

# Investing in quantum computing

Research has led to new understanding about exotic materials and the nature of quantum entanglement. But commercial viability will take time



## QUANTUM LEAP

DEVANGSHU DATTA

Quantum computing has promised much, and absorbed enormous resources, without delivering a great deal in practical terms yet. However, the rationale for investing in research remains impeccable.

In theory, a quantum computer could work much faster than any classical computer, enabling it to tackle currently impossible problems. In practice too, advances in quantum computing have equated to better understanding of many

scientific phenomena.

The engineering problems are formidable. Superposition and entanglement are at the heart of quantum computing. At the quantum level, a particle can be in two states at the same time (or rather, it has probabilities of being in two states — this is “superposition”). Particles can be entangled, which means that a change in the state of one particle instantly causes corresponding change in the state of its entangled twin, even at a distance.

These two fundamental qualities offer the potential to make quantum computers work faster. Classical computers like your PC, or smartphone, work on binary principles with circuits switched on or off using “logic gates”. A quantum can be switched on and switched off, both at the same time, due to superposition.

Hence, while one classical bit can have either the value 0 or a quantum bit, or qubit can have both values at the same time. A 2-qubit circuit can be in four possible states of superposition at a given moment, whereas a 2-bit circuit can be

in only one of those four states. So a large qubit processor can process exponentially more information than equivalent classical circuits.

As the Boston Consulting Group (BCG) says, “Modeling the structure of penicillin, which has 41 atoms at ground state, requires a classical computer with 1086 bits, which is more transistors than there are atoms in the observable universe. Such a machine is a physical impossibility. But for quantum computers, this requires a processor with 286 logical qubits.”

However, every time quantum output is measured, it breaks down (“decoheres”) into a single measured state. To hold an entangled qubit circuit together requires a lot of work, since even small external disturbances causes coherence to break. Also quantum computers generate huge amounts of data, and a lot of error correction is required.

Currently, qubit chips are sealed in vacuum boxes and cooled to nearly absolute zero temperatures, which is only possible in tightly controlled lab envi-

ronments. They even have to be shielded from vibrations since footsteps can destroy coherence.

Computer scientists use “logical” qubits as the basic “currency”. A logical qubit can run two superposed states. It could consist of several physical qubits, or superconducting circuits that model the state of an atom. Indeed, a classical computer may simulate a quantum machine by imposing a structure of logical qubits on top of classical circuits. This is often done to test quantum algorithms.

There have been steady advances. Google’s Bristlecone is a 72-physical qubit processor, currently the world’s largest. The University of Science and Technology of China has demonstrated 18 Qubit entanglement. A research team from the University of New South Wales (Sydney) has dramatically improved processing speed in a 2 Qubit gate, by embedding phosphorus atoms in silicon.

To achieve “quantum supremacy” that is beat classical computers at solving problems, more breakthroughs are necessary. It’s generally assumed that a stable 50 logical qubit processing power is the minimum required to achieve supremacy. To calculate large molecules or run an AI Machine-learning algorithm

could take much more, perhaps a 1,000 logical qubit machine. Breaking standard RSA 2048 encryption could take a 4,000-qubit machine.

Another issue is noise. A large qubit register could, in theory, produce more data than the Large Hadron Collider and a lot of that data would consist of errors, which would need corrections. Programming quantum algorithms is also more complex than alphas for conventional machines. Even loading large amounts of data onto a quantum machine is a tricky problem.

The BCG recently came up with a set of projections. It believes that productivity gains from quantum computing will surpass \$450 billion annually. But “it will be a slow build for the next few years: we anticipate value for end users to reach a relatively modest \$2 billion to \$5 billion by 2024”. Value will then increase rapidly as the technology matures. The benefits will be uneven and disproportionately favour early adopters.

Quantum computing could revolutionise sectors such as drug design, network optimisation (ride hire companies, airlines, railways), supply chain management, portfolio management, weather and climate change predictions, and encryption/decryption methods. Research has led to new understanding about various exotic materials and the nature of quantum entanglement. But commercial viability will be a while coming.

# Gas connectivity: Poised for take-off

City Gas Distribution now complements the massive utilities delivery networking infrastructure sweeping across India



## INFRA TALK

VINAYAK CHATTERJEE

Bharat Net project, launched in 2011, is the National Optical Fibre Network to provide connectivity to all 250,000 gram panchayats. The Saubhagya project seeks to provide electricity connections to all households. As of mid-2019, Nal Se Jal (water from pipes), rechristened Har Ghar Jal (water for every household) commits to provide water connections to all households in the country by 2024.

