

Fostering growth through innovation

The OECD's innovation and green growth strategies are helping countries to boost innovation, build a sustainable recovery and move on to the next phase

By Angel Gurría, secretary-general, Organisation for Economic Co-operation and Development (OECD)

“Times of innovation... are times of effort and sacrifice, of work for the future, while the harvest comes after.

The harvest is gathered under recessive symptoms and with more anxiety than rejoicing.” (Joseph Schumpeter, *Business Cycles: a Theoretical, Historical, and Statistical Analysis of the Capitalist Process*)

This appraisal, by one of the 20th century's greatest economists, of the circumstances under which innovation is taking place – albeit perhaps excessively dark and disenchanting – captures the essence of innovation. It is ‘a work for the future’, a driving force behind economic activities and welfare creation. For this very reason, the release in May 2010 of the Innovation Strategy of the Organisation for Economic Co-operation and Development (OECD), mandated after three years of hard work, was an important landmark. The OECD was proud to present a policy tool that would help countries bolster innovation, build a sustainable and jobs-rich recovery, and move on to the next phase of human progress: the era of green growth. Building on this momentum, the OECD Green Growth Strategy was unveiled one year later. This was a major and complementary contribution, as it addressed the specific global challenges that arise from a transition to a low-carbon economy, and from green innovation in particular.

Rebooting the growth model

OECD countries are at a critical economic and social juncture. Most of the fiscal and monetary levers available to revive the economy have been exhausted, and the scars of the crisis – starting with unemployment and inequalities – are still deep and fresh.

In this context, governments have no choice but to swiftly implement far-reaching structural reforms to support growth. Governments also need to uphold political and social stability by doing everything possible to bring down record unemployment and to reduce inequalities. But no one can afford to reignite growth at any price. Industrial reactivation must be compatible with the reduction of carbon dioxide emissions and a transition to low-carbon economic development. Governments are facing the daunting challenge of going structural, going social and going green simultaneously.

This imperative makes the case for a more intelligent type of growth, one that is welfare-enhancing, inclusive and sustainable, driven by new ideas, new technologies, new entrepreneurs, new business models and new social organisations. The world economy needs traditional ‘Schumpeterian’ innovation, as well as social innovation.

Securing strong, fair and clean growth

The OECD has launched an initiative on ‘New Sources of Growth’ to improve the measurement of intangible assets and to analyse their contribution to growth and their relationship to new business models. Investment in intangible assets, such as computerised information, intellectual property or economic competencies, offers a promising avenue forward. Research shows rapid expansion of investment in intangible assets by companies in the United States, Japan and Europe, with significant impacts on productivity. Such investment accounted for up to one percentage point – around one-quarter – of labour productivity growth in Austria, Finland, Sweden, the United Kingdom and the US between 1995 and 2006. Innovation can thus be a powerful instrument to restore the growth potential of OECD

economies, which has been seriously dented by the crisis. According to OECD estimates, the potential output of G7 countries may have been reduced substantially.

Innovation is also critical in moving towards greener growth and meeting today's social challenges. Green growth requires radical changes in the way people produce and consume. Beyond individual technological innovations, such as the development of renewable energy technologies, a systemic approach is needed. In the case of energy management, green growth requires wholesale changes in the way energy is produced and distributed and transportation networks are organised. In other words, system innovation is required.

Another area that poses new challenges is demographic shifts and population ageing. Developments in nanotechnology

Green growth needs wholesale changes in the way energy is produced and distributed

and biomedicine have the potential to stimulate significant waves of innovation in treating chronic conditions associated with ageing. Innovations are also needed for greater efficiencies in the provision of health and social services, while information and communications technologies play an important role in helping elderly individuals improve their quality of life, live longer and independently, and counteract the lowering of physical capabilities that comes with old age.

Rethinking innovation policies

To turn innovation into a catalyst for strong, green and inclusive growth, a better understanding of its nature and functioning is needed – who the actors are in innovation, what it consists of, where it occurs, and how it is performed. In addition, policies to nurture and guide innovation must be rethought.

One way is to reconsider the role of universities and public research organisations in today's economies. As essential nodes in the innovation system, they should be granted more autonomy and independence,



and encouraged to compete to become catalysts for world-class innovation.

Entrepreneurship must be promoted, and the creativity of young innovative companies supported. These so-called 'gazelles' tend to be the source of radically new 'disruptive innovations', but can generate large productivity and employment gains. According to new data from the US, companies under five years old accounted for almost all job growth in the private business sector over the past 25 years.

Usually, innovation comes about through interactions among these actors,

underpinned by venture capital and incubators. Therefore, innovation should be considered an ecosystem: innovation policies must have a broader view than simply supporting science and technology. Countries need holistic government innovation strategies capable of aligning the different ministries, policies and reforms around a nationwide 'innovation crusade'.

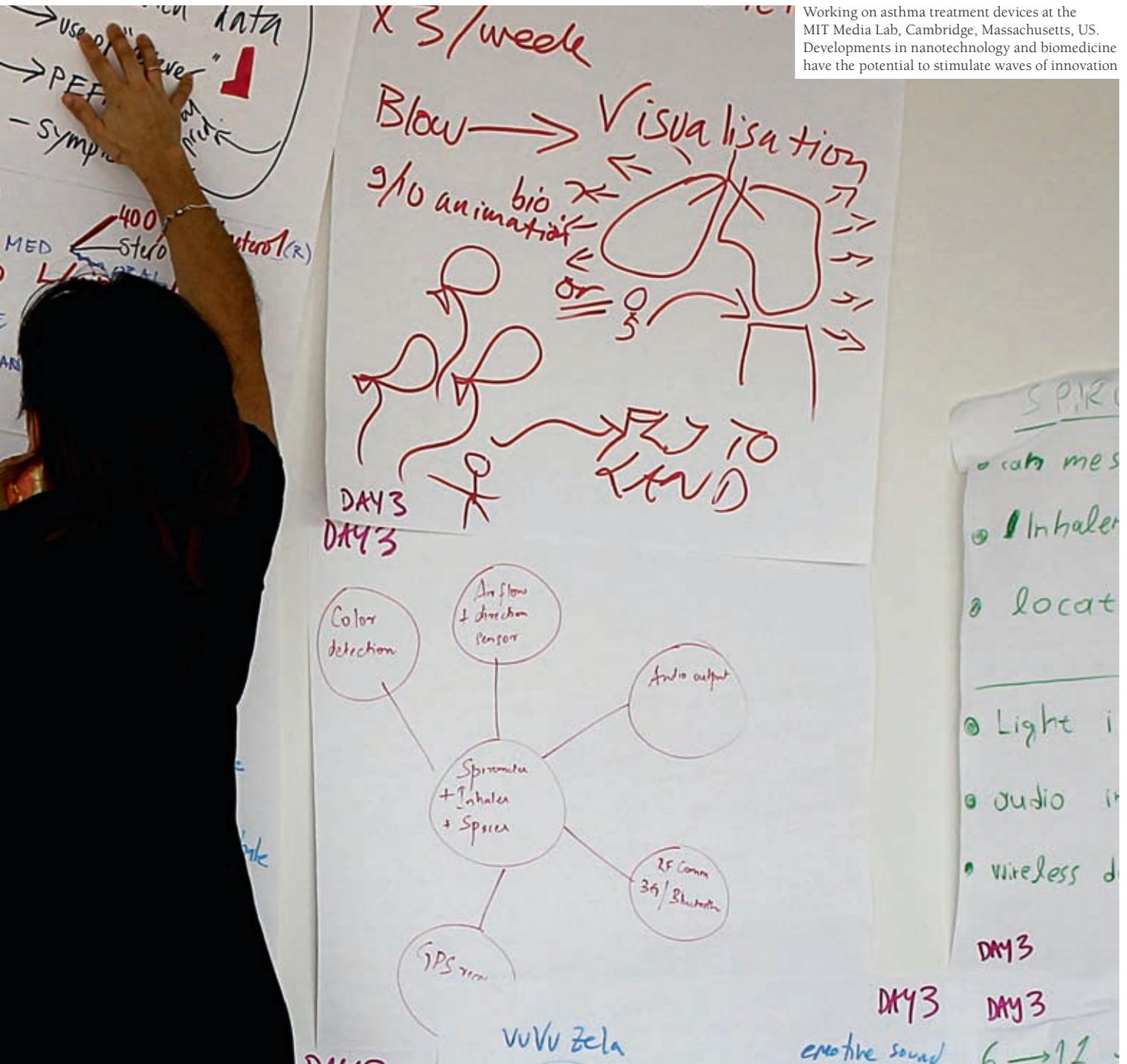
Addressing social challenges through innovation also requires a system much more open and receptive to social influences. There is a need for greater involvement of stakeholders – social entrepreneurs, non-profit

foundations and patient groups, to name a few – in the development of science, technology and innovation policies.

Enhancing international cooperation

To address these global challenges, scientific and technological progress must gain speed. While strong innovation at the national level is key, there is also an urgent need to address these common challenges collectively through international cooperation. However, existing policy frameworks and governance mechanisms for international cooperation fall short of adequately supporting broad-based

Working on asthma treatment devices at the MIT Media Lab, Cambridge, Massachusetts, US. Developments in nanotechnology and biomedicine have the potential to stimulate waves of innovation



collaborative action at the scale and intensity required to tackle global challenges.

While public policies aimed at fostering innovation must be rethought, international cooperation needs to be enhanced. Indeed, such coordination can help to share the costs of public investment, and can also help to improve access to knowledge and foster the transfer of technology across countries. This issue is particularly important for developing countries.

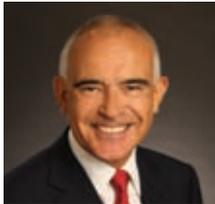
To make international cooperation effective, the governance structure must be that of a 'learning system' tailored to the needs of a

specific collaboration, with room for active and responsive adaptation. It must establish and maintain linkages among local, regional, national and international levels to avoid duplication and foster transparency among stakeholders. Outreach from the research community to other stakeholders should be a priority. Knowledge-sharing and intellectual property provisions should be adapted to each phase of the innovation life cycle. Funding and spending mechanisms should contain contingency provisions and a means of guaranteeing appropriate financing for multi-year research projects. For most global

challenges, research contributions are needed from a wide array of countries, at all levels of science and technology capacities. Additionally, capacity-building should be an element of joint efforts to address these challenges.

The leaders of the G8 countries play a crucial role. They can emphasise that international cooperation is necessary to promote innovation, and lead by example on information-sharing, for instance, in the realm of green growth innovation. In other words, the G8 leaders have a responsibility to pave the way for international cooperation for innovation. ■

Entering the 'Human Age': skills, innovation and productivity as key drivers of job growth



**David Arkless, President –
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The inescapable pressure to do more with less during the global recession has awakened employers to the true power of human potential. Unleashing that potential is the ultimate measure of success for organisations and individuals alike, now that the world has entered the 'Human Age'. The need, indeed the opportunity, has rarely been greater for government and business leaders to work together in order to meet the unique challenges presented by this new era.

The economic crisis that began in 2007 has fundamentally changed the employment landscape forever. Consequently, reviving job growth is an immediate challenge for countries around the world. With the private sector being the main generator of job growth in the years ahead, companies need to be agile and flexible enough to adapt to the unprecedented changes facing them, from increased competition and demographic shifts, to rapid technological advancements.

Ironically, however, just as talent and skills could not be more important, they are no longer available in either the right quantity and quality. This explains the apparent paradox of high levels of unemployment juxtaposed with so many unfilled job vacancies. Indeed, one-in-three employers worldwide is unable to fill key positions, according to ManpowerGroup's sixth annual *Talent Shortage Survey*¹. These results suggest that the talent mismatch – the inability to find the right skills in the right

