

Reducing atmospheric carbon dioxide

A descendant of CO₂-eating e coli could be modified to make organic carbon molecules



QUANTUM LEAP

DEVANGSHU DATTA

The reduction of atmospheric carbon dioxide (CO₂) is vital to combat Climate Change, since CO₂ contributes roughly half of all greenhouse gases. Research at Israel’s Weizmann Institute of Science indicates there could be a way to design bacteria to absorb atmospheric CO₂. The natural mechanism for removing atmospheric CO₂ is photosynthesis. Leaves contain chlorophyll, which uses energy from sunlight in a chemical reaction that creates sugars out of

atmospheric CO₂ and water. Sugars have a large number (“n”) of carbon atoms coupled to a large number of water molecules (H₂O) and formulae on the lines of Cn(H₂O)n. An important “waste product” in photosynthesis is excess oxygen, which is released by plants into the atmosphere. Plants and trees also absorb oxygen and release CO₂ during hours of darkness. But net-net, plants release more oxygen (O) and consume more CO₂. Photosynthetic cyanobacteria — aquatic microbes that produce oxygen — also use energy from light to fix CO₂ and turn it into sugars, proteins and fats. But natural photosynthesis is insufficient to deal with the excessive production of CO₂ by industrial processes. Now Israeli scientists claim they have found a way to engineer common bacteria to eat atmospheric CO₂. Right now, these bacteria release more CO₂ than they consume. But this is a transformational approach and it may lead to insights that help to fight Climate Change. Living organisms are either autotrophs (such as plants) that convert

CO₂ into biomass (wood), and heterotrophs that consume organic compounds (humans and other animals). The common bacteria Escherichia coli (E.coli) is found in the guts of many animals and it is heterotrophic. It is easy to genetically engineer, and its fast growth means changes through generations can be quickly tested and tweaked to optimise mutations. Normally it consumes sugars, and emits CO₂. However, in an experiment described in Cell magazine, ([https://www.cell.com/fulltext/S0092-8674\(16\)30668-7](https://www.cell.com/fulltext/S0092-8674(16)30668-7)), a Weizmann team described how they transformed the dietary habits of e coli. Lead author, Shmuel Gleizer said, “From a basic scientific perspective, we wanted to see if such a major transformation in the diet of bacteria — from dependence on sugar to the synthesis of all biomass from CO₂ — is possible. Beyond testing the feasibility of such a transformation in the lab, we wanted to know how extreme an adaptation is needed in terms of the changes to bacterial DNA.” The engineered strain of e coli first

harvested energy from formate (HCO₂), a chemical which can be produced electrochemically from renewable sources (or from formic acid, which is found in ants). Formate has only one carbon atom, and does not normally serve as a food source for e coli. In 2016, the Weizmann team created an e coli strain that ate CO₂, but it preferred sugars. Using genetic engineering they gave it genes that allow photosynthetic organisms to convert CO₂ into carbon. Photosynthesis isn’t possible in bacteria but they managed to insert a gene that lets the bacterium eat formate for energy. The scientists further modified the bacteria to inactivate key enzymes that made it heterotrophic and thus, more dependent on autotrophic methods. Eventually they succeeded in “building” a bacteria that consumed only CO₂. They confirmed this by labelling food sources with marker chemicals and detecting changes in the marker-levels. Then they cultured successive generations of the modified bacteria, with minute quantities of sugar, and CO₂ at

very high concentrations (about 250 times that in the atmosphere). After about 200 days, bacteria capable of using CO₂ as their only carbon source grew. After 300 days, these bacteria grew faster than those that could not consume CO₂. The autotrophic bacteria still prefer sugar. Also this is slow-growth. Normal e coli doubles in number every 20 minutes, while the autotrophic type divides every 18 hours in an atmosphere that is 10 per cent CO₂. They can’t survive at current atmospheric levels of CO₂ of about 0.0407 per cent (407 parts per million). The scientists are trying to make the bacteria grow faster and live on lower CO₂ levels. They are also trying to understand how changes in just 11 genes allowed the switch. Biotech companies use cell cultures living on corn syrup to produce chemicals. If such cells — yeast or bacteria — could live on CO₂ and renewable electricity, they could be weaned from corn syrup. They may be further adapted to take energy from a solar cell and store that energy for use as fuel in the form of carbon fixed in cells. Thus, a descendant of this CO₂-eating e coli could be modified to make organic carbon molecules to use as biofuels. Such products would have lower emissions and ideally, they could remove atmospheric CO₂.

