

Global Findings

How to sustain growth is a question that preoccupies every government. By drawing a detailed map of the competitiveness landscape of 140 economies, the new GCI 4.0 can point towards lessons learned from global analyses. It can also help respond to critical emerging questions about competitiveness in today's economic, political, technological and social context.

This chapter distils global findings from the inaugural edition of the Global Competitiveness Index (GCI) 4.0, featured below. It also includes four In Depth sections on what the GCI 4.0 tells us are critical questions arising around innovation, institutions, economic progress, and openness.

Competitiveness is not a zero-sum game between countries—it is achievable for all countries.

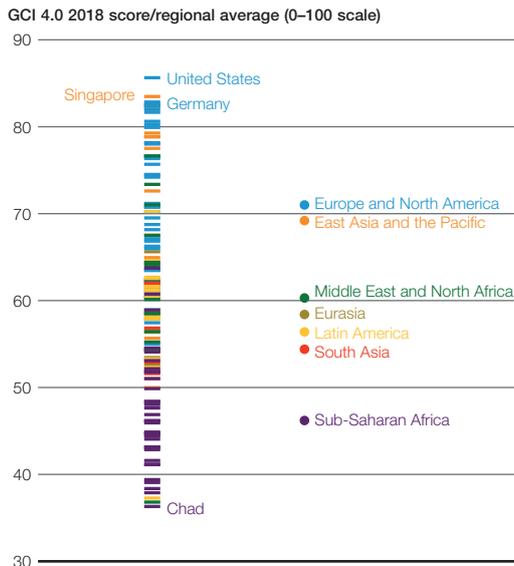
When competitiveness is equated to productivity, it becomes clear that it is neither a competition nor a zero-sum game. All countries can become more productive at the same time. Improving education standards in Country A does not lower standards in Country B; tackling corruption in Country A does not make Country B more corrupt. Hence, the pursuit of national competitiveness does not undermine global cooperation—indeed, openness contributes to competitiveness (see the third In Depth section later in this chapter). This finding is important to reassert at a time when globalization and the global governance system are being put to the test.

While competitiveness is not a zero-sum game between countries, cross-country comparisons can be instructive by pointing to benchmarks and best practices. The GCI 4.0 therefore presents a ranking of countries, as in previous years, but aims to focus the debate instead on three fundamental questions: Which areas should a country prioritize?; Is a country making progress over time?; and 'What can a country learn from the highest performing countries?'

This index does this through a 'distance to frontier' approach, in which performance on each component is evaluated against the 'frontier', or ideal state. Stakeholders are encouraged to ask whether their country is moving closer to the frontier in a given area, where its distance to the frontier is the largest, and what it can learn from those who are performing best in selected areas.

There are deep divides between countries when it comes to current competitiveness—and the risk of further divergence

The United States is the closest economy to the frontier, the ideal state, as described by the concepts included in the index, where a country would obtain the perfect score on every indicator. With a competitiveness score of

Figure 1: The competitiveness gap

Source: World Economic Forum analysis.

85.6, it is 14 points away from the frontier mark of 100, slightly closer than Singapore and Germany (see the full rankings on page xi). This implies that, even though the United States is the top-ranked economy among the 140, there is still room for improvement.

Globally, the median score is 60. Twenty-one countries, including 18 in sub-Saharan Africa, score lower than 50. With a score of 35.5—fully 50 points behind the United States—Chad is the furthest from the frontier and therefore ranked last.

The competitiveness gap runs deep across regions (Figure 1). Europe and North America (the two are grouped together for the purpose of the analysis) are home to seven of the 10 most competitive economies. The three others in the top 10—Singapore, Japan and Hong Kong SAR—are in the East Asia and the Pacific region. Other regions lag significantly behind; in particular Sub-Saharan Africa, where eight of the 10 least competitive economies are found. Additionally, regional averages conceal vast disparities within them. In Europe, there are four distinct groups of countries with very different competitiveness levels. In Latin America, Chile's score (70.3, 33rd) is almost twice that of Haiti (36.5, 138th). The existence of pockets of over- or under-performance within each region suggests that there is little determinism in competitiveness; it is instead the result of proactive policies and leadership (see Chapter 2 for a longer discussion). The 4IR is likely to compound these differences in competitiveness for countries that are unprepared to leverage new opportunities. It may result in a further segregated world, in which highly

competitive countries adapt and thrive, and the least competitive countries stagnate or decline.¹ Similarly, within countries the 4IR could increasingly segregate workforces into “low-skill/low-pay” and “high-skill/high-pay” groups, which could exacerbate inequalities and increase social tensions.²

In the age of the Fourth Industrial Revolution all economies have the opportunity to carve a path to competitiveness

For most of the 20th century, the pathway to development seemed relatively clear: lower-income countries would be expected to develop through progressive industrialization by leveraging unskilled labour. Today, the sequence has become less clear. For example, robotics are making light manufacturing less labour-intensive. However, the 4IR is also making it more feasible for lower-income countries to leapfrog in certain areas. ICTs, for instance, have been shown to facilitate access to basic services and enable new business models. ICTs and globalization enable the rapid transfer of ideas and technologies and lower the barriers to innovation, offering new ways to develop.

The GCI 4.0 reflects this growing complexity of policy prioritization by no longer weighting the pillars according to a country's stage of development. Instead, the overall score is simply the average of the 12 pillar scores. All competitiveness factors matter for all countries, regardless of their stage of development, and any pillar can be considered a potential priority. The 4IR makes it reasonable to take this more agnostic approach to income level and calls for a more encompassing approach to policy prioritization. This is supported by the GCI's results: a country's overall competitiveness depends to a very large extent on that country's performance on the relatively basic drivers of competitiveness (see Chapter 2).

The promise of leveraging technology for economic leapfrogging remains largely unfulfilled

Analysis of the GCI pillars makes clear that in many countries, the root causes of slow growth and inability to leverage new opportunities offered by technology continue to be the ‘old’ developmental issues—institutions, infrastructure and skills. Notably, the disappointing economic performance of most Sub-Saharan African countries is more attributable to weaknesses in these areas than in any others, and the much-vaunted economic leapfrogging will not happen unless these issues are addressed decisively.

While there is much hype around the potential of information and communications technologies (ICTs), and while ICTs can clearly be enablers of productivity on some GCI pillars, such as innovation and business dynamism, it would be misguided to rely on technology

to solve all problems.³ For example, evidence of significant impact technology in areas such as education, health and governance remains anecdotal.⁴ Additionally, an enabler is not the same as a substitute. There is full *complementarity* among the drivers of productivity, but little *compensability*. ICTs cannot, for instance, replace transport infrastructure.

Moreover, ubiquitous ICTs and universal internet access remain aspirational: there are, at most, 4.5 billion smartphones in use in the world and more than half of humanity has never gone online.⁵ ICT adoption—which often serves as a proxy for a country’s general level of technological adoption—is either the weakest or second weakest of the 12 pillars for 57 out of the 140 countries. The second In Depth section later in this chapter examines how institutions remain a fundamental building block of competitiveness and therefore a prerequisite to fulfilling the promise of leapfrogging.

