



**NATIONAL COUNCIL
OF APPLIED ECONOMIC
RESEARCH**

**THE 7TH NCAER C. D. DESHMUKH MEMORIAL
LECTURE 2019**

*Challenges to India from Global
Economic Upheavals*

Martin Wolf

January 15, 2019



Chintaman Dwarkanath Deshmukh (1896–1982) was born on January 14, 1896 in Nata, in Maharashtra. He was educated at Elphinstone College in Mumbai, and at Jesus College, Cambridge, winning the Frank Smart Prize in Botany in 1917 and graduating with a Natural Science Tripos. Sir Chintaman topped the Matriculation Examination of the University of Bombay in 1912 and then the Indian Civil Service (ICS) Examination in 1918.

After 21 years of distinguished service in the ICS, during which he was knighted by the British Government (1944), served as one of the two Indian Secretaries to the 1931 Second Roundtable Conference in London and was the ranking Indian on India's delegation to the July 1944 Bretton Woods Conference that led to the establishment of the World Bank and the IMF, he went on to help build numerous Indian public institutions.

He became the first Indian to be appointed the RBI Governor, bridging the transition to an independent India (1943–50); a member of the IMF and World Bank Board of Governors (1944–54); one of the four initial members of the Indian Planning Commission at its inception in 1950; and the first Chairman of the University Grants Commission (UGC, 1956–61). He was the first Union Finance Minister of India (1950–56) after Independence to last as long as six years until he resigned in protest against the Government's position on the linguistic problem of Bombay. "I have decided to resign on a particular issue," he said. "It is neither too tragic nor too heroic. It is just satisfying one's conscience . . . When I differ from the Government on some matter of principle, I feel I must resign." Sir Chintaman was asked soon after his resignation whether he was willing to have his name considered for the position of the Managing Director of the International Monetary Fund. Instead, he chose to serve his country as the UGC Chairman.

Sir Chintaman did much to advance intellectual life in India. He was a founding father of NCAER—India's first independent economic policy institute established in 1956—and a member of its first Governing body. He played a key role in establishing the India International Centre in 1959. He was the Vice Chancellor of Delhi University (1962–67), and the President of the Indian Statistical Institute (1945–64) and the Institute of Economic Growth (1965–74). Sir Chintaman and his wife Durgabai Deshmukh, a prominent social worker in her own right, were both honoured by the President of India with the *Padma Vibhushan*, India's second highest civilian award, in 1975.



Martin Wolf is the Associate Editor and Chief Economics Commentator at the *Financial Times*, London. He was awarded the CBE, the Commander of the British Empire, in 2000 "for services to financial journalism". He was a member of the UK government's Independent Commission on Banking during 2010–11. He is a member of the International Media Council of the World Economic Forum.

Mr Wolf was made a Doctor of Science (Econ), *honoris causa*, by the London School of Economics in 2006 and a Doctor of Science, *honoris causa*, by Warwick University, in 2009. He is an honorary fellow of Nuffield College, Oxford University.

Mr Wolf was joint winner of the Wincott Foundation senior prize for excellence in financial journalism for 1989 and 1997. He won the "Accenture Decade of Excellence" at the Business Journalist of the Year Awards of 2003. He won the "Commentator of the Year" award at the Business Journalist of the Year Awards of 2008. He won the Ludwig Erhard Prize for economic commentary for 2009. He won "Commentariat of the Year 2009" at the Comment Awards, sponsored by Editorial Intelligence. He was placed in *Foreign Policy's* list of the "Top 100 Global Thinkers" in 2009, 2010, and 2011. He was joint winner of the 2009 award for columns in "giant newspapers" at the 15th annual Best in Business Journalism competition of The Society of American Business Editors and Writers. He won the Overseas Press Club of America's prize for "best commentary on international news in any medium" for 2013.

His most recent publications are *Why Globalization Works* (Yale, 2004), *Fixing Global Finance* (Johns Hopkins, 2008 and Yale, 2010) and *The Shifts and the Shocks: What we've learned – and have still to learn – from the financial crisis* (Allen Lane, 2014). *China Business News* named *Fixing Global Finance* its "Financial Book of the Year" for 2009.

Mr Wolf was educated at Oxford University.

THE 7TH NCAER C. D. DESHMUKH MEMORIAL LECTURE 2019

Challenges to India from Global Economic Upheavals

Martin Wolf

Associate Editor and Chief Economics Commentator
Financial Times, London

January 15, 2019

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Foreword

NCAER instituted the C. D. Deshmukh Memorial Lecture in 2013 in memory of one of India's most eminent economists and a founding father of NCAER. Sir Chintaman Dwarakanath Deshmukh was a member of NCAER's first Governing Body in 1956. A more detailed biography elsewhere in this volume lists his many achievements, including as the first Indian Governor of the Reserve Bank of India, and thereafter India's second Finance Minister, a position he held when NCAER was founded.

I was delighted when Martin Wolf accepted our invitation to deliver the 7th C D Deshmukh Memorial Lecture. As one of the world's most influential economics commentators, Martin brings to his writings and speeches great insights, accessibility, and an uncanny instinct for what is important in the subject or issue he is commenting on. The Deshmukh Lecture that Martin delivered on January 15, 2019 was no different. The Lecture deals with six challenges that India faces from global upheavals. Martin rightly urges Indian policymakers not only to respond appropriately to these challenges, but indeed, also shape them. The Lecture, delivered to a packed audience in our new NCAER-T2 Conference Centre, came at a most opportune time as Indian politicians and citizens were approaching the 2019 General Elections.

NCAER is privileged to honour the memory of C. D. Deshmukh as part of its own 63-year legacy. The distinguished speakers who have delivered the Deshmukh lectures so far, including Martin Wolf in 2019, are listed at the end of this volume, along with SPARQ codes that can be scanned to view the full videos of the lectures on a smartphone.

Shekhar Shah
Director-General

THE 7TH NCAER C. D. DESHMUKH MEMORIAL LECTURE 2019

Challenges to India from Global Economic Upheavals¹

Martin Wolf²

“The most important development, I believe, of the 21st century will be the rise of Asia. China has already trebled its share of world GDP over the past two decades and India has doubled it. Both these giant economies of Asia are bound to gain a considerable part of their share of world GDP that they had lost during the two centuries of European colonialism

Just as the world accommodated the rejuvenation of Europe in the post-War world, it must now accommodate the rise of the new Asian economies in the years that lie ahead.

What this means is that we need global institutions and new global “rules of the game” that can facilitate the peaceful rise of new nations in Asia. It also means that existing global institutions and frameworks of cooperation must evolve and change to accommodate this new reality. This is as true for the reform and revitalization of the United Nations and the restructuring of the United Nations Security Council, as it is true for the management of multilateral trading system, or for the protection of global environment or for the security of world energy supplies.”

Manmohan Singh, December 2006.³

“Protection will lead to great prosperity and strength.”

Donald Trump, Inaugural Address, January 2018.⁴

“संरक्षण से महान समृद्धि और शक्ति पैदा होगी।”

Google translation of Trump’s statement.⁵

It is a great honour to be giving a lecture that bears the name of Sir Chintaman Dwarakanath Deshmukh, the first Indian governor of the Reserve Bank of India, a great Indian public servant, and a founding member of the Governing Body of the National Council of Applied Economic Research, the host of this lecture. The honour is made still greater by the distinction of my predecessors, which include Raghuram Rajan, noteworthy academic and former governor of the RBI, and the great economist, Sir Partha Dasgupta.

¹ 7th C. D. Deshmukh Memorial Lecture, delivered at the National Council of Applied Economic Research in New Delhi on 15 January, 2019.

² Associate Editor and Chief Economics Commentator, *Financial Times*, London.