CHINESE WHISPERS

Ready to bat
Surendra Singh ‘Shera’, independent MLA from the Burhanpur Assembly seat, is known for his rebellious nature. He supports the Congress government in Madhya Pradesh but is unhappy at not being offered a ministry. He is frequently in the headlines for his criticism of the state government. During a government event recently, Singh and Chief Minister Kamal Nath were in a discussion. When asked about his possible inclusion in the cabinet, Singh said: “Kamal Nath is my captain, whenever he asks me to bat, I will come to the crease and start hitting fours and sixes. I am waiting for my turn with my pads and gloves on.”

Storm gathers momentum
Even as the ruling Bharatiya Janata Party (BJP) in Uttar Pradesh is trying to recover from the rebellious sit-in by party legislators in the Assembly to protest against alleged harassment by police and district officials, BJP MLA Nand Kishore Gurjar has demanded a probe into the properties of all politicians and bureaucrats. Gurjar was the first to raise the harassment issue in the Assembly on the inaugural day of the UP legislature on Tuesday and was later joined by other party legislators and members from the opposition benches. Gurjar said the graft probe should include spouses of political leaders and bureaucrats because several of them were running non-government organisations. The MLA lamented he was being targeted because he was trying to expose corrupt officials in his constituency, Loni.

Dealing with family businesses

Business partners should take care to understand the family in a family business or they may find family businesses too enigmatic to deal with

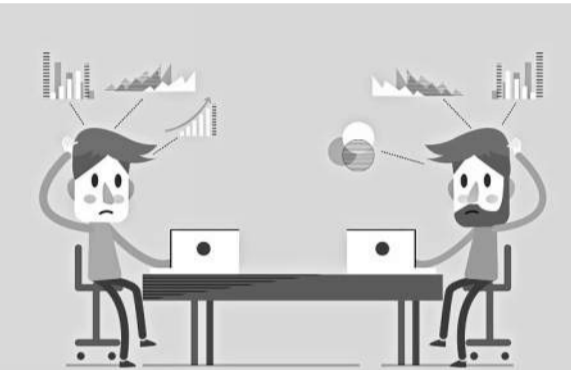


JANMEJAVA SINHA & VARUN GOVINDARAJ

Despite the importance of family businesses across the globe it is surprising that often their business partners do not know how to deal with them. Business partners — whether investors, private equity firms or joint venture partners — tend to focus on the business side of the family business. However, every family businesses combines two conflicting sides. On one side there is the business where profit, growth and shareholder returns are paramount. On the other side there is the family where emotions of love, fairness and trust reign supreme. Successful family businesses skillfully navigate these disparate perspectives to achieve both success and stability in their business. If a family business fails because it cannot reconcile the needs of the business with the wants of the family, its partners (who have invested time, capital and other resources) also lose a great deal. So one would expect that potential partners are alert to this conundrum

when they begin engaging with family businesses. Yet this is often not the case. Partners often treat family-owned businesses as they would any other company, which is a mistake. We believe potential partners should undertake a more comprehensive evaluation of the family before working with them. In particular, there are five areas worthy of deep investigation. ■ The reputation of the family: It is important to understand the family’s reputation. This can be done by examining their past behaviour or the behaviour of other companies owned by the promoter group. Have their joint ventures survived? Have promoter group companies defaulted on their loans? How have they used the judicial process? How close are they to certain political parties? It is crucial for potential partners to speak with other partners to understand their experience working with the family. With that said, it is also worth noting that family businesses with strong reputations cherish their reputations. They will go to great lengths not to stain the integrity associated with their names. Only in truly extreme situations will they default on their commitments. Typically their partners will trust them deeply because of the flawless reputation of the promoter family. ■ Identify the decision makers: In family businesses often the formal structure of the company does not reflect the underlying power dynamics of the company. While there may be a CEO or chairman

of the company, their actual autonomy might be limited. Their titles are often titular. So it is critical to identify the true decision maker. This may be a head of the family (such as a patriarch) or a group of elders that deeply influence business decisions despite holding no official titles. Potential partners must know them, understand their individual motivations and their vision for the family business and ensure these are in line with their own objectives before entering into a partnership. If partners find that there is a lack of alignment between different members of the family then they should be careful and recognise that decisions taken by the current incumbent may be stalled or even overturned later. Ignoring the underlying family dynamics is a big mistake which can turn out to be very time consuming and costly for potential partners. ■ Understand the influence of non-family top executives: The power that non-family executives have in a family business varies. Some long-term executives serving in a company may actually be very influential. Their advice is taken seriously and they know how to navigate the family’s dynamics. So their support counts for a lot more than that of a freshly installed CEO. In comparison many freshly hired CEOs may not last long in the company especially if they come to the family business from a different background (like an MNC) — simply because they will not understand the culture of the family and the company.