Less talked about, but equally impactful, the City Gas Distribution (CGD) initiative joins the massive utilities delivery networking infrastructure now sweeping rural and urban landscapes, and transforming the lives of millions of Indians.

CGD is the great infrastructure story of the last decade that did not quite happen the way it was supposed to. Whether in the form of piped supply to households, or compressed natural gas (CNG) refuelling stations, it remained restricted to a few large cities. Even in such cities,

such as Delhi, it has not been able to make a decisive mark. It has always played second fiddle to the more politically relevant liquefied petroleum gas (LPG), with much attention on the government’s Pradhan Mantri Ujjwala Yojana (PMUY) flagship scheme to distribute subsidised LPG cylinders to economically weaker households.

But the CGD initiative, using CNG, is now poised for take-off. After years of lacklustre movement, the last two rounds of bidding for geographical areas or GAs (similar to telecom circles) saw markedly better response, following a series of changes to the way the CNG auctions were designed. As of February this year, the regulator, the Petroleum and Natural Gas Regulatory Board (PNGRB) has bid out a total of 228 GAs around the country covering around 70 per cent of the population.

It is the overall commitments made by winners of the various GAs that is revealing. Starting from April 2020, and up to 2029, winners have promised to deliver over 2 million piped gas connections per year, a total of 3,500 CNG stations across the country, and 58,000 km of pipelines. The overall aim is to raise the share of natural gas in the overall energy mix from 6 per cent to 15 per cent by 2030 (the global average is currently 24 per cent). India imports around 45 per cent of its requirement — a big plus for CGD is that it has first claim on supplies.

It has not come a moment too soon. The PNGRB was set up in 2007. Since its inception, it had been locked in legal

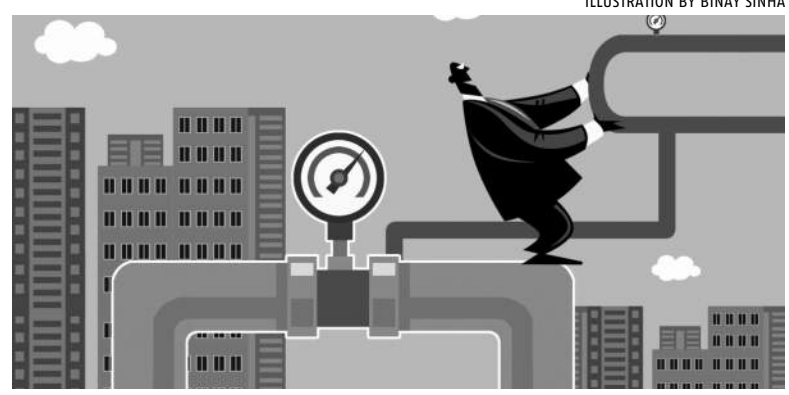


ILLUSTRATION BY BINAY SINHA

tussles with different stakeholders in the sector. Then came a whole slew of problems around the bidding out of GAs. The first couple of rounds of bidding drew muted response from the private sector. Then, in rounds 4-6, the pendulum swung the other way, toward a problem that has been all too common in Indian infrastructure — aggressive bidding. Bidders started bidding tariffs that were irrationally low. When this happens, it only results in bidders returning later to renegotiate the terms of their contracts, further litigation and NPAs. Then came a prolonged period where PNGRB Board slots remained unfilled, putting a further dampener on any expansion in the sector.

Once the new board was reconstituted, the PNGRB got its act together. New norms set a minimum tariff to discourage unviable bids and assessed bids on the promise to create greater levels of infrastructure. The rules also capped the

amount of performance bank guarantee that could be offered — companies in earlier rounds competed to offer ever higher levels of bank guarantee in an effort to win the bid, regardless of the actual bid quality. To sweeten the deal, the PNGRB also extended the marketing exclusivity period from five to eight years for winning bidders in their respective GAs.

Thereafter, 2018 was, in many ways, a breakthrough year. In May 2018, the biggest CGD licensing round (round 9) offering 86 GAs in 174 districts was announced. This round received a good response from both domestic and global players. Over 400 bids were received for all the 86 GAs. On November 22, 2018, the foundation stones were laid for CGD projects in 65 GAs covering 129 districts. Bidding for the tenth round was announced for 50 GAs in 124 new districts, which subsequently closed in February 2019 with

substantial investor interest.

