

Europe clearly sees China as an economic rival, but, lacking global superpower status and its concomitant concerns, Europe does not find it a threat to itself, politically, and even less militarily. Europe's security is linked to developments in Russia, Ukraine, the Middle East, North Africa and perhaps the rest of Africa. Here, too, American and European interests may not be completely analogous.

There is a certain parallel between U.S. interests vis-à-vis China and Europe. The China dilemma has been described. The European dilemma is whether a strong and united Europe is in America's interest — and, if so, whether the United States has enough resources to assist the Europeans in overcoming their crises and is willing to use them — or whether Washington will decide to leave Europe to fend for itself.

Wrap-Up

In broad strokes, and assuming no fundamental shifts in the medium term, these are the basic facts, and ones which should guide us towards a reasonably solid forecast. Unfortunately, it is almost certain that fundamental changes will take place. The industrial epoch of history has ended. Its leftover political and economic system increasingly struggles to deliver the goods.

Economic operators — consumers, producers, individuals, corporations, the public sector, business leaders and politicians — continually change their behavioural patterns, so that the past can no longer guide us to predict the future. The models used as an instrument for governing and policymaking no longer work when behavioural patterns change.

First we need to understand that the world faces a starkly transitional moment. Then we need to take a hard look at how we can manage that transition, into a new world which we do not, as yet, know much about.

Notes

1. Source for demography figures: UN 2015.
2. <https://www.globalinnovationindex.org/userfiles/file/reportpdf/gii-full-report-2015–v6.pdf> and <http://www.wipo.int/econ_stat/en/economics/gii/>.

3. Russia was predicted to show a strong jump in productivity. Considering events since Jorgenson and Khuong made their study, this seems unlikely.
4. Sources for energy: International Energy Agency and the U.S. Energy Information Administration.
5. See, for example, Parello-Plesner and Duchatel, 29 May 2015.