the financial ecosystem within which the family business operates. The ease with which partners can exit a family business will differ greatly across countries and this has implications on the safety of their investments. It would, for example, be much harder for a private equity investor to sell a stake in a family

business in an emerging economy without developed institutions. In the same vein, developed markets also allow family businesses more freedom to find alternative sources from where they can raise capital or manage family restructuring. All partners need to appreciate this. Given the critical position of family businesses in many economies, it is surprising that more work has not been done in helping partners create a work book on how to deal with them. Though there are many partners who have a good intuitive understanding of how to do business with family businesses — there are many that do not and flounder because their due diligence ignored the family dynamics of the promoter group. Business partners should take care to understand the family in a family business or they may find family businesses too enigmatic to deal with.

Sinha is chairman & Govindaraj is consultant, BCG India. Views personal



Gandhi in the time of CAA
Protests against the passage of the Citizenship (Amendment) Act have now reached every part of the country. While government spokespersons and “people’s forums” continue to disseminate their own version of the events, the Press Information Bureau has been, since December 18, tweeting quotes by Mahatma Gandhi that do not have any connection with any specific date or event. “One should assimilate in oneself what is good in others and reject the bad,” reads one. “Lack of our awareness was a reason we became subjects of British rule,” reads another. Yet another reads: “Good deeds can only be accomplished with righteous methods; dishonest methods cannot yield good results.”

INSIGHT

The new face of environment activism

India needs to develop its own environment framework



JYOTI MUKUL

Rajeev Chaba, president and managing director, MG Motor India, walked in before guests with child actor Prachi Thakur as his company unveiled the ZS, an all-electric SUV, earlier this month. After being ushered into the car, Thakur waved at the audience at New Delhi’s Pullman Hotel from the car’s sunroof. During the show, the hall’s dome projected moving caricatures conveying the message that conventional vehicles cause pollution and going electric was the only way forward. It was not without reason that the Chinese company roped in Thakur to unveil its high-end EV, whose battery can be reused for power generation. Whether such high end models will make much of a difference to air pollution remains a subject of debate but children and young adults have been at the forefront of movements across the globe demanding critical action on environment from governments and decision makers. These actions could be in the public space or within the confines of the family.

the Paris agreement, it is the likes of Thakur and those slightly older who would define climate change movements going forward. Daily Intelligencer, a website of the New York magazine group, in a December 16 write-up called António Guterres, Secretary-General of the United Nations, a “Greta Thunberg’s alarmist equal” for saying at Madrid that “the point of no return is no longer on the horizon... it is in sight and hurtling towards us”. Though Intelligencer’s comment had more to do with the failure of COP25, it brings out the dichotomy of the times — that a 16-year-old girl is able to carry the message more forcefully while member countries failed to put an action plan in place. In September 2019, she addressed the UN Climate Action Summit in New York to warn about the world her generation would end up inheriting if nations failed to act now. Earlier in 2019, Thunberg spearheaded the School Strike for Climate (Skolstrejk för klimatet in Swedish), also called Fridays for Future (FFF). School students did not attend classes and instead took part in demonstrations to demand action to prevent further global warming and climate change. On March 15, more than one million were reported to have kept out of schools. This, however, went unnoticed in India except for some pockets in the major cities where students egged on by their schools held events to drive home the message of environment-friendly behaviour among urban citizens. Prime Minister Narendra Modi did try to wage a war on plastics but the government’s efforts at environment preservation have been peripheral, and is often confused with Swachh Bharat,

the flagship programme for clean toilets and sanitised living. There is another face of environmental activism that has emerged with the Extinction Rebellion. This movement has an India chapter as well. Though run by professionals and people much older than Thunberg, it practises civil disobedience and forces closure of what it perceives as environmentally harmful. Set up by Roger Hallam and Gail Bradbrook and other activists in the United Kingdom in May 2018, the Extinction Rebellion is also called XR. Many do not support the antics of XR sympathisers because they coerce people rather than convince them to shun environmentally harmful activities. Nonetheless, it is true that the lack of global leadership among policy makers and influencers has been the main reason behind the emergence of sub-national forces this year. Within India, getting those beyond a defined group to use less water or recycle waste or do less damage to environment in whatever small way they can is largely left to non-government agencies. This is despite the fact that damages caused due to climate change are more pronounced in smaller cities and villages simply because the infrastructure in both personal and public spaces is less disaster resilient. It is, therefore, important that the benefits of being environment friendly, having a smaller carbon footprint and being less of a burden on natural resources is built into public psyche. The first step is to shun complacency. For policy makers sitting in the national and state capitals, COP25’s failure should be no relief but a push for developing India’s own national environment framework with actionable triggers and urgent targets.