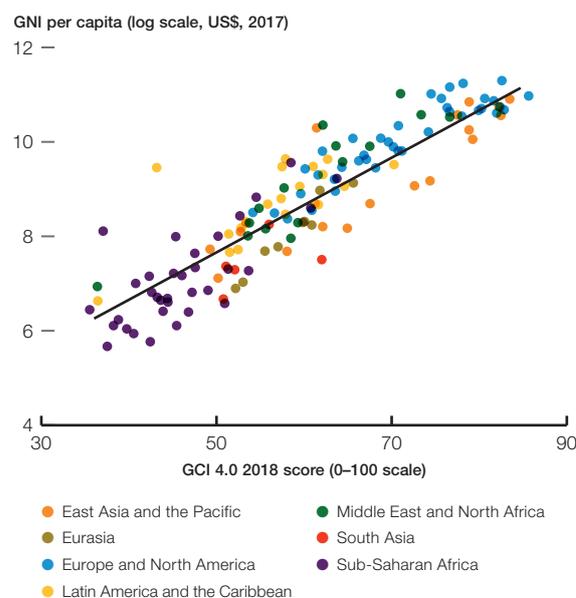
Fostering innovation requires holistic strategies that most economies have yet to master

Innovation is especially critical as a driver of productivity growth and value creation in the 4IR. It is already at the core of the growth agenda of most advanced economies and a growing number of emerging economies. But governments are struggling to understand what makes a country innovative.

The new GCI adopts a broad approach guided by three principles: first, a country’s capacity to innovate depends on the quality of a vast and complex ecosystem; second, innovation is a process through which ideas become successful products; third, innovation happens everywhere, not just in a laboratory, and its outcomes take many forms, from products—goods and services—to businesses and organizational models. Since the GCI 4.0 aims to capture the complexity of the innovation process and the breadth of the ecosystem supporting it, the index includes softer drivers of innovation—such as creativity and entrepreneurship—that are difficult for stakeholders and leaders to grasp, let alone to influence.

The results of the GCI 4.0 reveal there are only a handful of innovation hubs in the world, for reasons we unpack in the first In Depth section later in this chapter. The global median score on the Innovation capability pillar (pillar 12) is 36 out of 100, the lowest score across the 12 pillars. For 77 of the 140 economies studied, Innovation capability is the weakest pillar. Only four ‘super innovators’ score above 80: Germany, the United States, Switzerland and Taiwan (China).

Figure 2: Competitiveness and income



Sources: World Economic Forum; World Bank, 2018; national sources.

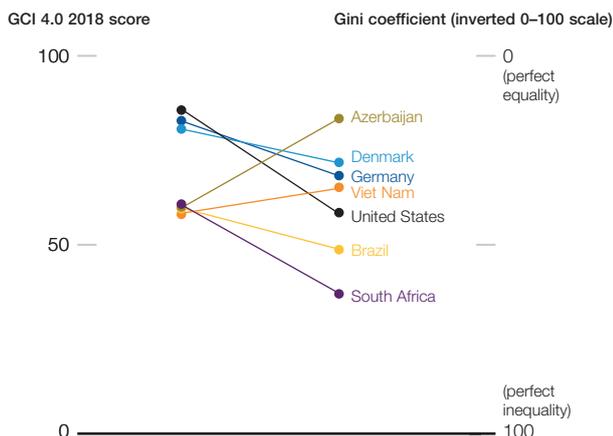
Notes: GNI = gross national income (Atlas method), natural log transformation. Data for Venezuela is from 2014, and data for Taiwan (China) is from 2016. N=140, R² = 0.82.

Enhancing the fundamentals of competitiveness improves resilience to shocks

The results reveal that countries that optimize their performance on the factors included in the GCI 4.0 are on a higher long-term growth trajectory (see Chapter 3, Box 3) and achieve higher levels of income (see Figure 2). More competitive economies are also more resilient to various shocks. As shown in previous editions, the more competitive advanced economies rebounded from the Great Recession much more quickly, returning to pre-crisis levels of employment and growth by 2015, while less competitive economies experienced protracted stagnation or even long episodes of recession.⁶ Building economic resilience through competitiveness is more important than ever in today’s volatile context, with a wide range of vulnerabilities, geopolitical tensions and potential flash points around the world.

Likewise, more competitive countries are also better equipped to address the challenges of the Fourth Industrial Revolution (4IR)—and to seize the opportunities it presents. In particular, competitive economies that prioritize agile and innovative businesses and a skilled workforce, combined with visionary governments, are better able to handle the negative impacts of new technologies while also being better prepared for the benefits (see Chapter 3, Box 1 for a longer discussion).

The global economy is growing and the short-term outlook looks favourable—but medium-term risks are mounting. Tariff increases by the United States and retaliatory measures by trading partners have increased

Figure 3: Competitiveness and inclusion

Sources: World Economic Forum analysis; World Bank, 2018.

the likelihood of escalating and sustained trade actions that could derail the recovery and deter investment. Financial market conditions remain accommodating to advanced economies, but this could change rapidly as levels of public, corporate and/or private debt are very high in many advanced and emerging economies. Should a shock occur, government capacity will be limited and credit markets might seize up again. Now is the time to make structural reforms and investment to improve productivity. Given the volatile context, the window might not be open for much longer.

Achieving equality, sustainability and growth together needs proactive, far-sighted leadership

There is a worldwide consensus on the need for a more holistic model of economic progress that promotes higher living standards for all, respects planetary boundaries, and does not disadvantage future generations. Competitiveness is necessary but not sufficient to meet these objectives.

In the third In Depth section, we show that more competitive economies tend to do better on selected socio-economic outcomes. Competitiveness, for instance, has a close and positive relationship with measures of poverty and life satisfaction. The relationship with equality is looser: more competitiveness seems neither to systematically reduce or increase inequality. This implies there is no inherent trade-off between equality and growth: it is possible to be both pro-growth and 'pro-equity', as shown by the strong performance of several northern European countries both in terms of competitiveness and inclusion (Figure 3). The relationship between competitiveness and the environment, however, is less conclusive. The most competitive economies have the largest ecological footprints, but they are the most efficient (footprint per unit of GDP is the lowest). It

is therefore incumbent upon leaders to set longer-term priorities to create virtuous cycles between equality, sustainability and growth.

In Depth Sections

The In Depth sections below sift through the results of the Global Competitiveness Index 4.0 to tackle four important questions—and to debunk the assumptions and myths surrounding them.

- **Is there a formula for innovation?** A critical driver of productivity, innovation is bound to assume increased significance in the 4IR. In this section, we show the myriad factors that make for a fertile innovation ecosystem. The difficulty of having all these elements in place explains why there are so few innovation hubs around the world.
- **Are institutions still important?** We show how weak institutions continue to act as a drag on competitiveness, and urge governments to not lose sight of this long-standing governance issue.
- **Are prosperity, people and the planet compatible?** We stress the importance of competitiveness for overall economic progress. We show that more competitive economies are on a higher long-term growth trajectory (when accounting for their level of development) and achieve better socioeconomic outcomes than less competitiveness economies.
- **Should countries pursue openness?** We examine how openness is linked to competitiveness and inclusion. We argue that being open is almost always good for competitiveness, and not necessarily bad for inclusion.

In Depth: Is there a formula for innovation?

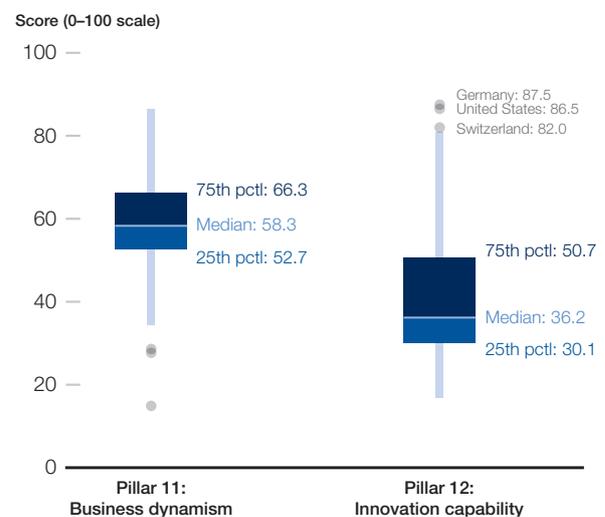
The 4IR is reshaping the economic landscape by changing the drivers of growth and competitiveness. It is no longer possible to rely solely on efficiency and cost-cutting for economic success: innovation, flexibility and adaptation to change are becoming the key ingredients. When change is the only constant, economies that can adopt new ideas, methods or products more quickly will have an edge. That's why embracing opportunities and leveraging innovations can accelerate growth and development for every economy.

