The problem with voice assistants

Users need to find a balance in the trade off between convenience and loss of privacy

TECH-ENABLED

DEVANGSHU DATTA

A recent incident in Belgium highlighted the increasing privacy concerns with voice-activated robotic assistants. A contractor sent audio recordings of over 1,000 Google Assistant conversations to the public broadcaster, VRT. These contained medical information as well as personal data that allowed identification of the user. What's more, 153 of these recordings should have never been made as the "Ok Google" command wasn't clearly given.

Google has responded with defensive PR on its official blog saying these recordings are anonymised and transcribed for experts to analyse and help make the virtual assistant smarter.

This problem won't go away. Google Assistant, Apple's Siri and Amazon's Alexa are used by well over a billion people. They make life easier in many ways. Their very existence is a triumph for machine learning.

But they need to be "trained" by using tonnes of data. Hence, conversations are recorded. In order to improve functionality, conversations are listened to by human teams, to sharpen the assistants' understanding of natural speech with its pauses and ungrammatical constructions.

Although these conversations are supposedly anonymised, this is, in itself, intrusive. As this breach indicated, the conversations themselves may contain sensitive personal data that identifies users along with locations. Also, it confirmed assistants can switch on and record in error.

This also happens with Alexa. Users can playback transcripts of Alexa conversations and this recording error happens with some frequency. This glitch happens when the "wakeup" word process goes wrong. Sometimes this can be triggered by random conversation, or some background noise, that the machine "hears" as a wakeup word. In effect, a digital assistant includes a microphone that is always on and listening. The programme is supposed to start recording only when the wakeup is used. But the mike itself is always on. Even if devices offer a push switch to activate, users tend to keep the mike on by default because that is inherent to functionality.

That programme can thus, be started by accident and it isn't under the user's control. Those recordings are sent back to the mother servers for analysis, including human analysis. This helps to improve functionality and it is critical to developing the technology that makes assistants useful.

But this process is insecure. Contractors hired to transcribe and analyse such recordings may choose to break confidentiality. For that matter, a server hack could put such data into the wrong hands.

Anonymising can also lead to poorer functionality. One reason why some users claim Siri lags Google Assistant and Alexa in the things it can do, could be related to anonymising. Siri anonymises to greater extent. Users can't playback and human analysis is only done with a random tag attached to identify specific conversations. But this also means that Siri doesn't learn the individual quirks and tastes of specific users.

Amazon and Google monetise their assistants' interactions in ways, which makes them reluctant to anonymise. They do big data analysis and meta-data analysis to discover patterns of searches, online purchases, entertainment choices, appointments, medical conditions, phone calls and text messages etc. It is even possible for assistants to accurately gauge the user's mood and mental health from tonality.

This analysis builds more complete profiles that can be used for targeted marketing and personalised advertising initiatives. It can seem like magic when Amazon offers you a choice of TV shows, music and books that you really like, or Google throws up ads about destinations you're interested in visiting. This is actually enabled by this sort of analysis of your online usage patterns and your interactions with assistants.

That convenience comes with a cost. Users need to find a balance in the trade off between loss of privacy and convenience. This would mean a far greater degree of transparency, and user control over the data being harvested. Unfortunately, most jurisdictions don't have legislation that enables this. The European Union's general data protection regulation (GDPR) is pioneering legislation in this area but most nations don't have privacy legislation of this strength. That in effect means that the corporate service provider decides how much privacy it will allow.

There have been thought experiments and speculation about what the service provider should do, if an assistant picks up a conversation about criminal or terrorist activity, or hears an incident of domestic violence. That's a grey area but it's likely this has happened. The vast majority of recordings would be about the mundane but they would also provide lots of private information. In this version of dystopia, it isn't only Big Brother that's watching.

CHINESE WHISPERS

A breath of cool air

Hitachi Alphonso Smoothie? So, is the air-conditioner manufacturer getting into branded beverages or farming probably? Not really. In an interesting branding move this scorching summer, the Indian arm of the Japanese conglomerate has tied up with coffee maker Barista in the NCR to help promote the latter's new range of cold beverages. So you will find co-branded table standees when you walk into a Barista outlet, with the Hitachi brand name prominently displayed. In a quid pro quo, the AC brand has fitted these stores with its cooling equipment.

Disciplining MLAs

Missing Assembly sessions will no longer be easy for MLAs in Madhya Pradesh. Assembly Speaker N P Prajapati has ordered if a member is absent citing illness, a medical certificate signed by a "medical board" has to be submitted. Not only that, if a member wants leave to attend a wedding or any other social gathering, the invitation card for this must be produced. With the new rules coming into force, a member rued, "We are representatives of the people, so why treat us as government servants?"