³ Speech to the LSE Asia Forum 2006, 7 December, 2006, <http://www.lse.ac.uk/Events/Events-Assets/PDF/Asia-Forum/ManmohanSingh-OpeningAddress.pdf>. I am indebted for this citation to Kishore Mahbubani, who referred to this important speech in *The New Asian Hemisphere: the Irresistible Shift of Global Power to the East* (New York: PublicAffairs, 2008) p.235.

⁴ <https://www.whitehouse.gov/briefings-statements/the-inaugural-address/>.

⁵ This Google translation into Hindi, which experts have told me is reasonably accurate, is meant to demonstrate the growing power of artificial intelligence that this lecture discusses.

I cannot imagine why I, a mere journalist, have been invited to follow such luminaries. But, if NCAER has stooped to invite me and I have had the temerity to accept its invitation, all I can do is plough on. I hope that I do have one small advantage: the ability to look at India from outside. But I do so with affection. This is the most fascinating, bewildering and occasionally exasperating of all the countries I know. Perhaps, this is not because it is a country, but both a sub-continent and a civilisation. Since my first visit, in 1973, India has intrigued me. I hope that this remarkable country will emerge as a prosperous democracy, with a voice in world affairs that is as wise as it is powerful. The world very much needs it to do so.

Globally, we are in transition between an old world we thought we understood and a new one we can barely imagine. Such times of transition have in the past proved hazardous: think of the period before the First World War or the interwar years. This one seems unlikely to be an exception to that rule. These dramatic changes have to be managed by countries, individually, and by the world, collectively.

What is more, these changes will have profound implications for India: they alter the environment in which it hopes to develop; they demand substantial and far-sighted domestic responses; and they will force it to clarify its global stance. This country is too vulnerable to ignore the changing global realities. Indeed, it must not only respond to them, but seek to influence them. This is the necessary response for a developing country that will, if it continues to advance successfully, become one of the world's greatest powers. I once described India as a "premature superpower," by which I meant a relatively poor developing country that would yet be big enough to have a large impact upon the world. Thus, as India's economy grows, so will the demands upon it. Indeed, this is already happening.

Outline of the Lecture

This lecture then is not only about India *in* a world in upheaval, but also about the possible effects of India *upon* a world in upheaval. One of the most obvious signals of the upheaval comes in the quotation from Donald Trump's inaugural address that I started this lecture with. It reads almost as a response to the hopes of the former Indian Prime Minister, Manmohan Singh. Metaphorically, it is. At least under its current management, the US is no longer committed to maintaining, let alone promoting, the liberal international order it created in the aftermath of the Second World War. That is one respect in which the world we believed we lived in prior to 2008 has vanished. But that fact is itself related to other upheavals.

In the first part of my lecture, I intend to focus on five global upheavals. First and foremost, I will examine the shift in global economic power, away from the West and towards the Asian emerging countries, China, above all, but also India. Second, I will look at the implications of this shift for international relations. Third, I will discuss the consequences for the rules-governed, liberal international economic order of the erosion of support for it in the West, especially in the US, of which Mr Trump's election is a powerful symptom. Fourth, I will examine the possible implications of the next stage in the computing *cum* telecommunications revolution. In particular, the remarkably rapid development of a specific form of artificial intelligence—recognition of patterns in huge data sets, or machine learning—that looks likely to create big opportunities, but also huge challenges, not least for India.

Finally, I will look at the challenge of climate change and, above all, the challenge created by the failure of the world to tackle climate change successfully.

Then, in the second part of my lecture, I will look at what these external changes might mean for India. How, in particular, might it secure the stable and supportive global environment it will need for sustained development? How, furthermore, should it shape its domestic policies in this environment? In this lecture, I cannot hope to provide the answers. Maybe, I can clarify some questions.

Global Economic Upheavals

Let us then consider the five upheavals I mentioned above more closely.

From Great Divergence to Asian Convergence

The great story of the world economy, and so of global power, was the divergence in output per head, and so standards of living, between the West and the rest in the 19th and first half of the 20th centuries. This is what Kenneth Pomeranz of the University of California, Irvine, has called “the great divergence.”⁶ It is unnecessary today to discuss why this divergence occurred: that question remains controversial. But it certainly happened. As recently as 1980, very few non-western economies had caught up to the West, the most important exception being Japan. Now, however, the picture is very different: there has been substantial convergence in incomes. But, interestingly, this is more or less exclusively an Asian phenomenon, with Asia defined as east, south and south-east Asia—a region that does, of course, contain half of the world’s population.

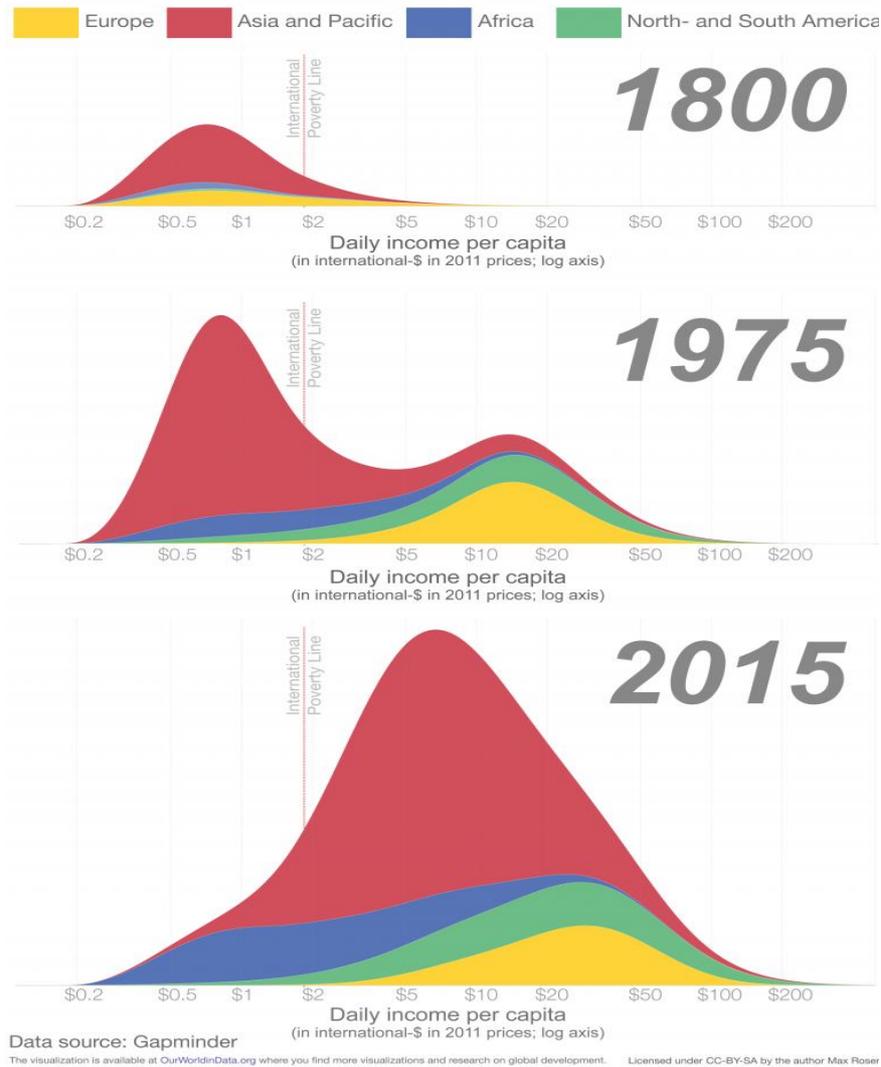
Chart 1, which is taken from the Gapminder website, created by the late Hans Rosling, shows the picture with great clarity. It reveals five crucial points: first, the huge increase in the world’s population over the past two centuries; second, the equality of the world in 1800, but also that this was an equality of mass destitution; third, the soaring inequality of the succeeding 175 years, as Europe and the Americas diverged from Asia and Africa; fourth, the explosive growth in incomes per head of Asia between 1975 and 2015; and, finally, the huge reduction in the proportion of the world’s population in extreme poverty over this period. The great divergence has turned into a great convergence.⁷

⁶ Kenneth Pomeranz, *The Great Divergence: China, Europe and the Making of the Modern World Economy* (Princeton: Princeton University Press, 2000).