LETTERS

Think before you speak

At a time when parts of the country are on the boil over the contentious Citizenship Amendment Act (CAA), the Army Chief’s warning that the situation along the line of control can escalate any time and the Indian Army is always ready for an “escalatory matrix” is not only alarmist but unwise too. While it is true that ceasefire violations by Pakistan have witnessed a spurt since the abrogation of Article 370 in August, “escalatory matrix” is not an option particularly when our economy seems headed for the ICU, as opined by Arvind Subramanian, former chief economic advisor. The Army Chief needs to be more circumspect in his public utterances and consider their likely political ramifications. With a large number of leaders, including three former chief ministers, still under detention in Kashmir despite Union home minister’s claim of normalcy there, the Army Chief’s warning of a possible escalation of tensions along the LoC could well be used by the Centre as a ground to maintain the status quo in the valley. That would be unfortunate.

SK Choudhury Bengaluru

History repeats itself

The recent countrywide uprising by students and members of the civil society is unnerving. The implementation of CAA and the imminent operationalisation of the National Register of Citizens is a dangerous cocktail for our political economy that is already on the stretcher. It is widely thought that the enforcement of such laws will inflict the same amount of pain and damage to our social and political firmament as did demonetisation to our economy barely three years ago. The economy is paying a heavy price for that single step and the pain is not over yet. As the saying goes, history repeats itself; the second time as a farce. We are surely and



steadily converting the demographic dividend into a demographic curse. If not, then what is the point of forcing 25 per cent of our existing labour force to abjure work and queue up to prove their existence, nationality, citizenship, identity and so on?

Ganga Narayan Rath Hyderabad

Do your job

This refers to the well-timed piece, “All is not well with the media, says former President Pranab Mukherjee” (December 19). That a former president had to point out “orchestrated, out-of-context and motivated reporting for partisan agendas” and call for self-correcting measures to check such irregularities must truly awaken the conscience of all concerned. He has expressed his utter dismay at the blur-

ring of distinction between views and news and exhorted media organisations not to compromise on their basic role of behaving like ever-alert watchdogs of the society. He also thought it wise to provide a comprehensive list of dos and don’ts. It becomes incumbent upon those at the helm of affairs to meticulously follow them. It’s also time to bid adieu to paid and fake news. That would require a lot of determination and conviction, but that is the need of the hour.

SK Gupta New Delhi

Letters can be mailed, faxed or e-mailed to: The Editor, Business Standard Nehru House, 4 Bahadur Shah Zafar Marg New Delhi 110 002 Fax: (011) 23720201 E-mail: letters@bsmail.in All letters must have a postal address and telephone number



Don't over-react on GST

Govt must be restrained on collection targets

The Goods and Services Tax (GST) Council, the body which comprises Union and state finance ministers and oversees the indirect tax system, met for the 38th time on Wednesday. But this was a meeting with a difference. So far, the Council has been able to maintain a tradition of unanimity, with every member agreeing on changes. However, on this occasion, voting took place for the first time, and the rate on lotteries was increased to 28 per cent. This took place, reportedly, because the Kerala government maintained a resolute opposition to the proposal. While there may have been no alternative, this is not a good harbinger for the future. Indeed, GST in general is looking increasingly troubled. States are deeply concerned about their GST compensation not coming in time, which has stressed their own finances.

Yet GST itself continues to underperform. This takes on particular salience at a time when, following a drop in corporate income tax rates, the mop-up of corporation tax has actually gone down by over 5 per cent in the months between October and December 2019, as compared to the corresponding period of the previous year. Personal income tax is not showing sufficiently robust growth to make up for it, an indication that an overall slowdown is also partially responsible. Thus, the low GST collection is stoking a fiscal crisis. The finance ministry has set a target of ₹1.1 trillion a month for GST collection, which is more than the collection in all but the first month of the current fiscal year. It appears that the belief has taken hold that the problem is essentially widespread evasion, and fraud relating to input tax credits.

Various measures are being proposed to address this issue. Several ways to limit the outgo in terms of input tax credit are also being proposed, such as the lowering of the amount that is provided before invoices are uploaded to 10 per cent of the amount from the current 20 per cent. But the government must be very careful in how it approaches anti-evasion mechanisms. In general, giving tax officials targets and enhanced powers to achieve those targets has proved to be massively counter-productive in India. Currently, the thinking appears to be that relaxation in penalties for late filing, alongside some extension in deadlines, might be tried. But it appears a consensus is developing for harsher measures, including enhanced penalties and more powers to block credits for tax officials. As usual, the possibility of arrest is also being thrown into the policy mix. But the government must take a holistic view of the problem.