Renovation versus care

A storm is brewing in Madhya Pradesh over renovating ministers' bungalows when the state's anganwadi centres require funds urgently. These centres, mandated to take care of children and support them, are on the verge of closing down because the state government is yet to release ₹40 crore for them. On the other hand, it has reportedly spent close to ₹4 crore on repairing official bungalows of ministers in Bhopal, Public Works Department Minister Sajjan Singh Verma said in response to a question in the Assembly last week. The Opposition grabbed the opportunity. While the government says the previous regime left the treasury empty, it spent crores on sprucing up ministers' bungalows, said former minister and senior BJP legislator Narottam Mishra.

Celebrating 50 yrs of bank nationalisation

The nationalised banks do a good job of what their majority owner mandates them to, but most are failed business enterprises

BANKER'S TRUST

TAMAL BANDYOPADHYAY

This Friday marks the 50th anniversary of bank nationalisation. Fourteen banks with deposits of at least ₹50 crore each were nationalised in the midnight of July 19, 1969 hours after Prime Minister Indira Gandhi addressed the nation on this. The Ordinance that paved the path for nationalisation was challenged, an interim stay was granted on a few issues but a 34-day trial before a 11-judge bench in Supreme Court later, all roadblocks were cleared. This set of banks, along with State Bank of India (SBI) and its associate banks, had 85 per cent share in the deposits of the industry then.

A second round of nationalisation of six more commercial banks — with deposits of more than ₹200 crore each — followed in 1980. At that time, the government-owned banks' share in the industry was 91 per cent. SBI, the nation's largest lender, is majority government-owned but is not covered by the Act that nationalised 20 private banks for expanding the credit market.

Not too many bankers are in a mood for celebrations. Many analysts are questioning the results that nationalisation has yielded even as a few are advocating privatisation despite what a couple of large private banks had been through in recent times.

Before we walk down the intensive care unit where some of the public sector banks (PSBs) are resting these days, let's take a look at the banking scenario in 1969. Then, there were 73 commercial banks (excluding regional rural banks); now the figure is 91. The number of bank branches have grown phenomenally — from 8,262 to 1,41,756. What is particularly important is the share of rural branches, which was just about 22 per cent in 1969 and has gone up to more than 35 per cent now — from 1,832 to 50,081. The share of semi-urban branches dropped from from 40 per cent to 27.5 per cent (3,223 to 9,063) while there has not been any significant change in the share of urban (1,447 to 25,498) and metropolitan branches (1,661 to 27,114).

The size of the banking industry has grown many times in the past five decades. Aggregate deposits have risen from a meagre ₹4,646 crore to close to ₹125 trillion and bank credit, from ₹3,599 crore to ₹96.5 trillion. For the record, till the 1990s, the PSBs' assets grew at a pace of around 4 per cent in sync with the average growth rate of the Indian economy. That got changed dramatically in the first decade of this century (the credit growth was three times or more the growth of India's GDP between 2006 and 2008) but the pace slowed considerably and many of them actually have been shrinking their balance sheets since 2015 after being forced to expose their weak underbelly — a pile of bad assets.

Just a week before the promulgation of the Ordinance to nationalise the banks, Gandhi, in her address at the Bangalore session of Indian National Congress on July 12, 1969, forcefully pitched for it. Apart from Gandhi, only three people were involved in the exercise — P N Haksar, principal secretary of prime minister; A Bakshi, a deputy governor of the Reserve Bank of India (RBI); and a junior bureaucrat, D N Ghosh. The RBI governor was not kept in the loop.

Indeed, there was politics behind bank nationalisation. But, there were other reasons too. Many banks collapsed post World War II as they were financing speculative activities and the RBI, a relatively young banking regulator then, was finding it hard to supervise some 300 banks, most of which were into trade finance and reluctant to support industry and agriculture.

In 1960, when Palai Central Bank and Lakshmi Commercial Bank collapsed, pushed by finance minister Morarji Desai, the RBI brought down the number of banks from 328 in 1960 to 94 by 1965 through closures and mergers. Post nationalisation, the government forced a merger only once — that of New Bank of India with Punjab National Bank in 1993. Now, the consolidation drive has been in full force. After ensuring merger of SBI's associates with the parent, the government has merged two relatively small banks with Bank of Baroda and more such mergers could be on the cards.

Is consolidation the answer? Will it ensure efficiency? There are challenges in terms of duplication of branches, different technology platforms and, of course, issues related to HR. Even if the industry successfully overcomes these hurdles, consolidation will not pare the share of the government-owned banks in the overall banking industry which is a little less than 70 per cent now — much higher than most markets.

Who is to be blamed for the state of affairs in PSBs? The banks themselves and their majority owner — the government. After the first set of new private banks came into being in 1990s, for the first time, the government owned banks faced competition. By allowing them to raise money from the public, the government tried to make them competitive and technology-savvy as they were answerable to their new owners.