Chart 1: Skills Mismatches Increasing in Many Major Economies

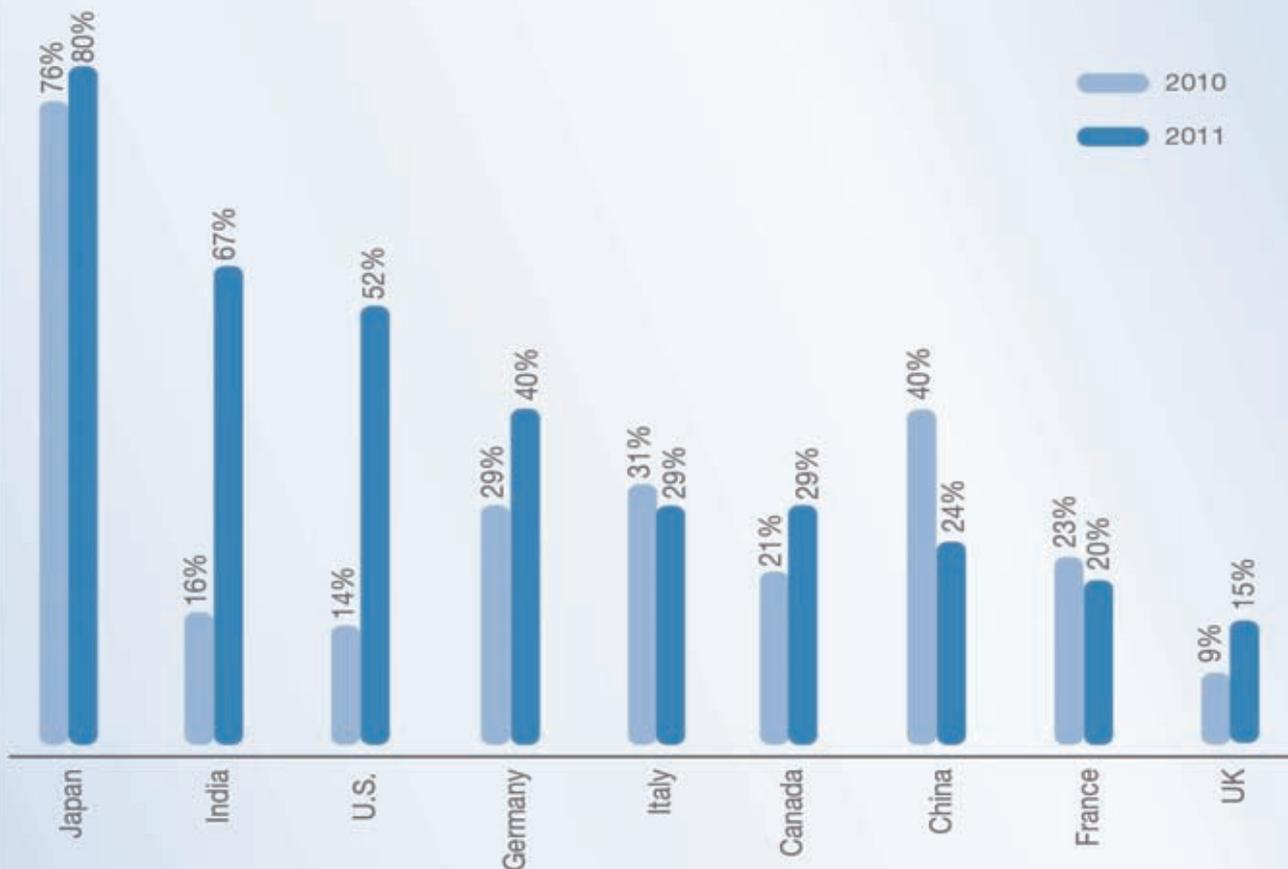
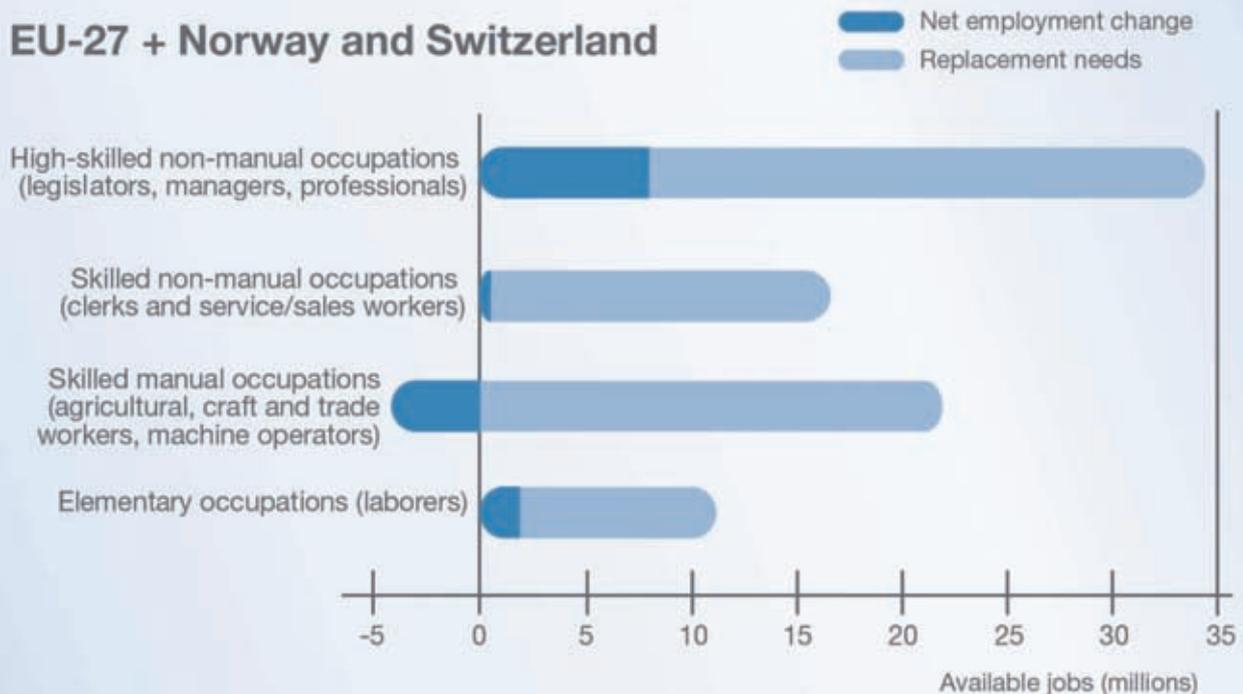


Chart 2: EU Projects Skills Shortages Will Not Be Confined to High-Skilled Occupations

EU-27 + Norway and Switzerland



place at the right time – is a growing threat to all employers (see Chart 1, opposite). Some 52 percent of employers in the US are currently struggling to fill mission-critical jobs, while 40 per cent of German employers have been reporting similar frustrations.

Simultaneously, employers are seeking evermore specific skill sets and combinations of skills – not just technical capabilities alone, but in combination with critical thinking skills or other qualities that are needed to help drive the organisation forward.

As one EU projection illustrates (in Chart 2, above), the lack of available talent will not be confined only to high-skilled occupations (such as managers and professionals)², but also to skilled non-manual occupations (clerks and service/sales workers) and skilled manual occupations (agricultural, craft and trade workers, and machine operators).

In the emerging power centres across the world, job growth is not such an immediate problem per se. Yet, by probing beneath the surface, it is apparent there are forces at work threatening job growth. Strong growth centred on the developing economies has meant that demand for specific skills and behaviours far outstrips supply and training capacity. Sourcing highly skilled individuals is becoming increasingly difficult, creating a mismatch between the talent that is available and the talent needed by employers.

An era of unparalleled talent scarcity, ageing workforces, outdated education systems and skills mismatches is, at the same time, an era in which human potential itself will be the catalyst for change, as well as the global driving force economically, politically and socially. If left unaddressed, talent scarcity will put a brake on economic and business growth and job creation.

For companies to succeed in the 'Human Age', their ability to harness human potential will be the most important determinant of future business success and growth. Essentially, this requires business and government leaders to re-examine how they unleash human potential in an increasingly volatile and complex world.

There are, therefore, three focuses for businesses: first, to ensure they have a talent strategy in place that is aligned with business strategy; second to attract and retain talent; third, to help their people reach their potential to ensure individual fulfilment that ultimately leads to business success.

Companies must become more agile in how they attract, train and develop their employees, rethinking their people practices and work models, to ensure they have the best environment to unlock the creativity, innovation, empathy, passion and intellectual curiosity that is at the heart of what it means to be human.

Employers facing ongoing, systemic talent shortages must alter their mindsets to consider candidates who, although they may not meet all of the job specifications, can be trained to do so in a timely and cost-effective way. Training is vital. A commitment to reskilling and upskilling employees, new hires and even candidates will become a key step in building a skills strategy that not only keeps up with business strategy, but accelerates it.

Such a commitment will expand the available pools of talent, create jobs and ensure their workforces continue to be appropriately skilled, and keep employees engaged in their work. It is a worthy agenda for leaders of business and government to work together and to ensure continued economic growth.

1. 2011 Talent Shortage Survey, ManpowerGroup, May 2011
2. EU Job Opportunities by Occupational Groups, 2010-20



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The G8's strategy for global economic growth

The leaders of the world's leading economies will be coming together to discuss policy initiatives to tackle concerns as varied as government debt, rising unemployment and the price of crude oil

By Robert Fauver, former G7/G8 sherpa, United States

Continuing in what appears to be something of an unfortunate tradition, the G8 is meeting at a time of uncertainty in the economic outlook for the industrial countries and, indeed, for the world economy as a whole. The outlook for real growth in the industrial world has weakened over the past six months – particularly during the early months of 2012 – due to several different factors.

The first is the continued uncertainty in financial markets about the ability of the European Union to fund the Greek debt crisis sufficiently; and the second is continued uncertainty over the effects of the adjustment efforts inside Europe on the EU's real economies. Furthermore, markets continue to be troubled by the inability of the United States administration and Congress to address the large and continuing budget deficit as well as the rising level of national debt as a share of gross domestic product (GDP).

In addition to a slowdown in the industrial world – and a possible return to recession in Europe, since most analysts believe the eurozone experienced negative real growth in the first quarter of 2012 – real growth in the emerging market and developing economies is slowing significantly. While their real growth will be in excess of five per cent, they are accustomed to stronger real growth rates.

In the largest of the emerging market economies – India and China – growth

is likely to be around eight per cent, substantially slower than the double-digit growth rates of recent years. Part of this slowdown is the result of policy action in China leading to a shift from export-led growth towards more domestically generated demand. But it is also a direct result of the industrial world slowdown in real growth and its related effects on the demand for exports from the emerging economies.

Stubbornly high unemployment levels, both in Europe and the US, plague government officials. In Europe, the unemployment rate rose to 10.8 per cent from 10.7 per cent in January – and was the highest since June 1997. More troubling was the continued rise in youth unemployment, which exceeded 21 per cent, reaching 50 per cent in Spain. In comparison, in the US the youth unemployment rate is roughly 16.5 per cent. Clearly the G8 leaders at the Camp David Summit will discuss various methods and policies aimed at reducing this major problem.

Finding a common strategy

It is imperative for the G8 to focus on designing a strategy for addressing the real growth and unemployment problems. It is time to determine shared and complementary responsibilities for restoring sustained real growth in the G8's national economies. Of critical importance is restoring both financial market and consumer confidence in the determination of governments to reduce national debt burdens.

The leaders must agree to a joint and coordinated strategy for reducing government deficits and debt in order to restore confidence to the markets. But the strategy must focus on the medium term, and not simply the short term. Consistent year-by-year reductions in government spending need to be coupled with enhanced tax revenues approaches in order to



display a serious commitment to deficit and debt reduction. Should governments fail to devise a confidence-building strategy, then financial markets are likely to again threaten the financial system and the possibility of a renewed deep recession will return. In the absence of a publicised shared strategy, G8 leaders will continue to face very sceptical markets and continued turmoil.

But the leaders need to announce policies that go beyond the national debt issues. They must address the structural problems in each of their countries that have prevented labour markets from functioning efficiently.

Rigidities in hiring and firing practices, social safety nets and long-term unemployment support are among the issues to be looked at. Without removing these structural problems, whatever recovery finally comes on stream will not be very effective in reducing unacceptably high unemployment rates, especially among young people.

It is imperative for the G8 to focus on designing a strategy for addressing the real growth and unemployment problems



China's growth is set to fall as the country's government pushes for more domestically generated demand and the global slowdown affects its economy

Another issue that demands attention is energy policy. Recent increases in crude oil prices have hurt the recovery process across the industrial world. Most analysts believe that a major portion of the crude oil price rise has been due to speculation in future markets. Concern about the confrontation between Iran and the West has led to speculation that crude oil prices will increase even further.

In the United States, the administration's decision to prevent the Keystone oil pipeline from Canada being built has added to the concern of US oil investors. In addition, China's rise to become a major importer of crude and refined oil has added demand to global markets, despite the drop-off in demand in Europe and the United States.

A joint approach to energy issues

The G8 leaders may decide to pursue a joint strategy of releasing national strategic oil reserves as a political effort to reduce the price

of oil and gasoline. But most analysts have argued historically that strategic oil-reserve releases only affect markets in the short run, and then are most effective in the case of a major supply interruption – which is not the current case. Thus, the leaders need to develop a longer-term joint strategy for addressing the volatility in oil markets.

They might focus on policy initiatives aimed at limiting speculation by raising margin requirements or limiting access to the futures market to firms, such as oil companies and airlines, with legitimate demands for assuring the future price of oil. Leaders could also add their support to new exploration and production of oil and gas resources in the G8 members themselves .

In terms of the G8 countries themselves, the outlook calls for a differentiated, but coordinated, strategy. The US needs to engage in deficit reduction that extends over the medium term and addresses rising entitlement

programmes. Canada, however, has made impressive progress in reducing its federal budget deficit over the past decade or so and has substantial room for a temporary increase in the federal deficit to stimulate demand. But as authorities design a stimulus plan, care must also be taken to prevent a loss of public confidence that has been well earned.

For Europe, the most two most important issues are confidence in the mid-term strategy of budget and debt reduction and restoring employment growth. Both require spending restraint and enhanced revenue programmes that do not hinder investment plans. Japan needs to focus on its budget deficit and enhancing tax revenues. An increase in the consumption tax is required.

Most importantly, at the Camp David Summit the G8 leaders need to restore the confidence of consumers and investors, who must believe that serious policy adjustments are being undertaken. ■

Toward a balanced global economy... in 2020

The US, the euro area and China each have a responsibility to redress the asymmetry of the global economy to prevent a rerun of the 2008 crisis



By Eric Chaney,
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Is the world safer now than it was when the worldwide financial crisis wreaked havoc on the global economy back in 2008? It is hard to say. A lot has been done: policymakers, regulators and supervisors have undertaken in-depth reforms with regard to the regulation of financial companies and financial markets. *Macro-prudential regulation*, a term which, not that long ago, was familiar only to a small number of academics, has since become a buzzword in policymaking circles.

On the positive side, financial regulation and political efforts to reshape growth models, that, for example, seek to encourage higher savings in the United States and strengthen consumer demand in China, should be acknowledged. Equally, the acid test of the twin sovereign and banking crises in the euro area has forced European leaders to embrace ambitious reform agendas for their own economies and to reinforce the governance of the euro.

Yet, the fruits born from these politically and socially costly reform efforts could prove more sour than sweet if the asymmetry of the global monetary system is not addressed. Why? Because this asymmetry is the very source of global imbalances that underpinned the excesses of the previous cycle. If policymakers continue to overlook this critical dimension, the global recovery might turn into a sequence of stop-and-go cycles fuelled by otherwise well-intentioned macroeconomic policies. The US, the euro area and China each have a role to play to reduce this asymmetry and, ultimately, reach a more stable equilibrium.

Setting the scene: heads I win, tails you lose

More than half of the global economy is, directly or indirectly, influenced by US monetary policy. A large part of continental Asia, Latin America and the Middle East belongs to a de facto dollar zone. *Nolens volens*, these economies are importing key features of their monetary policy stance from the US Federal Reserve which is, of course, driven by domestic considerations.

The painful deleveraging process of the US consumer sector, likely followed by an equally painful deleveraging by the government, will weigh on domestic demand for an extended period of time. Consequently, the Federal Reserve is likely to maintain an expansionary monetary policy for many years: emerging economies importing this monetary policy are more likely to overheat. Since these economies are commodity-hungry, the unwanted monetary transmission will, in all likelihood,

fuel large increases in commodity prices, which, in turn, may cause further global downturns in the future.

Note that the opposite would happen if the US, for any reason, were overheating: the transmission of her monetary policy to a large part of the world would artificially depress global demand. In short, the asymmetry of the global monetary system is a permanent source of macroeconomic instability.

How to reduce the structural instability of the global economy?

First, it would be a huge step forwards if world political leaders were to face reality and acknowledge that the asymmetry of the global monetary system is a permanent source of risk.

The next logical step would be enhanced cooperation between the most influential banks of the world – the US Federal reserve, the European Central Bank, the People's Bank of China, the Bank of Japan and the Bank of England. This could reduce global volatility by identifying and evaluating global inflation and deflation risks before they actually came to life.

