Indispensable EVMs

While a review of the hardware and software will ensure quick fixing of bugs, the confidence of voters in the electoral process can also be restored

TECH-ENABLED

DEVANGSHU DATTA

Every election is preceded by a debate about EVMs (Electronic Voting Machines). Given the scale of Indian elections, EVMs are indispensable. But the technology is opaque and hence, open to accusations of rigging. The Election Commission of India (ECI) has consistently denied that it is technically impossible to hack an EVM. This is absurd — any electronic computer can be hacked.

The EVMs are manufactured by the PSUs, Bharat Electronics Limited (BEL) and the Electronics Corporation of India Limited (ECIL). The EVM is a computer, with a specialised chip embedded in the motherboard, and a memory unit to store votes. It's supposed to be a stand-alone, non-networked, programmable unit. The chip that controls operations has the program code etched into it. It cannot be read, or tampered with. This creates potentially severe issues.

The candidates' names are listed in alphabetical order with their symbols. Each machine can store around 3800 votes and cater for 64 candidates. A new system has been implemented where voter-verifiable paper audit trails (VVPAT) are available.

In VVPAT-enabled systems, a slip of paper is printed and displayed, with the voter's candidate name and symbol, after the EVM button is pressed. The voter has about 7 seconds to verify that her vote is correctly recorded before the paper slip is deposited into a sealed box. The VVPAT tally can later be matched versus EVM records, if required.

A voter who sees a mismatch between vote and VVPAT slip, should inform the polling officer. Then there is a "test vote". If this is incorrect, the EVM may be withdrawn and replaced. If this test vote has no mismatch, the complaint is rejected.

Every EVM has a control unit, and a balloting unit (the VVPAT is a separate machine). The two units are joined by a cable. The voting buttons are on the balloting unit while the control unit stores votes and can display results. Each button-press leads to a single vote being recorded, and the machine is then locked. The control unit is used to unlock it to record the next vote.

In January, a man who calls himself Syed Shuja made absurd and sensational claims. Addressing journalists in London over Skype while wearing a mask, Shuja said he worked for ECIL from 2009-2014. Shuja claimed he was in a team, which designed and tested the EVMs used in the 2014 elections. He said he was forced to seek asylum in the USA. He also said that Reliance Jio used low-frequency signals to manipulate EVMs in 2014, on behalf of the BJP. (Jio only launched commercial services in September 2016.) "Shuja" gave no evidence for these incredible assertions.

Also in January, the Aam Aadmi Party MLA Saurabh Bharadwaj did demonstrate how it was possible to very quickly replace EVM hardware. Other researchers have also demonstrated hacks, showing how chips or circuit boards could be easily replaced, to allow hacking. The big problem with the chip that cannot be tested or verified: there is no way for the ECI to tell if it has been replaced by another chip.

Security experts have pointed out repeatedly that the ECI's refusal to share source code makes it much more insecure. Any code that is secret and contains bugs, can be exploited, without fear of detection. There is an excellent reason why giant corporations release source code for their programs: Independent security researchers can test it to detect bugs, and patch buggy code. Indeed, companies reward indy researchers for pointing out bugs.

Obviously, the ECI is not going to replace either EVMs, or VVPATs, at this late date. One demand that has been put forward is that 50 per cent of EVMs be matched with VVPATs, with mandatory re-polling if there's a high error in tallies. Another suggestion is that there should be mandatory VVPAT counts if there's a narrow victory margin.

Random sampling of EVMs and VVPATs should be done to ensure high confidence in the voting process. The process for identifying VVPAT errors also needs review. A clever hacker would ensure that consecutive votes are not interfered with, in order to pass the VVPAT test vote process. For example, every third vote could be rigged and the VVPAT test vote process would show the system was working fine.

The original EVM design was done in the 1980s. It's high time there was a review of the hardware and software, and the source code should also be released. That way, bugs can be fixed quickly and the confidence of voters in the sanctity of the electoral process can be restored.

The how, why & when of Kochhargate

The first of a two-part series explains why the ICICI Bank's board rushed to deny all allegations against Kochhar and then took extreme steps against her

BANKER'S TRUST

TAMAL BANDYOPADHYAY

In February 2017, now sacked CEO and MD of ICICI Bank Ltd Chanda Kochhar had addressed a group of investors at a Singapore hotel at the bank's in-house merchant banking outfit's annual road show. Much to her embarrassment and annoyance, one global investor asked her with a straight face: "Wouldn't a bank chief in any other geography have lost the job after the kind of performance ICICI Bank has put up over the years under your stewardship?"

