Opinion

THURSDAY, JANUARY 2, 2020

CALL OF DUTY

Prime minister of India Narendra Modi

Creation of the Department of Military Affairs with requisite military expertise and institutionalisation of the post of CDS... will help our country face the ever-changing challenges of modern warfare

Now to fund the infra and get investors enthused

Govt wants a three-fold hike over FY13-17; need a dedicated infra-financing bank/FI and sweeping reforms across sectors

ON THE FACE of it, the government's logic for a ₹102 lakh crore infrastructure budget—the details were announced by finance minister Nirmala Sitharaman on Tuesday—is reasonably sound. In the past, the infrastructure-to-GDP spending used to be in the 7-8% range, so the government is looking at getting back to somewhere around those levels; indeed, the government is targeting a level of around 6.5% for the FY20-25 period, and while the prime minister's Independence Day speech had spoken of a ₹100 lakh crore infrastructure investment over five years, the plan outlined by the finance minister is over a six-year period. What is worrying, however, is that these are not normal times; not only has GDP collapsed in both real and nominal terms, the investment impulse, especially for large-gestation, and big capex projects, has diminished considerably.

Going by the government's own estimates, the infrastructure-to-GDP spend collapsed from 7.1% in FY08-12 to a mere 5.7% in FY13-17; indeed, in FY19, it was just around 5.3%; reviving that isn't going to be easy. And, the 6.5% infra-to-GDP projection of the government is based on nominal GDP growth recovering to 13.1% by FY25; if we take a more reasonable growth of 9% for FY20-25 versus the government's 11.5%, the infra-to-GDP target is a much higher 6.9%.

The numbers get even more worrying after this since, compared to the actual infrastructure spending of ₹36 lakh crore in FY13-17—the numbers for FY18-19 given by the government are estimates—the government is looking at almost trebling this over FY20-25; indeed, while the infra-to-GDP spending was 5.3% in FY19, the FY20 projection is 6.6%, though there has been no sudden improvement in the investment climate. Indeed, with stressed government finances—thanks to the huge shortfall in tax collections in FY19 and FY20—it is not even clear how the government is going to contribute the large share of infrastructure investment that is envisaged. The estimates made for annual infra-capex (₹13.6 lakh crore in FY20) require a 40% step-up in central government expenditure since the plan envisages the central and state governments pitching in 39% of the overall infra-spend each, and 22% by the private sector.

And, assuming both the government and the private sector have the ability to invest, even a 3:1 debt-equity ratio means debt of ₹75 lakh crore will be needed. In the past, when banks were funding this, they got into big asset-liability mismatches and it was seen that banks simply don't have the ability to lend much to infrastructure—in which case, the first item on the government agenda has to be a credible debt-raising plan. While fixing the bond market will take time, is the government going to set up a dedicated infrastructure-financing organisation and capitalise it adequately?

The government has been pragmatic in looking at a fairly low private-sector share of investment, but even getting this is challenging without sweeping infra-reforms. A fourth of the infra-spend is to be made in the power sector where, thanks to the failed Uday scheme, state electricity boards remain loss-making and strapped for cash; who will invest, or lend, till this isn't fixed? A fifth is to come from the roads sector, where, as per an *FE* report, from 85% in 2013, the share of the private sector in road awards is zero today; all the projects in April-November 2019 were EPC ones, where the private sector's role is just construction while the government spends everything. The story of telecom is well known, so it is just as well that the plan envisages just a 3% share from the sector. There are issues like the need for genuinely independent regulators—in power, the regulatory failure is near-complete—and clarity on whether contracts can be renegotiated when projects run into trouble; and, if this is to be allowed, will any government body have the ability to do so? If these issues are not dealt with soon, the ambitious plan won't amount to much.