There is, by definition, a limit to monetary cooperation: central banks must fulfil their essentially domestic mission and maintain their independence. Yet, the global nature taken on by inflation¹ cannot be tossed aside. Because inflation is more global than local, central banks in charge of domestic price stability would indeed take advantage of this enhanced cooperation. One might object that they are already cooperating under the umbrella of the Bank of International Settlements. Yet, the previous cycle saw the building of the largest global credit bubble ever², despite stark warnings from the BIS itself³.

Let us face it: the reluctance of central banks to coordinate their monetary policies was and remains a counterproductive attitude. A recommendation to consider global inflation or deflation factors under the auspices of the BIS, if coming from the highest political level, would do no harm.

Although useful, these two steps would only begin to scratch the surface of what is actually quite an in-depth, firmly grounded issue; namely, the asymmetry of a US dollar-based global monetary system. Only a long-term vision shared by the leaders of the three largest economic regions could restore equilibrium in the global economy. While moving towards a more balanced global monetary architecture would benefit all, each of the leading economies – the US, the euro area and China, would be obliged to make concessions.

Euro area – issuing Eurobonds

The most decisive contribution of the euro area to global stability should be to restore its own long-term sustainability. Making the code of good fiscal conduct more credible and setting up a permanent emergency fund are critical, albeit insufficient, steps in that direction.

There is indeed a more subtle point: one of the main reasons the global monetary system is largely anchored to the US dollar is the prominent role played by US Treasury

bonds. Export-orientated emerging economies need to invest their rapidly growing foreign exchange reserves in safe and liquid assets. Aside from US Treasuries, the global supply of such assets is scarce⁴. Therefore, emerging economies are naturally attracted to the de facto US dollar zone. Thanks to its size, the euro area should be the second natural supplier of safe and liquid government bonds. It is not because its sovereign markets are fragmented. Worse, the euro crisis has stripped almost all euro government bonds – except those of the Germans – of their ‘risk-free asset’ status.

It is, therefore, urgent for the most fiscally responsible euro area countries to reintroduce risk-free assets by issuing joint Eurobonds⁵. By doing so, they would kill two birds with one stone: they would restore the stability of the euro financial system and create a second pool of safe and liquid assets. As always, there is a flip side: if these bonds are to be made as safe as German Bunds are today, participants in the Eurobond system would need to concede more of their fiscal sovereignty.

China – moving towards convertibility

China has a growing responsibility in the global financial system, not only because of its size and its fast growth rate, but also because it is becoming a financial giant. Yet, it has not yet built the financial markets that its extraordinary development would require to make it sustainable. Indeed, as the Chinese economy becomes ever more complex and driven by decisions taken by private economic agents, be they consumers or entrepreneurs, its policymakers need the full spectrum of economic policy instruments.

Currently, Chinese monetary policy is mostly based on non-monetary instruments, such as official deposit/lending rates or reserve requirement ratios imposed on commercial banks. These relatively coarse instruments will prove more and more inefficient, in comparison with a full-fledged monetary policy based on interest rate settings through open-market operations. Yet, to get there, China will need to strengthen its capital markets, especially for debt instruments, and eventually open its capital account and make its currency fully convertible. In doing so, China would progressively become the third supplier of safe and liquid assets, which undoubtedly would quickly become very popular among the central banks of China’s main trading partners in Asia and beyond. Just like for Europe, China would kill two birds with one stone: making its own economy more robust and contributing to global financial stability.

US – doing nothing but accept a partial loss of seigniorage

The paradox here is that the US does not need to do much to help the world becoming a safer place, provided that the euro area and China do their homework. So long as US policymakers focus on keeping their own economy on an even keel, they will provide the global economy with its most valuable jewel: an open, innovative and prosperous leading economy.

Yet, the issuance of Eurobonds and the internationalisation of Chinese government debt would come at a cost to the US economy. Researchers at the Universities of Berkeley and Princeton⁶ have calculated that US foreign investments generated an average annual excess return of 2.1 per cent in comparison with investments by foreigners in the US during the period 1952-2004. Since 1973 and the collapse of the Bretton Woods monetary system, this ‘exorbitant privilege’ has averaged 3.3 per cent, allowing the US to finance its current account deficit on the cheap side. The reason for this asymmetry, also known as the seigniorage power of the US dollar, is precisely that foreign investors, such as central banks, are chasing safe



AXA's headquarters in Paris

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and liquid assets, such as US Treasury bills, at the expense of yields. If these institutional investors had access to a wider supply of international safe and liquid assets, such as Eurobonds and Chinese sovereign debt, the share of US Treasuries in their portfolios would decline, thus reducing the excess return of US foreign assets versus external liabilities and eventually raising long-term US interest rates. It should be noted that these kinds of tectonic changes would occur only incrementally and over an extended period of time.

At this juncture, China cannot open its capital account because its domestic capital markets are not yet robust enough, the euro area cannot issue Eurobonds because governance issues are still being hotly debated, and the US cannot afford a significant rise in long-term interest rates. Should we conclude that the path towards a safer world is impracticable? Not if there is a clear long-term vision shared by world leaders.

Building a more balanced global monetary order, based on three, not one, main currency areas by 2020 is achievable. The financial markets would certainly reward such vision.

Footnotes

- 1 ‘Global Inflation’, Matteo Ciccarelli and Benoît Mojon, *The Review of Economics and Statistics*, August 2010
- 2 ‘Credit Booms Gone Bust: Monetary Policy, Leverage Cycles and Financial Crises, 1870-2008’, Moritz Schularick and Alan M. Taylor, *American Economic Review* and NBER Working Paper 15512, 2009
- 3 ‘Is Price Stability Enough?’ William R White, BIS Working Papers, April 2006
- 4 ‘A Global Model of Global Imbalances and Low Interest Rates’, Riccardo Caballero, Emmanuel Farhi and Pierre-Olivier Gourinchas, *American Economic Review*, 2008
- 5 Since the word ‘eurobond’ seems to have become deeply unpopular in euro area countries, generating large current account surpluses, euro area leaders may opt for ‘Euro redemption bonds’, as proposed by the German Council of Economic Experts
- 6 ‘From World Banker to World Venture Capitalist’, Pierre-Olivier Gourinchas and Hélène Rey, in *G7 Current Account Imbalances: Sustainability and Adjustment*, NBER volume, edited by Richard H Clarida, University of Chicago Press, May 2007

America forges ahead in the new global economy

The world's largest economy is growing again as cyclical sectors recover, debts fall and technological innovation boosts domestic energy production

By David Hale, chair, David Hale Global Economics, and co-editor of *What's Next? Unconventional Wisdom on the Future of the World Economy*

The US economy is again the G7 growth locomotive. It grew at a 3.0 per cent annual rate during the fourth quarter of 2011 and is likely to expand by 2.5-3.0 per cent during 2012. Europe is experiencing a recession. Japan's earthquake reconstruction should produce a growth rate in the range of 1.5 per cent to 2.0 per cent. As a result of the US upturn, Canada should also have a growth rate of 2.5 per cent or more.

Five factors are driving the improvement in the US economy:

First, some of the economy's most cyclical sectors, such as housing and commercial real-estate construction, are just starting to recover. They lost two million jobs during the recession and could create several hundred thousand jobs if their recovery is sustained.

Second, the US Federal Reserve is pursuing a highly accommodative monetary policy. It has pledged to keep short-term lending rates close to zero until 2014. It is redeploying its portfolio of treasury securities, from short maturity instruments to long-term bonds.

Recovery in corporate profits

The next factor is that the corporate sector has enjoyed a dramatic recovery in profits since 2009. The profit share of gross domestic product (GDP) is at a 60-year high and corporations now have \$2.2 trillion of excess cash on their balance sheets.

The robust growth of profits has encouraged business spending on new equipment, but the ratio of investment to cash flow is still only 87 per cent, so there is ample potential for further growth. The ratio of capital spending to cash flow before the 2008 recession was 130 per cent.

Fourth, the household sector has been deleveraging. It has reduced its debt by more than \$1 trillion. The low level of interest rates,

coupled with this deleveraging, has reduced household interest payments by \$270 billion from the 2007 peak. The household debt servicing ratio has fallen to 5.8 per cent from more than 9.0 per cent five years ago. The decline in interest payments has freed up more income for consumption.

Finally, there has been a major recovery in the banking sector. During 2007 and 2008, US banks lost more than \$1 trillion. They are now earning just under one per cent on their assets and have boosted their equity-to-asset ratio above 11 per cent from just over 9.0 per cent three years ago.

Their profits in 2011 were \$119.5 billion, compared to a previous peak of \$145.2 billion,

The coming changes in North American energy output will have profound geopolitical consequences. The US will no longer need to import oil

in 2006. The recovery in bank profitability has led to a relaxation of lending standards for households and business.

The weakest sector of the US economy continues to be state and local governments, which have lost nearly 650,000 jobs since 2008. They received a great deal of federal assistance during 2009, 2010 and early 2011, but these funds have now largely run out. As these areas of the public sector will continue to run a fiscal deficit of \$49 billion this year, they will continue to trim spending.

The major short-term risk in the US economy is rising gasoline prices. They have increased by more than \$0.60 per gallon

since the December price trough, resulting in a de facto \$60 billion tax increase on the household sector. If they continue to rise, it could dampen the recovery occurring in consumer spending, as happened during the second quarter of 2011.

The intermediate-term risk in the outlook is federal fiscal policy. The income and payroll tax cuts enacted during the past two years are scheduled to expire at the end of 2012. Unless Congress acts, there could be tax hikes in early 2013 equal to 4.0 per cent of gross domestic product (GDP), which could drive the economy's growth rate back to zero. It will be unclear how Congress intends to resolve this problem until after the presidential election in November 2012.

US oil production continues to rise

The most positive new factor in the US economy is rapidly growing energy output resulting from new fracking technology. Natural gas production has increased from just over 18 trillion cubic feet in 2005 to 23 trillion cubic feet, and could rise to more than 26 trillion cubic feet by 2035.

US oil output has increased by one million barrels per day (mb/d) during the past three years, and has the potential to increase much more as a result of shale oil development.

As a result of growing oil sands output in Canada, a potential liberalisation of Mexico's oil investment policies and rising US output, Citibank estimates that total North American oil production could rise from 15.4 mb/d in 2011 to 26.6 mb/d in 2020.

The coming gains in oil production could increase US GDP by nearly 3.0 per cent and employment by 3.6 million jobs. There will also be a decline in the US current account by anywhere from 1.2 per cent to 2.4 per cent of gross domestic product. The deficit is currently 3.0 per cent of GDP.

Barack Obama had planned to boost investment in alternative energy technologies, such as solar power, but they are suffering from competition with low-cost natural gas and a surge of Chinese imports. The US recently tried to protect the domestic solar power sector by imposing tariffs on Chinese imports. China has spent billions of dollars in trying to become the dominant global supplier of solar power technology.

The coming changes in North American energy output will have profound geopolitical



The US economy experienced a return to steady growth in 2012 that is expected to continue through 2013, despite a number of challenges on the horizon.

consequences. The US will no longer need to import oil from the Middle East. The price of oil could decline despite steadily growing demand from China. There will also be great potential to increase production of shale oil in China, Argentina, South Africa and Australia.

The G8 countries will be relieved that the US economy is regaining momentum at a time when Europe is confronting recession and China is showing signs of slowing down.

It will help to offset the fiscal drag now prevalent in other G7 countries and help to sustain the growth rate of the global economy in the range of 3.0 per cent to 4.0 per cent.

The G8 should try to lessen the risk of renewed US weakness during 2013 by encouraging the Obama administration to explore alternatives to the large tax hikes that are now scheduled to occur at year end. The US is having no problem funding its budget

deficits, and significant fiscal drag in the US economy would limit the world economy's growth potential next year.

The US needs a plan to reduce its deficit in a gradual way, rather than abruptly. There have been deep partisan divisions in Washington over how the deficit should be reduced, but both political parties should be able to achieve a compromise aimed at avoiding recession during 2013. ■



Finland

Finland: During my school visits, I spoke with teachers about their preparation and ongoing support. They spoke of their strong academic program combined with extensive clinical experience and ongoing professional development. It was clear that Finland has one of the most comprehensive continuous teacher preparation programs in the world.



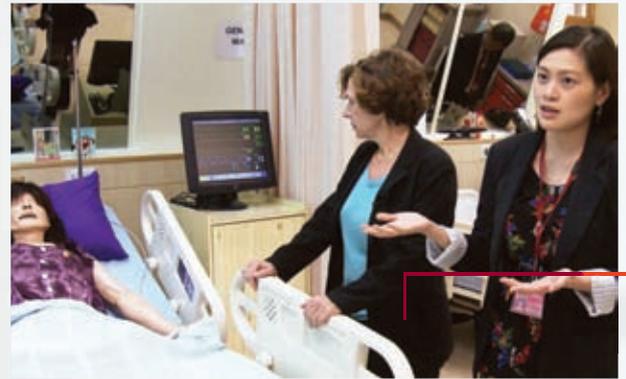
United States

United States: The New American Academy in Crown Heights, Brooklyn, New York, is creating a powerful, compelling model of what a public school in the new knowledge economy should be. Built on a foundation of teacher collaboration and professional reflection, the NAA is a wonderful place of learning for kids precisely because of its culture of trust and caring.



South Africa

South Africa: Many school leaders are applying improvement strategies found in high-performing countries. At Manenberg High School in the Cape flats (a partner with Artesia High School in California), school leaders work with teachers, parents and the community to place the school at the center of community activities and services. Manenberg High, which I visited last summer, is a model community school that ranks among the best in the world.



Singapore: At an impressive vocational and technical school—The Institute of Technical Education—students not only have an opportunity to learn using the latest training equipment, they also can start their own businesses. The head of nursing training explains to me the value of the artificial patient in training healthcare technicians. It can simulate hundreds of symptoms and gives students an opportunity to apply their training in a clinical setting.



China

Shanghai: At the No.2 Middle School at East China Normal University, students showed me how they apply scientific principles in the laboratory. In this experiment, students are using mealworms to help solve one of the world's most pressing issues: how to dispose of plastic containers in an environmentally friendly way.



Ontario: Talking with education leaders, I learned that labor/management collaboration was an essential component of their successful reform efforts. Working together, labor leaders, government officials, and school administrators developed and implemented a wide-ranging strategy to improve Ontario's schools. In just 10 years, Ontario rose to the top of the PISA league tables and has one of the smallest achievement gaps in the world.