The 10th round itself expects investments of about ₹50,000 crore. Overall, investments of over ₹1.5-₹2 trillion are envisaged in the next decade with over 40 private and state-owned companies vying for a share of the action.

Roll-out of CGD operations have commenced in Daman & Diu, Bhubaneswar, Dadra & Nagar Haveli, Kutch (West), Amroli, Dahod, Dahej-Vagra and Jalandhar cities. A slew of fresh authorisations have also been granted to new GAs.

For much of the CGD promise to be fulfilled, implementation is key. Coordination between central and state governments, city municipalities, the regulator and private sector stakeholders is critical. In spite of the renewed rush of adrenalin, concerns remain. They relate to high execution challenges in rolling-out the mother-pipeline network, the huge capital expenditures required, high cost of providing the ultimate last-mile connectivity, and finally at the customer end, penetration and cost-effective and sustainable O&M frameworks. Urban conglomerations in hilly terrain and in the north-east will require special attention.

All done and dusted, the build-out of a giant city gas distribution network will have as important an impact on the economy as the Golden Quadrilateral roads project did, and will transform the way Indians will live, just as electricity and water connections have sought to do.

The author is chairman, Feedback Infra

## INSIGHT

# The structure of asset sale



JYOTI MUKUL

One of the explicit messages from this year’s Budget has been that the government would depend on private sector investment in more ways than one to support its growth agenda. Apart from expecting private investment in infrastructure and manufacturing, the government, for its own revenue, expects institutions and retail investors to pitch in with as much as ₹1.05 trillion by buying stake in public sector undertakings (PSUs). These will be outright sale of equity either in the stock market or through strategic sale.

This is just one side of the disinvestment programme, the other being letting go some of the assets that have been created by the PSUs. This forms part of the larger privatisation programme where money is realised through sale of pipelines, manufacturing units, transmission lines, land and other tangible assets of government-owned companies. Proceeds thus realised are proposed to be used for further investment by PSUs. This in true sense will be a monetisation programme.

Apart from outright sale, the other way of monetisation is to house the assets in infrastructure investment trust (InvIT) which ensures that costs, including debt, incurred on their creation moved from the balance sheet of a company to that of InvIT. Equity in the InvITs thus created could be

offered to other investors. The PSU earns a return from the cash flows of these InvITs.

An alternative scenario is where the proceeds from sale flows to the government though it is not clear how it will be counted as government revenue, unless PSUs are asked to transfer as much through special dividends, in which case the company itself will not retain the cash. In such a case, the entire exercise cannot be called monetisation. It will be an outright sale for the benefit of government revenue. PSUs have nothing to gain from such an exercise but run the risk of losing revenue if the assets indeed are profitable and not a liability.

A vital question for the government, however, is whether it wants to pursue both equity disinvestment in PSUs and asset sale, simultaneously, and

whether one company can figure in both these programmes. In one of the post-Budget interactions, for instance, Atanu Chakraborty, then disinvestment secretary, said ONGC was on the list of disinvestment ministry where the government would want to give up control by reducing its holding to less than 51 per cent. At the same time, a monetisation process is underway for ONGC wherein its 64 oil and gas producing fields with total in-place reserves of about 300 MMTOE have been put up for bidding. Though this monetisation is based on a revenue-sharing model, to some extent putting these fields in a different basket, while divesting equity in the company, will translate to value erosion for shareholders.

In other words, if the very company that is sought to be divested under-

takes monetisation of assets alongside, that company will certainly be valued lower. Besides, future earnings for that company would be subject to the impact of such monetisation.

It has been reported that the government expects ₹3 trillion to come in through the monetisation programme. The private sector parallel is already available with even groups, like Reliance Industries Ltd and GMR, either looking to divest or getting in financial investors into their specific assets like pipelines and roads. Private sector companies, in fact,

have been pursuing monetisation for the past few years though their reasons are more to do with debt reduction than fresh investment.

The NITI Aayog is believed to have carved out a list of such assets while the department of investment and public asset management (DIPAM) has issued expression of interest for appointing consultants for transaction advisory services for monetisation of land assets.