An awkward smile laced with silence was her answer. After all, ICICI Bank had underperformed its peers as well as the Bankex, the BSE's banking index, by yards. She could not blame the investors for losing patience after being at the helm for eight years.

By that time, *Infra Live* expose "Kochchar's Renewable Empire" was almost eight-month old. Most in the financial sector had read the story that alleged Kochchar's husband Deepak's business relationship with Venugopal Dhoot's Videocon Group, a borrower of the bank. It was discussed at the cocktail circuit and many wondered why Kochhar or her bank wasn't filing a defamation suit against Live Media & Publishers Pvt Ltd, the publisher of the magazine.

Two years down the line, Kochhar got the boot — not because of her performance but for violation of the bank's code of conduct. Three months after she resigned, in January 2019, the bank's board terminated her for failure to deal with conflict of interest (not recusing herself from credit committee meetings that took a call on giving loans to Videocon) and lack of disclosure (of her husband's business links with the Videocon group).

Kochhar was "disappointed, hurt and shocked" but she doesn't seem to be contemplating any legal action against the bank for being treated this way after serving 34 years with "dedication and hard work". Proud of her "honesty, dignity and integrity", she is certain that "truth will ultimately prevail".

This is Kochchar's first ever reaction, after the bank sacked her and asked to return her bonuses earned (around ₹8 crore as the 2018 bonus has not yet cleared by the regulator) and denied her at least ₹125 crore in the form of stock options.

What went wrong? Why had the bank's board rushed to deny all allegations against her (while Kochhar kept quiet) initially and then took this extreme step? What has been the role of the board? What next for Kochhar?

In the first week of March 2010, the top brass of the bank camped out at Kumarakom Lake Resort in the backwaters of Kerala for the offsite — the first after Kochhar took over as the boss in May 2009, succeeding the legendary K V Kamath, the king of retail loans in India.

Ahead of the offsite, McKinsey and Co made a presentation to senior executives of the bank, pointing out that ICICI Bank had not been growing and was losing market share to its peers. From around ₹4 trillion in 2008, ICICI Bank's asset base declined to ₹3.8 trillion in 2009 and further in 2010 when its loan book declined by 17 per cent and deposits by 7.5 per cent.

The analyst community was happy when she shrank the balance sheet — an anathema for her mentor Kamath whose model was the big fat Chinese banks. After the consolidation phase, Kochhar grew the balance sheet and bad assets.

Many of us thought that she had read the economic trends wrongly but none could anticipate that an intelligent and articulate Kochhar who has every possible award in her cupboard — from Woodrow Wilson Award for Global Citizenship to Padma Bhusan, the third-highest civilian award in India — would compromise on her integrity, as has been claimed by the Justice B N Srikrishna Committee probe.

The *Infra Live* report was based on a letter written by Arvind Gupta, a shareholder of both Videocon and ICICI Bank, which raised many questions about the financial links between Kochhar's husband and Videocon's Dhoot, and she playing a role in the bank giving loans to the Videocon group.

Then Chairman of the ICICI Bank Board, M K Sharma, appointed law firm Cyril Amarchand Mangaldas (CMA) to advise him on this matter.

No one could anticipate that an intelligent and articulate Kochhar who has every possible award in her cupboard would compromise on her integrity as claimed by the Sri Krishna committee probe

The law firm apparently gave her a clean chit.

Also, the Reserve Bank of India (RBI) conducted a probe. It apparently did not find anything wrong in the process of the loan disbursements but pointed out that the business relations between Deepak and Dhoot are spread beyond the shores of India. The Indian central bank was not in a position to probe that. I have not seen the report but why didn't it hand over the investigation to the appropriate authorities which could take it forward?

By January 2018, the Central Bureau of Investigation (CBI) got into the act and *The Indian Express* newspaper front-paged the story of Deepak-Videocon relationship in March.

That was the time, Sharma, former chairman of the bank, fiercely shielded Kochhar against all allegations. N Vaghul, former chairman of ICICI Ltd, the earlier avatar of the bank, also rushed to support Kochhar. However, none of them mentioned the probe report of the RBI or the law firm, based on which they seemed to have not found fault with Kochhar. They gave the benefit of doubt to their star CEO.