A Union of Professionals

To the G8 Community:

The global economic downturn has been long, deep and damaging. A robust recovery with broadly shared benefits is possible only if educational opportunities are available to all children and nations around the globe. Education must be part of any and all economic policies furthered by the G8 in response to economic conditions.

Education can help enhance and equalize economic opportunity for individuals. And nations that invest in developing a well-educated populace reap significant economic and societal benefits. We live in a global village in which countries' economic prospects are closely connected.

The American Federation of Teachers has done its homework and studied the education systems around the world to identify effective policies and practices. The top-performing countries on most international comparisons—Finland, Singapore and South Korea—emphasize collaboration, capacity building, teacher preparation, mentoring, and developing teachers' skills throughout their careers. Each has a well-rounded curriculum that teachers can tailor, and responsibility for student outcomes is shared. In Finland, which I recently visited, teacher training is rigorous and extensive—with carefully designed clinical experience. Teachers in these countries are esteemed; they are expected to make teaching their profession; and teachers and their unions are key partners.

High-achieving countries provide a more equitable education for all students and offset the effects of poverty through wraparound services that support students and their families. South Korea, for example, provides increased pay and smaller class sizes for special populations; and teachers working in hard-to-staff schools are given more time for collaboration.

Shanghai, which tops international comparisons, emphasizes support for struggling teachers and schools. The city pairs higher-performing schools with lower-performing schools to enhance student outcomes for all children.

Here in the United States, there are numerous effective educational programs and practices that should be replicated more widely.

- In **Cincinnati, Ohio**, every public school has been transformed into a community school where students and their families can access services such as medical and dental care, nutrition counseling and resources that help adults earn a general education diploma. High school graduation rates have soared, and the achievement gap has narrowed.
- In **New Haven, Connecticut**, the teachers union and management are working together to help teachers develop their skills throughout their careers. First-year results of the district's evaluation system, which focuses both on teacher practice and student learning, show a positive effect on teacher quality.
- In **Crown Heights, Brooklyn, New York**, not far from where I once taught, there is a powerful model of what a public school in today's knowledge economy should be. Teachers at the New American Academy start each day by meeting with colleagues for 90 minutes to reflect on the previous day's lessons, plan the day ahead and discuss individual students' needs—a practice I have observed in high-achieving countries, but one that is all too rare in the United States.

The American ideal of the belief in opportunity for all and that by working hard and being treated fairly, each generation can do better than the last has long served as a beacon for much of the world. But long-standing inequalities in America and around the world have been exposed, and the global recession has deepened the chasm. More children around the world are falling into poverty, and achievement gaps are growing between disadvantaged students and their more-advantaged peers. As the United States and our sister nations strive to stabilize our economies, we must remain focused on our education systems, for neither can be strong if the other is weak.



Randi Weingarten
President, American Federation of Teachers

Generating green growth and jobs in G8 countries

The Camp David Summit offers an ideal opportunity for the leading economies to consider international strategies on renewable energy and sustainable jobs

By Steve Charnovitz, George Washington University Law School

The commitment in the G8's Deauville declaration for green growth should be implemented, with new measures to achieve the interconnected goals of economic growth and environmental sustainability. Sound environmental policy does not require countries to forego real economic growth – rather, the opposite is true: without proper attention to ecosystem health and environmental performance, ostensible improvements in economic growth may prove illusory or unsustainable.

A forum for international cooperation

G8 leaders at their Camp David Summit should consider several initiatives requiring international cooperation.

First, in order to head off international trade disputes and wasteful government spending, the G8 should agree to refrain from subsidies that seek to pick renewable energy technology winners. Instead, governments should pledge to ramp up and coordinate greater support for basic scientific research.

Second, if the overall Doha Development Agenda of the World Trade Organization (WTO) cannot be consummated because of political disagreements, governments should rescue Doha's environmental chapter for early implementation. Third, governments should reduce any barriers to private-sector investment in clean energy infrastructure.

Fourth, governments should introduce better labour market policies to undergird the development of more green jobs. Fifth, G8 members should call for the forthcoming United Nations Conference on Sustainable Development (Rio+20) to take definitive action to address the underperformance of current institutions of environmental governance.

Although subsidies can be an appropriate policy tool to address environmental market

failures, some G8 governments are misusing subsidies for protectionist purposes by linking the grant to a domestic content requirement. This type of subsidy violates WTO rules and prior G8 commitments against protectionism. Energy subsidies can also lead to domestic and international criticism when they are specific to a particular recipient or are awarded to fossil fuels.

Unfortunately, WTO rules on clean energy subsidies are imperfect and need refinement to take better account of the public interest in permitting appropriate subsidies and avoiding countervailing duties that add to consumer costs (such as trade remedies against solar components). One solution is

International action is needed to ascertain best practices for training workers and reducing regulatory impediments to the creation of green jobs

for G8 governments to ask the Organisation for Economic Co-operation and Development (OECD) to develop options for improving the international law of energy subsidies.

Over the past several years, WTO director general Pascal Lamy has highlighted the benefits of what he calls the 'environmental chapter' in the Doha Round.

This includes commitments to reduce barriers to trade in environmental goods and services, an agreement to reduce certain agricultural subsidies and new rules to curb fishing subsidies. The G8 summit should also ask the WTO to reach an early harvest agreement on Doha's environmental chapter

without waiting for other parts of the Doha Round to be completed.

Lowering the costs of renewable energy development and delivery requires huge investments in infrastructure and technology. Fiscally challenged governments will be unable to provide the needed level of financing – nor should they, because public funding will often be poorly administered. Instead, governments should reduce barriers to new investments by the private sector, pension funds and foreign sovereign wealth funds. G8 governments should also seek legal solutions to facilitate investments from non-traditional sources, such as Islamic financing.

Environmental best practice

Although no one disagrees with the goal of creating more green jobs, there is no consensus on what actually constitutes a green job. Some analysts might argue that sectors such as natural gas or first-generation biofuels produce green jobs.

Others may disagree and point to the environmental harms from natural gas and ethanol production. The important point, however, is that there is no need for governments to settle immediately on a unified definition of a green job.

Instead, international action is needed to ascertain best practices for training workers and reducing regulatory impediments to the creation of green jobs, however defined, within a particular labour market. To that end, the G8 should ask the International Labour Organization (ILO) to expand its ongoing efforts on green jobs into a programme of global capacity building.

In addition to workers and employers, the ILO should also invite environmental non-governmental organisations to participate.

Although the preparatory process for Rio+20 is considering improvements in the institutional framework for sustainable development, preliminary indications suggest that governments are not thinking boldly.

The G8 should firmly endorse major institutional change such as transforming the United Nations Environment Programme into a specialised UN agency with participatory opportunities for industry and civil society. The need for better institutions to oversee stewardship of the planet's ecosystems has been recognised for many decades. Yet only a few governments, such as France



International green policies will need to address broader issues related to climate change and the environmental impact of national energy policies

administration, have exercised leadership in pressing for new organisations.

A green growth strategy also needs to include policies for preventing adverse climate change. Two by-products of the financial crisis and the ensuing global recession have been a reduction in greenhouse gas emissions in some countries and a slowing down of the rate of increase in others. These provided an unexpected dividend for the planet's atmosphere, but at an enormous cost in

jobs and social well-being. As this climate policy reprieve comes to an end, the G8 should take steps to agree on coordinated steps to reduce carbon intensity.

One good start would be to gain agreement among the major economies for the gradual introduction of a carbon tax on energy producers, starting at \$5 per ton and rising each year to \$100 per ton. As Daniel C Esty and I pointed out in the March 2012 issue of the *Harvard Business Review*, such a

tax would send a signal to companies and consumers to reduce their use of carbon energy while also signalling the market regarding the need for greater innovation in clean energy. Although many governments recognise the value of such a tax, no government wants to move first out of a fear of hurting its own industries in international competition. The way forward is for G8 governments to act in concert to adopt such a tax for the benefit of the global 'economy'. ■

Colombia's internationalisation and its free trade agreements

Colombia is focusing its economic efforts on entering the global marketplace, and role of bilateral trade agreements – particularly with the United States – offer excellent opportunities for the country to realise its economic potential

The Colombian government, seeking to promote economic growth and job creation, has been working on the effective admittance of the country's economy into the international market. This decision is consistent with growing globalisation, where an increasing number of goods are manufactured within global value chains.

Consequently, the government has been developing an ambitious commercial agenda where Free Trade Agreements (FTA) and International Investment Agreements (IIA) are used as instruments to make entry into the global economy more effective. FTA and IIA not only eliminate tariff and non-tariff barriers, but also achieve greater access to the trade of services. Transparent and stable rules are negotiated in commercial agreements, strengthening flows of trade and investment.

Negotiating trade agreements worldwide

Within the policy's development, FTAs have been negotiated with almost all Latin American countries, with the United States and Canada, with the European Union and the European Free Trade Association countries. FTAs with Latin America are in force, as is the FTA with Canada, Switzerland and Liechtenstein. The FTA with the United States is scheduled to come into force on 15 May and the agreement with the European Union is expected to come into force in the near future.

Other FTAs are being negotiated with Panama, South Korea, Turkey and Israel. The country is expected to begin negotiations with Japan, China and Costa Rica, among others. In addition, Colombia is working on the Pacific Alliance with Peru, Chile and Mexico in order to deepen current agreements and strengthen relations with Asia Pacific. Most FTAs include a chapter on investment in order to protect investors and increase the effect of foreign direct investment flows.

Bilateral IIAs have been negotiated with another group of countries as a step towards achieving greater commercial exchanges in the context of global value chains, as well as building a legal framework that offers incentives for investors to invest in the country. This is why eight bilateral IIAs have been negotiated with countries such as China, India and Japan, of which three are already in force.

Proof of the success of these steps, both in the levels of trade in goods and the amount of foreign direct investment (FDI), can be seen by figures from 2011, which show a more than fourfold rise from only 10 years ago. Last year our exports in goods grew by 43 per cent with respect to 2010, reaching nearly \$57 billion, and we received more than \$13 billion in FDI. On these criteria, this makes us as the most dynamic economy in the region.

The FTA with the United States plays an important role in the policy of internationalisation of the Colombian economy. First, it is the world's largest economy: it is the first global importer,

the first capital exporting country, the first importer of services and has a population of more than 300 million, with one of the highest per-capita incomes in the world.

Second, it is Colombia's main commercial partner, with a 38.1 per cent share in the country's exports destinations, and 24.9 per cent as import supplier. The United States is not only the main buyer of Colombian mining energy products, but also of all other products, with a 22 per cent share in 2011.

Third, it is a world leader in technology development and around which several global value chains are created. Given that the Colombian government looks to include its productive apparatus in such chains, it is important to have the permanent preferential access provided by the FTA.

The different exercises and simulations carried out in the country, both at the initiative of the government and the private

Last year our exports in goods grew by 43 per cent with respect to 2010, reaching nearly \$57 billion, and we received more than \$13 billion in FDI

sector, show that the FTA will have positive effects on the Colombian economy. According to the results of the general equilibrium models, an increase in annual gross domestic product growth between 0.5-1.0 per cent, consumer surplus improvement by more than 1.0 per cent and employment growth between 300,000 and 500,000 stable jobs can be expected.

However, exploiting the advantages derived from the FTA is a challenge for the country and for the business community. Realising the full potential of the FTA implies maintaining stable and credible macroeconomic policies, achieving significant progress in competitiveness, regulatory modernisation, the strengthening of institutions and the diversification of exportable supply, among other factors.

The role of the private sector and government agencies

To that end, the government has been working with the private sector and academia under the framework of public-private alliances that will allow these goals to be achieved.

Several government programmes are also moving towards the same goal. Proexport Colombia, a body in charge of the promotion of exports, the encouragement of inbound international tourism and the attraction of foreign direct investment, has made outstanding efforts. It has 28 commercial offices worldwide, eight of which are in the United States. This



international presence has become stronger as the organisation has sought to take greater advantage of the FTAs.

In developing its activities, Proexport assesses the potential of productive sectors in markets where Colombia has commercial agreements, and with market intelligence programmes facilitates effective access for entrepreneurs. It supports the presence of Colombian businessmen at the relevant international fairs; it brings potential buyers to the country; and promotes the meeting of buyers and sellers through a system of business matching.

Proexport also works on attracting foreign direct investment for all sectors and regions of the country, with special emphasis on those involved in the Productive Transformation Program (PTP). The PTP currently accompanies 16¹ productive sectors of the country in the preparation of exportable supplies of high added value, helping them to become stronger competitors in international markets.

Strengthening production chains

To achieve this, the PTP and the sectors undertake business plans that strengthen the production chains, improve human capital in their businesses, create conditions to facilitate access to foreign markets, and incorporate sustainability as a differentiating – and high added value – factor in their processes and products.

The above, added to the fact that several sectors of the PTP produce goods and services with the high potential – both

present and projected – to take advantage of global demand, means that their contribution to the diversification of exports is of great importance.

With these set of policies and instruments, including the important milestone of the FTA with the United States coming into effect, Colombia is working towards its effective entry into an increasingly globalised and interconnected world.

Footnote

- 1 Nature tourism; dairy; fruit and vegetable; metallurgical, iron and steel and shipyard; business processes outsourcing BPO&O; software and information technologies; health tourism; electrical power, related goods and services; editorial and graphic communication industry; fashion system; vehicles and auto parts industry; cosmetics and personal care products; chocolate, confectionary and raw materials; beef; and palm oils, vegetable grease and biofuels
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G8 Research Group

In the rapidly globalizing world of the 21st century, the Group of Eight major market democracies serves as an effective centre of global governance. G8 members – the United States, Japan, Germany, Britain, France, Italy, Canada and Russia, plus the European Union – contain many of the world’s critical capabilities and are committed to democratic values. At its annual summit and through a growing web of G8-centred institutions at the ministerial, official and multi-stakeholder levels, the G8 does much to meet global challenges, especially in the fields of economics, development and security.

The G8 Research Group is a global network of scholars, students and professionals in the academic, research, media, business, non-governmental, governmental and intergovernmental communities who follow the work of the G8 and related institutions, such as the G7. The group’s mission is to serve as the world’s leading independent source of information, analysis and research on the G8. Founded in 1987, it is managed from Trinity College and the Munk School of Global Affairs at the University of Toronto. Its Professional Advisory Council members, Special Advisors and participating researchers span the world. Through the G8 Research Group, Trinity’s John W. Graham Library has become the global repository of G7/8 documents, transcripts, audiotapes, media coverage, interviews, studies, essays, memorabilia and artifacts.