The success of GST depends upon voluntary participation in the tax. Cracking down too harshly now will scoop up both the innocent and the guilty, and further depress business sentiment at a time when reviving animal spirits is crucial to get out of the current slowdown. What is needed is an overall review of GST's structure. Can it be simplified in such a way that compliance increases without the use of the metaphorical *lathi*? The Council must deliberate on the broad direction of the tax as well as specific rates.

Mixed signals

IUC extension is welcome, but Trai should take a holistic view

The decision by the telecom regulator to extend the current regime of 6 paise per minute termination charge or IUC (interconnect usage charge) for wireless calls ending on a different telco's network for another year is a welcome move. It would help improve the cash flow of the incumbent operators, which have been complaining that some of the decisions taken by the Telecom Regulatory Authority of India (Trai) have only helped the newest telecom operator. But the regulator needs to iron out some more creases. For example, while extending the current regime, Trai has announced that zero IUC or the BAK (bill and keep) regime will be implemented in January 2021. Although telcos will get a year to transition to the new system, setting a date for zero IUC without any review condition ahead of the rollout seems ill-planned.

Before its implementation, Trai must make sure that the timing is right for shifting to a zero IUC regime. One of the factors guiding Trai to fix termination charges is traffic symmetry, a term used to describe the ratio between outgoing and incoming calls. Following consultation with industry stakeholders, Trai believes that by the end of 2020, traffic symmetry will be achieved and, therefore, zero IUC would be feasible from January 2021. But at a time when the telecom industry is bleeding and, on top of that, has received an adverse court order to pay up adjusted gross revenue (AGR) dues of around ₹1.4 trillion (with interests and penalties), the regulator should not be in a hurry to abolish the interconnect charges.

In fact, the Trai decision to extend the IUC must be seen in the context of comments by top companies. Vodafone Group Chief Executive Officer Nick Read had told reporters in a post-result discussion that the Indian venture was reaching a liquidation-like condition. Following that, Vodafone Idea Chairman Kumar Mangalam Birla had said it might be the end of the road for the telecom venture if there was no help from the government. Even Bharti Enterprises Chairman Sunil Mittal said in recent interactions that these were the most difficult times for the telecom sector.

IUC has been a controversial subject ever since Reliance Jio launched its service with free calls three years ago. In 2017, Trai had cut the interconnect charge from 14 paise per minute to 6 paise per minute, a move that may have hit the industry by around ₹5,000 crore a year. Incumbents argued that the regulator's decision to slash IUC by more than half helped Jio subscribers make calls to those on other networks at a much lower price, while enabling the company to keep disrupting the market with predatory tariff. Another grudge that incumbents expressed against Trai's calculation of IUC was that some key components such as capex and spectrum charges were not considered. This is an opportunity for Trai to show its fairness. And, any change in the IUC regime should come after a proper assessment of the market. The point is that IUC is a cost, and hence it should be cost-based. That's the reason the regulator should be mindful of traffic symmetry so that the market does not get distorted.

The mind of a champion



BOOK REVIEW

DEVANGSHU DATTA

At 50, Viswanathan Anand's *curriculum vitae* runs to many pages. India's first grandmaster announced his arrival on the world stage in 1987 by winning the World Junior Championship. In 2018, he won the World Rapid Championship. In-between, he won multiple world titles, in different formats, alongside countless other successes.

Obviously Anand was born with an

extraordinary aptitude for this highly demanding sport. Equally obviously, he has a manic work ethic that helped him master the technical skills to maximise that talent. Less obviously, achieving such success and maintaining this consistency for over 30 years also requires intense introspection and self-examination. Anand has ruthlessly analysed his own flaws and weaknesses, and understood how to play to his strengths.

Such introspection is not unique to Anand — Roger Federer, Magnus Carlsen and Sachin Tendulkar to name three people, must have gone through similar processes. Anand is unusual in that he was already part of the world elite long before he received any formal coaching. He was, therefore, an absolute auto-

didact in terms of this internal journey of self-realisation.

He learnt to deal with self-doubt triggered by loss of form. He learnt how to bounce back after crippling defeat, and equally importantly, how to maintain equilibrium and retain motivation, after big wins. He taught himself the art of revving into super-gear in "must-win" games and learnt how to switch off completely in order to recharge mentally. He also taught himself how to use anger, discrimination and disappointment as motivational spurs.

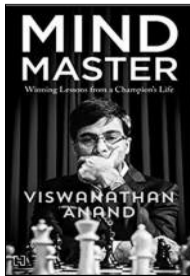
Remarkably, this book succeeds in verbalising some of that understanding in terms that will make sense to readers, who have never played chess, or indeed, any other sport. This is one of several things that raises this book well above the norm

in terms of sporting biographies.