⁷ Martin Wolf, “In the grip of a great convergence,” *Financial Times*, 4 January 2011, <https://www.ft.com/content/072c87e6-1841-11e0-88c9-00144feab49a>. See also Kishore Mahbubani, *The Great Convergence: Asia, the West, and the Logic of One World* (New York: PublicAffairs, 2014).

CHART 1: GLOBAL INCOME DISTRIBUTION IN 1800, 1975, AND 2010

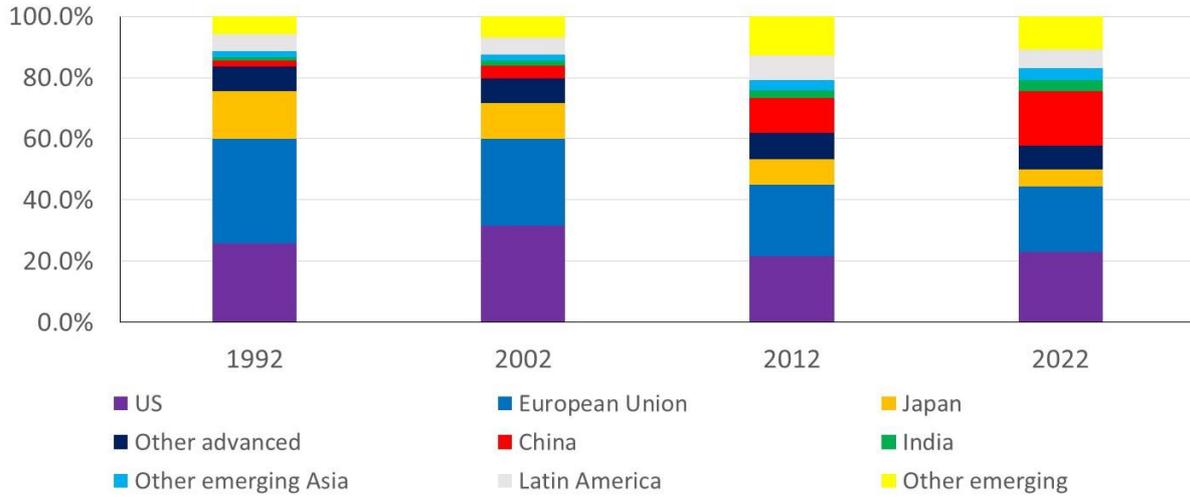
Income is measured by adjusting for price changes over time and for price differences between countries (purchasing power parity (PPP) adjustment). These estimates are based on reconstructed National Accounts and within-country inequality measures. Non-market income (e.g. through home production such as subsistence farming) is taken into account.



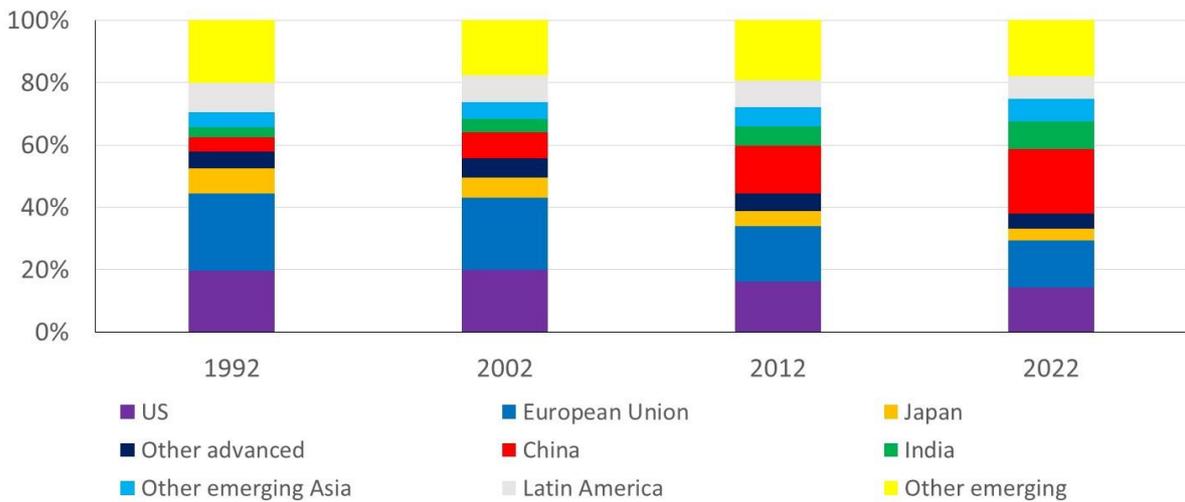
Yet it is also a limited convergence. Charts 2 and 3 show country shares in world economic output at market prices and at purchasing power parity. In 2002, the high-income countries still generated 80 per cent of global output at market prices, and 56 per cent of output at purchasing power parity. According to the International Monetary Fund, these shares will be down to 58 per cent and 38 per cent, respectively, by 2022—dramatic declines of 22 and 18 percentage points, respectively, over two decades. The counterpart increases are in emerging Asia: this region’s share in world economic output will have jumped by 18 percentage points at market prices, and 19 percentage points at purchasing power parity. India’s share will have risen significantly, from 2 to 4 per cent of global output at market prices, and 4 to 9 per cent at purchasing power parity. But the huge shift is China’s, from 4 to 18 per cent at market prices, and 8 to 21 per cent at purchasing power parity.

The regional pattern of this shift reflects the fact that many countries did not catch up to the high-income countries. As Chart 4 shows, the larger ones that did so

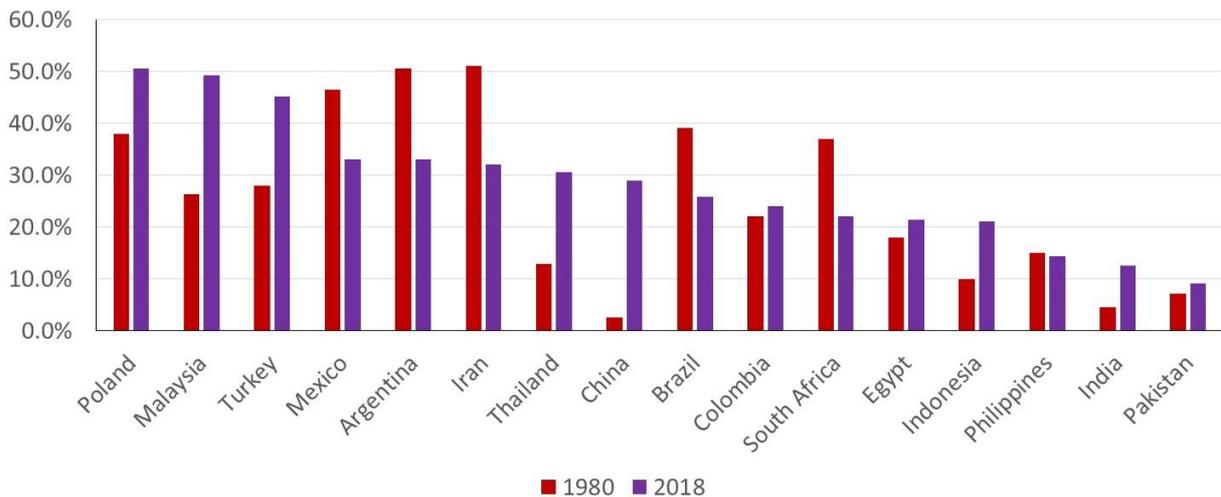
**CHART 2: SHARES IN WORLD GDP AT MARKET PRICES
(IMF, WEO Database)**



**CHART 3: SHARES IN WORLD GDP AT PURCHASING POWER PARITY
(Source: IMF, WEO database)**



**CHART 4: RATIOS OF GDP PER HEAD TO THAT OF THE US, RANKED IN
2018 (at purchasing power parity)**



most remarkable case is China, whose gross domestic product per head at purchasing power parity rose from 3 per cent of US levels in 1980 to 29 per cent in 2018. India's GDP per head at PPP rose from 5 to 13 per cent of US levels over the same period. By any standard, other than those of China and a few far smaller economies, this is a remarkable success, although it leaves India still a relatively poor country. Another significant success was that of Indonesia, whose GDP per head at PPP rose from 10 to 21 per cent of US levels between 1980 and 2018.