That was a good move but two critical issues maimed them. First, the project finance institutions were wound up and the PSBs, which did not know much beyond giving working capital loans, had no choice but to extend long-term financing to Indian corporations. That sowed the seeds of bad assets. Second, the government ceded the majority ownership but not the control. It continues to appoint the chief executive officers (CEOs), plays a critical role in the constitution of the boards and uses the infrastructure of the industry at times for things remotely connected to banking. It also does not pay the bankers market-related compensation. And, the bankers are being continuously scanned by investigative agencies. You can't expect them work wonders with both hands tied behind their backs.

The Pradhan Mantri Jan Dhan Yojana, the world's most expansive financial inclusion drive, has 36.06 crore new depositors. The PSB's contribution to this is 28.65 crore in contrast to private banks' 1.25 crore (the rest is done by the regional rural banks). The government-owned banks generally do a good job of what is mandated by their majority owner but most are failed business enterprises.

The 50th anniversary of bank nationalisation is an appropriate occasion for the owner to take a call on their future. Should they be continuously given capital for creating bad assets while lending to build infrastructure and doing the so-called nation building or some of them should be allowed to fall by the wayside and even be privatised. How long will they be allowed to live in nostalgia? Is it time to celebrate or chant dirges?

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INSIGHT

Export focus in the govt's growth agenda

From a competitiveness perspective the RBI may choose not to let the currency gain too much

B PRASANNA

In a positive surprise, Union Budget FY2020 committed on its path of fiscal prudence, lowering its budgeted fiscal deficit to 3.3 per cent versus 3.4 per cent of gross domestic product (GDP) budgeted in the interim Budget. The markets were expecting a breach to the tune of approximately 3.6 per cent given the headwinds from both domestic and global growth on the one hand, and expectations of a counter cyclical fiscal policy to stimulate growth, on the other. However, the Budget showcased the underlying ideology of sticking to the path of fiscal prudence to avoid crowding out private investment, reflected in the unchanged expenditure targets. A shortfall in receipts is budgeted to be made up from higher customs and excise duty revenues, higher non-tax revenue including higher RBI dividend payouts, and higher disinvestment receipts.

Apart from the headline numbers, which at the moment look feasible, the introduction of foreign currency sovereign issuances would also reduce domestic borrowing demand and is a big positive for the bond markets. Moreover, sticking to the fiscal glide path also provides monetary policy more bandwidth to continue on its path of monetary policy accommodation.

With the government focused on reducing the cost of capital, and the current monetary policy committee (MPC) oriented to align itself to that goal (especially under the scenario of negative output gap and benign inflation trajectory), we expect two more rate cuts in this cycle, with the next one in August.

The equity markets were disappointed with the Budget. The expectation that populist doles would immediately kick-start consumption growth were missing. On the contrary, imposition of higher customs and excise duties on gold and petrol/diesel could further dent both urban and rural demand. The increase in shareholder limit from 25 per cent to 35 per cent and higher surcharge on FPIs, have had negative ramifications for stock market sentiment. Policies of bringing in more FDI flows through easing of FDI norms in certain sectors, bringing down public holding to below 51 per cent for PSUs and allocation towards recapitalisation of bonds, while all aimed at reducing cost of capital, have at the moment been largely ignored. Over the medium term, the increase in the available float may lead to some favourable rebalancing on MSCI equity indices which would attract flows in the long term. Other foreign investment related liberalisation steps such as increasing the statutory limit for FPI holding in a company in line with sectoral FPI limits, allowing FPIs to invest in debt securities issued by real estate investment trusts (REITs) and infrastructure investment trusts (InvITs) could help infrastructure investment in the long term.

The watershed event that has happened in this Budget is the announcement of the government's intent to diversify its borrowings towards foreign currency issuances. India's external debt to GDP ratio is one of the lowest among emerging market peers with its sovereign external debt to GDP ratio at under 4 per cent. Most emerging markets have issued foreign currency denominated bonds or have conducted local currency issuances offshore. It seems to be an opportune time for India to explore the same as well. This will have multiple benefits. On an unhedged basis, the government's borrowing costs should come down significantly as the likely spread of the Indian sovereign over London interbank offered rate (Libor) should be at approximately 100 basis point. This will also help to reduce the crowding out faced by the private sector borrowers on account of large public domestic borrowing. However, on the flip side if a significantly large issuance is done, then there could be some adverse impact on spreads of the investment grade corporates who borrow offshore.