There are other stellar qualities as well. The narrative dips in and out of Anand's life, pausing to take snapshots of key moments. Somehow, without going through the tedium of

chronological description, it gives a pretty complete picture of his life and career. There are some utterly fascinating descriptions of Anand's thought processes before, during and after a vital game, or match. (In chess parlance, a match is a series of games against one specific opponent). There are also great explanations of the relationships between a champion and his seconds and of the sport's transition to the digital era.

The book also introduces us to many



MIND MASTER: Winning Lessons From a Champion's Life
Author: Viswanathan Anand with Susan Ninan
Publisher: Hachette
Price: ₹599

details about Anand's relationships with his other great contemporaries.

Despite being a cut-throat sport, chess players are often friendly with rivals. Anand is on very good terms with several of his greatest rivals, while having a somewhat "transactional relationship" with Garry Kasparov. He has worked with Magnus Carlsen, who helped him prepare for a title match against Veselin Topalov. Even during two hard-fought world title matches when Carlsen beat Anand to

other characters on the chess circuit, and chess is full of fascinating characters. There are also subtle descriptions of some of the many shades of gamesmanship that occur. There are interesting

become his successor, they were laughing onstage at the same jokes (both quote chunks of Monty Python).

The "insider" descriptions of the match against Veselin Topalov is epic. The match almost didn't happen: a volcanic explosion led to flights across Europe being cancelled. Anand had to ask for a timeout. He hired a van and his team drove for over 40 hours, from Germany to Bulgaria, to get to the venue. Then they drove up and down outside their hotel for an extra hour because they were watching the concluding part of the *Lord of the Rings*!

Anand's work-life balance has always been exemplary and that has contributed to his success. He takes wind-surfing holidays, bakes cakes with his son and pursues hobbies like astronomy, maths. His relationships with his mother Susheela, and with his wife, Aruna, are both touched upon, with love, delicacy, humour and honesty.

ILLUSTRATION: BINAY SINHA



Natural partners, unnatural times

India-US defence ties remain strong despite discord over trade and human rights. New Delhi would do well not to put this to the test

On Wednesday night in Washington DC, after the second US-India 2+2 Ministerial Dialogue, in which US Secretary of State Mike Pompeo and Secretary of Defence Mark Esper co-hosted Defence Minister Rajnath Singh and Foreign Minister S Jaishankar, persistent questions from the US media about the continuing crack-down in Jammu & Kashmir and the passage of the Citizenship (Amendment) Act, which discriminates against Muslim refugees in granting Indian citizenship, made it clear that these issues are now front and centre in the American perception of India.

Since the warming of US-India relations two decades ago, Washington and New Delhi have both talked up the "natural partners" rationale for partnership, with almost every US and India joint statement citing the "shared values" between the two "vibrant democracies". Indeed, Wednesday's joint press conference played that same tune. Lovers of realpolitik have tended to dismiss that as empty rhetoric, pointing to America's long and unlovely record of backing dictators — not least Nguyen Van Thieu in Vietnam and the Shah of Iran; and in more recent times the undemocratic leaders of Pakistan and Saudi Arabia. The cynics argue that expediency, not principle, dictates Washington's policy, and that even the post-Soviet expansion of the North Atlantic Treaty Organisation has involved a strong element of holding one's nose. This argument, however, overlooks the fact that, while Washington happily makes tactical compromises with strongmen and their authoritarian regimes, its strongest and deepest partnerships — such as the Five Eyes alliance with Australia, Canada, New Zealand and the UK — rest on the bedrock of shared values and worldviews.

Others argue that Donald Trump can hardly accuse New Delhi of discrimination against Muslims, given his own misogynistic racism and his shameful imposition in 2017 of a travel ban on citizens of specified Muslim countries. However, it should be remembered that his ban was repeatedly overturned by US courts, strongly opposed by the American media and by large

sections of US lawmakers. Trump is an aberration in the US polity and will cease to be president latest in January 2025, and perhaps even earlier in the unlikely event of the Senate echoing his impeachment on Wednesday by the House of Representatives.

The US administration has not so far meaningfully chastised New Delhi for discriminating against Muslims or its continuing detention of Kashmiri leaders. Pressed by the US media on whether Washington had brought up these issues in the 2+2 dialogue, Mr Pompeo trod carefully, noting that "we care deeply and always will about protecting minorities, protecting religious rights everywhere..." and the US will be consistent in the way that we respond to these issues, not only in India but all across the world"; but also saving Indian face by telling the questioner that "we honour Indian democracy as they have a robust debate inside of India on the issues that you raised."