The scenario dramatically changed when an anonymous whistle blower wrote a much more elaborate letter, listing many more alleged misdoings of Kochhar and her family, which Gupta's letter did not mention. That brought the market regulator Securities and Exchange Board of India (Sebi) into action and, for the first time, Kochhar disclosed her husband's business relations with the Videocon group.

(There was yet another whistle blower letter but that spoke about some 31 loan accounts where the bank apparently did not follow the correct income recognition procedures and had nothing to do with Kochhar's personal integrity.)

These developments probably made Sharma realise his mistake and he appointed the Srikrishna Committee for a comprehensive probe — spanning the period between April 2009, a month before Kochhar took over the mantle from Kamath, and March 2018. The law firm immediately withdrew its report as it was based on an assumption that no relationship between Deepak and Dhoot ever existed as Kochhar had never mentioned this before.

The Srikrishna panel did not have any deadline. Why?

(Tomorrow: The key lessons from Kochhargate)

The columnist, a consulting editor with Business Standard, is an author and senior adviser to Jana Small Finance Bank Ltd. Twitter: @TamalBandyo

CHINESE WHISPERS

Helmet for cars

To make the flow of traffic easy and hassle-free, the Madhya Pradesh city police have introduced a hi-tech e-challan system. Under this system, the traffic police department has installed cameras at prominent junctions in Jabalpur. In case a driver/rider breaks traffic rules, an e-challan is generated automatically, and then sent to the postal address of the vehicle owner. But it appears the new system was not tested thoroughly before release. There have been instances when four-wheeler owners have been issued challans for not wearing the helmet. The department is now grappling with complaints rather than solving them.

Agenda 2019

The National Women's Party (NWP), which was registered in 2012 and which recently announced its intention to contest 283 seats in the coming Lok Sabha elections, has declared that it might consider fielding some male candidates as well. It would field 13 women candidates in the upcoming general elections and in the remaining seats, the NWP would field male candidates, said party President Shweta Shetty. Shetty said the party had chosen the 13 seats based on the dominance of women population there. The party claims it has made strong inroads among women in Rajasthan and said it would fight all 25 Lok Sabha seats in the state in the upcoming general elections.

No love lost

In the run-up to the general elections, the Bharatiya Janta Party and the Congress on Saturday released rap videos to chronicle their achievements. Nothing new or unusual about it, only that both the parties have used the same song with different videos. The song is *Azadi* by Divine from the film *Gully Boy*. The film will release on Valentine's Day. The two rivals have crammed their videos with shots and posters that highlight their pet projects and campaign slogans. Both have pinpointed star *betas* in each other's camps. And there's a lot of stress on the word *saaf*. To borrow a phrase from the song, *alag shakal, wahi jaat*?

INSIGHT

Defence modernisation budget rises just 5% each year in real terms

With customs duties imposed on defence in 2016 and GST in 2017, capex has fallen even more

AJAI SHUKLA & DEVANGSHU DATTA

A *Business Standard* analysis of defence capital allocations, the crucial component of the defence budget that buys new weapons and equipment, reveals that it has risen by barely 5 per cent in real terms each year, in the last decade. This is after accounting for inflation and foreign exchange rate variation (FERV).

Thus, the military's modernisation budget has trailed far behind growth in the Gross Domestic Product (GDP), which has risen at 6-8 per cent annually for that period.

Twice during this period, in 2012-13 and 2015-16, the adjusted capital budget was lower than the previous year's allocations.

There were large hikes of 23.38 per cent (2009-10) and 18.98 per cent (2010-11) in the first two years of the second United Progressive Alliance (UPA-2) government. After those two boosts, the annualised increase over the next eight years amounts to only 1.6 per cent with forex spending up from around \$6.97 billion in 2010-11 to \$7.73 billion in 2018-19 and domestic capex in constant rupees going from ₹343 billion (2011-12) to ₹398 billion (2018-19).

Business Standard needed to compile allocations scattered across various budget heads and Demands for Grants in order to calculate the capital allocations. For example, in the 2019-20 budget, the capital allocations for border road construction is not in the capital budget (Demand No 21), but buried as Demand No 19 under the Ministry of Defence head. It's similar for the Coast Guard. Until 2016-17, capital allocations for the Defence R&D Organisation and Ordnance Factory Board were also part of the Ministry of Defence budget. These scattered capital allocations have been compiled and included in capex.

Each year's budget is then adjusted. We have assumed that half of the capital Budget is spent domestically and the rest, abroad in forex. The domestic spending is presented in constant 2011-12 rupees to adjust for inflation, using the deflator given when the Budget is presented.