Apart from this, as far as the domestic IGBs are concerned, at current Mumbai interbank forward offer rate (MIFOR) levels, FPIs may choose to divert some of their holdings towards the FC issuance especially those who are hedged. For the unhedged entities there could be a case for investing in the FC bond and use the non-deliverable forward (NDF) market to exploit any onshore-offshore arbitrage. Also, any sharp currency depreciation could lead to government's fx loss.

However, it is still a very significant move and there would be significant effective arbitrage opportunities for India dollar bond at the levels of USD-IRS and MIFOR levels prevailing now. Given that it is India's maiden issuance, the spread over US Treasury should also be fairly attractive.

From a market perspective, we expect bonds to trade in a range of around 6.40-6.70 per cent in the near term, buoyed by the fiscal prudence, prospects of sovereign issuance, monetary policy outlook and globally favourable environment. However, given the rather weak outlook for domestic economic growth, we may witness stress in the fiscal scenario later on in the fiscal and the government could once again have to resort to expenditure shifting or saving methods.

We expect the rupee to benefit from a favourable external sector outlook with expectations of a balance of payments surplus worth of $20 billion, with upside risks dependant on the quantum of offshore bond issuances by the government. The prospects of the Federal Reserve easing policy is also a positive for EMs in general as the dollar index is expected to weaken on the margin. Hence, we expect a broad trading range of 68-70 for the rupee. However, from a competitiveness perspective the RBI may choose not to let the currency gain too much as there is also a strong exports focus in the government's growth agenda.

The author is group head, global markets, sales, trading and research, ICICI Bank

LETTERS

Unusual times indeed

Apropos your excellent editorial "Pricing impasse" (July 12), I do hope the Digital Communications Commission (DCC) listens to your sane advice and has a serious relook at the totally impractical reserve price for the 5G spectrum auction. In fact, the Telecom Regulatory Authority of India (Trai) has taken a conservative position by suggesting a price of ₹492 crore per MHz; if it were to consider the ground reality in the sector, it would actually recommended an even lower figure. Telecom Minister Ravi Shankar Prasad's admission — stress in the industry — was a pragmatic statement and it would be fair for the DCC to accept the Trai suggestion. The possibility of mopping up ₹5.53 trillion should help the government arrive at a practical decision. By insisting on the higher reserve price, DCC may well be killing the proverbial golden goose.

The DCC should realise these are indeed unusual times. The debt burden of ₹4.3 trillion on the telecom industry is close to breaking its back. Players need all possible assistance at this time to ensure they do not buckle under pressure. Bharti's decision to not participate in the 5G auction and Vodafone's suggestion for delaying the same have both been made under duress. Clearly they don't want to miss the 5G bus but are helpless at this point.

Krishan Kalra Gurugram

Educate the consumer

This refers to "HSBC, Stanchart, Citi top the charts in customer experience: Kantar report" (July 12). The growing dissatisfaction and increasing customer complaints regarding banking services are apparent in the data thrown in the RBI Annual Report of Banking Ombudsman, Kantar Report and the BCSBI report on customer satisfaction.

It is also a manifestation of more people coming into the banking system, low levels of financial literacy, growing awareness of complaint redress forums and the complexity of newer banking products. It must be understood that many of the new entrants into the banking system have leapfrogged from cash-based payments to electronic banking modes. They are not used to safely operating internet banking, debit and credit cards, ending up compromising their card credentials, disclosing passwords or operating at dodgy or unsafe websites or tampered ATMs. Hence, growing frauds and unauthorised transactions show up as complaints. The lack of transparency about the products, suitability of products, pressure on bank staff to sell and achieve sales targets and upfront commissions are some of causes for the misselling.

There is a growing need for banks to create continuous awareness among customers about their products and about the ways to use them safely and responsibly.

Arun Pasricha New Delhi

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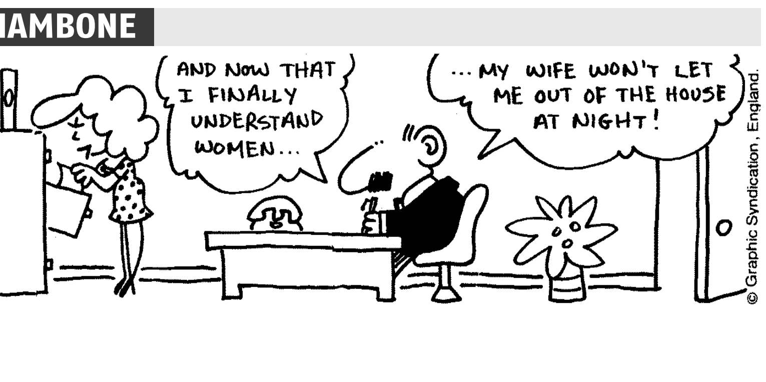
HAMBONE