In sum, we have seen a huge and rapid shift in the weight of the world's economies towards Asia, mainly just since 2000. At market prices (a better indication of economic influence than purchasing power parity), Asian emerging economies are forecast by the International Monetary Fund to generate a quarter of global output in 2022. This would be a little more than either the US or the EU individually, though far less than the share of all high-income countries together, which is forecast to be close to 60 per cent.

By the middle of the 21st century, however, the Asian share of world output is likely to be at least as large as that of all of today's high-income economies together, and perhaps substantially more. That is likely only to be the beginning. The emerging and developing countries of East, South, and South East Asia contain 52 per cent of the world's population. The high-income countries contain only 16 per cent. So, if the Asian emerging and developing countries were to match the aggregate output of the high-income countries at market prices, their average GDP per head would still be only a third of that of the high-income countries. Further convergence is possible, even probable.

What has made the economic rise of Asia still more globally significant is that so much of it has been driven by one country. At market prices, China is forecast to generate just under 70 per cent of the total output of emerging Asia at market prices in 2022. By 2022, the Chinese economy is forecast to be three quarters the size of the US economy at market prices, and 45 per cent bigger at purchasing power parity. In contrast, the Indian economy is forecast to be only 17 per cent of US levels in 2022 at market prices, albeit 63 per cent of US levels at purchasing power parity. China is becoming an economic superpower, both in aggregate size and, increasingly, even in its technological level. India will probably have to wait a few decades to gain this sort of global weight. Even so, India is forecast to have the fifth largest economy in the world at market prices, and the third largest at purchasing power parity by 2022. It is, in short, already one of the world's leading economic powers and is likely to ascend further in relative significance.

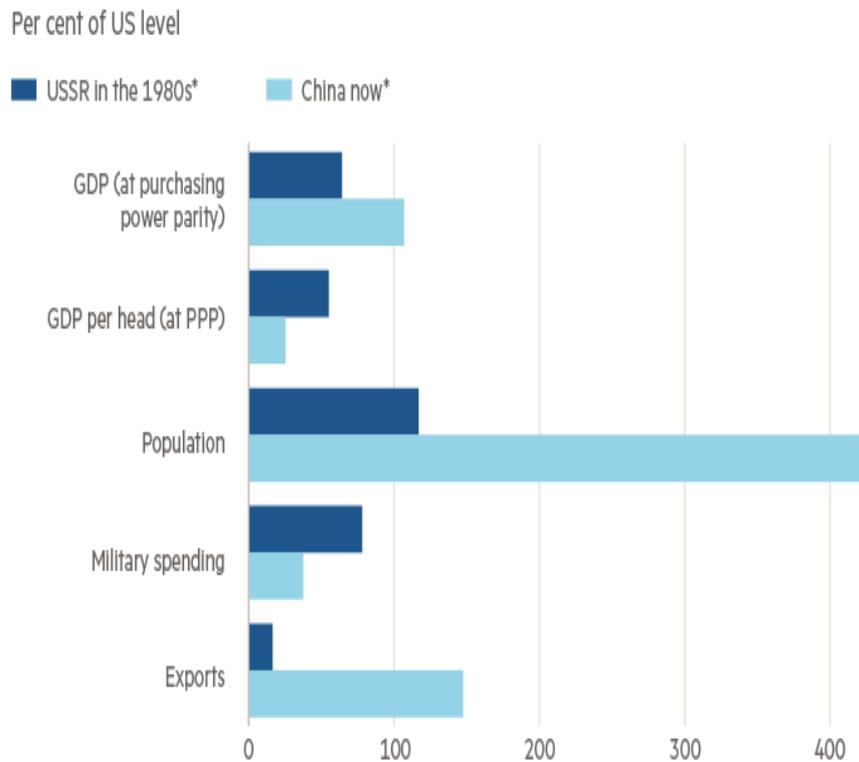
Transformation of International Relations

The economic shift discussed above has one obvious effect: a reduction in relative US military power. In real terms, Chinese military spending is somewhere between a little under a half and two-thirds of that of the US (see Chart 5)⁸. It is also rising fast. China is becoming a formidable strategic competitor of the US. China's economy relative to the US is far larger than the old Soviet Union's, its economic potential is far greater, and its population is relatively far bigger. China is a far greater threat to US strategic supremacy than any the latter has confronted since its

⁸ See Martin Wolf, "US-China rivalry will shape the 21st century," 10 April 2018, *Financial Times*, <https://www.ft.com/content/5f796164-3be1-11e8-b9f9-de94fa33a81e>.

emergence as a superpower a little over a century ago. China is therefore increasingly regarded as a strategic competitor by the US.⁹

CHART 5: STRATEGIC RIVALS OF THE US COMPARED



* USSR 1980 except exports (1981) and military spending (1987). China forecast for 2018 except military spending and exports (both 2017)

Source: The Conference Board (GDP & population), SIPRI (military spending), IMF DOT (exports)

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If, as some predict, the result will be a new “cold war,” it is likely to be far more disruptive than the old one, for two reasons. First, it is quite likely to last a very long time, since it is not so easy to see how one side ends up collapsing, as happened to the Soviet Union. Second, the two superpowers are so economically intertwined that conflict is likely to generate great economic disruption. The optimistic view is that this will constrain conflict. Unfortunately, it did not do so in Europe in the early 20th century.

The new strategic rivalry is also going to make global governance more complex, on at least two dimensions.

First, China is taking the lead in creating new international institutions, and a new set of alliances and dependencies. The most important of the former are the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank

⁹ See, on the new US view of China, “Vice President Mike Pence’s Remarks on the Administration’s Policy towards China,” 4 October, 2018, <https://www.hudson.org/events/1610-vice-president-mike-pence-s-remarks-on-the-administration-s-policy-towards-china102018>. See also Martin Wolf, “The US must avoid a new cold war with China,” 30 October 2018, *Financial Times*, <https://www.ft.com/content/c9e5ab54-dc2a-11e8-8f50-cbae5495d92b>.

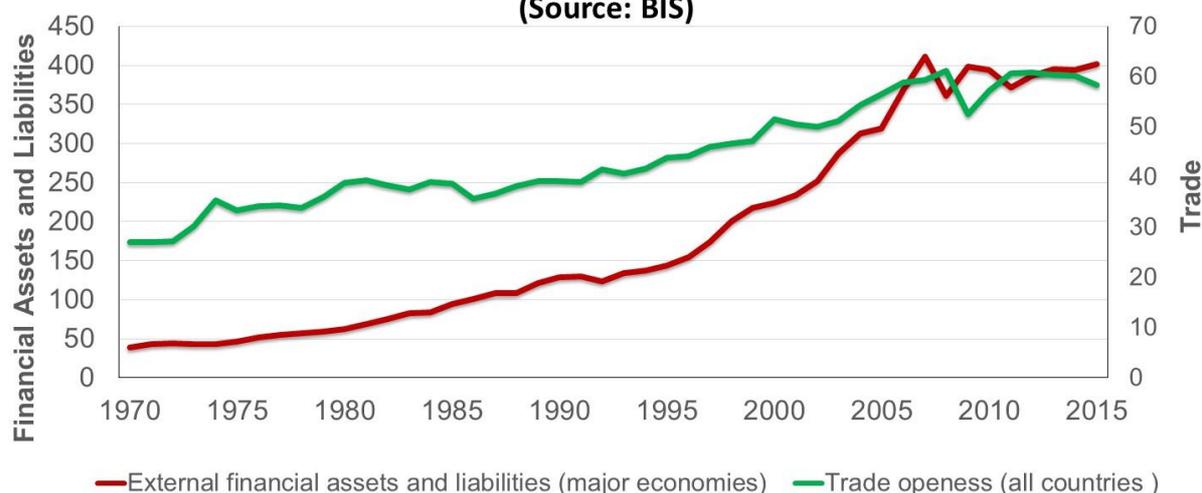
(NDB). The most important of the latter is the Belt and Road Initiative (BRI), where the “belt” refers to the old Silk Road to Europe and the “road” refers to the Indian Ocean. India is heavily engaged in the NDB (formerly known as the BRICS Bank), whose head is an Indian, and heavily affected by the BRI. Whether this new set of institutions and relations should be regarded as complementary to, or a substitute for, existing institutions and relations is debated and debatable.