The deflator is a ratio of the value at current prices of all the goods and services in the economy in a given year to the value during the base year, which is 2011-12.The capex figures for 2009-10 and 2010-11 have been adjusted "forwards". The domestic sources of equipment, include the 41 Ordnance Factories (OFs), eight defence public sector undertakings (DPSUs) and Indian private firms.

The other 50 per cent, which is assumed to be spent in foreign exchange, is adjusted for FERV, using the median US dollar exchange rate of the respective financial year. While some equipment is paid for in Euros, most international defence transactions — even with Russia and Israel — are invoiced in US dollars.

DEFENCE CAPITAL ALLOCATIONS: RUNNING FLAT

		Indian rupee component (Assumed to be 50% of capital allocation)			US dollar component (Assumed to be 50% of capital allocation)			Percentile rise/fall per year		
Financial Year	Capital allocation (current ₹)	Domestic component (In current ₹)	Implied inflation Deflator (%/year)	Domestic component (In constant 2011-12 ₹)	Forex component (in ₹)	Median rupee to dollar exchange rate	Forex component adjusted for exchange rate (in \$ bn)	Annual change in rupee component (in %)	Annual change in US dollar component (%)	Combined annual change (in %)
2008-09	41,700									
2009-10	52,020	26,010	6.07	30,766.5	26,010	47.16	5.52	17.61	29.14	23.38
2010-11	63,258	31,629	8.98	34,330.84	31,629	45.38	6.97	11.59	26.37	18.98
2011-12	69,476	34,738	8.54	34,738.00	34,738	48.9135	7.1	1.19	1.90	1.55
2012-13	72,063	36,031.5	7.93	33,384.14	36,031.5	54.565	6.6	-3.90	-7.02	-5.46
2013-14	80,195	40,097.5	6.19	34,986.04	40,097.5	61.52625	6.52	4.80	-1.31	1.74
2014-15	83,022	41,511	3.05	35,146.05	41,511	61.2455	6.78	0.46	4.00	2.23
2015-16	83,560	41,780	1.79	34,752.95	41,780	65.7418	6.36	-1.12	-6.24	-3.68
2016-17	91,483	45,741.5	3.61	36,722.46	45,741.5	66.9663	6.83	5.67	7.48	6.57
2017-18	95,431	49,236.5	3.74	38,103.28	49,236.5	64.4418	7.64	3.76	11.86	7.81
2018-19€	98,473	54,066.5	5.10	39,811.92	54,066.5	69.9159	7.73	4.48	1.21	2.84
2019-20*	108,133									

€ Revised estimates; * Budget estimates

Comparison over UPA-2 and National Democratic Alliance (NDA) tenures

The UPA-2 increased domestic capital allocations in real terms by about 5.99 per cent annually. The NDA has increased domestic capital spending by about 2.62 per cent annually. The UPA-2 increased FERV-adjusted capital allocations by 8.8 per cent annually, while the NDA government has increased FERV-adjusted capital allocations by 3.46 per cent.

Double whammy: Customs duties and goods and service tax (GST)

Two recent tax measures have cut into these already meagre capital allocations. In April 2016, customs duty of 10.3 per cent was imposed on defence imports. Since 50 per cent or more of the capital budget is spent on imports, customs duties amount to five per cent of the capital Budget.

An even bigger blow came in July 2017, when goods and service tax (GST) was levied on defence capital purchases. Most military equipment comprises "high end engineering goods" and falls in either the 18 per cent or 28 per cent bracket. As the end-user, the defence ministry cannot recover the GST paid out. This has impacted the capital budget in the last two fiscals.

Ironically, customs duties were imposed for a laudable objective — to provide a level playing field to the private sector vis-à-vis DPSUs, OFs and foreign original equipment manufacturers (FOEMs). Before 2016, DPSUs enjoyed customs duty exemptions, while imports from FOEMs were tax-free. Only private sector firms were liable for customs duties and local taxes. Now everyone pays customs duty.

Before GST, the capital budget paid only the basic cost of domestic defence equipment. The defence firms paid excise duty and value-added tax (VAT), which were reimbursed, on the basis of evidence. But GST is collected before defence equipment is shipped out by a firm. The defence ministry doesn't receive reimbursement for GST. Hence, this is an outflow from the capital budget.