On their part, some action by PSUs has already been taken. Companies, like Steel Authority of India, have gone ahead and sought expression of interest for some of its units even after running the risk of employee resistance. Even loss-making PSUs, like BSNL and MTNL, have leased out 13,051 and 392 mobile tower sites to private telecom companies.

Whatever be the structure of asset sale, it is important that instead of Dipam and NITI Aayog driving the monetisation programme to fulfil the government intention of getting more private money, PSUs themselves draw out company specific strategy where their corporate vision is the sole determinant.

## LETTERS

### Industry needs a push



Apropos your front page report, “Passenger vehicle sales plunge 31%, steepest in two decades” by Arindam Majumder (August 14); the 31 per cent drop in car sales is a harsh wake-up call for both the government and the industry. The fortune of the auto industry is usually a good indicator of the overall health of the economy because it has a deep connect with several other sectors, both in manufacturing and services. The auto industry, being a big job creator, has added to the woes and has spread the sentiment of gloom all around.

The accompanying chart, “Accelerating decline”, shows a major slide during FY19 in the sales of commercial vehicles as well as two- and three-wheelers. This makes the situation much worse. The Society of Indian Automobile Manufacturers (SIAM) is right in raising an alarm. The Automotive Component Manufacturers Association of India has already raised the issue on several occasions and, I am sure, it will have to say far more in its forthcoming annual session.

Some companies expect a turnaround in the next fiscal but SIAM Director General Vishnu Mathur sounds more realistic when he says “you can never say this is the worst”. I doubt that festival sales this year will perk up despite the big discounts most auto manufacturers are bound to announce. Only holistic measures to give a push to

industry as a whole — badly needed at this stage — will change the fortunes of the crucial auto industry.

Krishan Kalra Gurugram

### All for a cause

This refers to “CSR panel wants non-compliance a civil offence” (August 14). The purpose behind the introduction of corporate social responsibility (CSR) is to blend corporate functioning with social development. If corporations compel themselves to adhere to section 135 of the Companies Act to fulfill a compulsory legal requirement to avoid punitive measures arising out of non-compliance, they will only squander their finances. They might not consider the wider social implications of the expenditure. The in-built fear creates psychological hurdles in carrying forward social development measures leading to unplanned development activity.

The emphasis under CSR is as much on social development as on allocation of funds. When the fear of penalty is not there, corporates will be able to play a more active and planned role to fulfill their moral obligation of social development. Their sense of responsibility to ensure proper use of their financial contribution towards social development coupled with third party assessment of performance will reinforce the objective behind CSR — of ensuring progressive social development.

Innovative suggestions for the execution of socially beneficial projects will ensure policy level implementation of CSR. Investment in social benefit bonds

in addition to obtaining support from specialist institutions identifying areas for social development will ensure efficiency in the enforcement of CSR. Replacing criminal responsibility with civil ones will ensure there is greater willingness from corporates to achieve a social objective.

C Gopinath Nair Kochi

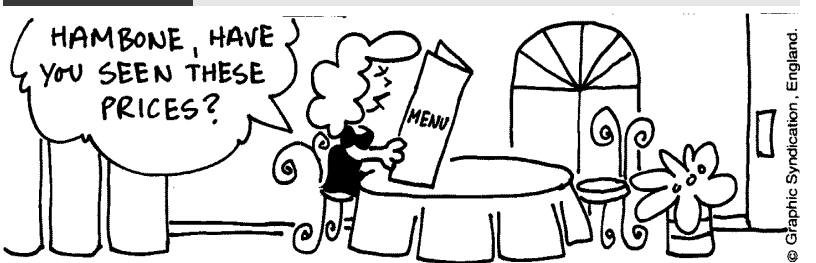
### A fitting tribute

This refers to “The Jagannath road” by Bibek Debroy (August 14). It just goes to show the genius of the workers, engineers, thinkers and the thoughtful and generous people who created the miracle of a 261-mile road with, hold your breath, 816 bridges. It took seven years for the road to be completed. How many vagaries of weather those workers must have braved! It would be ideal if the Films Division of India makes a film on this important link — Jagannath road. We have made great progress in recent years in terms of construction of roads and highways and it will be difficult to find any traveller who wouldn’t give a thumbs up to our achievements in this regard. The Pradhan Mantri Gram Sadak Yojana, for instance, is a great step. Those who have travelled to villages on these roads will know what a relief it is.