The G8 Information Centre at www.g8.utoronto.ca

The online G8 Information Centre (www.g8.utoronto.ca) contains the world’s most comprehensive and authoritative collection of information and analysis on the G8. The G8 Research Group assembles, verifies and posts documents from the meetings leading up to and at each summit, the available official documentation of all past summits and ministerial meetings (in several G8 languages), scholarly writings and policy analyses, research studies, scholarship information, links to related sites and the “briefing books” for each summit published by Newsdesk.

Books on the G8 and Related Issues from Ashgate Publishing

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The contribution of the private sector to education

For the private sector to play a helpful role in education, it must target disadvantaged communities and give schools autonomy

By Harry Anthony Patrinos, lead education economist, World Bank

Education is central to the long-term development of human capital and to economic growth. Schooling empowers people and strengthens nations. It affirms human dignity and provides individuals with capabilities to compete in the global economy. Good-quality education is among the most powerful instruments known to reduce poverty and inequality and to foster dynamic and competitive economies over the long term. In today's global economy, a high-quality education is

critically important for creating, applying and disseminating knowledge.

The Millennium Development Goals (MDGs) recognise the essential role that education plays. Two of the eight MDGs focus on education – namely, universal primary completion and gender parity in primary and secondary schooling. However, despite great progress in many countries, certain countries will not meet the MDG targets by 2015 or even 2030, given the current pace of progress. Enrolment rates are too low, drop-out rates too high and

educational quality too inconsistent across and within countries.

Many education systems in low-income countries are in crisis. According to UNESCO's 2010 *Education for All* report, while primary school enrolment increased over the past decade, a quarter of sub-Saharan Africa's primary-age children remain out of school. This picture is even bleaker when the poor quality of education received by those who are in school is taken into account.

Comparative perspectives

As a result of this continuing crisis, many countries are ill prepared to further their economic and social development. They lack a human resource base endowed with the critical thinking skills, problem-solving abilities and comparative perspectives necessary to compete in, and fully benefit from, today's globalised, knowledge-based economy.

Youth employment is another symptom of this crisis. Accounting for a large proportion of the working-age population, youth in



A volunteer teacher teaches children displaced by floods in Pakistan. The country is offering subsidies to private schools to improve minimum learning

several countries in sub-Saharan Africa and the Middle East, for example, suffer from very high unemployment rates. That some education systems do not adequately prepare graduates to compete in the global environment is a critical reason for these high unemployment rates. Given that more than three billion young people worldwide are under the age of 24 years, one of the key challenges of the 21st century is addressing the weaknesses of education systems in order to produce employable and employed citizens.

A good public education system means public spending – but not necessarily public provision or state management – with government maintaining the crucial role

of ensuring accountability. In the member countries of the Organisation for Economic Co-operation and Development (OECD), more than 20 per cent of public education expenditure goes to private institutions – communities, non-governmental organisations (NGOs), faith-based organisations, trade unions, private companies, small informal providers and individual practitioners – and about 12 per cent is spent on privately managed institutions.

Achieving better outcomes

But does private participation mean higher-quality education and better exam results? And can it encourage greater equality?

Evidence shows that in the independent school sector, where schools depend on fees, often once family background is controlled for, the actual benefits of private schooling disappear. But in systems where access is not limited by selection or wealth, privately managed schools can contribute to better outcomes.

In the Netherlands, for example, 70 per cent of enrolments are in 'private' schools that receive a fixed amount of government funding per student (with extra funding for disadvantaged students). On average, families tend to be from a lower social class than those of pupils attending 'public' schools, and yet student test scores are higher. The level of



These pupils attend a boarding school in Mogadishu, Somalia, but a quarter of sub-Saharan Africa's primary-age children still do not go to school

choice offered appears to provide incentives for Dutch schools to keep improving. Controlling for selection, rigorous impact evaluations show that the Dutch system promotes academic performance, producing significantly higher achievement scores in publicly subsidised private schools.

Reversing achievement gap

Charter schools in the United States have had a real impact on narrowing achievement gaps. The Harlem Children's Zone combines schooling with community support, such as help with healthcare and meals. According to randomised control trials, the Harlem's Children's Zone could

reverse the black-white achievement gap in maths. Also, KIPP (Knowledge Is Power Program), the largest charter school provider in the US, has been criticised for only improving test scores through selection, but evidence from randomised control trials shows that the largest gains are among young people with special educational needs and limited English proficiency.

A large-scale experiment in Pakistan offers the opportunity to study the quality assurance system for a public-private partnership programme. The Punjab Education Foundation offers public subsidies conditional on minimum learning levels to low-cost private schools. Schools are

cast out of the programme if they fail to achieve a minimum pass rate in two consecutive attempts, making the stakes high for the test. Results from a rigorous impact evaluation show that the threat of programme exit on schools that barely failed the test the first time induces large learning gains. The large change in learning between the first two test rounds is likely to be attributable to this accountability pressure.

In 1999, the city of Bogotá, Colombia, launched the concession school programme, designed to broaden the coverage and quality of basic education. It consists of a contract between a group of private school providers – selected from among the best schools in

In the Netherlands, 70 per cent enrol in 'private' schools that receive a fixed amount of government funding per student – the choice appears to provide incentives for schools to improve

Colombia – and the public education system. The city built modern school buildings in 25 disadvantaged neighbourhoods in which private agents provide education for low-income students. Evaluations of the programme show that: drop-out rates are lower in concession schools than in similar public schools; other public schools near the concession schools have lower drop-out rates in comparison with other public schools outside the area of influence; and test scores from concession schools are higher than scores in similar public schools.

Informed choice

The picture internationally is that involving the private sector can improve school performance – through competition, accountability and autonomy – as well as expand access. However, without strong systems of accountability, private schools with public funding are not likely to produce large gains. The best results come where competition is enhanced through informed choice, disadvantaged areas are targeted and there is plenty of autonomy at the school level.

Any new approach needs to be subjected to rigorous evaluation of its impact. Small-scale pilots are needed initially, with subsequent investment going only to projects that have been proven to work. Moving forward, countries can learn from each other. Being aware of the international landscape, and benchmarking education policies within and across countries, will be important for raising standards and addressing inequality. ■

The views expressed are the author's own



The private-sector contribution to education and employment

The potential of both individuals and economies is met through learning, and businesses are playing a crucial role in helping to improve education systems



**By Stephen Crowne,
Senior Director, Global
Education, Cisco Systems**

Education is one of the keys to ensuring the sustained economic, social and cultural development of nations. Universal education is the bedrock of our modern civilisation, with the power to lift people out of poverty and set them on a path of progress and fulfilment by providing the essential feedstock of knowledge and skills.

We now take it for granted that the State should invest in education for the common good. In most countries the State is also a large-scale direct provider of education. But the private and not-for-profit sectors have always had a very strong interest and commitment to education, and in recent years partnerships between the three sectors have driven improvement in education systems, higher levels of achievement among young people and adults, and more competitive economies.

Cisco is a global corporation with a deep and long-standing commitment to education and the conviction that the private sector must continue to play a central and dynamic role in improving education systems. This is not only right for global development, but also good for business. All sectors need the highly qualified people that education systems around the world provide, as well as healthy ecosystems where entrepreneurship can thrive and where talent can be absorbed into the marketplace.

Expanding opportunities in education

There are now more opportunities than ever before for companies such as Cisco to influence and contribute to progress in education: public/private partnerships addressing the challenges of education infrastructure; projects promoting the effective use of technologies to improve education outcomes; programmes for the training and professional development of educators; initiatives for fostering entrepreneurial thinking among young people; programmes that sponsor students' education through scholarship agreements, and other initiatives that celebrate and reward achievements in education performance.

Cisco is contributing to the thought leadership needed to confront the biggest challenges we face in education: How do we get more for less in straightened economic times? How do we achieve quality, equity, efficiency and secure a firm link between

education and employment? How can we apply innovative approaches – new perspectives, programmes, partnerships, ideas, technology and expertise – on a whole-system basis, to maximise the benefits to citizens?

Over the years, Cisco has made significant and ground-breaking contributions to the education and employment sectors. At the heart of Cisco's Global Public Sector organisation, our Global Education group has been working with governments and other stakeholders around the world to help create a transformation agenda focused on the use of technology to achieve education goals.

We work with education system leaders at national, regional and local levels, helping them to articulate their vision for education and translate that vision into an effective programme enabled by technology. We bring a wide and deep understanding of the global trends impacting on the future of education and the skills required to succeed in the knowledge economy. We want to help system leaders develop new learning models that meet the needs of modern economies and societies and help them share lessons and benefits worldwide.

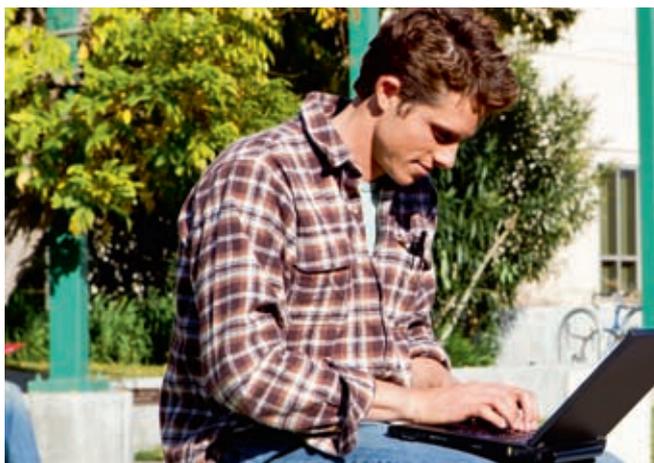
At the global level, our organisation has been actively participating in multi-stakeholder partnership efforts led by institutions such as UNESCO, the World Economic Forum and the World Bank Institute, helping governments come closer to meeting the Millennium Development Goals¹ and Education for All targets regarding universal access to high-quality education².

“Cisco is committed to being a trusted partner and business adviser to education leaders around the world. We believe that through global collaboration and a focus on innovation, we can help enable the development of high-quality education and job creation for citizens everywhere.”

JOHN CHAMBERS, CHAIRMAN AND CEO, CISCO SYSTEMS

We are also working in partnership on initiatives such as the Global Education Leaders' Program (GELP)³, which is aimed at developing, showcasing and sharing approaches from around the world to radically transform teaching, learning, and assessment so they reflect the needs of 21st-century learners and economies.

Working with 13 jurisdictions, (including some of the highest-performing education systems in the world), through GELP we are building not only a new vision for 21st-century school systems but also a pragmatic set of road maps that will help jurisdictions get there. We have also brought our expertise and capacity for innovation to partnerships across education –



with institutions such as the University of Melbourne, and with international organisations such as the OECD-PISA, and the Inter-American Development Bank. We have led the launch of initiatives such as ATC21S⁴, which is aimed at finding ways for assessing 21st-century skills and encouraging the teaching and adoption of these skills in the classroom.

However, this is not just about helping the best in developed economies get better. We are finding increasing enthusiasm for our holistic approach to system transformation from the leaders of school systems in emerging regions, who regard investment in transformational approaches as vital to ensuring a sustainable path to economic development and growth.

We are firm believers in technology being a fundamental component (but not the only one) of the broader redesign in education; through programmes such as GELP we are making sure that changes in curriculums, assessment, pedagogy, teacher professional development, student-centric learning environments and other areas are also taken into account to achieve sustained systemic change and transformation.

Cisco believes in the central role that the private sector has in helping to strengthen the links between education, employment and enterprise creation. Some of our flagship programmes such as the Cisco Networking Academy⁵ and Cisco Entrepreneur Institute⁶ focus on the development of skills that will not only help students and instructors have increased access to career and economic opportunities, but also help communities and nations around the world harness the power of entrepreneurship for economic and social prosperity.

Keeping up with the pace of change

Other Cisco-led initiatives – such as BIG, the British Innovation Gateway – are also aimed at supporting high-tech growth, innovation and entrepreneurship. Through the creation of the Cisco National Virtual Incubator, we are helping the UK

government bring together start-ups, business people, education hubs, investors, technologists and innovation experts to create new jobs and opportunities that will help the UK achieve its vision of excellence in innovation⁷.

We know that the world is changing at a faster pace than ever before, and that technology provides both challenges and opportunities. The lessons we have learned through decades of engagement in education give us the confidence to continue making significant contributions to the improvement of education and employment opportunities, underpinned by technology. Harnessing the power of technology within a clear and ambitious vision for education, with strong system leadership and with inclusive partnerships that allow for transparency and good governance, will deliver even greater benefits.

Footnotes

- 1 Millennium Development Goals(www.un.org/millenniumgoals/); Education For All (www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-all/)
 - 2 http://portal.unesco.org/education/en/ev.php-URL_ID=54285&URL_DO=DO_TOPIC&URL_SECTION=201.html
 - 3 www.cisco.com/web/about/citizenship/socio-economic/GELP.html
 - 4 Assessment and Teaching of 21st Century Skills. <http://atc21s.org/index.php/about/>
 - 5 www.cisco.com/web/learning/netacad/index.html
 - 6 www.ciscoinstitute.net/
 - 7 www.ciscobig.co.uk/; www.youtube.com/watch?v=vUY68k_9RWE
www.youtube.com/watch?v=oL29oVEy6Ko
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Innovation and productivity in an age of austerity: a role for ICTs

Information and communications technologies can help advanced economies caught between budget constraints and the need for productivity growth

By David Crane, journalist

The economic recovery remains a serious challenge for the advanced economies of the G8. Without stronger economic growth, they face high unemployment and much greater reliance on spending cuts rather than on generating revenue to address budget deficits and debt. Moreover, with ageing societies, they need strong productivity growth to provide the wealth required for growing health and pension needs. Yet “for advanced economies, the current recovery is predicted to be the weakest of the postwar era”, according to the 2012 *World Economic Outlook* published by the International Monetary Fund (IMF).

So the advanced economies need to chart a stronger growth path, despite the urgent need for fiscal consolidation. The key is to find ways to boost innovation, since this is the engine of economic growth and strong productivity performance – and to do this while developing medium-term strategies for fiscal sustainability.

Stimulating growth

Yet there is a way to stimulate growth through innovation without undermining future fiscal health. That can be done by advancing the revolution in information and communications technologies (ICTs).

As with electricity a century earlier, ICTs can be found in every part of the economy, from the way businesses are organised, governments deliver services, and the secrets of proteomics and nanotechnology are unveiled to how aircraft and cars are designed and produced, customers and suppliers are connected, and knowledge and information transferred and manipulated. It is a universe of hardware, software and applications, with continuing gains in memory capacity and cost, speed and price of microprocessors, and

a growing role for sensors and displays and for optical and wireless communications. Airline reservation systems, global financial markets and global value chains all depend on ICTs.