Missing the forests

ISFR data masking harsher on-ground realities

THE LATEST INDIA State of Forest Report (ISFR)—these reports have come biennially since 1989—shows forest cover in India has improved by 3,976 sq km between 2017 and 2019. This should seem heartening given, today, this stands at 7.12 lakh sq km, up from 6.7 lakh sq km in 2005—that too, in the face of development needs compelling the diversion of forest land. But, while the area under 'moderately dense forests' shrunk from 3.3 lakh sq km to 3 lakh sq km, that under open forests has increased from 2.9 lakh sq km to 3.04 lakh sq km. Also, keep in mind that nearly 330 sq km of recorded forest area have been lost between 2017 and 2019—the absolute figure may seem small, but this means significant loss of reserved and protected forests. At the same time, the depletion in the northeastern states' forest cover is worrying given these are very old forests, and have greater carbon sequestration capacity.

The headline increase, however, could be masking the real loss. The rapid increase in forest cover, especially with a fair share of the gain being concentrated in the dense forests category (canopy density higher than 40%), is likely rooted in two factors. First, the Forest Survey of India has been using better satellite imagery with a 1:50,000 scale, compared to the 1:250,000 scale earlier. This means any area, even as small as 0.01 sq km, with a canopy density of more than 10% is captured as a forest; the earlier resolution meant land units under 0.25 sq km didn't get captured as forest. Thus, land that has been denuded of forest cover but did not get recorded as forest earlier because it fell below the 0.25 sq km threshold now figures in the ISFR as a "gain" in forest cover. Denuded forest land and non-forest land can be reforested, but that happens over decades, not years as the ISFR data would seem to suggest. Second, the tree canopy basis of identification doesn't differentiate between natural forests, plantations, orchards, or even palm groves. This means the loss in diversity doesn't get captured by the data. Thus, the growth in forest-cover could be attributed to fast-growing plantation trees like eucalyptus that are favoured in compensatory afforestation programmes.

ISFR 2019, for the first time ever, gives data for forest diversity, and 'plantations/trees outside forests' already account for nearly 9% of the total area under forests—making plantations the fourth largest group in the biodiversity classification. Plantation monoculture just makes the loss of forests worse. Also, given how the 15 of the last 18 years have been drought-years for Andhra Pradesh, and 60% of Karnataka reeled under drought in 9-11 years between 2001 and 2015, it is hard to see how the two states have performed so well in increasing forest cover. The forest data needs to reflect more of the ground reality instead of becoming a tool to lull the country into inaction on forests.

GhosnCASE

The former Nissan chief's shocking escape from Japan does his plea for justice no good

THE HOLIDAY SEASON didn't bring good tidings for Japanese authorities investigating former Nissan CEO Carlos Ghosn for financial misconduct. On Monday, they found Ghosn gone, having fled his Tokyo home, giving the slip to heavy manned and video surveillance. Once the toast of the automotive industry and held in high regard in Japan, Ghosn fell from grace when news of alleged financial misconduct broke in 2017; he was arrested in November 2018 upon his return to Japan from Lebanon, where he has now surfaced. While there is no watertight account of how Ghosn managed to pull off one of the sensational escape, Lebanese media reports are pinning it to a large musical case of the Gregorian band that performed at his house in Tokyo and flights from Japan to Istanbul and onwards to Beirut, and the French media is speculating on forged passports and complicity of Japanese officials. Whatever be the *modus operandi*, many media outlets concur that it was likely orchestrated by Ghosn's wife, Carole, who had earlier complained that Japanese authorities had denied her any access to, or communication with her husband.

Ghosn says he has escaped injustice and political persecution—to the shock of his defence team in Japan. While Japanese law heavily favours the prosecution, the fact that Ghosn, despite the outrage that followed the news of his alleged financial misconduct breaking, had made bail twice shows he may not be able to successfully argue his case for fleeing justice. More so, since he had professed faith in the due process, saying it would eventually prove his innocence. What *l'affaire* Ghosn—and *les affaires* Andersen, Mallya, and others—shows is that, sometimes, money can outsmart justice.