However, the Innovation capability pillar has the lowest performance on average of the 12 pillars on the GCI 4.0, with a median score of just 36, and three-quarters of countries score 50 or lower, indicating they are less than halfway to the frontier (Figure 4). The distribution of scores is so skewed that the pillar's three best performing economies—Germany (87.5), United States (86.5) and Switzerland (82.1)—are considered statistical outliers.

Why are there so few innovation powerhouses in the world? Innovation is a complex process. It starts with the generation of ideas, some of which lead to inventions, and only a few of which are ever commercialized. Innovations enhance economic productivity only if they reach the desired markets and achieve commercial success. Innovation takes place within an ecosystem of multiple factors. Any factor missing from the innovation ecosystem can prevent new ideas from being generated or evolving into viable commercial products.

The index is designed to capture this complexity and assess countries against it. Both the Innovation capability and Business dynamism pillars enable an assessment of each economy's innovation ecosystem. Innovation capability is comprised of indicators on the

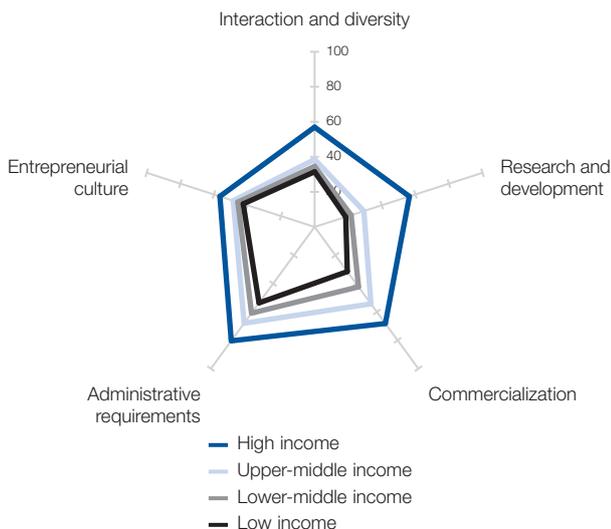
Figure 4: The innovation ecosystem, descriptive statistics



Source: World Economic Forum analysis.

Note: Pctl = percentile.

Figure 5: Innovation ecosystem performance
By income group



Source: World Economic Forum analysis.

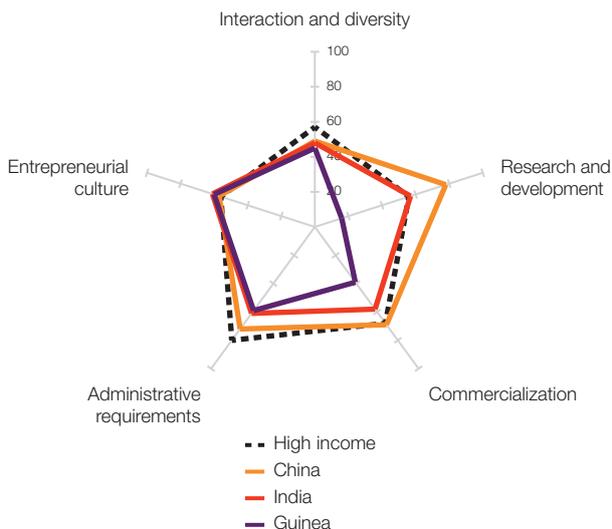
‘softer’ and less tangible aspects of idea generation, captured in the Interaction and diversity, as well as Research and development (to develop inventions) and Commercialization (the capacity to successfully bring innovation to the market) sub-pillars. The Business dynamism pillar captures broader factors, captured in the two sub-pillars: Administrative requirements (the extent to which the regulatory framework supports creative destruction by making it easy to found and close companies) and Entrepreneurial culture (a country’s willingness to take risks and embrace disruptive ideas).

Other GCI components also play a critical role in determining a country’s capability to innovate. These include ICT adoption (pillar 3), quality of education (captured in the Skills pillar), intensity of competition (Domestic market pillar) and availability of financing (Financial system pillar).

The results demonstrate that the countries with the winning formulas for innovative ecosystems have embraced a wide range of measures to achieve success. On average, high-income economies achieve significantly higher scores than those in lower-income brackets on each of the five sub-pillars that make up the Business dynamism and Innovation capability pillars, demonstrating that their innovation ecosystems are more developed. Nonetheless, they are still far from the frontier on all dimensions—and all economies have potential for further progress (Figure 5).

The most striking differences are found in the Research and development sub-pillar, which includes indicators on R&D spending, patents, publications and research institutions.⁷ For 94 of the 140 economies featured in the report, this sub-pillar is the

Figure 6: Innovation ecosystem performance
By top performer from each income group



Source: World Economic Forum analysis.

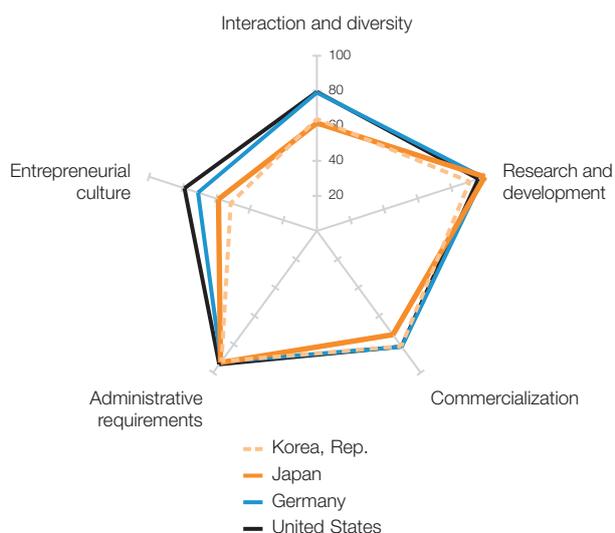
lowest scoring of the five. Nonetheless, despite low levels of research and development these economies can still adopt technologies developed elsewhere and adapt them for local needs. For example, in some developing economies the diffusion of mobile phones has become a platform for delivering financial services.⁸

The gap between advanced and developing economies is less prominent on the Administrative requirements sub-pillar, but there is still room for improvement. Further reducing administrative burdens on starting or closing a business represents a relatively achievable goal in terms of policy intervention: accessible, low-cost and without requiring cultural shifts.

The top performers in the upper- and lower middle-income brackets, such as China and India, are catching up with or even outperforming the average among high-income economies. China, for example, is already more advanced when it comes to investing in research and development sub-pillar than the average high-income economy, while India is not far behind and let down only by its less-efficient bureaucracy for business creation and insolvency. The catch-up process is reflected in the emergence of Chinese and Indian companies in technology-intensive sectors. China is home to 33% of the world’s ‘unicorns’ (private companies valued at over 1 billion) in 2017, up from 12% in 2014.⁹

Among low-income countries, however, even the best performers are still lagging behind. Kenya, for example, underperforms on most of the five sub-pillars. This supports the widely-held idea

Figure 7: Innovation ecosystem performance



Source: World Economic Forum analysis.