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The poverty challenge

High, sustainable, and inclusive growth is the only answer

The release of the United Nations Development Programme's (UNDP's) annual report on multi-dimensional poverty is an appropriate point to evaluate India's progress on poverty reduction. As the report underlines, it is an impressive achievement. The UNDP had previously found that India had lifted 271 million people out of poverty between 2005-06 and 2015-16. The latest, the 2019 report, further fleshed out how this was achieved. Multi-dimensional indicators recognise that poverty is about more than just access to income: It is also about access to resources and capabilities to improve individual prospects. Thus, 10 indicators go into constructing the multi-dimensional poverty index, including nutrition; schooling; access to fuel, power, and drinking water; sanitation; electricity; housing; and child mortality. What is impressive about India's performance in the decade to 2015-16 is not just the scale of the achievement but also how all-encompassing it was. For one, India was one of the few countries to show a significant decrease on all the 10 indicators. In addition, the report says that "poverty reduction in rural areas outpaced that in urban areas — demonstrating pro-poor development". It added that "India demonstrates the clearest pro-poor pattern at the sub national level: the poorest regions reduced multidimensional poverty the fastest". India also saw that the poorest 40 per cent of the population had the greatest relative improvement in their multi-dimensional capabilities — measured both in terms of size, intensity and inclusiveness, India's poverty reduction effort stands out in global terms.

It is worth noting, however, how much more remains to be done — both in terms of number and inclusiveness, and specific capabilities. There are still more multi-dimensionally poor people in India than anywhere else. The report also points out some problems that are particularly intense in South Asia — for example, child malnutrition. Over 40 per cent of South Asian children aged less than five are stunted or underweight. Worse, it appears that there are disparities within households — almost a quarter of South Asian children live in houses where at least one child is malnourished and one is not. The report is silent as to the gender composition of this problem, but other work has drawn attention to the issue of boys being better fed than girls in India. Last year's report had also highlighted that poverty is very unevenly spread across identities; Muslims and Scheduled Tribes are the poorest groups, with about half of the former stuck in multi-dimensional poverty. Social as well as economic inclusiveness in poverty reduction must clearly continue to be priority.

The specifics of India's progress on capabilities can also guide policy. In the 10 years after 2005-06 — eight years of the UPA, and two years of the NDA — progress was most visible on gaining access to productive assets, housing, cooking fuel, and sanitation. Progress on drinking water existed, but was insufficient — and there was barely any improvement in child mortality. Health and water access are the next frontier for poverty reduction.

Finally, it should be noted that poverty reduction is fastest when growth is high and sustainable. The aim of high, sustainable, and inclusive growth should always be kept in mind.

Policy uncertainty

Businesses avoid environment of policy instability

Macroeconomic stability and policy certainty are important determinants of investment as businesses are not inclined to invest in an environment of economic and policy instability. Over the last few years, India has done well to reduce uncertainty, but some decisions, particularly in the latest Budget, can undermine the benefit.

At the macro level, for instance, the adoption of the flexible inflation-targeting framework has helped anchor inflationary expectations. This is important because it will not only help strengthen macroeconomic stability but also enable businesses to make better longer-term forecasts. Price stability, among other things, can be expected to bring down the cost of capital over time. Similarly, the goods and services tax has significantly reduced complexity in the indirect tax structure, though some of the implementation issues are still being addressed. Further, the Insolvency and Bankruptcy Code is helping resolve stressed assets and will improve credit culture in the Indian economy. Although some of these reforms implemented in recent years are still a work in progress, at the net level, they represent a significant forward movement and will improve the business environment.

Unfortunately, some of the other decisions of the government have only helped in increasing uncertainty. The Budget is a case in point. What is surprising is that the Economic Survey, presented a day before the Budget, underscored the importance of maintaining policy certainty and noted: "…a poorly drafted law that is riddled with ambiguities, amendments, clarifications and exemptions… such uncertainty can spook investors and spoil the investment climate in the economy."

But the Budget ended up increasing complexity and uncertainty at multiple levels. For instance, investors require stability and predictability in tax rates. But by suddenly raising the income tax surcharge for super-rich individuals, the Budget not only increased complexity in the tax structure but also affected foreign portfolio investors (FPIs), investing as non-corporate entities. That's not all. It was first reported that the government will issue a clarification on the subject, but it later decided that it was not necessary. As investors look at post-tax returns, some of the FPIs might consider moving out of India. Among other stakeholders, with an ambitious disinvestment target, this will also affect the government.

Further, the government again decided to increase import duty on a number of items with a view to protecting domestic industry. Aside from affecting consumers, it will hurt India's chances of getting into the global value chain, which is extremely important if India intends to increase exports. Multinational companies would be reluctant to work with Indian firms or invest in India if tariffs are regularly revised. Another example is the policy push towards electric vehicles. The Budget, for example, gave tax benefits to individuals buying electric vehicles. Containing air pollution is a worthy goal, but the government should not pick winners, as it puts the rest of the ecosystem in the sector at risk and increases uncertainty. After laying the ground rules, the government should allow the market to decide.