RAILWAY REFORMS

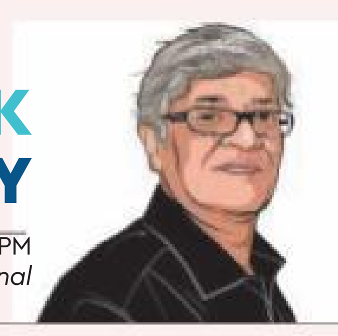
DEPARTMENTALISM PLAGUED THE MANAGEMENT OF THE RAILWAYS, THE RAILWAY BOARD REFORM ADDRESSES THIS

On the right track

BIBEK DEBROY

Chairman, Economic Advisory Council to the PM

Views are personal



ONE CAN QUIBBLE about Arthur Cotton and Red Hill Railroad, built in 1836. But, officially, the advent of railways is dated to April 16, 1853, when a train left Bori Bunder for Thane (then Tannah), with three steam locomotives (Sindh, Sultan, and Sahib) pulling it. "The railway-system will therefore become, in India, truly the forerunner of modern industry". This is something Karl Marx wrote, and most people are familiar with this quote. They may not remember where Marx wrote this and when. The piece was titled *The Future Results of British Rule in India*. He wrote it on July 22, 1853, though it was first published on August 8, 1853. In other words, Marx was probably aware of Bori Bunder to Thane. One can quibble about the way Indian Railways (IR) defines consequential accidents and related deaths. But, with that as a constant, 2019-20 is the first time in 166 years (counting from 1853) that there have been zero passenger deaths (so far). This is a vivid example of the modernisation that IR is going through. IR set up a committee to examine restructuring. This is often known as the Debroy Committee. It submitted an interim report in March 2015 and a final report in June 2015. These two reports listed more than 20 committees that preceded the Debroy Committee and took stock of their recommendations.

There was a terminal goal we visualised, as did others. There must be competition, and choice. With IRT (IR trains, for want of a better word) as a public service provider of railway transport services, there must be private sector entry, with a regulator (say, Development Authority). However, because of the way IR has historically evolved, one can't simply unbundle the existing IR the way railways have been unbundled in other countries (sometimes unsuccessfully). Instead, one divides the existing IR into a Railway Infrastructure Corporation (RIC), and the new IRT. RIC's common infrastructure is shared by both IRT and private sector providers. The regulator's role is not merely to set tariffs, but also to ensure fair competition (such as access to track) between IRT and private operators. The railways ministry sets broad policy, the regulator implements principles of competition determined by that policy, and the present Railway Board becomes a corporate board for IRT. Skipping the finer details, this was the terminal goal. As a Committee, we decided to focus more on the process, especially human resources and finance. Out of the 20-odd committees other than ours, the 1994 Prakash Tandon Committee explored HR in detail.

The key ingredients of our reform template were the following: Allow private entry, including in running private trains; change composition of Railway Board; decentralise decision-making to zones/divisions, and even further below; separate core functions of running trains from non-core functions like schools and medical services; set up a regulator; unify various railway services; transit to commercial accounting; and unify Railway Budget with the Union Budget. If one ticks boxes, for an organisation that is so old and somewhat resistant to change, it is remarkable that so many reforms have been introduced since 2014. Private entry has already been allowed, and other than royal tourist trains, Tejas Express is the first private passenger train, on pilot basis. The composition of the Railway Board has been recently announced, with the Board functionally pruned. Decentralisation of decision-making has been done. Separation of core functions from non-core ones is being implemented at a zonal level. Transition to commercial accounting has been completed at the zonal level, and the railway and Union budgets have been unified. Clear computation of social costs is a function of commercial accounting being done throughout the IR system. This leaves the regulator and unification of services. Recently, eight Group A services have been unified into the Indian Railway Management Service (IRMS). While details are awaited, this will presumably first be done prospectively, for new entrants. Retrospective application will always face more challenges.

> **If one ticks boxes, for an organisation that is so old and somewhat resistant to change, it is remarkable that so many reforms have been introduced since 2014**

As users of IR services, we often don't appreciate the silos that exist in IR. Think of a station. Who takes care of station amenities? Platforms, drinking water, toilets, waiting rooms, and over-bridges are the responsibility of civil engineering. Lights, lifts, escalators, fans, and water-coolers are looked after by electrical. Public address systems, departure boards, and train indicator boards are the responsibility of telecom. Reservation, and ticketing is with commercial (with IT thrown in). Everything on-board (including sockets, fans, and lights) is with mechanical. I did say drinking water is the responsibility of civil engineering. But, do remember, water-coolers are the responsibility of electrical. Within a station, there are tracks, platforms, places where passengers wait, toilets, and perhaps even trains that come in. These need to be cleaned. In one station I visited, I counted 17 different cleaning contracts. Have you wondered about the use of hot-cases on trains? Why not microwave ovens? When it was proposed many years ago, there was departmental wrangling between those who looked after electrical and those who looked after utensils, those who looked after procurement and those who looked after catering contracts. Silos, and not talking to each other, are common to many organisations. But, this is compounded by separate services with separate lines of accountability, and encadred posts for vertical mobility. In plain language, there are quotas, with posts reserved for specific services.