But ICTs are not found just in high-tech products such as smartphones or tablets. Electronics represent a major part of the cost of a car today. Household appliances, credit cards, televisions and factory robots all depend on ICTs. According to the Washington-based Information Technology and Innovation Foundation, in the United States between 1995 and 2002, ICTs were responsible for two-thirds of total-factor growth in productivity and almost all the growth in labour productivity.

One way in which advanced economies can leverage public and private resources to foster innovation is to use ICTs to achieve a clean and efficient electricity system, thereby addressing the twin challenges of global energy demand and climate change

Yet despite the spectacular gains of recent decades, many experts believe that there remains enormous potential from ICTs in manufacturing, education, healthcare, clean energy, smart infrastructure, homecare for the elderly and security, as well as in research to deal with future problems in global food supply, water and climate change.

Focus on skills and education

In a 2011 study on the internet’s role in innovation, productivity and wealth creation, the McKinsey Global Institute found the internet had been a critical element of growth and job creation. The report urged policymakers to unleash the internet’s growth

potential by leveraging public investment in the internet, arguing that “countries with the highest public investment in the internet are also those with the largest non-public contribution to GDP [gross domestic product]”. It urged a focus on promoting skills and education, ensuring access to capital, developing digital infrastructure and creating an attractive business environment for innovation and investment.

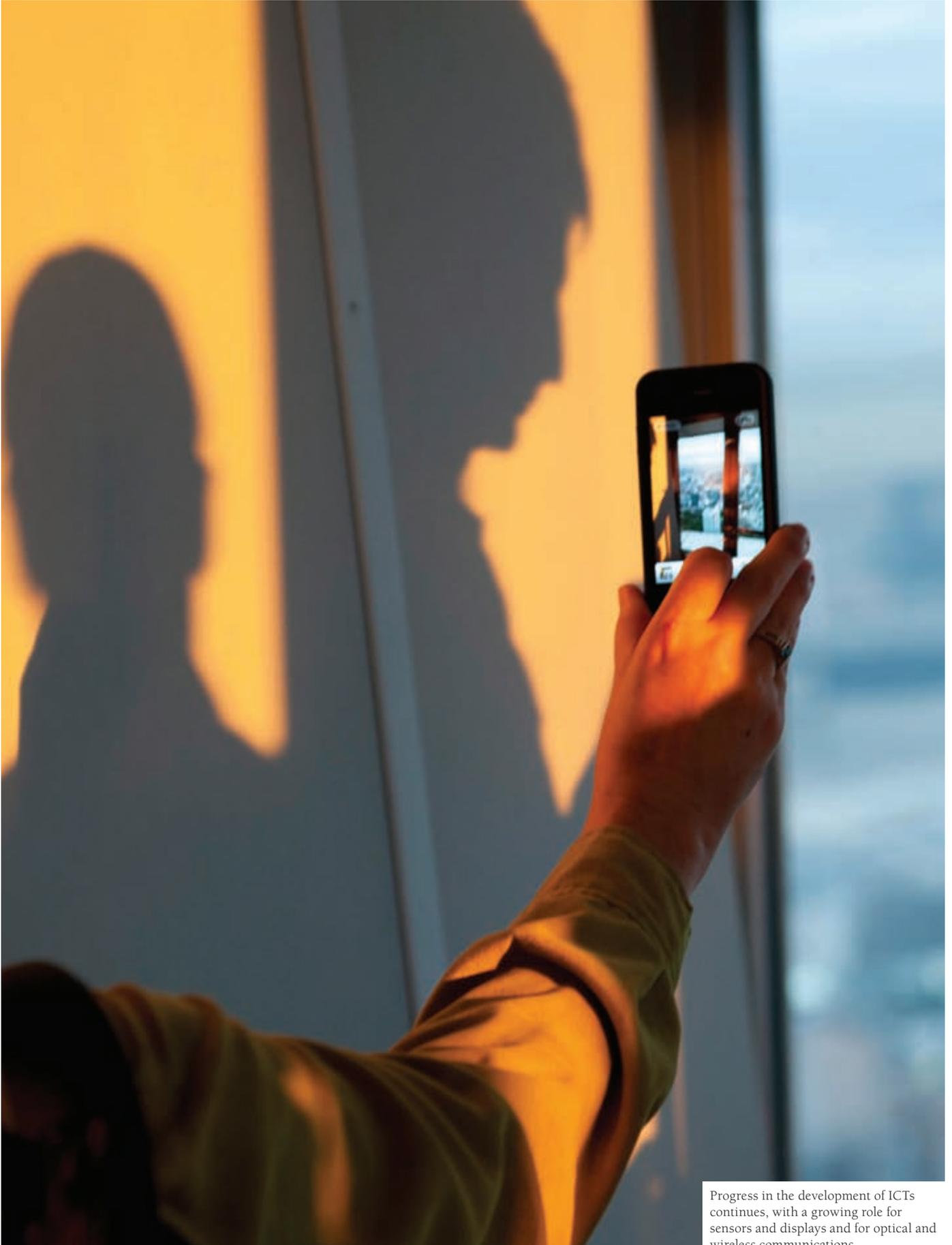
Improved prototyping

Carlos Osorio, of Harvard University’s Berkman Center for Internet and Society, believes ICTs clearly matter for innovation. Writing in the *Global Information Technology Report*, he argues that businesses in the advanced economies use ICTs to “foster their innovation processes by enhancing the acquisition of more and better market data, improving prototyping and test cycles, increasing the power of their networks in order to leverage the resources of their ecosystem, and boosting their capabilities for learning by embracing failure through experimentation”. Osorio cites the development of the electronic spreadsheet, which has permitted inexpensive financial

simulation to make better investment decisions, and the spread of rapid prototyping, which has provided a fast and inexpensive means for innovation in new products.

One way in which advanced economies can leverage public and private resources to foster innovation is to use ICTs to achieve a clean and efficient electricity system, thereby addressing the twin challenges of global energy demand and climate change. Two-thirds of global electricity supply is based on fossil fuels, which are a major source of greenhouse gas emissions.

ICTs for smart grids, including smart meters, offer great potential for driving innovation in the ways electricity is



Progress in the development of ICTs continues, with a growing role for sensors and displays and for optical and wireless communications

produced, managed and consumed, says the Organisation for Economic Co-operation and Development (OECD). A smart grid is defined by the International Energy Agency (IEA) as “an electricity network that uses digital and other advanced technologies to monitor and manage the transport of electricity from all generation sources to meet the varying electricity demands of end users”.

“Smart grids coordinate the needs and capabilities of all generators, grid operators, end users and electricity market stakeholders to operate all parts of the system as efficiently as possible, minimising costs and environmental impacts while maximising system reliability, resilience and stability,” says the IEA.

Smart grid support

By embarking on a major initiative for smart grids, advanced economies could encourage significant job-creating investment and the growth of specialised software, technology

and consultancy firms, the OECD study says.

Policies to marry public funds with private initiatives for growth and job creation through exploiting ICTs could also boost productivity and generate wealth that would help restore balance to public finances. Funds can be found by ring-fencing innovation budgets or through the technique of what the IMF calls “balanced budget fiscal expansion”, which “could support activity and employment while keeping fiscal consolidation plans on track”. One example, which it says has been tested by the US Federal Reserve, the European Central Bank and the Bank of Canada, is a temporary tax hike, with the revenues being used to increase funding for much-needed infrastructure. This, argues the IMF, would lead to increased output and jobs.

Trade policy also matters. An open global trading system is not a zero-sum game. Technology advances in one country are good for all countries. Moreover, the economic growth of emerging market economies such

as China and India benefit businesses in advanced economies. Automotive companies such as BMW and General Motors depend on sales in China to help sustain profitability. High-tech companies such as Apple and Research in Motion depend on parts and components from countries around the world, and on final assembly in low-cost labour locations such as China and Mexico. The integration of production through global value chains means, as the World Trade Organization points out, that many products should be labelled ‘made in the world’ rather than in any particular country.

Prior to the global downturn of 2008-10, advanced economies enjoyed annual growth rates in the range of three per cent; today they are looking at growth forecasts of two per cent or even less. Yet they also face fiscal challenges that austerity alone will not solve. Targeted growth – by exploiting the ICTs revolution for needed public initiatives – represents one way to generate a more sustainable outcome. ■



ICT components from countries around the world are often assembled in low-cost labour locations such as China, but businesses also benefit from sales of the finished product to emerging economies

The importance of innovation in telecommunications



By **Kevin Shatzkamer**,
Distinguished Engineer



David Ward, Chief Architect,
Cisco Systems

Throughout history, the evolution of telecommunications has been one of transition and invention. Inventions produced innovation in hardware, software, applications and services, while transitions allowed for different adoption curves across socioeconomically, politically, culturally, and environmentally disparate regions of the globe.

As we enter the next phase of re-architecture, the role of telecommunications has never been more critical.

Telecommunications providers played a key role in the transition from the Information Age to the Internet Age. During the next transition, in which the Internet of Things is realised, their role is equally important – enabling not just billions of human-to-human and human-to-machine interactions, but also trillions of machine-to-machine interactions.

While the Information Age marked important advancements in our understanding of politics, history, religion, and science, that understanding was not accessible, as there was no distribution mechanism. The Internet now provides that global distribution channel. Today, those who excel are no longer those who can amass the most information in the shortest time, but instead those who can find, classify and verify information from an unlimited number of sources. In fact, the future will be transformed not by those who retain information, but by those who can turn that information into knowledge and innovation.

The Internet Age created massive wealth for those organizations that have found ways to participate and facilitate this information exchange. Hyper-connectivity has created numerous communications models, such as voice, messaging, video and collaboration via numerous devices, which facilitate the transmission and distribution of digital information. This has not only changed the way people communicate, but also the way businesses conduct business, economies function, governments govern, surgeons operate, and educators educate. In short, telecommunications plays an important role in increasing social knowledge. The very nature of the Internet, in which device manufacturers and application developers are free to innovate, makes it one of the most powerful creations in human history.

At the heart of these interactions is the telecommunications industry, building a global communications platform that connects disparate sources of information and upon which innovation can occur. The Internet allows geographically disparate, culturally diverse and previously isolated information sources with unique insights, experiences and expertise to communicate. Wireless technologies, leveraging licensed and unlicensed spectrum (WiFi), provide cheaper, ubiquitous coverage, allowing interactions between information sources to occur in real-time, collaboratively.

Cloud services allow sharing of social and intellectual information, providing a platform for global collaboration.

These interactions are not without their challenges – culture clashes, political unrest, social etiquette breaches, and privacy concerns are frequent topics in media outlets cautioning about the negative implications of technological advancement. However, by increasing social intelligence and awareness, technological advancements provide the tools to overcome these challenges.

Evolving the global telecommunications network from a means of connecting information sources to a source of knowledge itself provides the next big opportunity for innovation. To do so, telecommunications providers are transforming their networks into environmentally friendly (“green”) platforms with increased connectivity, visibility and programmability.

Extracting information from the global telecommunications infrastructure gives rise to the next iteration of innovation. Software-Defined Networks (SDNs) allow telecommunications

“Innovation is a critical driver of growth within the global telecommunications industry. As customer needs evolve and new market transitions emerge, innovation brings new revenue opportunities, and a chance to better serve the rising global population.”

John Chambers, Chairman and CEO, Cisco Systems

providers to program and control the network hardware. SDNs, combined with a network Application Programming Interface (API), which exposes network functions to developers, and analytics, that give insight at both micro and macro levels, provide the tools for the next generation of services and applications, while still ensuring the right level of privacy and confidentiality. These tools provide the “ability to gather, analyse, and distribute massive amounts of data, in real time, that society can turn into information, knowledge, and ultimately, wisdom.”

As telecommunications providers deliver on enhanced connectivity, visibility, and programmability, the global telecommunications network will provide the foundation for the Internet of Things, in which hyper connectivity between people and machines is foundational. The Internet of Things will, once again, redefine the limits of our understanding of education, communication, business, science, government, and humanity while creating opportunity for the next iteration of transition and invention.



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Start-ups: more than just a sideshow

Governments are recognising the potential for growth and job creation offered by start-ups, which have largely been ignored at previous G8 gatherings

By Jonathan Ortman, chair, Global Entrepreneurship Congress; president, Global Entrepreneurship Week; senior fellow at the Kauffman Foundation

At the recent 2012 Global Entrepreneurship Congress in Liverpool, in the United Kingdom, a staggering 3,500 'start-up junkies' from 125 countries gathered to share notes on the newest elements of national ecosystems that support new and young firms.

While plenty of attention has been given to small and medium-sized enterprises (SMEs), global economic policy gatherings and multinational institutions have largely ignored the importance of stimulating new, high-impact start-ups as a prime growth strategy for global economic growth. With some governments racing to build better entrepreneurial environments that attract smart entrepreneurs with the best ideas and networks, the G8 leaders might be wise not to simply acknowledge entrepreneurs as a sideshow, but consider them a central strategy for improving lives and building economies.

Appealing to a new generation

In 2012, there is already some convergence between top-down policymaking and hundreds of grassroots networks focused on smoothing the path of their countries' nascent entrepreneurs. Start-ups now appeal to a generation that once shunned 'business', thereby welcoming new creative talent. Moreover, new evidence shows that start-ups are the most potent driver of economic growth and job creation. Whether new firms grow or shrink is a vital measure of the collective fate of an economy. They create innovative products and new markets, providing jobs to millions around the world that generate wealth and raise living standards.

National leaders are already eager for policies that create jobs. The rationale is simple. In the United States, new firms are the most effective source of new jobs. Research from the US-based Kauffman Foundation using government data found that, between

1980 and 2005, almost all net job creation in the US took place in firms less than five years old. While older businesses add jobs, this process was not enough to offset the job losses that occur when other older businesses decline or shut down. On average, one-year-old businesses create almost one million new jobs a year, while 10-year-old firms generate just 300,000. And in 2007, the last pre-recession year, young firms accounted for two-thirds of the US economy's new jobs.