However, it would be hard to dispute that the US administration faces a new element of embarrassment due to its India relationship, something that will inevitably corrode the solid bipartisan consensus in the US Congress on the India relationship. It would be prudent to anticipate that New Delhi's days of an unending free ride — when it needed to do little for the US and just being India was enough — are now coming to an end. The implications of this are significant. It might become increasingly difficult to obtain waivers from US laws on issues like the import of S-400 air defence missiles from Russia. And India might now have to contribute more visibly and to take more visibly pro-US positions on certain issues, even where Indian interests would be better served by ambiguity. With India's moral power diminished in global perceptions, New Delhi might have to compensate with other, more overt, forms of influence.

The 2+2 dialogue itself yielded predictable diplomatic outcomes. Washington backed India's security positions in the Indo-Pacific, while New Delhi catered to Chinese sensitivities by backing an Indo-Pacific security architecture "based on the recognition of Asean centrality." The US side appreciated India's



BROADSWORD

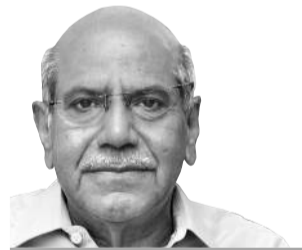
AJAI SHUKLA

Translating economic scale into financial heft

China is the second largest economy in the world with a gross domestic product (GDP) of \$14 trillion, about 18 per cent of global GDP, and may soon become No 1. It has been the world's biggest trading nation since 2013 and has a current export-import volume of more than \$4.5 trillion. China has the world's second largest equity and bond markets, respectively. Its bond market is worth \$13 trillion and constitutes 11 per cent of the global total. Similarly, its equity market by capitalisation is 12 per cent of the global volume. But its weight in the global economy is not reflected in its financial profile.

The use of renminbi (RMB) in trade settlement has fallen in recent years from a high of 25 per cent in 2013 to less than 15 per cent in 2018. Only 2 per cent of international payments is conducted in RMB. In 2016, the RMB was included in the trillion dollar Special Drawing Rights (SDR) of the International Monetary Fund (IMF) as a reserve currency alongside the US dollar, the euro, Japanese yen and the British pound and given a weight of 10.86 per cent. Its inclusion in the foreign exchange reserves of IMF member countries could reach a maximum of \$1 trillion but is currently only \$194 billion. China has encouraged currency swap agreements with over 30 countries and this is valued at \$500 billion currently, but this has been used only marginally. The RMB has failed to achieve the same credibility as other reserve currencies. Its reluctance to give up control over capital flows and tolerate currency volatility, has stalled progress so far.

China has now shifted to a different strategy to achieve the eventual goal of internationalisation of the yuan. It is pursuing the systematic integration of its huge equity and bond markets into global financial markets using sheer scale to gain pre-eminence. Initially, China set up the Hong Kong-Shanghai and Hong Kong-Shenzhen Stock Connect to allow quota-based trading in Chinese shares, progressively liberalising the quota and allowing easy repatriation of funds. It began to develop its bond market by allowing the issuing of RMB-denominated bonds initially in Hong



SHYAM SARAN

Kong and then later in Singapore, Taiwan and London. It is now encouraging key global indices to include Chinese equities and bonds in their benchmarks. Chinese A-shares, which trade on the Shanghai and Shenzhen stock exchanges, have been included in the MSCI Emerging Market and MSCI All Country World Index. Chinese Government Bonds (CGB) have now been included in the Bloomberg Barclays Global Aggregate Index and may soon become part of the FTSE Russells Bond Index. Schroders, an investment firm, claims that the flow of funds from international institutional investors, who typically invest passively in indexed funds, would be \$200 billion annually in each category initially, going up to \$400 billion eventually. As the Chinese equity and bond markets expand and retail investors also begin to participate, we are looking at fund flows in trillions of dollars. It may be noted that only CGBs have been included so far. It is only a question of time before corporate bonds also get included. Standard and Poor's has been allowed to function as a rating agency inside China. Ratings of corporate bonds against international benchmarks will enable their inclusion in global indices and this will add to the volume of fund flow into the Chinese bond market. The setting up of a yuan-based oil futures exchange in Shanghai, leveraging the country's status as the world's largest oil importer is raising the currency's profile. Shanghai has emerged as the world's third largest oil futures market, overtaking Dubai this year.

China's UnionPay credit card is also helping raise the country's profile in international financial markets. UnionPay constitutes 58 per cent of all credit cards issued across the world and there are currently 7.6 billion UnionPay card holders. It is accepted in 174 countries. With Chinese making 150 million foreign trips each year and accounting for 20 per cent of tourism spending, acceptance of UnionPay has become indispensable for merchant establishments worldwide.