LETTERS

Dubious deal

This has reference to the Ministry of Defence (MoD) internal note dated November 24, 2015, that has surfaced in the media clearly evidencing the fact that the Prime Minister's Office (PMO) had conducted parallel negotiations in the murky Rafale deal, thereby weakening the negotiating position of the MoD and the team. The MoD had also objected to this high-handedness of the PMO and had alerted the then defence minister Manohar Parrikar, who it appears was helpless in this matter.

By derailing the negotiations conducted by the MoD, the PMO represented by Joint Secretary to PM Jawed Ashraf and the National SecurityAdviser Ajit Doval appears to have facilitated the entry of Anil Ambani-led Reliance Defence as the offset partner in the deal. Moreover, it is a wonder why the PMO had diluted the terms and conditions proposed by the MoD and agreed to accept just a letter of comfort to cover proper implementation of the supply protocol by industrial suppliers, instead of a 100 per cent secure sovereign or government guarantee or a bank guarantee as rightly proposed by the MoD in their negotiations.

Looking at the sequences of the happening, one really wonders whether the above dilution of security was an internal barter deal to make the French dealer accept the inexperienced and debt-laden Reliance Defence as an offset partner. With the latest revelation, Rahul Gandhi stands vindicated of his allegations against the government in the Rafale deal and his demand for a thorough probe by a Joint Parliamentary Committee into the dubious deal sounds reasonable.

Tharcius S Fernando Chennai

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

Business Standard

Volume XXIII Number 128

MUMBAI | MONDAY, 11 FEBRUARY 2019

Repeal angel tax

Rewriting Section 56 (2) to exclude start-ups is difficult

The government is reportedly planning to raise the investment limit for availing income tax concessions by start-ups, and provide a clearer definition. The Department for Promotion of Industry and Internal Trade (DPIIT) has decided to form a working group to resolve the "angel tax" tangle. These are welcome developments as they signal that policymakers are becoming aware of the major issues caused by Section 56(2) of the Income-Tax Act. But while the Central Board of Direct Taxes (CBDT) has decided to go slow on demands under the section, and a mechanism for exemptions has been created, more than 2,000 start-ups have already received income-tax notices. Last week, two start-ups complained that their company accounts were frozen by the tax department and money withdrawn on account of angel tax demands. Though the CBDT later clarified that these were not related to angel tax, the fear factor persisted.

However, a lasting solution to the problem is deleting the contentious clause. Industry stakeholders, tax experts and the DPIIT itself have recommended the clause be scrapped. And, the government's plan to come up with a definition of a start-up sounds good on paper, but may prove to be a difficult task. The issue with the Section arises from the concept of taxing closely-held, unlisted companies, which issue shares at above "fair value". The difference between share price and "valuation" is taxed as income. This provision is supposed to prevent money laundering and to detect money being siphoned off into shell companies. Unfortunately, there is no hard and fast rule for valuing start-ups. Valuations are especially difficult in a service-oriented economy where new businesses are asset-light. Angel investors apply a combination of art and science to estimate growth while investing in start-ups. Entrepreneurs and investors accept this equation of high risk and high reward. Repeated tax notices add an unnecessary element of stress to an already high-risk ecosystem. Another troubling oddity is that this Section is discriminatory in that start-ups raising equity abroad are not subject to this scrutiny. Given the framing of the Section and the discretionary powers of officers assessing valuations, notices are more likely than not for Indian-funded start-ups. It is estimated that over 70 per cent of start-ups, with Indian investors, have received IT notices.

The exemption process is cumbersome, involving applications with lots of paperwork to the DPIIT, which has the discretion to recommend exemptions to the CBDT. Rewriting the Section to exclude start-ups from its ambit is easier said than done. How does one define a start-up, and distinguish it from a newly registered shell company? On paper, a newly registered shell company is indistinguishable from a bona fide start-up until it has started generating revenues. There are other tried and tested ways to identify money laundering. Indeed, the government claims that it has deregistered millions of shell companies in the last four years. Money laundering and tax evasion are pernicious practices that need to be eliminated. But the start-up ecosystem is vitally necessary for generating business activity, and for creating employment. The angel tax clause must go if it cannot be rewritten to explicitly exclude start-ups from this form of tax terrorism.