How billion-dollar businesses begin

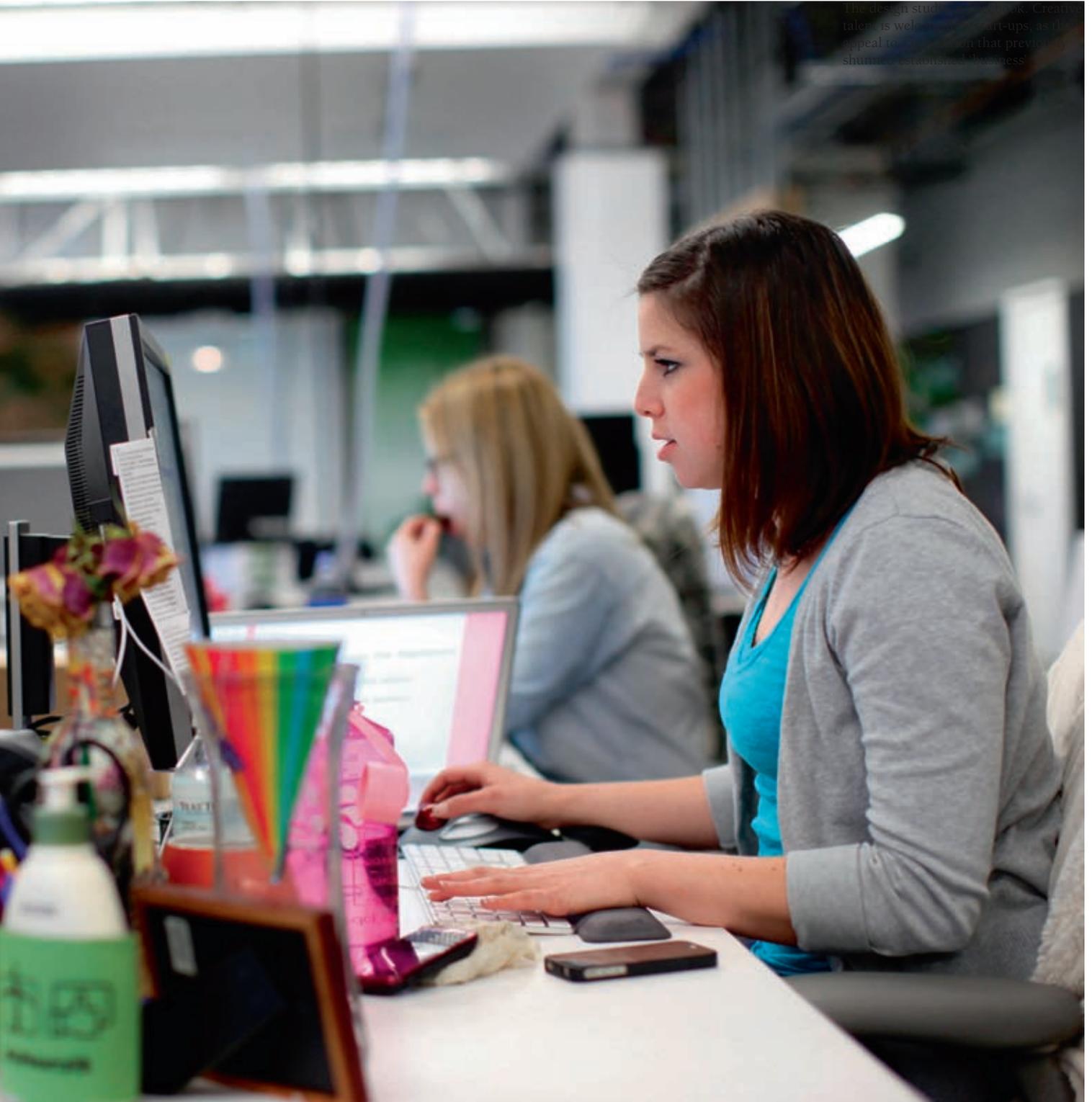
Not all new businesses have the same potential. Many will fail, and few will have more than 30 employees. But only a few successful start-ups are needed to achieve a high level of ongoing growth. Companies that eventually generate \$1 billion or more in revenue will drive economic growth and job creation for many years.

Kauffman research looks at the link between billion-dollar companies and economic growth – showing that about 15 of these billion-dollar companies arise every year. If those numbers rose to somewhere between 30 and 60, the US would add a full percentage point to gross domestic product (GDP), doubling it in 18 years instead of 24. Gains could be measured in terms not only of rising incomes, but also of new technologies that improve daily life around the world.

Whether it is Starbucks reinventing the cup of coffee, or Steve Jobs and Apple inventing whole new industries by unleashing an apps revolution on smartphones, high-growth companies invariably bring something new to society rather than simply responding to existing demand.

The challenge facing the G8 is to increase the number of new start-ups and to raise their success rate, so that more companies can become high-growth firms. For government leaders, this can be difficult. New-firm creation cannot be 'governed', and the





The design studio at Google. Creative talent is welcomed to start-ups, as they appeal to a generation that previously shunned established business.

traditional linear thinking of governments is antithetical to organic entrepreneurial activity. Entrepreneurship will always be messy. Leaders thus need strategies to inspire and smooth paths – not create plans for new top-down programming.

The good news is that there are already thousands of local start-up communities organised at the city level and populated by smart, global, open, socially motivated founders driven to do good and do well. A successful start-up ecosystem typically leads someone from nascent inspiration and discovery, through team formation and taking start-up action, all on their way to real scale and growth.

Many of the traits of a successful start-up are already known. They include the importance of teams and co-founder ‘dating’, of mentorship, of remaining lean, and being able to afford to recycle teams or ideas. While a young person with a disruptive idea may be vital, innovative high-growth firms also have experienced co-founders with unique knowledge of their industry. Venture capital – while important in some capital-intensive industries as firms scale up – is less of a factor for most new start-ups.

The path to growth

With such bottom-up start-up communities constantly relearning these lessons and adapting in real time to what works, government is free to focus on the best rules and incentives. No government programme will ever compete with boot camps such as Startup Weekend, or accelerators such as

TechStars. Government leaders should focus on encouraging more citizens to join these communities, inspiring those who would otherwise not consider entrepreneurship as a path.

For example, more than a dozen heads of state or government actively participate each November in Global Entrepreneurship Week, which in seven days attracts more than seven million attendees to 33,000 activities in 125 countries. The initiative helps legitimise entrepreneurship, puts successful national role models on a pedestal,

The challenge facing the G8 is to increase the number of new start-ups and to raise their success rate

and allows policymakers to see at first hand what is working among their own companies, so they can focus on creating the best legal environment for nascent entrepreneurs and young firms to thrive in their country.

This past spring, US president Barack Obama signed into law the Jumpstart Our Business Startups Act – the JOBS Act. In less than one month during a politically charged election year, the House of Representatives and the Senate supported a legislative package that combines measures in six different bills to make it easier for young companies to raise

money. The JOBS Act is only one of a series of ‘start-up bills’ that have arisen from looking at entrepreneurship not from the perspective of firm size – small and big business – but of firm age, namely those all-important first five years of firm formation. These bills are part of a rush to support start-ups driven by new data and helped along by President Obama launching Startup America.

This initiative, and other recent action in Washington, are excellent examples of an emerging non-partisan narrative founded on robust research that statistically explains the powerful relationship between new-firm formation and economic growth. For the US, this narrative is leading to changes including amending high-skilled immigration laws – such as start-up visas – and changes to capital gains rules, but every country will have its own shortlist.

What matters for the G8 will be using data from the World Bank and the Organisation for Economic Co-operation and Development on economic growth and job creation to guide what national governments should measure in their pursuit of smarter policies to support high-growth entrepreneurship.

Policymakers are likely to find a paucity of data, or plenty of myths, driven by 30 years of tired dialogue about SMEs. But whatever each country’s ‘start-up act’ looks like, focusing public dialogue on the inventors and makers of things at future G8 meetings would lead to sharing better information and ideas about how to raise the success rate of all entrepreneurs in a global effort to see more new firms improve lives and expand economies. ■



The founders of San Francisco-based start-up Schmendricks Bagels use social media services such as Twitter to reach new and existing customers

Open letter to the G8

Long-term investments in education and training, particularly at primary and secondary level, are essential for economic growth and employment



Dennis Van Roekel
President



Lily Eskelsen
Vice President

The financial crisis that hit five years ago added millions of people to the jobless ranks and threw millions more into precarious work. It also exposed two decades of growing inequality. Many workers have lost good jobs and far too many have lost the fundamental labour rights that went with them.

In the United States, the global economic crisis has resulted in nearly 200,000 educators losing their jobs, in critical educational programmes disappearing, in class sizes exploding and, for the first time in our nation's history, in a generation of young people whose future prospects are significantly less promising than those of their parents.

The National Education Association (NEA) knows that addressing this crisis and finding long-term solutions requires meaningful investment in quality education and training and a focus on ensuring equity for all. Widening income gaps around the world make it very difficult for children to access the educational opportunities that will ultimately propel their



Rebecca S Pringle
Secretary-Treasurer

The National Education Association calls on governments attending the G8 Camp David Summit to join together to create good, sustainable jobs and enhanced education and training opportunities for current and future workers

economic prosperity. A failure to focus on educational equity translates to a crisis of untapped economic and cultural potential.

A compelling body of research links primary and secondary education to economic development and growth. A child's education increases average earnings and productivity. It also reduces the incidence of drug abuse, crime and welfare dependency. In the United States, the real rate of return on investments in education and training programmes – in terms of pay-off to lifetime earnings relative to the upfront costs – is five to 15 per cent per year.

NEA calls on governments attending the G8 Camp David Summit to join together to end the crisis – to create good, sustainable jobs and enhanced education and training opportunities for current and future workers.

We join with Education International and the global labour community to call for:

- Sustained investment in quality public services and quality education to overcome the crisis and to build democratic societies in which all people have the opportunity to live healthy, rewarding and satisfying lives;
- A broad range of urgent actions for jobs and recovery, including a renewed investment in innovative job growth for 21st-century needs that create decent and secure employment;
- Fiscal policies that raise greater revenue from upper income groups and corporations, fight tax fraud and evasion, close loopholes and crack down on tax havens;
- Full respect for trade-union rights and the promotion of strong systems of collective bargaining and social dialogue that help build fairness and democracy;
- More comprehensive social protection through the creation of a global social protection floor supported by adequate funding;
- Guarantees of rights to such basic needs as food, water, housing, health and quality public education for every student.

We look to the G8 for leadership to ensure that long-term investments in education and training materialise to enhance the prospects of the current and future generations.



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Unlocking the potential for innovation offered by ICTs

Information and communications technologies are already inspiring innovation, but governments need to address the obstacles to access that remain

By Jeffrey A Hart, Indiana University, United States

What is the potential impact of the diffusion of information and communications technologies (ICTs) on innovation in the global economy? At first view, the question seems simple. Some of the major consequences are reduced cost, time and effort associated with communicating across great distances. The faster and less costly the spread of potentially economically consequential ideas and new knowledge, the faster the pace of innovation, especially in those parts of the world previously cut off from information flows. The questions are only: what barriers to the flow of information and ideas continue to exist, and how might they be attenuated for the benefit of all?

Removing barriers

Not all information and ideas spread via ICTs will result in innovative activity. A good percentage will be for entertainment primarily, to be passively consumed, possibly to the detriment of creative activity and innovation. Also, not everyone who can benefit from the flow of ideas has access to them via ICTs. This lack of access requires addressing the so-called 'digital divide'. A deeper, and related, question is on the ability of people to absorb the information and ideas that are likely to foster innovation. A likely prerequisite is a long history of investment in the development of human capital – for example, through education and training. Moreover, there is the question of what types of innovation will be required in the coming decades, as opposed to where the biggest 'bang for the buck' might be on the supply side.

One of the main barriers is cultural. Linguistic barriers are especially important, since most significant information and ideas are transmitted via text that may be not

just in different languages, but in different alphabets and character sets. One of the most important innovations in ICTs – attributable to IBM's desire to sell into the vast Chinese market – was the ability to display most of the world's character sets in standardised formats. However, in providing inexpensive and accurate translation to ease the flow of information, there is still a long way to go.

Much of the knowledge that is important for innovation is tacit. To learn key aspects of how to use and further develop the technology, people need to communicate face to face. Conversion of tacit knowledge into

Many national-level indicators of ICT access are strongly correlated with, for example, gross domestic product per capita

explicit or codified knowledge occurs at a certain point when the technology is maturing. This process is accelerated to some extent when innovators attempt to establish their intellectual property rights (IPRs) by applying for patents and copyrights.

The global sharing of patent and copyright applications and final decisions via ICTs is already significant in reducing barriers to information flows. However, licensing fees, and other restrictions on use, are increasing. While there is a global interest in promoting innovation by enforcing IPRs, IPR regimes may need to be reformed to prevent them from institutionalising undesirable barriers to innovation.

One such example is the controversy over patenting parts of the human genome by firms owned by Craig Venter. Similarly, the recent debate on the Stop Online Piracy Act (SOPA) and the Protect Intellectual Property Act (PIPA) in the United States focused on whether IPRs had gone too far in protecting the interests of rights holders while harming those of people engaged in legitimate creative activity, even perhaps creating opportunities for censorship and other restrictions on free speech. The demonstrations against SOPA/PIPA in the United States triggered demonstrations against the Anti-Counterfeiting Trade Agreement (ACTA) in Europe, where the same issue is an integral part of domestic and European politics.

Infotainment versus innovation?

A growing percentage of the traffic carried by the internet, both nationally and internationally, is content shared digitally for the purpose of entertainment and social networking. This includes iTunes audio and video files, YouTube videos, Facebook updates, Twitter tweets and a growing BitTorrent traffic, along with people playing massively multi-user online role-playing games (MMORPGs). While this traffic may make users happy and allow them to make new friendships online, and while there may be some resulting stimulus to the invention of new technologies, it is likely to be somewhat at odds with the flow of information that encourages innovation.

The owners of the infrastructure over which the traffic flows have a clear stake in monetising all traffic, and therefore may like seeing infotainment flows crowd out other traffic because they can charge premium prices for it. The various debates about net neutrality reflect the concerns of the user communities that infrastructure owners will prioritise traffic that they can monetise over other flows. For example, Korea Telecom recently restricted traffic created by cable television and internet services associated with 'Smart TVs' sold by Samsung, hoping that Samsung would contribute to the cost of upgrading Korean infrastructure by sharing revenues with Korea Telecom.