There are other areas too. The government has been claiming from day one that its priority is to improve ease of doing business. But the Budget proposal authorising customs officers to detain a person for verification in the interests of revenue or for preventing smuggling has serious scope for misuse. Such measures would only increase uncertainty. The government should consider long-term implications of its decisions, taken to meet short-term objectives such as revenue targets.

ILLUSTRATION: AJAY MOHANTY

Government debt abroad: Why & how

Nurturing a relationship with foreign investors is particularly important when it comes to the long-term objective of borrowing in times of a calamity

SNAKES & LADDERS

AJAY SHAH

There are three reasons in favour of a government borrowing abroad. Such borrowing will sometimes yield lower-cost financing for the government. It will produce a reference rate that improves the ability of Indian corporations to borrow abroad. Most important, when India is in a crisis, and a large surge in the deficit is required, it will create a way to obtain large quantities of debt at a low price. There are two caveats. Better institutional arrangements are required for debt management. We have to play the long game by nurturing the foreign investor base and winning their trust.

Suppose the Indian government has two channels for borrowing that are fully active and feasible at all times: To borrow in rupees in Bombay and in dollars in London. The prices at both venues fluctuate. Every now and then, the price in London will be more attractive, and such borrowing should then be favoured. By establishing an overseas borrowing programme, we create this optionality and gain from it.

The second benefit lies in a positive externality imposed upon all firms that borrow abroad. A liquid yield curve for dollar-denominated bonds issued by the government and traded in London can potentially arise. If this comes about, then it constitutes a reference rate against which all Indian corporate borrowers will be priced. All Indian firms that may seek to borrow abroad would obtain better terms, as a consequence of the information production for the sovereign yield curve through active trading.

The third and most important issue lies in difficult times. Healthy public finance involves running a small primary surplus in most years. But once in a while, every country faces a calamity. It is in such times that a big surge in the primary deficit is called for, i.e. a large surge in borrowing. However, when India faces a calamity, it will be hard to raise money domestically. That is the perfect time to use foreign borrowing. Lenders abroad will be generally unaffected by the calamity faced in India, and will be the better source of lending compared to domestic lenders, who are themselves stressed when India faces a calamity. Establishing the ability to surge borrowing in an occasional calamity adds to the strategic depth of the Indian state.

These benefits come with two caveats. The first problem faced is the institutional arrangements for public debt management. At present, there is no unified view of the government's strategy for borrowing, which is able to see the full picture, and make decisions about the currency composition of borrowing. There is no place in government that is able to understand what constitutes a liquid yield curve in London for Indian government bonds denominated in dollars and undertake the steps to establish this.

What is required is a Public Debt Management Agency (PDMA), which would be the investment banker to serve the Ministry of Finance. This would take a unified view of all the borrowing of the government, and come up with optimal pathways.

Many observers have worried that borrowing abroad is a dangerous thing. It all depends on the magnitudes involved. In the present Indian situation, $25 billion borrowed abroad is about 1 per cent of GDP, and is not a threat but an important learning opportunity. But at the same time, the PDMA is required to keep track of the risks and manage them, particularly when bigger sums of money are taken from abroad.

The key idea required at the PDMA is a philosophy of building a long-term relationship with sceptical investors. We should have no illusions about what we're up against. At present, almost all of the domestic government bonds are sold by force. Banks, insurance companies, the Employees' Provident Fund Organisation, the National Pension Scheme, and now even mutual funds are forced to buy government bonds. The Indian state can make bad data and violate fiscal prudence, and there will be no consequences when faced with these forced lenders. In contrast, foreign investors are immune from coercion and have to be wooed. This requires a wholly different behaviour on the part of the Indian state.

This will require four tasks: Engaging with investors, answering difficult questions, improving the fiscal position, and improving data quality. When we fumble on one or more of these four problems, the cost of borrowing abroad will go up. Once voluntary lenders are in the fray, our self-interest will demand addressing these problems.

Nurturing a relationship with foreign investors is particularly important when it comes to the long-term objective of borrowing in times of a calamity. This requires first establishing the trust of regularly borrowing, and repaying on time. When this is done many times, India will earn the trust and respect of foreign investors. Advanced economies are able to easily borrow vast sums, at very low rates of interest, because they have a very long track record of borrowing and successfully repaying. The last time the UK defaulted on its debt was in 1688.