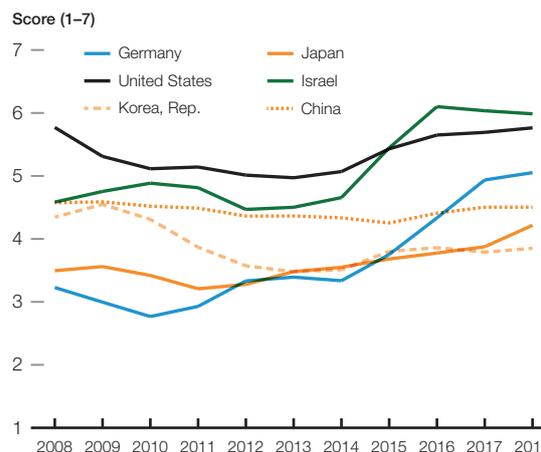
that innovation requires stable conditions—such as well-established institutions, extensive ICT adoption, domestic market competition and a favourable education system—and suggests these factors should be priorities for governments in low-income economies that are looking to innovation for employment growth.¹⁰

The exception to this performance gap is found in the Entrepreneurial culture sub-pillar, which the GCI results suggest is not a prerogative of advanced economies. In Uganda, for example, 28.1% of the population are self-described entrepreneurs, the highest percentage in the world.¹¹

Among the best performers, the so-called ‘softer’ drivers of innovation—represented by the sub-pillars Entrepreneurial culture and Interaction and diversity—distinguish the ‘super innovators’, Germany and the United States from other innovation hubs found in countries such as Japan and Korea (Figure 7).

One reason why Korea and Japan lag slightly behind their high-income peers on these sub-pillars could be a tendency toward uncertainty avoidance. As Figure 8 shows, despite some recent increases, the appetite for entrepreneurial risk in Japan and Korea is significantly lower than in the United States. Possible explanations include perceived higher opportunity costs to entrepreneurial risk and other cultural factors that make it more difficult to embrace disruptive ideas. In fact, many experts attribute Japan’s ‘lost decade’ partly to companies’ reluctance to be forward-looking and break away from the status quo. A more vibrant innovation ecosystem

Figure 8: Evolution in attitudes toward entrepreneurial failure



Source: World Economic Forum, Executive Opinion Survey (various editions).

Note: Response to the survey question: “In your country, to what extent do people have an appetite for entrepreneurial risk?” (1 = not at all; 7 = to a great extent). See Appendix C for more details.

would allow these economies to more fully translate their research efforts into economic growth and increase long-term resilience to technological shocks.

For success in the Fourth Industrial Revolution, all economies—whether advanced or developing—will need to embrace the opportunities offered by innovation. The Global Competitiveness Index helps them to identify which factors—from regulations to cultural practices—each country’s government needs to focus on to develop a balanced and dynamic innovation ecosystem.

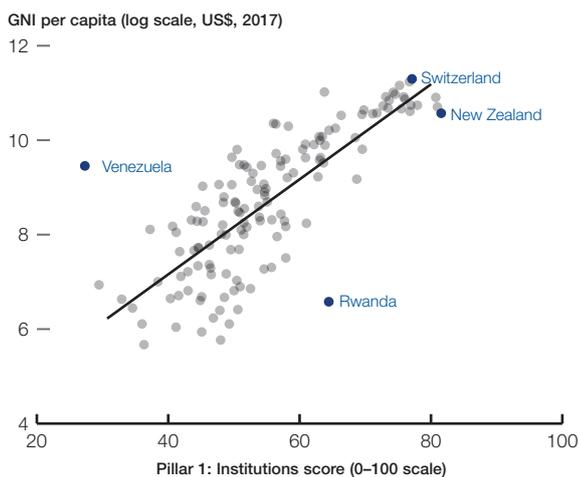
In Depth: Are institutions still important?

Strong institutions are a fundamental driver of both productivity and long-term growth. Their benefits extend well beyond economics, affecting people's well-being on a daily basis. Adam Smith first highlighted this in 1776, and it has been established as empirically sound time and again ever since.¹² Differences in institutional quality underlie many of the reasons for differences between countries in technology and physical and human capital, which can explain a large part of cross-country differences in income (see Figure 9).¹³ Further, ample empirical evidence has shown the ongoing importance of stable, effective institutions for economic productivity.¹⁴

It is because of the importance of these economic building blocks that the first of the GCI 4.0's 12 pillars assesses the strength and quality of an economy's institutions. By shaping the ways in which individuals organize themselves and their economic transactions, institutions form the backbone of economic activity and stable societies.

Weak institutions continue to hinder competitiveness, development and well-being in many countries. The Institutions pillar is the second-lowest scoring pillar of the 12 GCI pillars (after the Innovation capability pillar), with a median score of 53—just over halfway to the frontier. For 117 of the 140 economies studied, their Institutions pillar performance is a drag on their overall competitiveness score (Figure 10).

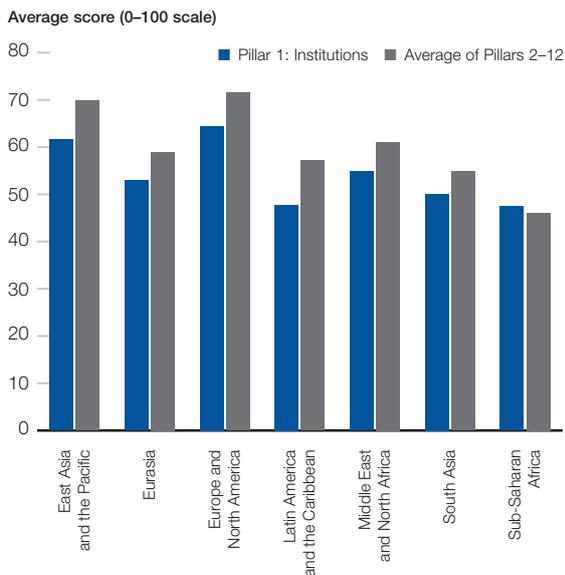
Figure 9: Institutional strength and income



Sources: World Economic Forum analysis; World Bank, 2018; national sources.

Note: N=140, R² = 0.63.

**Figure 10: Institutions and other drivers of competitiveness
By region**



Source: World Economic Forum analysis.

Note: N=140.

Box 1: Defining ‘institutions’

Economic agents will not invest if they fear they will need to spend excessive amounts of time and money on protecting their property and monitoring the fulfilment of contractual obligations. Their expectations depend on the levels of trust in society; on whether public institutions are capable of ensuring a basic level of security and enforcing property rights, and are characterized by transparency, efficiency, and checks and balances; and on the strength of corporate governance standards and prevailing business ethics.

The GCI 4.0 therefore conceptualizes institutions broadly as including *formal*, legally binding constraints—rules, laws, constitutions and associated enforcement mechanisms—and *informal* constraints, such as norms of behavior, conventions and self-imposed codes of conduct.¹ Pillar 1: Institutions comprises six sub-pillars and 20 indicators, as shown in Table 1.1.

Table 1.1: Structure and composition of Pillar 1: Institutions

Component	Worst performer	Best performer
Security		
1.01 Business costs of organized crime	El Salvador	Finland
1.02 Homicide rate	El Salvador	Japan
1.03 Terrorism incidence	Pakistan	Multiple
1.04 Reliability of police services	Venezuela	Finland
Social capital		
1.05 Social capital	Burundi	Australia
Checks and balances		
1.06 Budget transparency	Multiple	Multiple
1.07 Judicial independence	Bolivia	Finland
1.08 Efficiency of legal framework in challenging regulations	Venezuela	Finland
1.09 Freedom of the press	China	Norway
Public-sector performance		
1.10 Burden of government regulation	Venezuela	Singapore
1.11 Efficiency of legal framework in settling disputes	Brazil	Singapore
1.12 E-Participation	Venezuela	Singapore
1.13 Future orientation of government	Lesotho	Multiple
Transparency		
1.14 Incidence of corruption	Venezuela	Singapore
Property rights		
1.15 Property rights	Yemen	New Zealand
1.16 Intellectual property protection	Yemen	New Zealand
1.17 Quality of land administration	Venezuela	Singapore
Corporate governance		
1.18 Strength of auditing and accounting standards	Sri Lanka	Singapore
1.19 Conflict of interest regulation	Haiti	Singapore
1.20 Shareholder governance	Angola	Finland
	Ethiopia	Multiple
	Haiti	Kazakhstan

Source: World Economic Forum analysis.