Second, the end of the relatively unquestioned western leadership of the global system, the rise of China, and changes in US attitudes towards the idea of international co-operation as a mutually beneficial undertaking, are transforming the environment for global governance. This applies, to a greater or lesser extent, to every important area of governance: trade; finance; security; and climate. Global co-operation, always difficult, is set to become much more difficult. It is comforting to imagine that this reflects the unique characteristics of Donald Trump. But the fundamental shift towards adversarial superpower relations is likely to outlive him.

Erosion of the Liberal International Order

A further important upheaval is the erosion of liberal globalisation. The picture here has not been too awful: globalisation is resting rather than displaying a reversal. It is noteworthy, however, that since the Global Financial Crisis, the ratios of trade and cross-border financial assets and liabilities to global output have stopped rising (see Chart 6). In a report published in August 2017, the McKinsey Global Institute remarked: “Since the global financial crisis began in 2007, gross cross-border capital flows have fallen by 65 percent in absolute terms and by four times relative to world GDP.” Trade in volume terms has started to grow, but in line with world GDP, rather than far faster as it used to do (see Chart 7).

CHART 6: FINANCIAL ASSETS AND TRADE (as a per cent of GDP)
(Source: BIS)

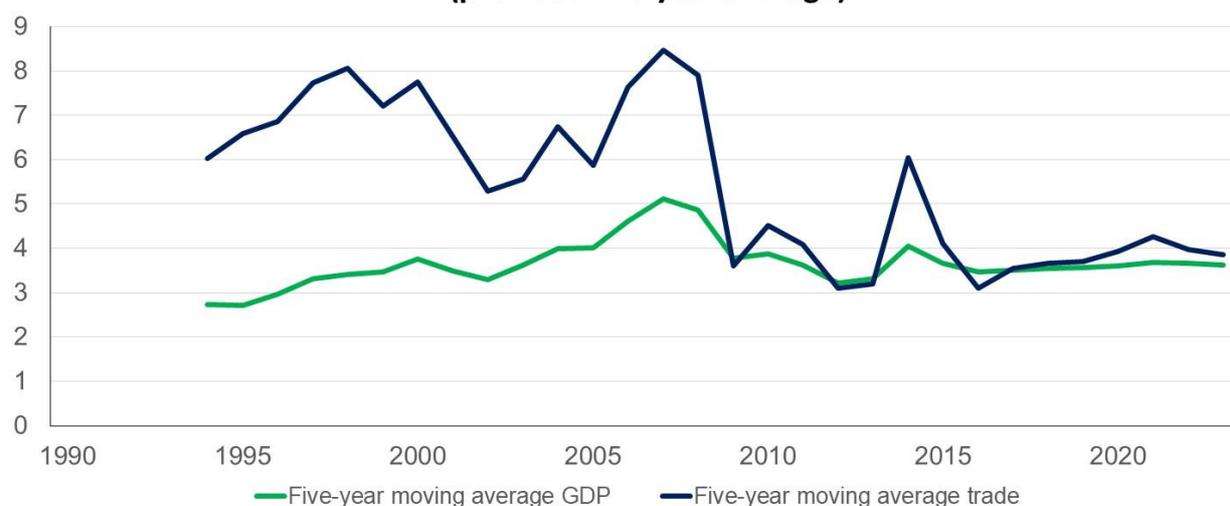


Why has the trade slowdown happened? One reason seems to have been the weakness of investment in the post-crisis period, since investment is particularly trade-intensive.¹⁰ Another is the exhaustion of many of the opportunities for the unbundling of global supply chains in goods. Indeed, new uncertainties and

¹⁰ Martin Wolf, “Sluggish global trade growth is here to stay,” *Financial Times*, 25 October 2016, <https://www.ft.com/content/4efcd174-99d3-11e6-b8c6-568a43813464>.

technological changes, notably improvements in robots, seem to be reversing the comparative advantage of emerging countries in labour-intensive production in some important sectors. Also important has been the failure of trade liberalisation efforts. The last significant liberalisations of trade were the completion of the Uruguay Round in 1994 and China's accession to the World Trade Organisation in 2001. Since then, the Doha round of multilateral trade negotiations has been a flop, Donald Trump withdrew the US from the Trans-Pacific Partnership and negotiations between the US and EU for a Transatlantic Trade and Investment Partnership have barely got off the ground.

CHART 7: GROWTH OF THE VOLUME OF GLOBAL OUTPUT AND TRADE
(previous five-year average)



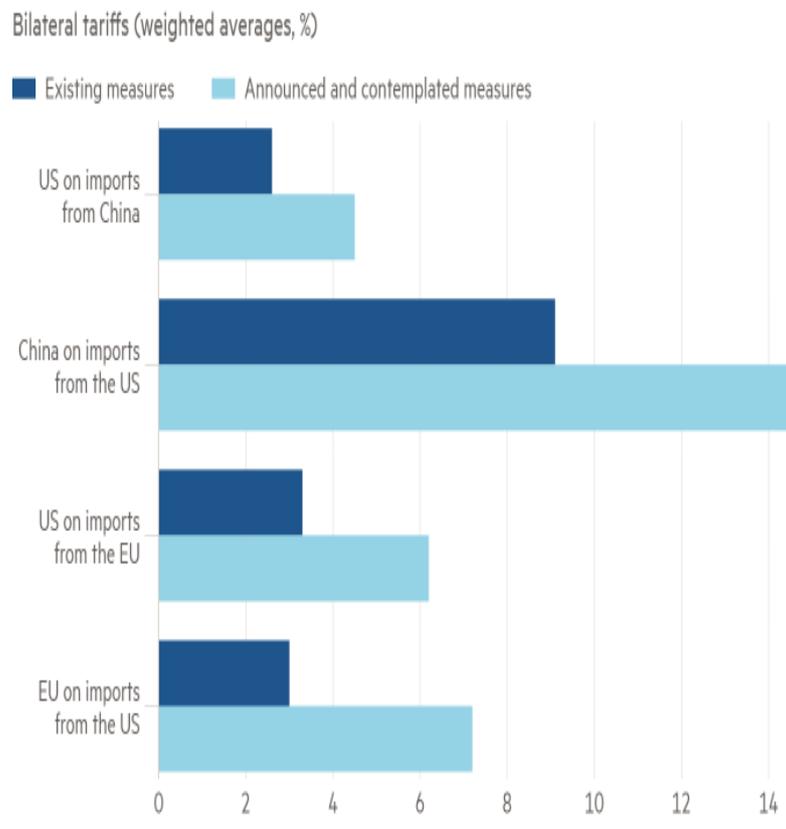
More recently, the world has witnessed a shift towards outright protectionism. A relatively minor element in this is Brexit: whatever proponents may claim, this is evidently a move towards “de-globalisation.” Far more important have been the protectionist actions of the US under the Trump administration. It has imposed tariffs on imports of solar panels and washing machines. It has also used a highly controversial national security justification to justify tariffs on imports of steel and aluminium, including on its closest allies, such as Canada, to the latter’s dismay. It is using the same rationale for an investigation of US imports of cars. These actions violate WTO rules, which define the national security loophole very restrictively, as they must if they are not to destroy the entire system. Most important of all, it has launched an open-ended trade war on China (see Charts 8 and 9).¹¹ The total affected trade already comes to about 7 per cent of US imports. In addition, the US has indicated its desire to upend the WTO’s dispute settlement process. In order to achieve this end, it is blocking appointments to the Appellate Body, with a view to rendering it inquorate, and so unable to function.