N K Bakshi Vadodara

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## HAMBONE



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## Minimum government

Govt needs to walk the PM's talk

Prime Minister Narendra Modi's Independence Day speeches from the ramparts of the Red Fort have typically been ones where he elucidates his government's policy directions, and also defends the measures it has taken. The 2019 speech was no different, although there were not many announcements on policies — apart from the long-delayed creation of a chief of defence staff. Some aspects of Mr Modi's speech stood out, however, and deserve greater attention than others. In one such section, the prime minister said: "I often ask my officers: Why cannot the government reduce its interference in the lives of the common man?" This is a throwback, perhaps, to his long-ago promise — before his first election in 2014 — of "minimum government, maximum governance". The prime minister's question to his officers needs to be seen in the context of the other measures he discussed in his speech and his government's broad welfarist strategy. It is correct that the role of the government needs to be reduced in India, but it also needs to be available where and when needed. Typically, it has tried to do too much, but has failed to perform its core tasks with competence.

The basic role of any government is to provide law and order and to create and support a structure that permits individual aspirations. This can be seen as the provision of market-supporting institutions and promoting the ease of doing business. Every step beyond that basic role is one that should be closely justified by examining whether the government is capable of carrying it off effectively and whether it would lead to undue interference in "the lives of the common man". The intent of the prime minister is clear from the fact that he also mentioned in his speech how the government had scrapped many antiquated laws. As a broad guideline for policy action, the prime minister's question cannot be bettered. However, it is also true that many recent measures have not fitted this vision. India's improved ranking in terms of the ease of doing business notwithstanding, recent tax and other policy actions have, in fact, made the business environment more difficult. The prime minister is perhaps putting his questions to a wrong audience — his officers will always have a bias towards increasing their power at the expense of the common man or ordinary business.

In his first Independence Day speech in 2014, Mr Modi had spoken of the need to promote manufacturing, which became his signature "Make in India" initiative. In this speech, too, he made many right noises about support for wealth creators, and the need to promote exports and domestic manufacturing. "Make in India" and exports growth, however, have seen only lacklustre success at best. In fact, exports are in some ways worse off than in 2014. This is linked to the government's failure to properly implement the "reduction in interference" that the prime minister spoke of. Success in manufacturing and exports will need solid and sustainable improvements in competitiveness — essentially a real focus on the ease of doing business, rather than increasing state power in the economy and over entrepreneurs. The government will need to fundamentally alter course if Mr Modi's stated vision is to be a real road map for the future.

## Responding to floods

India needs a holistic approach

At the beginning of his Independence Day speech, Prime Minister Narendra Modi expressed grief on the loss of lives because of floods in various parts of the country and acknowledged the hardship being faced by people in those regions. He also highlighted that all efforts were being made by government agencies to bring normalcy. So far at least 225 people have died in states such as Karnataka, Maharashtra, Gujarat, and Kerala, and millions have been displaced. Floods have affected over 8.8 million people in Bihar. About 300,000 people are reported to have been taken to relief camps in Kerala. The state had suffered substantial damage even last year in what was termed as once in a century calamity.

While the intensity of floods may differ in various regions in different years, the broader story is repeated almost every year. First, parts of the country struggle for survival with a severe shortage of water in the summer months. For instance, Chennai made headlines this year because of water shortages and it could be just a matter of time before other cities face a similar fate. But, as the calendar shifts to monsoon months, large parts of the country are exposed to floods. The government does its bit before moving on to some other pressing issue. The same story is repeated every year with unflinching regularity. In fact, things could get worse in coming years if corrective measures are not taken straightaway.

There are two broad reasons for the recurrence of natural disasters such as floods. First, the changing weather pattern is affecting the quantity and distribution of rain. Even this year, the rainfall was in deficit the initial period before recovering significantly in recent weeks. Second, unplanned development is putting enormous stress on the ecosystem. The encroachment on water bodies and deforestation for development not only affect the natural carrying capacity of the system but also reduce the possibility of groundwater recharge. India needs to work on improving the system of water management, so that the excess in some period and deficit in others can be addressed. Mr Modi in his speech rightly highlighted the need for grassroots level involvement in the conservation of water. Better management of water will reduce instances of floods to a large extent and help accomplish the mission of providing water to all households.