China set up its own international payment gate-

ways, but there was clear divergence over Washington's continuing peace talks with the Taliban. Mr Pompeo said: "We understand the concerns, too, that India has, rightful concerns that they have about terrorism emanating from Pakistan and we assured them that we would take that into account." On Iran, Washington urged New Delhi to back the "maximum pressure campaign", even though the US has already granted sanctions waivers for India-Iran cooperation in the Chabahar Port and connectivity project. The US side voiced "common fears" on the risks associated with Chinese 5G communication networks, while the Indian ministers remained silent on this.

There was more visible progress on the defence partnership. A clear achievement was the signing of an "Industrial Security Annex" (ISA) that will facilitate the flow of critical US defence technology to India. The ISA stipulates measures that Indian firms, including private companies, would need to take in order to protect sensitive US information and intellectual property, thus facilitating closer cooperation and collaboration between defence industries on both sides. The start of negotiation for ISA was announced during the first 2+2 dialogue in New Delhi in September 2018, which means it has taken just over a year to negotiate. This is a measure of growing comfort between the two sides, since the two earlier "foundational agreements" — the Logistics Exchange Memorandum of Agreement signed in 2016; and the Communications Compatibility and Security Arrangement signed last year — both took over a decade.

That leaves just a single "foundational agreement" to complete the military-legal framework that Washington requires for close defence cooperation — which is the Basic Exchange and Cooperation Agreement (BECA), which will streamline the sharing of geospatial intelligence between the US and Indian militaries, allowing for, amongst other things, better navigation and targeting. Vikram Singh, former deputy assistant secretary of defence for South and Southeast Asia who now advises the US-India Strategic Partnership Forum, says there was hope that BECA could be concluded early, but clearly areas of concern remain.

In the defence relationship, the two sides also announced the finalisation of three agreements under the Defence Technology and Trade Initiative for co-developing and co-producing critical technologies. Also announced was the completion of a hotline between the two sides' defence ministers, a link between the navy headquarters in Delhi and US Indo-Pacific Command (USINDOPACOM) in Hawaii and the posting of an Indian naval officer at the US Naval Forces Central Command (NAVCENT) in Bahrain. With the two sides cooperating closely in tracking Chinese submarines in the Indian Ocean, the cross posting of officers will help in coordination. It was also agreed that, with the Indian Navy's "area of interest" including the West Asian and East African littorals, senior US officers from Central Command (USCENTCOM) and Africa Command (USAFRICOM) should participate in joint training and patrolling.

Even as discord over US-India trade and commerce colours diplomatic relations, defence relations between the two countries remain on a firm footing. Traditionally, as in the case of Pakistan, the Pentagon has been guided by alliance and security partnership concerns, rather than human rights, political and religious freedoms. But India would do well not to test this tolerance and to return to the values that have brought it influence and admiration in the international arena.

way, the Cross-border Interbank Payment System (CIPS) in 2015 on the lines of the Brussels-based SWIFT. Currently, CIPS is cooperating closely with SWIFT, but the ultimate aim is to emerge as an alternative global payment and settlement system. There are 31 participants, including 12 international banks, and 745 indirect participants associated with them, which take part in CIPS. In 2018, CIPS handled \$755 billion in cross-border yuan settlement business. This is minuscule compared to the SWIFT processing of \$6 trillion daily, but is rising rapidly. Its use is being helped by the US using SWIFT to exclude countries under its sanctions such as Russia and Iran. Russia has set up its own System for Transfer of Financial Messages, which operates among the Eurasian Economic Union countries and has Chinese banks as participants. It has been reported that India, China and Russia are discussing the setting up of a trilateral payments gateway independent of SWIFT in order to avoid being targeted by US sanctions.

Finally, China is moving towards the launch of a sovereign digital currency based on blockchain technology, though details are unclear. Since over 70 per cent of all transactions in China are already digital this is not a far-fetched idea. This is being linked to another parallel plan to create an "Asian Yuan". A Chinese economist Sun Mingqi spells out the strategy, "The short-term goal is to create the 'Greater China Renminbi' by internally integrating the Hong Kong dollar and the New Taiwan dollar. The medium-term goal is to build the Asian Yuan system in cooperation with the Japanese yen, the Republic of Korea won and other Asian currencies to establish a 'three-legged system' consisting of the US dollar, the euro and the Asian yuan under the global currency system. The ultimate goal is to establish an ideal, digital, decentralised or non-sovereign global currency based on each country's economic strength and trade value."

And if China is already off the mark with its digital currency, who will the future belong to when this ultimate goal is achieved? And where does all this leave India which is now reduced to gazing angrily at its turbulent navel?

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