The actions taken so far are significant, but not in themselves hugely damaging. Far more so is the rejection of the core principles of the global trading system by its founder and most important player: instead of liberalisation,

¹¹ Martin Wolf, “Donald Trump creates chaos with his tariffs trade war,” *Financial Times* 10 July 2018, <https://www.ft.com/content/ba65ac98-8364-11e8-a29d-73e3d454535d>.

protection; instead of non-discrimination, discrimination; instead of multilateralism, unilateralism; and instead of global rules, national discretion. What is not clear yet is how far this represents a permanent US repudiation of its past commitments. But it is clear that suspicion of Chinese behaviour and aspirations, and the belief that trade has been dramatically “unfair” to the US, are quite widely shared across the US political spectrum.

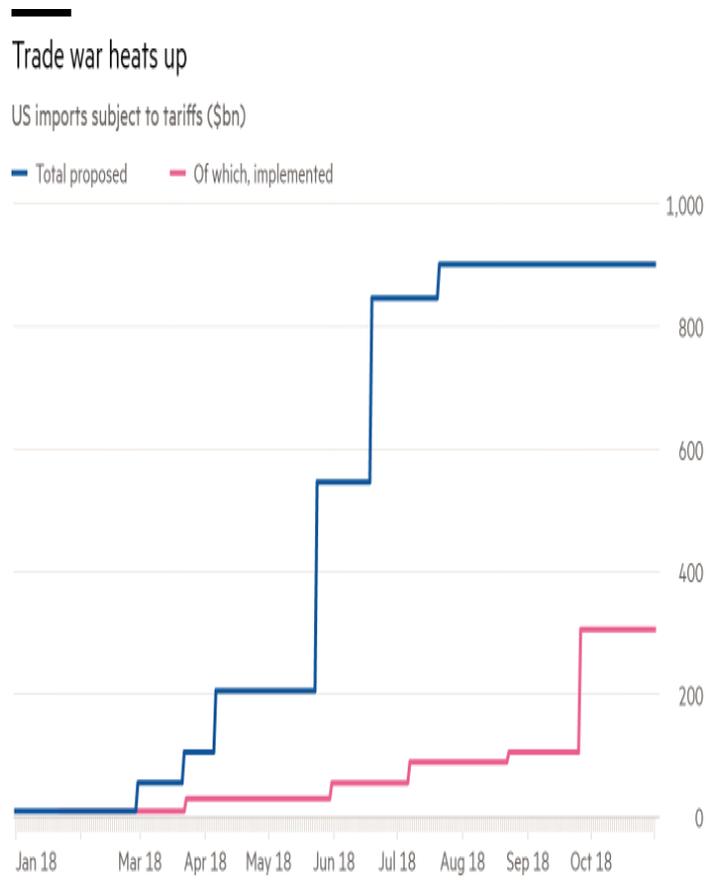
CHART 8: WHERE THE TRADE WAR MIGHT GO



Source: Bank of England
© FT

Behind this, no doubt, is a marked shift towards nationalism that afflicts much of the developed world, even though it has not shown itself strongly in trade, apart from the US. That, in turn, reflects the growing anxiety of the losers in the great story of globalisation, many of whom are in the upper-middle of the global income distribution, but in the middle and lower parts of the income distribution of the high-income countries. Indeed, we can say that the main beneficiaries of the growth of the last 40 years have been the ultra-rich and the bottom half of the global income distribution, who are mostly Asian. The moderately well off have done relatively badly. They have noticed—and they do not like it (see Charts 10 and 11). Unfortunately, this seems most unlikely to change and might get far worse. In that case, the pressures on the liberal global order in trade are likely to get much worse.

CHART 9: TRADE WAR HEATS UP



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CHART 10: THE BOTTOM 99 PER CENT: GLOBAL INEQUALITY AND GROWTH, 1980-2016 (Source: World Inequality Report)

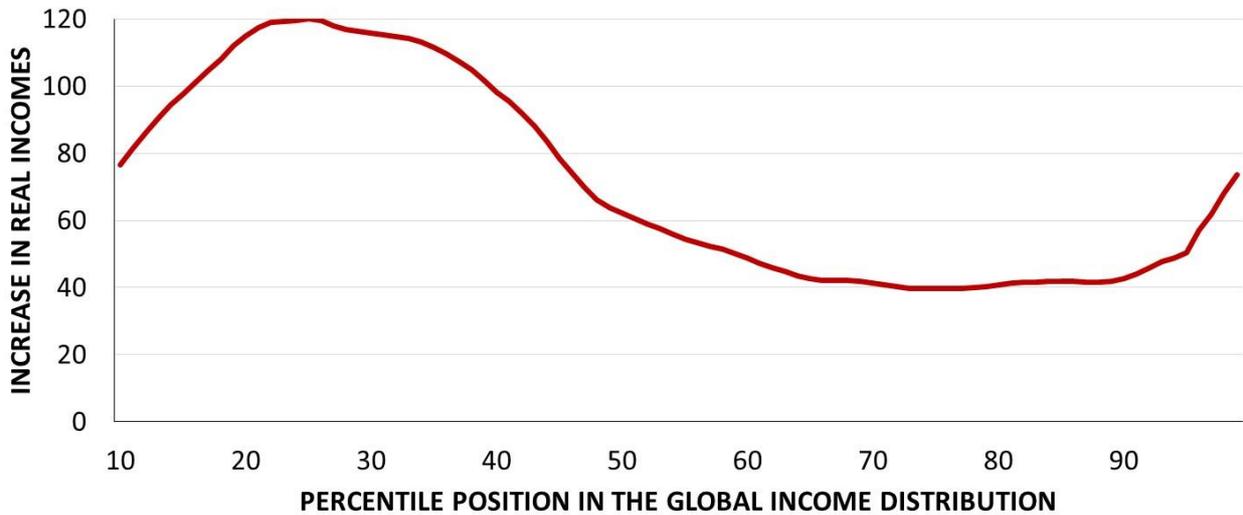
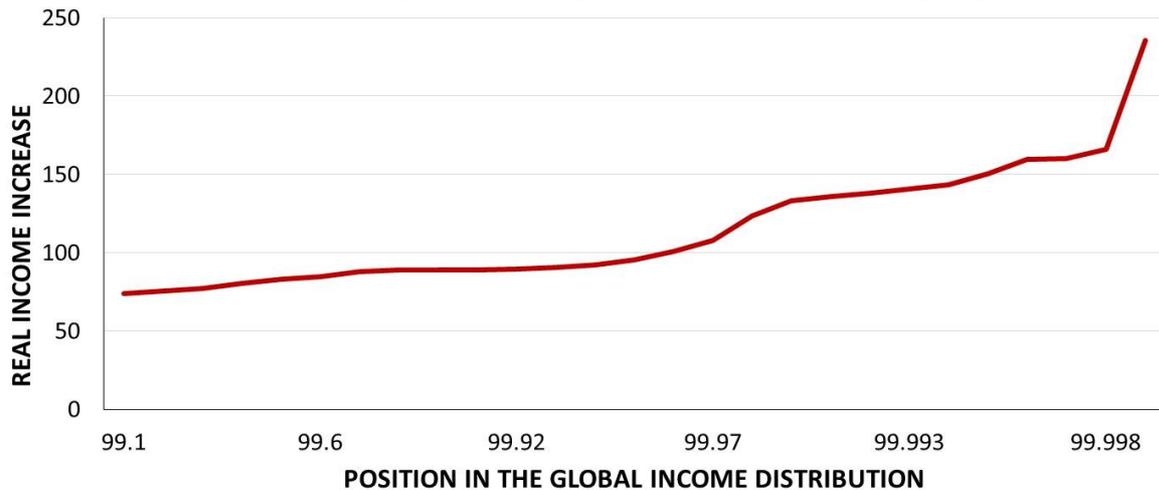