Departmentalism is worse than it was in 1950s. And much worse than it was in 1905, when the Railway Board was formed. However, the Railway Board went through a major change in 1951. It was time for another change in 2019, and HR reform feeds into that.

The economic crisis of 2020

The best that economists can do is to assess vulnerability. Looking at imbalances in the financial markets gives a sense of the potential consequences of a major shock

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Views are personal

PREDICTING THE NEXT crisis—financial or economic—is a fool's game. Yes, every crisis has its hero, who correctly warned of what was about to come. And, by definition, the hero was ignored (hence the crisis). But, the record of modern forecasting contains a note of caution: those who correctly predict a crisis rarely get it right again.

The best that economists can do is to assess vulnerability. Looking at imbalances in the real economy or financial markets gives a sense of the potential consequences of a major shock. It doesn't take much to spark corrections in vulnerable economies and markets. But, a garden-variety correction is wildly different from a crisis. The severity of the shock, and the degree of vulnerability matter: big shocks to highly vulnerable systems are a recipe for crisis. In this vein, the source of vulnerability that I worry about most is the overextended state of central-bank balance sheets. My concern stems from three reasons.

First, central banks' balance sheets are undeniably stretched. Assets of major central banks—the US Federal Reserve, the European Central Bank, and the Bank of Japan—collectively stood at $14.5 trillion in November 2019, which is down only slightly from the peak of around $15 trillion in early 2018 and more than 3.5 times the pre-crisis level of $4 trillion. A similar conclusion comes from scaling assets by the size of their respective economies: Japan leads the way at 102% of nominal GDP, followed by the ECB at 39%, and the Fed at a mere 17%.

Second, central banks' balance-sheet expansion is essentially a failed policy experiment. Yes, it was successful in putting a floor under collapsing markets over a decade ago, in the depths of the crisis in late 2008 and early 2009. But, it failed to achieve traction in sparking vigorous economic recovery.

Central banks believed that what worked during the crisis would work equally well during the recovery. That didn't happen. The combined nominal GDP of the United States, the Eurozone, and Japan increased by $5.3 trillion from 2008 to 2018, or only about half their central banks' combined balance-sheet expansion of $10 trillion over the same period. The remaining $4.7 trillion is the functional equivalent of a massive liquidity injection that has been propping up asset markets over most of the post-crisis era.

Third, steeped in denial, central banks are once again upping the ante on balance-sheet expansion as a means to stimulate flagging economic recoveries. The Fed's late 2018 pivot led the way, first reversing the planned normalisation of its benchmark policy rate, and then allowing its balance sheet to grow again (allegedly for reserve management purposes) following steady reductions from mid-2017 through August 2019. Asset purchases remain at elevated levels for the BOJ as a critical element of the "Abenomics" reflation campaign. And, the recently installed ECB president, Christine Lagarde, the world's newest central banker, was quick to go on the record stressing that European monetary authorities will "turn (over) each and every stone"—which presumably includes the balance sheet.

So, why is all this problematic? After all, in a low-inflation era, inflation-targeting central banks seemingly have nothing to fear about continuing to err on the side of extraordinary monetary accommodation, whether conventional (near zero-bound benchmark policy rates) or unconventional (balance-sheet expansion). The problem lies, in part, with the price-stability mandate itself—a longstanding, but now inappropriate, anchor for monetary policy. The mandate is woefully out of sync with chronically below-target inflation and growing risks to financial stability.