Note: See Appendix C for detailed methodology. Visit <http://gcr.weforum.org> for detailed results.

Notes

- 1 The definition is loosely based on North, 1994. For a longer discussion on the impact of public and private institutions on productivity, and for a full literature review, see World Economic Forum, 2015, Chapter 1.2.

Among the six sub-pillars of the Institutions pillar, global performance is best on Security.¹⁵ Here, the median score is 72 and half of all countries score 75 or above, with Finland (97.5) coming closest to being free from terrorism and crime. With equal scores of 33.8, El Salvador and Venezuela are the worst performers, but crime and violence extract a huge economic and human toll across Latin America. The continent's largest economies—Brazil (45.8), Mexico (46.0) and Colombia (43.5)—are less than halfway to the frontier. Nigeria, Yemen, South Africa, Pakistan and the Philippines are other countries with notable problems related to violence, crime or terrorism, and where the police are considered unreliable. Across all countries, the relationship between the prevalence of organized crime and the perceived reliability of the police is strikingly close.

Transparency is the weakest sub-pillar overall. Scores are assessed using Transparency International's Corruption Perception Index (CPI), for which the World Economic Forum's Executive Opinion Survey is a source (see Appendix B). On the CPI's scale, ranging from 0 ("highly corrupt") to 100 ("very clean"), two-thirds of the 140 GCI countries score lower than 50 and the median is just 43. When advanced economies are excluded, the median drops to 36. The worst-performing region is Eurasia but Latin America and the Caribbean is home to the world's most corrupt country, Venezuela, which has a score of 18.

Public sector performance is the second weakest sub-pillar. Unnecessarily burdensome regulation creates delays, raises transaction costs, reduces accountability, and disproportionately penalizes smaller businesses and average citizens. It creates room for corruption and arbitrary decisions, which is reflected in the close association between the scores for this sub-pillar and those of the Transparency sub-pillar.

The overall level of 'future preparedness'—which will become increasingly important in the 4IR—is very low. The Public sector performance sub-pillar is made up of indicators reflecting a government's ability to prepare for the future, and covers policy stability, responsiveness to change, long-term vision and the adaptability of the legal framework to technological change. The median score is just 45, yet the most future-prepared governments are not necessarily those of the most competitive economies. Only three—Switzerland, the United States and Singapore—feature in the top 10 of both lists. The East Asia and the Pacific and Middle East and North Africa regions outperform Europe and North America, with Singapore (85.6) scoring highest followed by Luxembourg (79.0), the United States (78.3), and the United Arab Emirates (76.7). The relationship between future-preparedness and income level is positive but extremely loose, with Malaysia and Rwanda, for example, scoring significantly higher than

Greece, Italy and Belgium. With a score of 8, Venezuela is by far the least future-prepared economy.

In summary, the results of the GCI are a reminder not to lose sight of the fundamental need for strong institutions, particularly as institutions have actually worsened in some economies over the past year. The fact that institutional strength as a driver of economic growth is a perennial yet fundamental correlation and not a new theory does not make it any less important.

In Depth: Are prosperity, people and planet compatible?

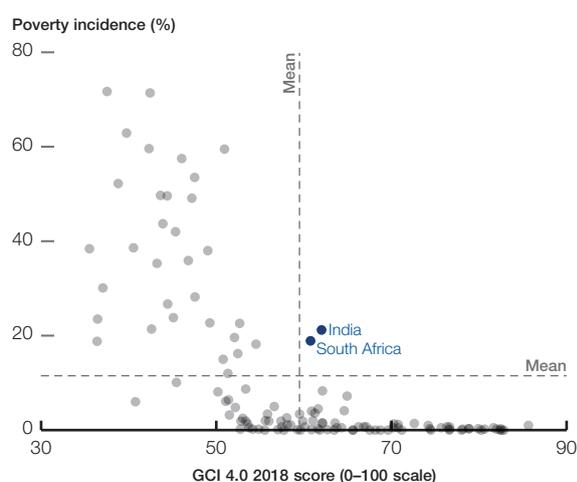
Sustained economic growth has been the main policy priority under the prevailing liberal international economic order that gained ascendancy in the early twentieth century.¹⁶ But too narrow a focus on growth has blinded many governments to adverse distribution effects and negative externalities as technological change and globalization have gathered force. Slow progress in living standards and widening inequality, exacerbated by the Great Recession that began in 2007, have contributed to political polarization and erosion of social cohesion in many advanced and emerging economies.

There is now a worldwide consensus on the need for a more holistic model of economic progress—a model that acknowledges growth as necessary but recognizes the need for additional measures to achieve higher living standards for all, while ensuring environmental sustainability and the interests of future generations.¹⁷

There are, inevitably, some tensions and trade-offs among the various dimensions of economic progress. But there is also potential for virtuous cycles. For example, as growth raises the income of individuals, it increases their ability to pay for services and goods that improve their health, education and welfare. This opens up new opportunities to improve their economic prospects, while increasing their overall well-being. Similarly, growth broadens a country's tax base, generating resources that the government can spend on public services, such as security, infrastructure, health, education and income redistribution—expenditures that can, over time, improve economic prospects.¹⁸

Performance results on the GCI 4.0 add to ample empirical evidence that more competitive economies on average do in fact perform better on various measures of economic progress—including poverty, inequality and well-being; however, the evidence is more mixed in the case of environmental sustainability.

Figure 11: Competitiveness and extreme poverty



Source: Sources: World Economic Forum analysis; World Bank *World Development Indicators (WDI)* database, retrieved 28 August 2018.

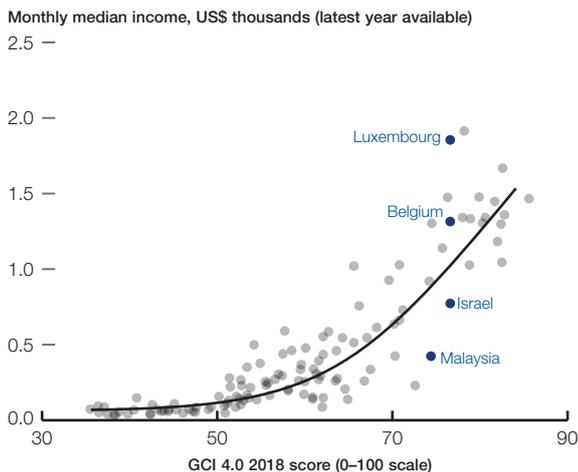
Notes: N=121. Poverty headcount ratio at PPP\$ 1.90 a day (2011 constant prices) in percentage of population (latest year available).

Competitiveness and poverty

The incidence of extreme poverty is an important measure of broad-based economic progress, and low productivity is its proximate cause: the poor produce too little to earn a wage to subsist let alone to invest in healthcare and education.¹⁹ That's why higher competitiveness scores are typically associated with lower poverty (Figure 11). In fact, only two countries in the top half of the GCI rankings—South Africa and India—demonstrate what is considered an extreme poverty incidence, in which the poverty rate exceeds 10% of the total population.