At a broader level, India will need to work with a holistic approach to minimise the impact of extreme weather conditions. Among other things, agriculture would be severely affected because of changing weather patterns. Therefore, it is important to revisit the nature of development in both urban and rural areas and find ways to protect the environment. Since this will take a long time to yield results, in the short run, it is important to improve the state capacity to fight extreme weather challenges like floods. The silting of riverbeds and the reduction in the carrying capacity of river channels need focused policy attention. The forecasting system has improved significantly in recent years and should be used more effectively to save human lives. Naturally, this will require better coordination between the Centre and state governments along with adequate allocation of resources.

## The CDS is now a reality

Integral to the Chief of Defence Staff concept is the placement of operational theatre commands under his charge

In a *Business Standard* column less than a month ago on weaknesses in our defence, I concluded by saying that in about two decades of discussing and debating, previous governments had not been able to decide on the need to have a Chief of Defence Staff (CDS). I had gone on to mention that only the present prime minister had the chutzpah and ability to take such a decision by overriding opposition as he had done for demonetisation. This belief has now turned out to be justified. From the ramparts of the Red Fort, no less, Prime Minister Narendra Modi declared on Thursday that India would have the CDS. He further said this would help in integrating the armed forces consistent with the needs of the time.

It is now well known that following the Kargil War, a committee (KRC) headed by the late K Subrahmanyam was constituted by the Vajpayee government to review the entire security apparatus. The KRC made several recommendations, of which an important one concerning higher defence management was to create the CDS. Following this, a group of ministers (GoM) headed by the deputy prime minister was appointed. The group, in turn, constituted four task forces covering different aspects of national security. One of these was on higher defence management, chaired by

former minister of state for defence Arun Singh. This writer was the only retired member of this group, the other eight being serving civil and military officers.

The Arun Singh committee, as it became known, conferred with a wide spectrum of senior civil and military persons, serving and retired. These included six defence secretaries and as many as 17 former chiefs of the three services as also those who had occupied high positions in defence research and development and production. There was considerable interaction with service headquarters and the ministry of defence, as also with the other three task forces dealing with intelligence, border management, and internal security; all these three comprised only retired officials who had held high decision-making positions in government.

Taking just four months, these groups presented their proposals to the GoM at a meeting at which I was present and, as I recall, all of those made by the Arun Singh task force in regard to higher defence management were accepted by the GoM and became part of its recommendations. The most important of these was the creation of the chief of defence staff.

At this stage, it may be pointed out that all the air



PREMVR DAS

## Trump's deficit economy

In the new world wrought by US President Donald Trump, where one shock follows another, there is never time to think through fully the implications of the events with which we are bombarded. In late July, the Federal Reserve Board reversed its policy of returning interest rates to more normal levels, after a decade of ultra-low rates in the wake of the Great Recession. Then, the United States had another two mass gun killings in under 24 hours, bringing the total for the year to 255 — more than one a day. And a trade war with China, which Trump had tweeted would be "good, and easy to win," entered a new, more dangerous phase, rattling markets and posing the threat of a new cold war.

At one level, the Fed move was of little import: a 25-basis-point change will have little consequence. The idea that the Fed could fine-tune the economy by carefully timed changes in interest rates should by now have long been discredited — even if it provides entertainment for Fed watchers and employment for financial journalists. If lowering the interest rate from 5.25 per cent to essentially zero had little impact on the economy in 2008-09, why should we think that lowering rates by 0.25 per cent will have any observable effect? Large corporations are still sitting on hoards of cash: it's not a lack of liquidity that's stopping them from investing.

Long ago, John Maynard Keynes recognised that while a sudden tightening of monetary policy, restricting the availability of credit, could slow the economy, the effects of loosening policy when the economy is weak can be minimal. Even employing new instruments such as quantitative easing can have little effect, as Europe has learned. In fact, the negative interest rates being tried by several countries may, perversely, weaken the economy as a result of unfavourable effects on bank balance sheets and thus lending.

The lower interest rates do lead to a lower exchange rate. Indeed, this may be the principal channel through

which Fed policy works today. But isn't that nothing more than "competitive devaluation," for which the Trump administration roundly criticises China? And that, predictably, has been followed by other countries lowering their exchange rate, implying that any benefit to the US economy through the exchange-rate effect will be short-lived. More ironic is the fact that the recent decline in China's exchange rate came about because of the new round of American protectionism and because China stopped interfering with the exchange rate — that is, stopped supporting it.