The potential instability of the US equity market is a case in point. According to the widely cited metrics of Nobel laureate economist Robert Shiller, equity prices relative to cyclically adjusted long-term earnings currently are 53% above their post-1950 average and 21% above the post-crisis average since March 2009. Barring a major re-acceleration of economic and earnings growth, or a new round of Fed balance-sheet expansion, further sharp increases in US equity markets are unlikely. Conversely, another idiosyncratic shock—or a surprising re-acceleration of inflation, and a related hike in interest rates—would raise the distinct possibility of a sharp correction in an overvalued US equity market.

The problem also lies in weak real economies that are far too close to their stall speed. The International Monetary Fund recently lowered its estimate for world GDP growth in 2019 to 3%—midway between the 40-year trend of 3.5% and the 2.5% threshold commonly associated with global recessions. As 2019 came to a close, real GDP growth in the US is tracking below 2%, and the 2020 growth forecasts for the Eurozone and Japan are less than 1%. In other words, the major developed economies are not only flirting with overvalued financial markets and still relying on a failed monetary-policy strategy, but they are also lacking a growth cushion just when they may need it most.

In such a vulnerable world, it would not take much to spark the crisis of 2020. Notwithstanding the risks of playing the fool's game, three "Ps" are at the top of my list of concerns: protectionism, populism, and political dysfunction. An enduring tilt toward protectionism is particularly troubling, especially in the aftermath of a vacuous "phase one" trade accord between the US and China. Prime minister Narendra Modi's "Hindu nation" crusade in India could well be the most disturbing development in a global swing toward populism. And, the great American impeachment saga takes Washington's political dysfunction further into uncharted territory.

Quite possibly, the spark will be something else—or, maybe, there won't be any shock at all. But, the diagnosis of vulnerability needs to be taken seriously, especially because it can be validated from three perspectives—real economies, financial asset prices, and misguided monetary policy. Throw a shock into that mix, and the crisis of 2020 will quickly be at hand.

LETTERS TO THE EDITOR

The year of democracy

2019 had ended with a hope that people of the country and across the globe could hardly remain mute spectators when they saw a grave danger and threat to the liberal and inclusive values defining the very idea of democracy from the rulers they have voted to power. Whether it be protests against the Citizenship Amendment Act in large parts of the country, with people from different walks of life pouring on to the streets, demonstrating their disenchantment with the attempts to accord citizenship on the basis of religion, or people coming under one roof to protect democracy in Hong Kong, the message is loud and clear, that rulers cannot easily ride a rough shod over the legitimate apprehensions of their own people in a democratic framework. While it is indeed heartening to see people raising their voices in unison to defend and protect the very defining values of a civilised and liberal society, emergence of right wing ideologues with their own polarising and divisive agenda, and their ascension to power both, evokes serious concern and underscores the challenges ahead to remain united and defeat them at their hustings.

— M Jeyaram, Sholavandan

FM's infra roadmap

Finance minister Nirmala Sitharaman unveiling an ₹102 lakh crore investment road-map to help achieve the target of a ₹5 trillion economy by 2025 comes on the back of decelerating economic growth, and core sector output shrinking. The funds would come from budgetary and extra-budgetary resources, as well as those raised from the market and the internal accruals of the relevant state-owned companies. One hopes that the significant investments planned in infrastructure projects will help produce the much-needed green shoots and perk up the wobbling economy.

— NJ Ravi Chander, Bengaluru

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FSR

Stability in sight

Although RBI's latest Financial Stability Report says that things have stabilised, one would have to be watchful and follow developments in the next 2-3 quarters, as external economic conditions will not be too ebullient, and banks, NBFCs and cooperative banks have to pay more attention to risk to strengthen their balance sheets and make them more resilient to shocks

THE RESERVE BANK of India's Financial Stability Report (FSR) is a cogent and comprehensive representation of the state of the financial sector which is brought out twice a year. It presents facts with explanations that are then iced with forecasts which point to how the regulator sees things going in the course of the year. The tone is firm without being judgemental, and it is left for the players to take necessary action to correct processes and ensure that the system is stable.