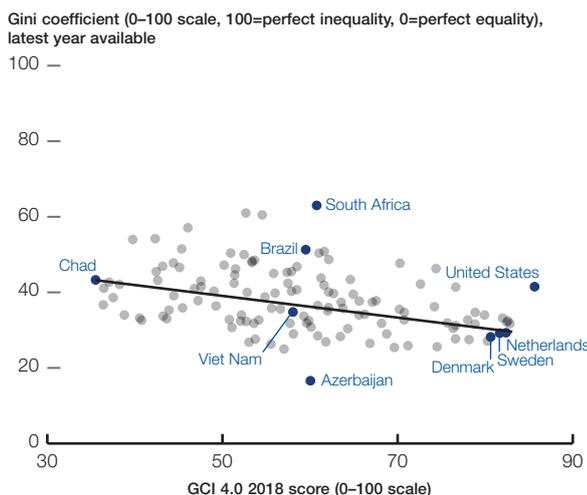
Median household income is perhaps the most visible signifier of the breadth of progress in living standards.²⁰ Here, too, there is a close relationship with competitiveness. Figure 12 suggests the relationship between median household income and competitiveness is non-linear: a unit increase in the GCI 4.0 score is associated with an exponential increase in median income. Moreover, the relationship is

Figure 12: Competitiveness and median income



Sources: World Economic Forum analysis; World Bank PovcalNet.
 Note: R² = 0.82.

Figure 13: Competitiveness and inequality



Sources: World Economic Forum analysis; World Bank *World Development Indicators (WDI)* database.
 Note: N=128.

remarkably close: performance on the GCI 4.0 explains 82% of the variation in median income across countries.²¹ Yet the correlation between the two is not exact. For example, although Malaysia and Belgium have a similar GCI score, Belgium’s median income is three times higher than Malaysia’s.

Competitiveness and inequality

Income Gini coefficient is the standard measure of inequality used by most institutions and organizations around the world. Values range from 0 (‘perfect equality’, in which every individual receives the same income) to 100 (‘perfect inequality’, when one individual receives

all the income). As shown in Figure 13, there appears to be a relationship between the income Gini coefficient and competitiveness. Yet it’s an extremely weak one. In fact, the most equal and unequal countries, Azerbaijan and South Africa, respectively, earned a similar overall GCI score (60.0 and 60.8), whereas the most and least competitive countries, United States and Chad, have a similar Gini coefficient (42 and 43). Thus, it would be inaccurate to conclude that more competitive countries are reliably more inclusive.

Results of the GCI 4.0 are consistent with the general consensus emerging from empirical studies that there is no consistent relationship between equality and growth.²² This also implies that, contrary to widespread belief, inequality is not caused by growth. There is no inherent trade-off between equality and growth: it is possible to be pro-growth and pro-equity. The Netherlands, Sweden and Denmark feature in the top 10 of the GCI and are among the world’s most equal countries. Governments need to rebalance policy priorities to respond to both stagnating growth and rising inequality, which, together, fuel frustrations and erode trust in institutions, technological progress and globalization.

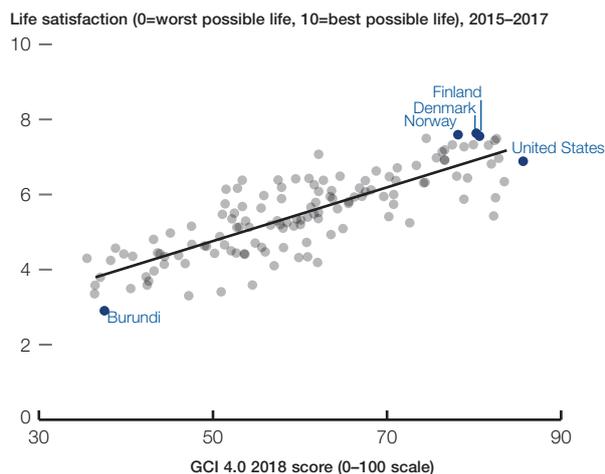
Competitiveness and well-being

An individual’s overall well-being is arguably the ultimate measure of human welfare. Figure 14 shows that GCI 4.0 scores explain over two-thirds of differences in so-called ‘life satisfaction’, as measured on Cantril’s Ladder of Life Scale, which ranges from 0 (‘the worst possible life’) to 10 (‘the best possible life’), for the 135 countries for which data exists. This is remarkable, considering the many cultural, historical and political idiosyncrasies that can influence answers to the question: ‘How satisfied are you with your life as a whole these days?’

Leisure time is another determinant of well-being.²³ Contrary to popular belief, higher competitiveness is typically associated with less working time and therefore more leisure time: workers in the GCI 4.0’s 10 most competitive economies work, on average, 361 fewer hours per year—or eight fewer hours per week—than in the 10 lowest-ranked economies for which working time data exists.²⁴ When excluding the United States and Singapore, the weekly average decreases by two additional hours. In Germany, the third-most competitive economy, workers average just 1,371 hours per year or 29 hours per week—10 fewer than the average across the 66 countries for which working time exists. This suggests productivity is increased not through more working hours, but by using working hours more efficiently.

Competitiveness and environmental sustainability

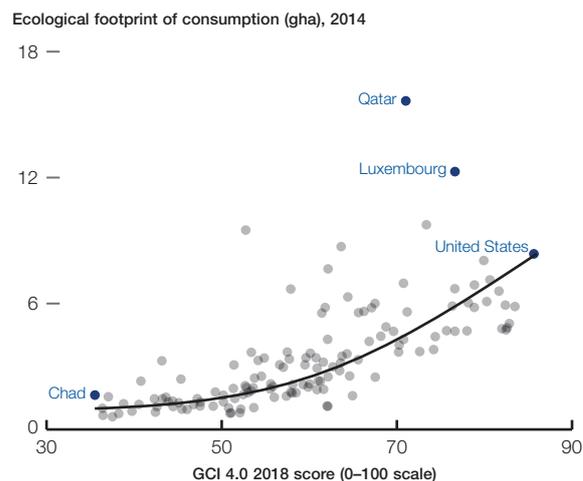
The relationship between competitiveness and the environment is multi-faceted and complex. In the long term, economic activity must respect planetary

Figure 14: Competitiveness and life satisfaction

Sources: World Economic Forum analysis; Helliwell et al., 2018.
Note: N=123, $R^2 = 0.68$.

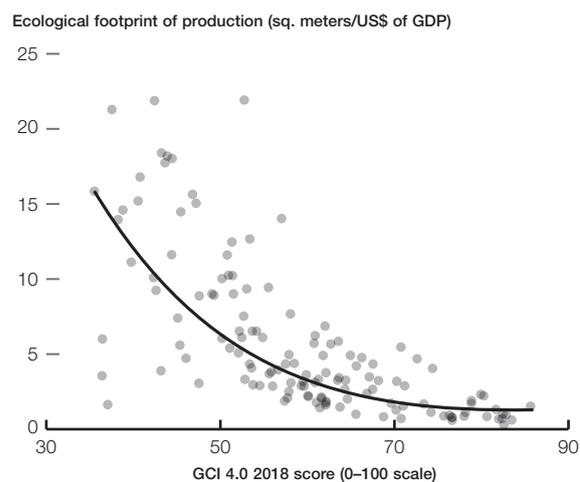
boundaries. Environmental damage in the form of pollution, climate change, resource scarcity, ecosystem destruction and biodiversity loss may undermine future growth, and, ultimately, put humanity at risk. For example, the Global Footprint Network's estimates that humanity uses the equivalent of 1.7 Earths to provide the resources we use and absorb our waste.²⁵ Figure 15 shows that there is a clear tension between economic progress and environmental sustainability: more competitive countries have a much bigger ecological footprint. If everyone lived like the average resident of the United States, the world's most competitive economy, it would take 4.9 planets to support humanity's footprint. The world's heaviest footprint is Qatar, an economy in the top 30 of the GCI and where 9.3 Earths is required.