CHART 11: TRIUMPH OF THE PLUTOCRATS: GLOBAL INEQUALITY AND GROWTH, 1980-2016 (Source: World Inequality Report)



Revolution in Artificial Intelligence

A fourth upheaval is technological. The important work of Richard Baldwin of the Graduate Institute of International and Development Studies in Geneva has illuminated the technological underpinnings of the era of globalisation the world has experienced since 1980 (sometimes called “the second globalisation”, to distinguish it from the late 19th and early 20th century “first globalisation”). In his outstanding book, *The Great Convergence*, Professor Baldwin argues that reductions in the costs of communication made it possible “to unbundle (or fragment) the production process, with the production of components and final assembly scattered across the world, under the control of manufacturers or buyers with the relevant knowledge. As Professor Baldwin puts it, workers in South Carolina “are not competing with Mexican labour, Mexican capital, and Mexican technology as they did in the 1970s. They are competing with a nearly unbeatable combination of US know-how and Mexican wages.”¹²

In another seminal book, out in early 2019, Professor Baldwin discusses what he calls *The Globotics Upheaval*—a hideous neologism that describes the integration of artificial intelligence with robotics.¹³ The core idea of this book is that this new revolution is about to do to services what the old information revolution did to manufacturing: facilitate offshoring and destroy an enormous number of jobs. Furthermore, because the services sector is far bigger in terms of employment and output than manufacturing, the impact of this new revolution will be far greater, he argues, than the previous revolution.

The impact of this revolution will be two-fold.

First, improvements in technology will make it far easier to collaborate at a distance. This means that people who are not physically present will be able to participate much more fully in collaborative work, principally because of

¹² Martin Wolf, “Donald Trump faces the reality of world trade,” *Financial Times*, 22 November 2016, <https://www.ft.com/content/064d51b0-aff4-11e6-9c37-5787335499a0> and Richard Baldwin, *The Great Convergence: Information and the New Globalization* (Cambridge, Mass: Harvard University Press, 2016).

¹³ Richard Baldwin, *The Globotics Upheaval: Globalization, Robotics and the Future of Work* (London: Weidenfeld & Nicholson, 2019).

improvements in virtual reality. Today, according to Professor Baldwin, a quarter of online freelancers are Indians, and another quarter are from Bangladesh and Pakistan.¹⁴ But, adds Professor Baldwin, the extraordinary improvements in machine translation might make it quite possible for people who do not know English (or any other language) to participate in such work.

Second, many tasks now carried out by people—research into documents, examination of test results or scans, writing reports and countless other things—will be done by artificial intelligence systems. Indeed, many forms of pattern recognition are done far better by machines than by people, and the advantages of the latter are likely to grow rapidly as both software and hardware improve.

This revolution, in which machines are able to carry out many tasks currently handled by educated people across the globe, is potentially an upheaval on the scale of the industrial revolution itself. It is likely to transform, over time—not necessarily all that much time—the division of labour and employment opportunities within countries and across the globe. Neither process will be easy to manage: standard instruments of protection do not work for the movement of bits across the internet. This revolution, therefore, seems as irresistible, as it will be destabilizing. The jobs of an enormous number of white-collar workers around the globe, and especially of relatively high-paid white-collar workers in high-income countries, are likely to come under threat. The social impact will be huge, and the political backlash correspondingly dramatic.

Looming Climate Crisis

The final upheaval I want to describe is the transformation of the earth's climate. Climate creates two challenges: mitigation and adaptation.

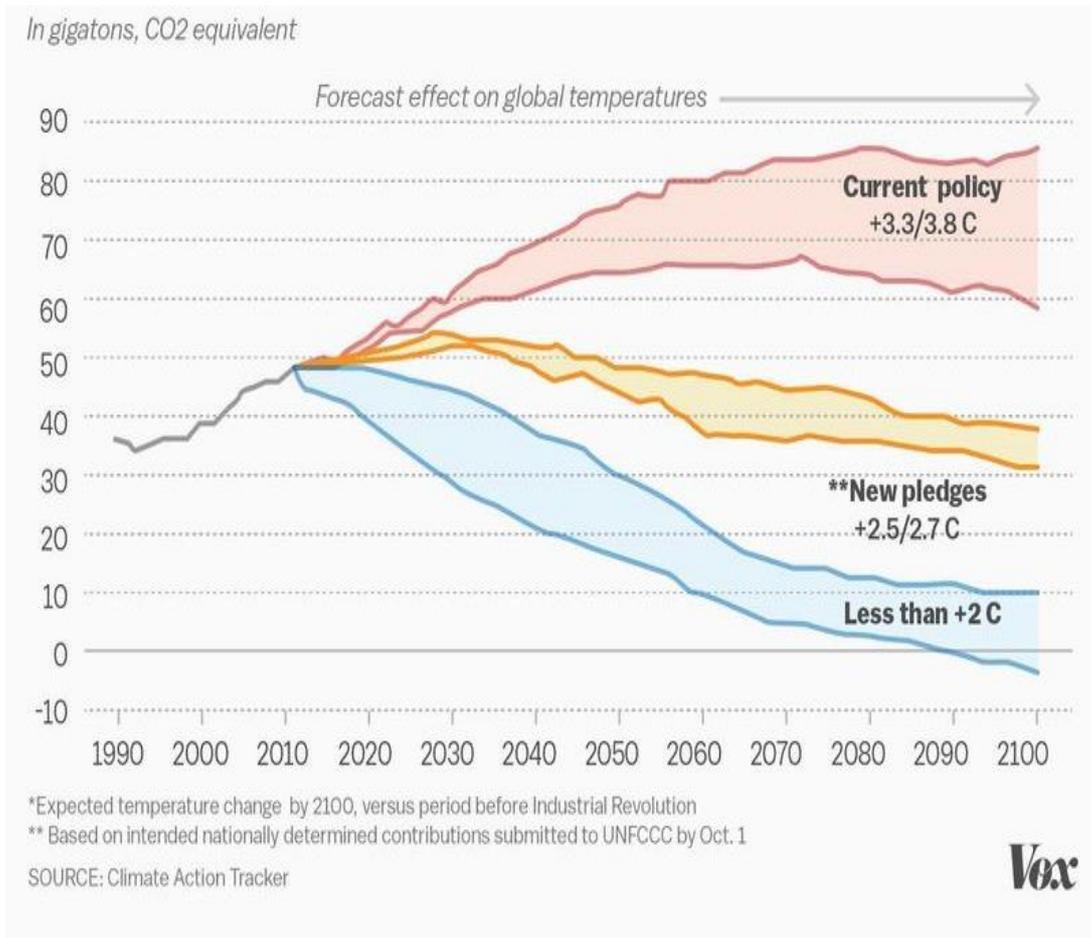
I believe strongly that humanity ought to mitigate climate change, by keeping increases in temperature ideally to below 1.5°C degrees above pre-industrial levels, or at least to below 2°C degrees.¹⁵ Yet the challenge of hitting the 1.5°C target is extraordinarily demanding. Net global CO₂ emissions would need to fall to zero not long after 2040, and other sources of climate change—emissions of methane and nitrous oxide, for example—would also need to fall from 2030 onwards. Only a fall in net CO₂ emissions to zero by 2055 makes it likely that the temperature rise will be below 2°C. Even this objective would be enormously difficult to achieve. A revolution in emissions is required over the next decade or so. The Nationally Determined Contributions that were put forward at the Paris climate conference in 2015 will be inadequate to achieve that aim. Worse, there is little reason to believe that countries will deliver even on these commitments, particularly now that the US has repudiated the agreement (see Chart 12).