The latest FSR does indicate that the financial system has sort of stabilised, given the myriad challenges faced in the last couple of years, starting with the asset quality review (AQR) that affected public sector banks (PSBs) first, and later brought in some disruptive changes in private banks too. The good part of the story is that the NPA levels have stabilised at 9.3% (in September 2019), and, more importantly, the slippage ratio which is defined as incremental NPAs during the period under review has been stable for industry, which is a big plus. It indicates that on an incremental basis NPA accretion is moderate, and the overall NPA ratio indicates that the AQR issue is tackled almost completely. The NPA ratio has been stable for industry at 17.3%, and had risen for agriculture and services in September compared with March. The stability in the ratio for industry is indicative of the NPAs being fully recognised. In fact, the slippage ratio for industry at 3.8% is lower than that in agriculture and services.

The fact that the CRAR (capital to risk weighted assets ratio) has improved to 15.1% is reflective of a great deal of resilience built in the system, with substantial support coming from the government in the form of recapitalisation of PSBs. Only one bank had a ratio of less than 9%. Also, the provisions coverage ratio at 61.5% shows that the banking system has largely gotten out of the rather nasty phase that lasted for around three years. And most assuring, the FSR also says the network analysis shows that there was a marginal decline in the bilateral exposures between entities, which means that the interconnected risks across sectors have stabilised. Therefore, the big plus of the system in the last six months is that, notwithstanding the NBFC crisis and the Punjab & Maharashtra Co-operative Bank (PMC) controversy, the financial system is back on its feet.

RBI is, however, cautious in the future outlook, where it has projected an increase in the gross NPA ratio to 9.9% in September 2020. This does not really cause alarm, but raises the flag that the system may not yet be out of the woods. It is indicative of the fact that overall GDP growth till Q2 of FY21 may still be uneasy, and the acceleration that may have been expected next year would not be witnessed during the first half of the year. The current economic slowdown, which is flagged by RBI, is hence expected to increase the numerator and result in incremental NPAs. One must remember that even the retail segment is witnessing a slight uptick in the NPA rate, as the slowdown also affects the ability of individuals to service their debt. Also, while the SME NPAs are not going to be recorded as being impaired as of March 2020, the same would be recognised subsequently unless there is a new dispensation that defers such assets. Hence, this will be something to look out for as it can get problematic if the volume increases.

> Notwithstanding the NBFC crisis and the PMC fiasco, the financial system is definitely on the right path, but should tread cautiously as the economic cycle turns around

The second factor flagged is that the denominator will increase at a slower rate as credit is likely to be sluggish. This is an important and critical judgement as banks today have surplus liquidity that is not being deployed due to both lower demand and relatively some extra caution being exercised while lending. In a way, it is also reflective of the implicit view on future GDP growth that may not be significantly higher than the 5% expected in FY20, in FY21. The finance minister has subsequently assured bankers that there should be no fear in lending as it would be within the domain of banks to escalate cases to the investigative agencies in case of suspicion of wrong doing. It needs to be seen if bankers feel assured on this count.

An interesting outcome of the stable picture presented is the capital adequacy ratio of 15%. While it was necessary for banks to be well-capitalised to fund future growth, the CRAR is a delicately balanced concept. A low CRAR restricts lending, while a very high ratio means that banks are not making good use of their capital. This has happened as their balance sheets have not expanded through credit but investments in G-Secs, given the share of PCA banks—those under RBI's prompt corrective action—in the story. The focus must be on expanding credit in a judicious manner, or else it will not be an efficient use of capital. Quite clearly, banks must use their capital in lending, or else the purpose of dis-intermediation would be dented.

The other area of concern has been the non-banking financial companies (NBFCs), and here RBI is more cautious. The fact that funding to these institutions has been a challenge from markets as well as banks is well known. The asset-liability mismatch that engendered the crisis is being addressed gradually by NBFCs, which will help in stabilising the system. However, given that this would take time to work out, one may expect the situation to linger for a couple of quarters, and it is here that RBI has waved the flag again on the possibility of their NPAs increasing.

In this context, the FSR has also analysed the real estate sector and the exposures of financial institutions. Interestingly, it shows that PSBs have lowered their exposures to this sector, while that of private banks and housing finance companies (HFCs) have increased. But in terms of impaired assets being carried on their books of this sector, PSBs have the highest ratio of 19%! Quite clearly, the credit standards are different for various imitations when lending to the real estate sector.