Yet the tension can be eased: 'green growth'—facilitating economic growth while taking into account environmental concerns—is possible, particularly with new technologies.²⁶ Policies that create incentives for greater efficiency in the use of natural resources, reducing waste and energy consumption, unlocking opportunities for innovation and value creation, and allocating resources to the highest-value use can simultaneously reduce environmental impact and increase productivity and growth. With greater wealth, more competitive economies tend to have the resources and the measures in place to use natural resources more efficiently.²⁷ As a result, even though they have the largest ecological footprint per capita, the most competitive economies have the smallest ecological footprint *per unit of output* (Figure 16). Further, data suggests that between 2004 and 2014, this ratio has actually decreased globally.²⁸ In addition, other studies show that most countries have reached peak

Figure 15: Competitiveness and ecological footprint

Sources: World Economic Forum analysis; Global Footprint Network.

Note: N=135; gha = global hectare. The consumption footprint includes the area needed to produce the materials consumed and the area needed to absorb carbon dioxide emissions.

Figure 16: Competitiveness and ecological footprint per unit of output

Sources: World Economic Forum analysis; Global Footprint Network; IMF, 2018.

Note: N=135, $R^2 = 0.63$.

carbon intensity, and are expecting downward trends in carbon usage.²⁹

These are positive developments, but overall efforts to maintain efficient use of natural resources remain insufficient. The hope of seeing (modest) international commitments and targets designed to curb greenhouse gas emissions is fading, and with it the probability—now estimated at less than 5%—to keep global warming within 2°C by 2100.³⁰ In keeping with the long-term thinking espoused by the GCI 4.0, it is critical that countries commit to green growth, which indicates a promising avenue for leveraging new technologies to foster both sustainability and a strong growth and jobs agenda.

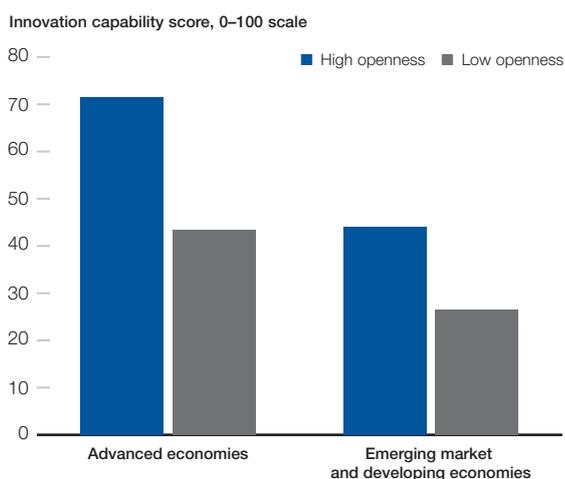
In Depth: Should countries pursue openness?

The accelerated pace and intensity of trade liberalization, openness and integration over recent decades has been a ‘win-win’ *between* countries but at times a ‘win-lose’ *within* countries. While increasing prosperity overall, free trade may bear partial responsibility for raising inequality by reducing the income of relatively small and concentrated social groups.

However, attempting to address inequality by reversing globalization is counterproductive and disastrous for sustained economic growth. GCI 4.0 results show that more open economies are more innovative and tend to be characterized by more competitive markets. Policies should, therefore, focus on improving the conditions of those specifically impacted by globalization rather than favouring protectionism. Combining GCI data with other sources suggests that redistributive policies, safety nets, investments in human capital, and more progressive taxation could help reduce inequality without compromising a country’s level of competitiveness.

Globalization has contributed to reducing both global poverty and between-countries inequality. Trade has contributed to generating prosperity across all countries in the past few decades.³¹ The benefits of trade openness have been particularly remarkable in South-East Asia and China, where export-led economic growth has quickly raised the living standards of a sizable portion of the population. In China, for example, between 1996 and 2014 the number of people living on less than US\$3.20 per day collapsed from 890 million to 129 million.³² In Viet Nam, evidence suggests that the

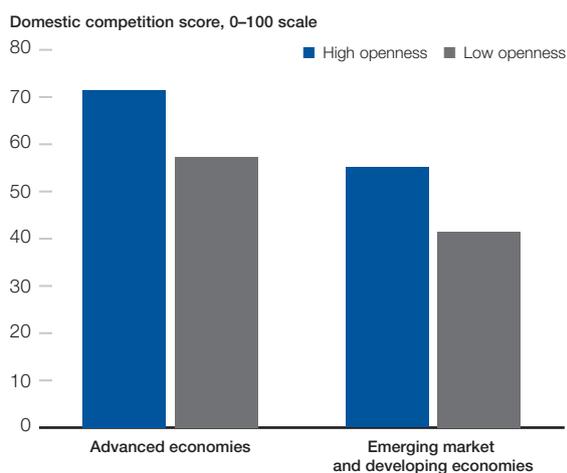
Figure 17: Innovation performance
By openness level



Source: World Economic Forum analysis.

Note: Country groupings are based on IMF classification. Openness is defined by the average of six indicators: Non-tariff measures; Tariffs; Service trade restrictiveness index; Ease of hiring foreign labour; International co-inventions; and Customs clearance (all values expressed in scores). Innovation capability corresponds to the score of GCI pillar 12. Domestic competition corresponds to the score of GCI Sub-pillar 7A.

Figure 18: Domestic competition performance
By openness level



Source: World Economic Forum analysis.

Note: See Figure 17 for country classifications and definition of openness.

2001 US-Viet Nam bilateral trade agreement reduced poverty by increasing wage premiums in export sectors, reallocating labour from agriculture to manufacturing and stimulating enterprise job growth.

Economies that participate the most in the global economy are also the most competitive. The GCI highlights the centrality of international openness for productivity. It enables greater and faster diffusion of ideas and technology, which boosts innovation (Figure 17). Open countries also tend to have more competitive markets, which compels domestic companies to innovate and procure the latest technologies to compete with the best international firms (Figure 18).

Since 1980, within-country income inequalities have increased in most economies. Over the past three decades, the Gini coefficient increased in 17 out of the 22 OECD countries for which long-term data is available. In the United States, where the increase is among the highest, the share of income accruing to the richest 1% of the population has more than doubled to about 20% over the past 30 years, while the share attributed to the middle class has fallen.³³

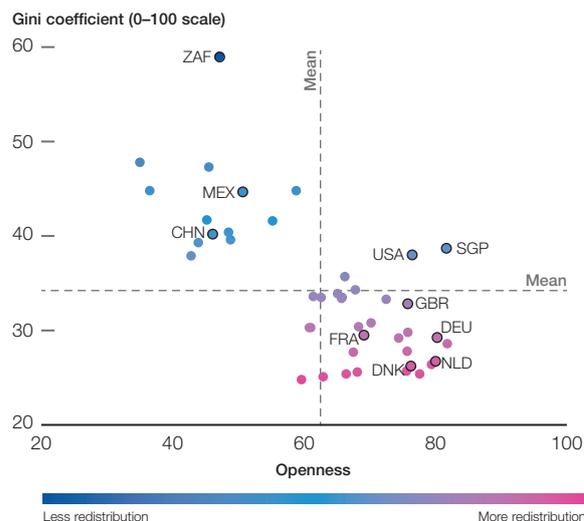
Many emerging economies have also experienced an increase in inequality. While distributional effects are often attributed to declining manufacturing workforces, they are also evident in many countries that have experienced sustained economic growth and decreasing poverty. In China, for example, between 1995 and 2015 the Gini coefficient increased from 36.3 to 40.2,³⁴ and the share of income accruing to the top 10% of the population increased from 33% to 41%.