Agreeing and implementing a globally effective plan to mitigate damaging climate change is, it appears, beyond humanity's capacity for joint and far-seeing action. The result, then, is going to be unpredictable, but extremely significant, damage. This, in turn, means that adaptation will be essential. That will be a huge challenge for all countries, but especially for relatively poor ones located in hot climates.

¹⁴ Baldwin, *op. cit.*, p.122.

¹⁵ Martin Wolf, "Inaction over climate change is shameful," *Financial Times*, 23 October 2018, <https://www.ft.com/content/b1c35f36-d5fd-11e8-ab8e-6be0dcf18713>.

CHART 12: ESTIMATED GLOBAL GREENHOUSE GAS EMISSIONS



Conclusion

The world is undergoing some epochal upheavals. There is a huge shift in relative economic power, towards Asia. There is a transformation of international relations, with, among other things, an emerging strategic competition between an incumbent superpower, the US, and a rising superpower, China. There are a series of challenges to economic globalisation, the most important of which may be the shift of the US away from its historic role as protagonist of a multilateral, rule-governed, and liberal international order, especially in trade. There is a new technological revolution in artificial intelligence, with huge potential consequences for services. And, finally, there is the rising probability that humanity will fail to curb extremely damaging climate change.

Implications for India

These changes will together create a demanding global environment for India. As a rising great power with huge development challenges, it needs not only to cope with this environment, while continuing to achieve the fast economic progress that its people need, but also to influence that environment. In what follows, I will try to

address some of the main implications for India, starting with the global and then moving to the national.

Meeting Global Challenges

The emerging strategic rivalry between the US and China is the most important change in the environment for all countries. Every other country must decide how to respond. Should they remain neutral and seek to preserve good relations with both sides? Should they align with one or the other of the superpowers? Should they play one off against the other? Should they try to bring the two together? All these options are going to be difficult.

What should India's role be? I would argue that this country's objective must be to promote as co-operative a global order as is possible in order to enjoy the blessings of peace and the opportunities of an open world economy. So far as it can, therefore, it should avoid taking sides between the two superpowers and use what influence it has, on its own or with allies, to promote co-operation between them, in order to meet shared global objectives. At the same time, if it is to maintain its own independence and freedom of manoeuvre, India will have to play one off against the other from time to time.

As India's power grows, it should increasingly be able to influence what is happening. But it also needs to forge close relations with other powers. As a leading democracy, India should align itself naturally with other democracies, notably Europeans, who share many interests with India. Finally, all this will be far easier if India is also able to reach peaceful and co-operative relations with other countries on the sub-continent. Its contentious relationship with Pakistan is evidently creating a huge, and for India a worrying, opening for China.

A further set of challenges relate specifically to the international economic environment and, in particular, the erosion of the liberal order.¹⁶ The biggest issue for India is global trade. At the very least, India will want its trade to grow in line with its economy, and, ideally, faster. No economy has succeeded in growing at the rates India aspires to without that. But India is also likely to grow, if all goes well, at least twice as fast as the world economy as a whole. This means that maintaining an open world economy is of vital interest of India. This is true in both manufacturing, where the opportunity to participate in global supply chains remains largely unexploited by India, and services, where India's comparative advantage is relatively strong.

The implication is clear. India needs to fight hard to maintain the effective operation of the WTO. It needs to fight for global trade liberalisation. It needs to participate in liberalisation efforts, regionally and globally. These are all strongly in India's economic and strategic interests. India can no longer take a favourable global environment for granted. It must also not quiescently accept its disappearance. It must use all the influence it has to support and promote it. This requires aggressive, pro-active, and risk-taking economic diplomacy, not the negative attitude to liberalisation for which, alas, India has in the past been notorious. India has weight: it should use it. At the same time, India should be opportunistic. If opportunities open up because of the trade conflict between the US and China, it makes sense for

¹⁶ See Martin Wolf, "India's Entry into the Global Economy," in Rakesh Mohan, Ed., *India Transformed: 25 Years of Economic Reforms* (Delhi: Penguin Viking, 2017) pp. 91-109.

India and Indians to exploit them. The great opportunity probably remains in manufacturing.

The “globotics” revolution will create both a large opportunity and vast challenges for India. On the international stage, the former dominate. Improved opportunities for what Professor Baldwin calls “telemigration” should be of great importance for this country. Many activities that currently require a physical presence abroad may soon be deliverable from India itself. It is a set of opportunities that India needs to exploit. Securing the highest possible standard of broadband access for all will be an essential part of this.

Finally, India must put the greatest possible weight on a successful global programme of climate change mitigation. But it needs to recognize that adaptation is also bound to be a dominant concern. It needs to collaborate with others on developing the best technologies and institutions for such adaptation.

Managing Domestic Implications

What, finally, might be the domestic policy implications of all this? Here are a few.

First, India needs to consider the implications of the new security environment, especially the rise of China, for its own spending on security. A balance needs to be struck between what is affordable and what meets the most obvious strategic threats. For a second-ranked power not embedded in a major alliance, this is always going to be a difficult balance to strike.

Second, almost regardless of the global environment, short of a war between the superpowers, the principal determinant of India’s progress will remain, as it has always been, its own policies. The challenges here are well known: reform of the financial sector; reform of the labour market; investment in high-quality infrastructure; vastly improved education for all; a focus of the country’s scarce fiscal resources on high-priority challenges; and, above all, great improvement in the performance of government at all levels.¹⁷ Similarly, the main determinant of India’s ability to exploit opportunities in global commerce depends as always on its own policies and institutions: if it allows Indians to access world markets on equal terms, they will no doubt thrive.

Third, India needs to devote careful thought to the domestic implications of the revolution in artificial intelligence. As a country with a growing and relatively young population and labour force, and huge employment in services, the implications might be very radical, both creating and destroying opportunities on a massive scale. India’s central and state governments will need to devote a lot of thought to how this revolution is likely to affect job opportunities and the labour market, and how, in turn, the country is to manage these challenges. If India fails to manage them, its “demographic dividend” could easily turn into a disaster of hopes denied. These domestic challenges are likely to be very large and potentially very disruptive.

¹⁷ See Vijay Joshi, *India’s Long Road: The Search for Prosperity* (Oxford University Press, 2017) and Martin Wolf, “India’s long road to prosperity,” *Financial Times*, 24 May 2017, <https://www.ft.com/content/d5cf8bb0-3fc3-11e7-9d56-25f963e998b2>.

Finally, India has a huge potential challenge in adapting to higher temperatures and changes in rainfall patterns. It would be comforting to believe these can be avoided. But it seems very unlikely. A particularly significant set of challenges here will be securing the least-cost electrification of the country, to lower industrial costs, increase broadband access, make cold chains more reliable, and make air conditioning more universally available. Another will be improved management of water resources.

India in a Changing World

The world is in upheaval, in terms of economic power, the strategic balance, the policy environment, technology and the environment. I have focused here far more on those changes than on how India should respond. This reflects my comparative advantage. The main implication is: do not be complacent. There are huge changes under way. India is itself part of those changes. It must improve domestic policy and performance to exploit opportunities and meet dangers. But, above all, as India grows, it will be expected to help shape the global response to these upheavals. Will it try to uphold a liberal global order in which all countries cooperate, or will it stand aside from such challenges?

The choices India makes will not only matter for this country, but also for the world. What sort of country does India want to be and in what sort of world? We in the rest of the world are waiting to find out.

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