While more than two billion people currently use the internet, in many parts of the world computer and internet access is nonexistent, or connections are too slow and



Smartphones have brought access to information and entertainment on the move, with new services developing at a rapid rate

Technological innovation is helping to close the digital divide, however some types of innovation are more useful than others



intermittent to permit access to valuable and timely information. The digital divide is the latest manifestation of the income and wealth inequalities that existed prior to the diffusion of ICTs. Many national-level indicators of access are correlated with, for example, gross domestic product per capita. The G8's efforts of the past decade to understand the global digital divide – for example, through the work of the Digital Opportunities Taskforce – have shown how difficult it is to bridge the divide in the short term.

Opportunities through innovation

One form of innovation likely to help is the wider use of alternative energy (especially solar and wind power) to ensure that power grids can power information devices reliably. Internet-based educational technologies, such as those created by the Khan Academy, can be applied to reducing the expense of providing high-quality education in the developing world. Inexpensive terminals – scaled-down versions of laptops and tablets – can be made available to schoolchildren. But, in the end, a precondition for success is the commitment to providing basic educational services in the form of teachers and well-equipped schools.

The world certainly needs more innovation, but some types are more useful than others. The current and future market for films will produce more innovations in three-dimensional, higher-resolution images such as enhanced – and virtual reality – technologies. While that innovation will preserve jobs and revenues in a small corner of the world economy, it may have little

impact on the rest of it. Innovation in ICTs in general has only recently paid big dividends in the form of higher productivity and growth rates in the advanced industrialised countries. Questions remain. In the near and mid-term future, which areas of science and technology will produce the best return on investments of public revenues in basic research and development (R&D)? While the diffusion of ICTs has changed how science is carried out and technologies are created and commercialised, what areas of innovation in science and technology will generate growth in employment, income and overall welfare?

Other than ICTs, there are growing clusters of innovation in biotechnology, nanotechnology, alternative energy and environmental technology. It is unclear which, if any, of these areas will generate the kind of growth that followed the diffusion of ICTs – or how the diffusion of ICTs can be harnessed to enhance innovation in other areas. So the approach to funding basic R&D that is likely to prevail in most advanced industrialised countries is the one created by Vannevar Bush during and after the Second World War, which involves scientists and engineers competing for research grants and using peer review to assess the quality of grant applications.

Investment in research

Applied R&D is another matter. Major differences in national approaches to funding this type of work will persist, with developmental or catch-up states – such as China – using industrial policies to prioritise areas for public investment.

Private investment will continue to play a major role in inventing and commercialising applied technologies. ICTs may contribute to facilitating new ventures, especially those too small to be of interest to venture capitalists or angel investors, including new services such as Kickstarter.com that connect investors with entrepreneurs for small-scale investments.

Room for international agreement

To sum up, the diffusion of ICTs can be harnessed to promote innovation. This is already happening. There remain important barriers to access that should be incrementally removed if the political will can be garnered to do so. Some are deeply embedded and likely to resist short-term policy changes, but others – such as better energy grids and diffusion of ICT-based education technologies in the developing world – will be more amenable to short-term improvements.

Governmental policies to promote the diffusion of infotainment services can waste valuable time and resources. That can be left to the market – as long as governments properly monitor their own IPRs and net neutrality policies. Bridging the global digital divide remains a legitimate concern for all governments for the long term.

Differences will remain in national philosophies on priorities for public funding in applied R&D, including funding ICT technologies for innovation outside the ICT cluster. Nonetheless, there is room for international agreements on new technologies, such as alternative energy, that are necessary for solving international problems. ■



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So it turns out that what's at the heart of computing and communications technology is also at the heart of economic growth. To learn more about this kind of technology innovation, visit intel.com/innovationeconomy

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Towards stewardship in cyberspace

As the rewards and risks of the internet multiply, we need to ‘steward’ this information commons, much as we attempt to do for other shared resources

By Ron Deibert, director, Citizen Lab and Canada Centre for Global Security Studies, Munk School of Global Affairs, University of Toronto, Canada

The world’s seven billion people now share a single complex information and communications system, widely referred to as cyberspace. Cyberspace functions, and arguably functions very well, despite no grand blueprint or central point of control. Born as an experimental research network in universities, what used to be the ‘internet’ has mushroomed, more by accident than design, to become the information and communications operating system for planet Earth. A mixed, common-pool resource that cuts across political jurisdictions and the public and private sectors, cyberspace has become, as Marshall McLuhan foresaw, “our central nervous system in a global embrace”.

This planet-wide network produces a remarkable stream of innovation and social goods. Deep wells of knowledge, translated into multiple languages, are now instantly accessible to almost everyone. Precise geolocational coordinates, down to the level of centimetres, are now available in the palm of anyone’s hand. Instantaneous information sharing – ‘crowd sourcing’ – holds the potential of revolutionising everything from election monitoring to disaster relief to disease outbreak predictions.

Threat to infrastructure

Yet, as wonderful as are the fruits of cyberspace, so are the poisons powerful. Malicious software that exposes insecure computing systems is developing at a rate beyond the capacities of security researchers. Massive data breaches of governments, private-sector actors, non-governmental organisations (NGOs) and individuals now occur daily. Systems that control critical infrastructure – electrical grids, nuclear power plants, water-treatment facilities – have been compromised, risking a potentially catastrophic loss of life

should anyone with malicious intent seek to cause widespread harm.

These unfortunate by-products of an open, dynamic network are exacerbated by increasing assertions of state power. Insecurity, competition and mounting pressures to deal with collective action problems drive growing government interventions in cyberspace. Internet censorship at the national level, once thought impossible, is now a global norm. The OpenNet Initiative estimates that 960 million people live in jurisdictions that restrict access to an open internet in some manner. Dozens of countries have adopted explicit cyber-security strategies, including the development of offensive cyber-warfare capabilities. Some countries actually benefit from the cultivation of the cyber-criminal underground, stirring a hornets’ nest of ‘hacktivism’ and espionage from which they derive short-term strategic intelligence and security benefits. A huge commercial market for offensive cyber-attack capabilities is sprouting to service the arms race that is only just beginning.

Extreme solutions may find resonance in the policy community. Proposals to censor the internet in response to copyright violations, to entrust secretive signals to intelligence agencies with the mandate to secure cyberspace for all, to loosen or even eliminate judicial oversight of data-sharing with law enforcement, or to delegate policing of the internet to the private sector – these policies are antithetical to the principles of liberal democratic government and to the system of checks and balances and public accountability upon which it rests. Furthermore, they legitimise the growing desire of autocratic and authoritarian regimes to subject cyberspace to territorialised control, and to the censorship and surveillance that go along with such control.

These trends portend the gradual disintegration of an open and secure commons of information on a global scale. The articulation of an alternative vision of security – one that protects and preserves cyberspace as a dynamic and open ecosystem – is thus urgently required. At its heart will be the elaboration of the proper rights, roles and responsibilities for all actors who share cyberspace.

Stewardship is typically defined as an ethic of responsible behaviour in a situation of shared resources, with respect to the natural environment and the commons, such as the oceans and outer space. Yet cyberspace is not a pure commons like these other domains. It is a mixed, pooled resource, much of it in private-sector hands, but with shared properties that benefit all who contribute to it. However, the concept of stewardship offers powerful guidance. In fact, stewardship is a natural fit for cyberspace governance, having been used explicitly by the engineers and scientists who built and designed the internet itself.

Stewardship goes beyond self-interest to demand accountability, in terms of rights and responsibilities to some larger shared social good. It is especially appropriate because cyberspace is an artificial domain that requires constant tending. It is the first entirely artificial environment – without humans, it would not exist. This places us all in the position of joint custodianship of cyberspace. We can destroy it, or we can preserve and extend it. The responsibility is inter-generational, extending to those digital natives yet to assume responsibility, but also linked to those in the past who imagined the possibilities for what something like cyberspace today presents.

Stewardship enriches what has become an almost empty euphemism: multi-stakeholderism. Governments, NGOs, armed forces, law enforcement and intelligence agencies, private-sector companies, programmers, technologists and citizens all play an interdependent role as stewards of cyberspace – but for none is it an exclusive domain. Concentrating governance of cyberspace in a single global body, whether based at the United Nations or elsewhere, makes no sense from the perspective of cyberspace. Stewardship in cyberspace implies numerous and distributed acts of

governance at all points of the environment, from the local to the global, undertaken by a multiplicity of actors. Indeed, the only type of security that functions in an open, decentralised network is distributed security.

Stewardship happens all the time in cyberspace, even if the acts are not described in such terms. When Twitter unveiled a new national tweet removal policy, it justified its actions in terms of larger consequences, and was judged according to principles of stewardship. As people entrust more and more data to third parties such as Twitter, how that information is handled, and with whom it is shared, must be based on more than mere self-interest and market considerations.

Likewise, profiting from products and services that violate human rights, or exacerbate malicious acts, in cyberspace is unjustifiable in a context of common shared information and communication resources, regardless of profitability. Justifying it on the basis of compliance with local laws is a hollow excuse, in the framework of the higher standards that stewardship in cyberspace imposes.

Limiting state power

Stewardship can help to moderate the dangerously escalating exercise of state power in cyberspace, by defining limits and setting thresholds of accountability. Today's tendency towards mass surveillance without judicial oversight is incongruous with stewardship in cyberspace. Governments are obliged to ensure that malicious acts are not tolerated within their jurisdictions, and to set the highest possible standards of self-restraint through proper mechanisms of checks and balances. Privacy commissioners and competition and other oversight bodies are critical as more and more information and responsibilities are delegated to private-sector hands – equal to, if not more than, those agencies that deal with public and national security.

Since cyberspace is ultimately a network of individuals, stewardship extends also to each individual and to the networks of organisations that constitute global civil society. Protected by academic freedom, equipped with advanced research resources that span the social and natural sciences, and distributed across the planet, university-based research networks are the ultimate custodians and independent monitors of an open and secure commons and the codes, protocols and principles that surround it.

To be sure, stewardship is not a panacea. It will not immediately cease the raw exercise of power and competitive advantage in cyberspace. It will not destroy malicious networks or prevent cut-throat entrepreneurs from profiting from the market to undermine cyberspace. But it will help to raise the bar, set standards, and challenge the players to justify their acts in more than self-interested terms. Above all else, it will focus collective attention on how to sustain a common communications environment in an increasingly compressed political space. ■



Governments are increasingly keeping an eye on online activity. Internet censorship at a national level, once thought impossible, is widespread

Tunisia: creating positive change

Little more than a year ago, the Tunisian Republic began its move into a new era of democracy and freedom. As it emerges from the Jasmine Revolution that ended former president Ben Ali's regime, the country faces many challenges, but it now has the power to overcome them and make fundamental economic and social changes that will set the tone for a more prosperous and stable future.

Among the most important challenges in the birthplace of the Arab Spring are the high rates of youth unemployment and inequality in incomes on a social and regional basis. The immediate goals, therefore, are to put in place a sustainable job-creation programme based on a more competitive private sector by removing some of the barriers that entrepreneurs have faced. Alongside this, the country is keen to diversify into more industrial sectors.

The new government is also seeking to reform the tax regime to reduce social disparity and redistribute public spending to help the poor and improve public services. There is a great deal of work to do, but in addressing these key issues face-on, the country is making itself an attractive home for overseas investment. The regulatory and political landscape, characterised by a new economic strategy, is more open to foreign investors, who in turn appreciate the new era of stability.

Local businesses are gaining confidence that the government will continue to loosen the restrictions on competition

Much of Tunisia is fertile soil – hence its large agricultural industry – and its long coastline on the Mediterranean Sea puts it within easy reach of Europe. In fact, Tunisia's location, as the northernmost country in Africa, gives it a strategic position for business that is hard to equal. It is the meeting point of many cultures, a bridge between Europe, Africa and the Arab world.

This is proven by the country's trade and investment relationships with the European Union and its membership of the Arab Maghreb Union, the Arab League and the African Union. Tunisia has close relations with France in particular, and there is a history of economic co-operation, industrial modernisation and privatisation programmes between the two countries.

Through its trade relations with the EU, Tunisia has programmes under way that focus on reinforcing partnerships to enable industry, particularly small and medium-sized enterprises, to fully benefit from its commercial relations with Europe. There is a mutual recognition of the need for more integrated markets, better technical infrastructure, less bureaucracy, and a regulatory regime to allow small and medium-sized enterprises to compete more effectively on the international stage.

Considerable progress has already been made in aligning Tunisia's legislative regime with that of the EU. For instance, there are discussions over an agreement on conformity assessment and acceptance of industrial products (ACAA), which could soon give full access to the single European market for industrial products that meet the necessary requirements.

Tunisia has a similarly close relationship with the US, which has been supportive during the transition and continues to build

stronger economic ties. The US has already granted \$100 million to Tunisia to help the government focus on its economic priorities, and has agreed a separate package of loan guarantees to help Tunisia raise capital, which will allow it to cut down debts to the World Bank and African Development Bank.

Furthermore, Tunisia, along with Egypt, Jordan and Morocco, is building a new partnership with the US to enhance the trade and investment that are vital to job creation and economic growth. In discussions chaired by the US as chair of the G8 and the Deauville Partnership with Arab Countries in Transition, an agreement has been reached to explore new ways to boost trade and investment between these countries, and to collectively identify new opportunities to increase regional competitiveness.

Under the new political system, there is a real chance to build on Tunisia's many natural advantages, and the most important goal is to fully develop its greatest untapped resource – the talent and potential of its people. With growing economic stability, there is a real opportunity to rebuild the vital tourism sector, boost foreign direct investment, bring back overseas companies to do business, and encourage Tunisia's SMEs to invest in growth.

Investing for the future

It is inevitable that the transition to a new political environment comes at a cost. Yet Tunisia is clearly well positioned for growth. Its economy has been expanding at a faster rate than many others, and there are clear opportunities to develop new and more sophisticated industries.

The current forecast for GDP growth is 3.5 per cent this year, but perhaps more important than such estimates is the fact that local businesses are now gaining confidence that the democratically elected government will continue to loosen the restrictions on competition that typified the previous regime. Optimism will no doubt grow as the new administration introduces incentives to help to channel resources towards high-value-added and knowledge-intensive sectors.

There are many opportunities in agriculture, industry and the services sector to foster growth and make the best use of Tunisia's human capital, not least by adapting schemes for education and training to meet the demands of a more dynamic and flexible economy.

This reborn Tunisian economy will be based on the rule of law and good governance, and with processes in place to increase transparency, competition and accountability, as well as economic efficiency and social justice, Tunisia can achieve the goals of industrial diversity, wealth generation and social equality that are so important to its people.

With the ongoing support of foreign partners and further efforts to improve trade relations with the EU, the US, its African neighbours and its fellow Arab countries, Tunisia has a real sense of opportunity, and the will to seize it.

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