Openness to international trade bears part of the blame for rising inequality, but there are other important factors. Evidence supports the idea that international trade can drive down wages and employment in the manufacturing sectors most exposed to foreign competition.³⁵ However, the expansion of automation, the rise of the digital economy and generalized reduction in taxation progressivity have also had a significant impact.³⁶

To reverse economic integration in an attempt to curb income inequalities would be highly ineffective and counterproductive. Protectionist policies will not address the continuing impacts of factors such as automation and digitization on the structure of economies and distributional outcomes. They will, however, harm the transfer of technologies, the innovation process and economic growth. In the short term, protectionism could also negatively affect workers engaged in global value chains. Redistribution of economic gains would be better achieved through well-designed international agreements and national policies.

Countries have succeeded in lowering inequality by making greater efforts to redistribute income. There is evidence showing that the tax-benefit systems found

Figure 19: Openness, inequality and redistribution



Sources: *Standardized World Income Inequality Database (SWIID)* and World Economic Forum analysis.

Note: N=45. The color of each data point reflects the level of redistribution. The redistribution level corresponds to the SWIID's relative redistribution estimate (market-income inequality minus net-income inequality, divided by market-income inequality). See Figure 11 for a definition of openness. The following economies are referenced in the figure: SGP=Singapore; DEU=Germany; NLD=The Netherlands; USA=United States; DNK=Denmark; GBR=United Kingdom; FRA=France; MEX=Mexico; ZAF=South Africa; and CHN=China.

in most advanced economies have helped to attenuate inequality³⁷ and protect vulnerable households from adverse economic shocks. Figure 19 shows that economies that redistribute the most can attain lower inequality levels while at the same time continuing to maintain policies of openness. Although safety nets are more common in advanced economies, some emerging economies, too, have recently started to successfully reduce inequality through public policies and programs.³⁸

Policies promoting more equal access to human and financial capital are crucial in narrowing inequalities. Measures such as income transfers may mitigate some cyclical causes of inequality, but to address structural inequalities requires complementary measures aiming to level the playing field for disadvantaged households. These can include broadening access to quality education and healthcare, greater financial inclusion, more progressive taxation and efforts to curb tax evasion.

Active labour market policies also play a central role. While safety nets are useful to smooth transitions across jobs, structural changes in the labour market can make it difficult for workers who lose their job to find another at a comparable wage level in the short time. With the current speed of technological disruption, workers in the middle of their careers may see a significant

contraction of demand for their current skills.³⁹ A recent study suggests that over the next decade, in a set of companies representing 15 million workers in total today, 1 million jobs will disappear but 1.7 million new jobs requiring new skills will be created.⁴⁰ Further, by 2022 at least half of all current employees will require significant reskilling and upskilling.⁴¹ Policies to address this tremendous challenge are clearly needed—as is investment in infrastructure, which has been shown to sustain real income growth among the lower-skilled and foster employment and re-qualification in de-industrialized areas.

Market forces alone cannot be relied on to address inequality. Policies that redistribute gains and opportunities from winners to losers are required to ensure that trade is inclusive. While a growth agenda is central to achieving national prosperity, there is a need for complementary policies—both passive (income transfers) and active (e.g. targeting education and reskilling). Workers vulnerable to international trade need to be resilient to income shocks—but should also be encouraged to acquire the skills necessary to benefit from the changing economic landscape.

NOTES

- 1 Education deficits, for instance, have long been a cause of low development, and will have disastrous consequences in the 4IR as the destruction of low-skilled jobs, through automation and efficiency accelerates.
- 2 Schwab, 2015.
- 3 The term was coined by author Evgeny Morozov.
- 4 See Juma, 2017, for a critique of leapfrogging.
- 5 Authors' calculations based on ITU, 2018.
- 6 World Economic Forum, 2015.
- 7 See Appendix C for details on the GCI structure.
- 8 Parizat and Strubenhoff, 2018.
- 9 Wu, 2017, and CB Insights, 2017.
- 10 Cerera and Sabetti, 2016.
- 11 Brinded, 2015.
- 12 "Commerce and manufactures can seldom flourish long in any state which does not enjoy a regular administration of justice, in which the people do not feel themselves secure in the possession of their property, in which the faith of contracts is not supported by law, and in which the authority of the state is not supposed to be regularly employed in enforcing the payment of debts from all those who are able to pay. Commerce and manufactures, in short, can seldom flourish in any state in which there is not a certain degree of confidence in the justice of government", *Wealth of Nations*, 1776.
- 13 See Acemoglu, 2009, for an exhaustive discussion on institutions and the fundamental causes of economic growth.
- 14 For example, North and Thomas, 1973, discuss a system of property rights as the key to growth. Hall and Jones, 1998, find that differences in capital accumulation and labour productivity are driven by differences in institutions and government policies. Acemoglu, et al, 2001, show that institutions are robustly related to present-day differences in per-capita incomes. Rodrik, et al, 2002, find that property rights are more important than either geography or trade in determining income levels around the world.
- 15 It must be noted that the countries covered by the GCI present a level of security and stability sufficient for data to be collected. In war-torn countries and failed states, it would be pointless and impossible to carry out an assessment of competitiveness.
- 16 Kundhani, 2017.
- 17 In 2017, the World Economic Forum launched the Inclusive Development Index (IDI) to evaluate countries' success against this broader notion of economic progress. The assessment is based on 15 criteria: income; labour productivity; employment; healthy life expectancy; median household income; poverty incidence; wealth Gini; income Gini; adjusted net savings; dependency ratio; public debt; and carbon intensity. See World Economic Forum, 2017 and 2018b for details and results.
- 18 See Bannister and Mourmouras 2017. They find that on average a higher level of income is associated with higher life expectancy and lower inequality.
- 19 Rodrik, 2012.
- 20 Median household income for a country is the amount that divides the income distribution into two equal groups.
- 21 R² value based on a polynomial regression of degree two of median income on GCI 4.0 score.
- 22 DfID, 2008.
- 23 OECD, 2009, Chapter 2.
- 24 Authors' calculations based on Penn World Tables data (Feenstra et al., 2015). Working time corresponds to the average annual hours worked by persons engaged. Working time data is available for 66 of the 140 economies covered by the GCI 4.0. The 10 lowest-ranked economies in the GCI for which working time data is available are: Trinidad and Tobago (75th, 1,583 hours), Viet Nam (76th, 2,340 hours), Jamaica (77th, 1,868 hours), Argentina (79th, 1,777 hours), Sri Lanka (84th, 2,075 hours), Ecuador (85th, 2,086 hours), Bangladesh (102th, 2,372 hours), Pakistan (107th, 2,283 hours), Cambodia (110th, 2,510 hours), and Venezuela (127th, 1,795 hours). Annual hours worked were divided by 48 to approximate working time per week.
- 25 GFN, 2018. See also WWF, 2016.
- 26 For more on the concept of green growth and its implementation, see OECD, 2011.
- 27 Yale and Columbia Universities, 2018.
- 28 World Economic Forum's calculations based on GFN, 2018.
- 29 Raftery et al., 2017.
- 30 Ibid.
- 31 Frankel and Romer, 1999.
- 32 The World Bank, *Poverty & Equity Data Portal*, China, <http://povertydata.worldbank.org/poverty/country/CHN>.
- 33 World Inequality Lab, 2018, <https://wir2018.wid.world>.
- 34 Solt, *Standardized World Income Inequality Database*.
- 35 Autor et al., 2013.
- 36 For studies on the effect of technology and trade on inequality see, for instance, Good, et al., 2014, Karabounis et al., 2013, and Autor, et al., 2018. The decline in progressivity of taxation is documented by World Inequality Lab, 2018.
- 37 Ravallion, 2018.
- 38 Ibid.
- 39 McKinsey Global Institute, 2017.
- 40 World Economic Forum, 2018a.
- 41 Ibid.

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