Building such a track record, well ahead of time, is required in order to obtain trust from bond investors when faced with a calamity. If the PDMA has a superficial engagement with foreign lenders, then they will shy away from lending to the Indian government when India has a calamity. If the PDMA builds a deep engagement with foreign lenders, where the Indian fiscal system elicits trust, then foreign lenders will offer enhanced resourcing to India when India faces a calamity, albeit at a higher interest rate.

To the extent that the Indian government learns how to engage with voluntary lenders overseas, this will be a valuable stepping-stone to changing course in domestic borrowing also, away from conscription of savings towards voluntary lending by private persons. Once again, the key insight is that substantially enhanced borrowing in a calamity can be obtained only from voluntary lenders, it cannot be obtained through conscription.

The writer is a professor at National Institute of Public Finance and Policy, New Delhi

Tradition for water revolution

DOWN TO EARTH

SUNITA NARAIN

You know you are old when you realise that today's conversation is a repeat of the past. That's how I feel when I hear the current chatter about the potential of rainwater harvesting to fix the problem of water scarcity in our cities and villages. For years now, we have known the importance of harvesting rain from rooftops and hill catchments and holding it in underground reservoirs, aquifers, lakes, and ponds. Then why have we not made this technology work? Why have we failed to use this knowledge? This is what we must ask.

Let me tell you how I learnt about rainwater harvesting. It was back in the 1990s when Anil Agarwal, then director of the Centre for Science and Environment, was at the wheels of his new Maruti 800 — red in colour. We were on our way to see grazing land regeneration in Bikaner. Suddenly there was something different on the ground. Anil stopped. He wanted to know what he was seeing.

It was in the shape of a flying saucer or an upside-down cup on a paved ground. We got off the car, walked over to the settlement and asked, "What is this?" As is often the case in India, such stupid questions from city people get very patient replies. "It is our water system, our *kundi*." It made no sense. They explained. "See, we pave the ground with lime and make it drain to the middle. Then when it rains, even a little, all the water is harvested and channelised into the well, which is covered so that there is no contamination." This small explanation changed our world. Changed it literally.

Anil calculated that the structure had huge potential. One hectare of land with just 100 millimetre (mm) of rain—that's what deserts get on an average — is capable of harvesting one million litres of water. Not small. A family of five would not need more than 10-15 litres a day for drinking and cooking. This comes to 4,000-5,000 litres in a year. This means one hectare can harvest enough water to meet the needs of 200-300 families.

Later, a few more experiences shaped my understanding of not just the potential of rainwater harvesting but its connection with all of us. We were in Cherrapunji, the wettest place on Earth or at least that's what I was taught in school. There in a small government guest house I saw a big sign — water is precious, please use it carefully. Amazing. A place with 14,000 mm of rain, enough to fill a high ceiling stadium, faces shortage of water! Anil and I had just returned from Jaisalmer — a city that had built a flourishing civilisation and a stunning fort of yellow sandstone despite receiving only 50-100 mm of rain. The answer we found was in the way the city had planned its rainwater harvesting, from rooftops to tanks — all to build a water-secure future.

Anil was so fascinated by this learning that he spent the next few years of his life teaching Indians the value of the raindrop. We have put this learning together in our 1997 book, *Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting Systems*, which explains the sheer intricacy, innovation and ingenuity of the knowledge. Every region of the country had its own unique method of harvesting rain, storing it and then using it. Every system had been adapted, in fact, evolved, to meet the special ecological needs, yet each system was an engineering marvel, designed to make the best of the region's rain endowment.

Why then did the wisdom die? First, the State took control from the local community or the households as the provider or supplier of water. This meant that harvesting rain was no longer a priority. Second, local groundwater, which was recharged using rainwater, was replaced by surface water, brought often from long distances in canals.

This is why rainwater harvesting has remained an idea whose time has still not come. The State cannot harvest rain; people have to be involved. It has to be done in every house; every colony; every village; and for every catchment. The incentive to do this only comes when we are dependent on groundwater for our needs. If cities and even villages get piped water, from distant sources, who will harvest rain and why?

The other problem is we have not understood the science and art of harvesting rain on land. So, the catchments — land where the rain falls — have been encroached upon or distributed in the name of land-reform. The drains that channelised rain to underground storage have been built upon or destroyed. Then how will we harvest the raindrop?

We can't and we won't. This is why the cycle of drought and flood will continue and get exacerbated. So, let's really learn from the wisdom that we have ignored and allowed to die.

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Silicon Valley's subsidised fortunes

BOOK REVIEW

STEPHEN MIHM

By the early 1970s, Don Hoefler, a writer for *Electronic News*, was spending after-hours at his "field office" — a faux-Western tavern known as Walker's Wagon Wheel, in Mountain View, California. In a town with few nightspots, this was the bar of choice for engineers from the growing number of electronic and semiconductor chip firms clustered nearby.