But, at another level, the Fed action spoke volumes. The US economy was supposed to be "great." Its 3.7 per cent unemployment rate and first-quarter growth of 3.1 per cent should have been the envy of the advanced countries. But scratch a little bit beneath the surface, and there was plenty to worry about. Second-quarter growth plummeted to 2.1 per cent. Average hours worked in manufacturing in July sank to the lowest level since 2011. Real wages are only slightly above their level a decade ago, before the Great Recession. Real investment as a percentage of GDP is well below levels in the late 1990s, despite a tax cut allegedly intended to spur business spending, but which was used mainly to finance share buybacks instead.

America should be in a boom, with three enormous fiscal-stimulus measures in the past three years. The 2017 tax cut, which mainly benefited billionaires and corporations, added some \$1.5-2 trillion to the ten-year deficit. An almost \$300 billion increase in expenditures over two years averted a government shutdown in 2018. And at the end of July, a new agreement to avoid another shutdown added another \$320 billion of spending. If it takes trillion-dollar annual deficits to keep the US economy going in good times, what will it take when things are not so rosy?

The US economy has not been working for most Americans, whose incomes have been stagnating —



JOSEPH E STIGLITZ

force chiefs with whom we interacted objected vehemently to the CDS concept, saying that this would adversely affect the ethos and fighting efficiency of the services. In the bureaucracy of the ministry of defence, there was negativity because there was a sense that it would act to the detriment of their own role in decision making. Treading these turbulent waters, Arun Singh had to make calibrated recommendations. Our group, therefore, proposed that the CDS should handle all planning, doctrine, and force development functions, and also oversee Intelligence, leaving the individual service chiefs with control of operations. It was felt that with the passage of time the spectrum of his control would be readjusted. This was a major compromise which still did not succeed in getting past the then prime minister, who, as quoted in a recent book by then naval chief admiral Sushil Kumar, ended the meeting by saying "iske baare mein aur sochna parega". This is where the matter has been for the past 18 years. Mr Modi has caught this bull by the horns and all kudos to him for doing so.

But this is not the end, only a beginning. The prime minister mentioned that all major armed forces — he specifically referred to the US — have the CDS. Yes, indeed, but the CDS in that country and most others — the UK, France, Russia, China, to name only four — does not oversee planning and force development, which are left to individual service chiefs, but controls operations. This makes sense because that is where being joint and integrated, both stressed by the prime minister, is essentially required. It is only in Pakistan that the CDS handles these important but mundane tasks, but the chiefs, mainly that of the army, who call the shots. It is not surprising that most of India knows the name of the Pakistan army chief but not that of the CDS. Hopefully, our CDS-to-be will not be placed in that category. So, even as the decision to create the CDS was bold, coming as it did in the face of quite a serious opposition, one hopes the position will not become a merely ornamental one and carry with it the authority and punch that it must have. Only control of operations can provide both. One can be certain that this change will be resisted by the service chiefs, who will see it as encroachment on their turf but, as I have said, the prime minister has the chutzpah to deal with them.

Integral to the CDS concept is the placement of operational theatre commands under his charge. Between them the army, navy and air force have as many as 12 of these, to which should be added the Andaman and Nicobar command and strategic command with two more reportedly in the pipeline. Having quoted the American example of working their higher defence management, we should also go that way. The existing method of functioning has long been overdue overhaul and a great opportunity has come our way to set this house in order. And, if one sensed the prime minister right, he will ensure he walks the talk.

The writer was member of the Task Force on Higher Defence Management. He has also served on the National Security Advisory Board

or worse — for decades. These adverse trends are reflected in declining life expectancy. The Trump tax bill made matters worse by compounding the problem of decaying infrastructure, weakening the ability of the more progressive states to support education, depriving millions more people of health insurance, and, when fully implemented, leading to an increase in taxes for middle-income Americans, worsening their plight.

Redistribution from the bottom to the top — the hallmark not only of Trump's presidency, but also of preceding Republican administrations — reduces aggregate demand, because those at the top spend a smaller fraction of their income than those below. This weakens the economy in a way that cannot be offset even by a massive giveaway to corporations and billionaires. And the enormous Trump fiscal deficits have led to huge trade deficits, far larger than under Obama, as the US has had to import capital to finance the gap between domestic savings and investment.