Hence, on the whole, the FSR does say that things have stabilised, though one would have to be watchful and follow developments in the next 2-3 quarters, as external economic conditions will not be too ebullient and banks, NBFCs, cooperative banks have to pay more attention to risk to strengthen their balance sheets and make them more resilient to shocks. The financial system is definitely on the right path, but should tread cautiously as the economic cycle turns around.

THE WORLD IN 2020

What sci-fi can tell us about the future

Most science fiction is not predictive. Yet it can still be a guide to the future

IN '**HIGH GROUND'**, AN episode of '*Star Trek: The Next Generation*' first aired in 1990, a crew member of the starship *Enterprise* is taken hostage by separatists on the planet Rutia IV. As her colleagues discuss how best to respond, one of them draws an analogy with a conflict on Earth several centuries earlier—the Troubles in Northern Ireland—noting that they were ultimately resolved by "the Irish unification of 2024". As the 2020s dawn, the upheaval of Brexit means the prospect of Irish reunification no longer seems like science fiction. A poll in September 2019 found that a slight majority of voters in Northern Ireland were in favour of it. "We are still on track for the Star Trek unification timeline," one fan tweeted. It is a striking example of a specific prediction being made in a work of science fiction. But despite perceptions to the contrary, such forecasts are the exception, not the rule. Just because sci-fi is often set in the future does not mean it is intended to be predictive. More often it is a commentary on the present.

I, Asimov

In 2020 (which happens to be the centenary of the birth of Isaac Asimov, a sci-fi legend), can the genre tell us about the future nonetheless? Set aside the aliens and the spaceships, and much contemporary science fiction is concerned with themes such as the impact of artificial intelligence, the danger of ecological collapse, the misuse of corporate power and the legacy of imperialism. Since the sexual revolution of the 1960s, sci-fi writers have explored changing attitudes to gender politics—imagining, for example, future societies in which gender is irrelevant or people can change sex at will. Another vibrant subfield today is Chinese science fiction, which offers an outlet for subtle dissent, and gives Western readers a sense of the country's hopes and fears. In all these cases, sci-fi authors are using the freedom granted by the genre to consider present-day concerns and extrapolate them to mind-stretching conclusions.

All of which does have some predictive value. It means science fiction can play a useful role as a forward-scanning radar for technological, social and political trends—but in the near term, not the distant future in which it is often set. This is the first of three ways in which science fiction can provide a guide to the future.

The second is that it can help broaden the mind when assessing future scenarios for planning purposes, both in government and in business. France's Defence Innovation Agency is setting up a 'red team' of sci-fi writers to propose scenarios that might not have occurred to military planners. Arup, an engineering firm, commissioned Tim Maughan, a science-fiction writer, to create four scenarios of what everyday life might look like as a result of climate change. Neal Stephenson, the bestselling author of '*Snow Crash*' and '*Cryptonomicon*', has served as an adviser to Blue Origin, a rocket start-up, and Magic Leap, a firm developing augmented-reality glasses. Tech giants including Google, Microsoft and Apple have also employed sci-fi writers as consultants, using a process sometimes called 'design fiction'.

But bosses do not need to hire sci-fi authors to benefit from their expansive imaginations. Simply reading their books can help. Writing in the *Harvard Business Review* in 2017, Eliot Peper, a novelist, argued that science fiction is valuable "because it reframes our perspective on the world". Business leaders should read sci-fi, he suggested, because exploring fictional futures "frees our thinking from false constraints" and "challenges us to wonder whether we're even asking the right questions".

And then there is a third, more direct, way in which sci-fi can provide glimpses of the future: by inspiring people in the tech industry who want to make it come true. The creation of the mobile phone at Motorola was motivated by the handheld wireless communicators from '*Star Trek*', and Amazon's Alexa voice-assistant by the talking computer on the *Enterprise*. The Kindle was inspired by an electronic-book device in Mr Stephenson's novel '*The Diamond Age*', and an entire industry is trying to bring to life the virtual world he depicted in '*Snow Crash*'. SpaceX, the rocket firm founded by Elon Musk, lands its rockets on drone ships whose names are borrowed from Iain M Banks's '*Culture*' novels; another of Mr Musk's start-ups, Neuralink, is building brain-computer interfaces inspired by the 'neural lace' implants found in the same books. The tech titans of tomorrow are surely reading sci-fi today.