Hoefler had a knack for slogans, having worked as a corporate publicist. In a piece published in 1971, he christened the region — better known for its prune orchards, bland buildings and cookie-cutter subdivisions — "Silicon Valley." The name stuck, Hoefler became a legend and the region became a metonym for the entire tech sector. Today its five largest companies have a market valuation greater than the economy of the United Kingdom.

How an otherwise unexceptional swath of suburbia came to rule the world is the central question animating *The Code*, Margaret O'Mara's accessible yet sophisticated chronicle of Silicon Valley. An academic historian blessed with a journalist's prose, Ms O'Mara focuses less on the actual technology than on the people and policies that ensured its success.

She digs deep into the region's past, highlighting the critical role of Stanford University. In the immediate postwar era, Fred Terman, an electrical engineer who became Stanford's provost, remade the school in his own image. He elevated science and engineering disciplines, enabling the university to capture federal defence dollars that helped to fuel the Cold War.

Terman also built one of the first academic research parks, leveraging Stanford's extensive real-estate holdings in the Santa Clara Valley. Among the businesses he persuaded to move to the area were Hewlett-Packard and a company owned by William Shockley, the co-inventor of the transistor.

Shockley turned out to be a boss from hell, and, in a legendary rupture, a handful of his most talented employees — the "Traitorous Eight" — parted ways from him and founded Fairchild Semiconductor. Fairchild became the Valley's ur-corporation: Its founders subsequently launched many more storied firms, from the chip maker Intel to the venture capital firm Kleiner Perkins.

Ms O'Mara argues persuasively that Fairchild "established a blueprint that thousands followed in the decades to come: Find outside investors willing to put in capital, give employees stock ownership, disrupt existing markets and create new ones." But she makes clear that this formula wasn't just a matter of free markets working their magic; it took a whole lot of Defence Department dollars to transform the region. Conveniently, the Soviets launched Sputnik three days after Fairchild was incorporated, inaugurating a torrent of money into the tech sector that only increased with the space race.

Defence money, Ms O'Mara observes, "remained the big-government engine hidden under the hood of the Valley's shiny new entrepreneurial sports car, flying largely under the radar screen of the saturation media coverage of hackers and capitalists."

But it was how these defence dollars got distributed — via Stanford and a growing number of subcontractors in the region — that mattered as much, if not more. Ms O'Mara argues that the decentralised, privatised system of doling out public contracts fostered entrepreneurship. So, too, did Congress, which passed the Small Business Investment Act in 1958, offering generous tax breaks to the kinds of start-ups proliferating in the shadow of Stanford.

The sources of its success, Ms O'Mara contends, had to do with a host of regulations and legal decisions that governed how firms in the Valley did business. Foremost among these was California's longstanding prohibition on non-compete clauses. This made it easy for employees to job-hop and share news of the latest innovations without fear of reprisal or recrimination. The turnover was staggering at Valley start-ups compared with established corporations such as IBM. on the other side of the country. But the creativity unleashed in the process left other regions far behind.

No less important was the passage of the Immigration and Naturalization Act of 1965, which unexpectedly led to an influx of newcomers, many of them skilled in the technical fields that are Silicon Valley's bread and butter. Between 1995 and 2005, more than half the founders of companies in the Valley were born outside the United States.

But this was a later development. At first, Silicon Valley was the province of white guys in white shirts and crew cuts working for defence contractors and chip makers. They created what O'Mara memorably describes as a "profanity-laced, chain-smoking, hard-drinking hybrid of locker room, Marine barracks and scientific lab." These men happily voted Republican, and had little interest in California's counterculture, much less its increasingly visible feminist movement. As O'Mara notes, Silicon Valley's gender imbalance dates back to a time when "girls and electronics didn't mix."

Ms O'Mara traces how the famously apolitical titans of tech became increasingly savvy to the ways of Sacramento and Washington. In the late 1970s, they secured cuts to the capital gains tax and changes to arcane regulations governing how easily pension funds could place money with venture capitalists. The result was a flood of new investment that revived Silicon Valley's fortunes.

Can Silicon Valley — a place and state of mind — maintain its supremacy in the coming years? China is pumping staggering amounts of money into its own tech sector, while European regulators are moving aggressively to curb the power of the biggest tech firms. The Department of Justice has signalled that it may initiate antitrust proceedings against them, while Republicans seem determined to restrict immigration to the US, effectively cutting off the lifeblood of talent that has sustained the tech sector in recent years. If Silicon Valley wants to preserve its dominant status, it's time to remember the words of Andy Grove, the iconoclastic CEO of Intel: "Only the paranoid survive."

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THE CODE
Silicon Valley and the Remaking of America
Margaret O'Mara
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