Trump promised to get the trade deficit down, but his profound lack of understanding of economics has led to it increasing, just as most economists predicted it would. Despite Trump's bad economic management and his attempt to talk the dollar down, and the Fed's lowering of interest rates, his policies have resulted in the US dollar remaining strong, thereby discouraging exports and encouraging imports. Economists have repeatedly tried to explain to him that trade agreements may affect which countries the US buys from and sells to, but not the magnitude of the overall deficit.

In this as in so many other areas, from exchange rates to gun control, Trump believes what he wants to believe, leaving those who can least afford it to pay the price.

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## The many personas of A K Ramanujan



BOOK REVIEW

SOURADEEP ROY

Reading A K Ramanujan's diary is like meeting the many personas of the same person. The persona is a concept he explains in one of his earlier essays, which appears as an "Afterword" to his translation of *Poems of Love and War* from classical Tamil. According to *Tolkappiyam*, the oldest book of grammar and poetics in Tamil, the speaker of an *akam* (a genre of poetry in classical Tamil referring to the interior, heart, household) is not an individual poet but a persona. The speaking voice in the

diaries, however, is certainly A K Ramanujan, known to the public world as a distinguished poet, translator, and linguist. Yet one of the things Ramanujan says about the speaker in an *akam* poem certainly applies to the "speaker" in this book: "The speaker seems to be half talking to herself, yet addressing a confidante. It is like a speech in a play."

The theatrical metaphor is apt for his diary: The reader is a listener of a play that Ramanujan narrates. The play: The theatre of Ramanujan's life. The form: Soliloquy. Ramanujan speaks and we, the readers, listen to him. It is because this book, a selection of Ramanujan's diaries, was published posthumously, without Ramanujan's explicit editorial eye. The result is that

the "confidant" is no longer Ramanujan himself but the wider reading public. In earlier diary entries, Ramanujan reveals that he was jealous of his peers who could act, and this was what prompted him to switch to writing. Reading this book, I couldn't help but wonder how Ramanujan would react to the accidental theatre that is this book.

The authorship of this book, however, does not solely lie with Ramanujan. The editors are his son Krishna Ramanujan and scholar Guillermo Rodriguez. The diary entries have been selected by them and interspersed with published or unpublished poems, some of the latter appearing for the first time in print. These selections have been annotated thoroughly.

The diaries also reveal how Ramanujan wanted to be perceived by the external world. For a person who is so specific about boundaries (in one place he says he cannot allow students into the private world of the household), he has famously described himself as the hyphen in the phrase Indian-American. Similarly, he is a poet, linguist, translator, folklorist, all at the same time, and expects to be seen that way. But the lines are also drawn. He says that Kannada does not interfere with his English when he is writing in English. But as the hyphen flows from one to another, boundaries are staked out.

Like all great writers, what Ramanujan's diary reveals is not restricted to himself. "It's too personal now, the 'I', not large and non-personal," he rebukes himself, and outlines his task: "To enlarge self without mysticism, pomposity, generality, etc". The

self he constructs, I'd argue, is a very Hindu self. In the poem, "Conventions of Despair", also included in this book, he says, "I must seek and will find my particular hell in my Hindu mind..." This is also perhaps why he chose to translate *Samskara*, U R Ananthamurthy's classic novel about the existential crisis of a Brahmin. The identity of the Hindu is a marker for much political talk these days, so it's even more important that we pay attention to Ramanujan. When he separates his sense of rootedness from patriotism — "This is no reversion to patriotism; patriotism is a primitive evil; I am thinking of a rooting of the cultivated mind" — he, perhaps unknowingly, makes a makes an important statement for our contemporary time.

The Hindu way of life is a recurring description in his poems. Everyday chores such as bathing (sometimes in the Ganges, a predominant image in some of his poems), and such realities as urine, human waste, gastronomic matters, and their association with his father, grandfather, and other members of fam-

ily are his ways of sketching a lineage for himself. Given that the economy of waste in the Hindu world order is also closely related to the caste system, Ramanujan's writing is also important for what it leaves out. His writings, or at least this selection from his diaries, appear to lack any self-awareness of the social systems of oppression the Hindu social order creates. Like the history of Hinduism itself, the diary is also important for its omissions. But Ramanujan also represents the best of what a "particular hell" the "Hindu mind" has to offer. Those who self-identify with the same word for political dividends are a far cry away from the possible meanings of that word.

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