THE ECONOMIST

Tackling slowdown institutionally

The country must look to institutions rather than individuals to solve problems

HARDAYAL SINGH

The author is former chief commissioner of Income Tax

CROSS THE RIVER, observed Deng Xiaoping, by feeling the stones. The current Union government may do well to heed this advice, as it struggles to tackle a serious slowdown in the economy and gets ready to present the Union Budget for 2020.

This slowdown is both structural and cyclical in nature. To the extent that it is cyclical, the economy will bounce back sooner or later. In fact, some green shoots of recovery are already visible. However, to the extent that it is structural, the road ahead to reverse it would, indeed, be steep. This is because it primarily relates to the poor institutional capacity in our country that has been deteriorating for the last 40 years. In fact, the lack of such capacity has created a trust deficit between the citizens and the government.

This has resulted in all-round poor governance that has impacted the economy. Following opaque processes, bureaucrats exercise vast discretionary powers, and are often governed by poor accountability standards. Since they are under no obligation to consult people for their decisions—and the knowledge and information base they rely upon is often dubious—it is not surprising that they get things wrong. Yet all these limitations have not deterred them from stepping in, even though governmental intervention is often costly and ineffective. Vijay Kelkar and Ajay Shah, in their latest book '*In Service of the Republic*', have pointed out that a public outlay of ₹1 ends up costing ₹3 to the Indian society.

The country may have moved up from 142nd rank to 63rd in the the World Bank's Ease of Doing Business rankings between 2014 and now (the current government undoubtedly needs to be given credit for this achievement), but its rank continues to be poor in respect of certain key parameters that really matter—enforcement of contracts (163), ease in paying taxes (115), starting a business (136), etc. Even today, people shudder to get involved in litigation or deal with departments like Income Tax, police or the Enforcement Directorate because cases take years to reach closure.

This institutional weakness is what really holds the country back from realising its full growth potential as a nation. The obvious solution, of course, lies in strengthening institutions. This is essential because otherwise the country runs the risk of falling into a middle-income trap. Only four countries—South Korea, Taiwan, Singapore and Israel—have been able to escape this trap. All four invested heavily in institution building. India has a long way to go before it joins the ranks of these countries. Its per capita income of $2,172 makes it a low-middle-income country; this must increase about six times to $12,056 before it can be classified as a high-income country.

The steps required to do this are not likely to be popular either with politicians or bureaucrats. The government must continue to focus on its sovereign functions, i.e. maintaining law and order, ensuring settlement of disputes, collecting taxes, managing the defence of the realm, conducting foreign policy, and ensuring the stability of the currency. Outside of these areas, it must explore other options, before it decides to intervene.

And when it does, it must limit its intervention to the bare minimum and confine itself to situations where markets cannot function or have failed to perform—or when a negotiated solution cannot be found. Rather than further empowering bureaucrats, the government should consider reducing their powers and check arbitrary exercise of power.

In the long run, we must prepare for a 50-year marathon. The country must look to institutions rather than individuals to solve problems. As a people, we are, at times, guilty of having developed highly romantic and idealistic notions of people who perform public service. We have to realise that public servants are ordinary human beings who act according to their self-interest. Power should, thus, be vested in teams rather than individuals, and concentration of power should be avoided.

Finally, we must bear in mind that whether we talk about ordinary citizens or officials, people respond better to incentives than coercion. Change the incentives and you change behaviour. When kerosene is cheap and petrol dearer, it is *naïve* to think that people will not adulterate petrol with kerosene. The future challenge for policymakers would be to devise simple rules that incentivise good behaviour and punish bad behaviour.

Good policymaking will have to be a slow affair, feeling the pebbles at the bottom of the water, one step at a time. Applied to GST, this would mean widening the coverage of the tax by reducing exemptions; and simplifying the levy, by reducing the number of rates, to one or two. Had the government heeded to this advice, it may not have enacted CAA so hastily.