Infrastructure, not finance

IBC process hampered more by delays than lack of funds

The Reserve Bank of India (RBI) has allowed bidders for stressed assets under the Insolvency and Bankruptcy Code (IBC) to raise funds abroad. The RBI relaxed the end-use restrictions for external commercial borrowings (ECBs). Till last week, funds borrowed abroad could not be used to pay back domestic rupee-denominated loans. However, an exception is being made to this for the IBC process. The argument against using ECB for repayments of domestic loans is that it might, through ever-greening and currency risk, introduce additional risk into the economy. However, if the borrowing is for the IBC process, then that is unlikely to be the case. Thus, the RBI's move cannot be faulted, especially as it has specified that overseas branches of Indian banks are not eligible under this condition. The aim is clearly to reduce stress in the Indian banking system and clear up funds for general lending that might otherwise have been taken up by the IBC process. Hopefully the greater availability of funds will also allow for Indian creditor banks to take less of a haircut on various stressed assets, thereby also improving the health of the banking system.

It is vital that the RBI and the government stay engaged in tweaking the IBC process in response to the various problems that emerge in its initial years. The biggest problem, however, has not been lack of funds. It is simply that the two-year-old IBC process uses a great deal of capacity and resources. It is, under current conditions, simply not easily scalable. There has been a visible slowdown in how the process has been operating over the past year. The original 270-day timeline is not being adhered to. Even of the first set of 12 big borrowers that were taken to the National Company Law Tribunal, or NCLT — which together owed about a quarter of the initial estimate of ₹8 trillion outstanding — less than half have been resolved so far. A report from the credit rating agency ICRA towards the end of last calendar year calculated the delays beyond the 270-day deadline had cost banks about ₹4,000 crore in terms of interest income foregone — just for the first set of borrowers. As a consequence, some lenders are now seeking solutions outside the IBC system. The State Bank of India announced in January it would auction its loan portfolio that had an exposure to Essar Steel, nominally worth over ₹15,000 crore. The Essar Steel insolvency proceedings had been ongoing for over 500 days at the time of the decision.

The essential problem is a lack of resources within the IBC system. The code, as originally drafted, had also sought to create an ecosystem that would have provided a greater cadre of resolution professionals and helped make the process scalable. However, this aspect of the law was diluted before it was passed. This is now beginning to bite. Even the simple admission of a bankruptcy application, supposed to take 15 days, can take months or even a year. The government needs to invest in physical and human infrastructure to speed up the process if the IBC is to succeed in the long run.

ILLUSTRATION BY AJAY MOHANTY

A country is not a company

Expertise in managing government cannot easily be transferred to a firm

SNAKES & LADDERS

AJAY SHAH

In India, we know a lot about how to run a firm. But the transferability of knowledge from management of firms into management of government is quite limited. Governments suffer from weak feedback loops. The essence of government — the power to coerce — is absent in firms. The size and complexity of government is greater than what is found in the largest and most complex firms. The key ingredients of government — policy and negotiation — are not seen in firms. The world of policy and public administration is fundamentally different from the world of profits in firms.

Before 1991, most firms in India were managed poorly. We now have a large number of extremely well-run firms in India. The key persons in these firms are legitimately proud of their ability to run large complex organisations. Alongside this, we see the shambolic Indian state, which is unable to get the basics right. Can management skills and techniques carry over from the Indian private sector into government?

The first problem lies in feedback loops. All big private firms are listed for trading on the stock market and see a stock price. The vast machinery of speculation in financial markets produces a real-time measure of the performance of the firm. Internally, private firms see operational MIS statements, which are updated daily. Revenue and profit are simple tools to distil the working of the firm down into a numerical yardstick.

These measures are absent when it comes to a country. The exchange rate is not a measure of the success or failure of the country, and the stock market index is a weak measure. There is no daily measure and feedback loop from decisions to measures of performance.

The problem is worse in India when compared to advanced economies, as we observe GDP inaccurately. A reasonably useful report card about the workings of the economy can now be constructed through the measurement of aggregate firm performance, investment projects and household conditions. But this will still induce weak feedback loops for the conduct of policy.

The second big area of difference lies in the powers of government. In a firm, the levers controlled by the management cover products, production processes and the internal organisation of the firm. In government, there is decision-making power about the internal organisation. But the surpassing feature of government is the monopolistic power to coerce.

The state has a monopoly on violence. It is able to coerce private persons, either to pay taxes or to change behaviour. State agencies are generally monopolies. The only place that you can get a driver's licence is a government office; the customer has no choice.

Private firms control their internal activities, and cannot coerce persons outside the boundary of the firm. They look outside anxiously, wondering how customers will take to their products. Customers have all the power to reject the fruits of the labour of the firm. In contrast, state agencies control their internal activities, and coerce the people outside. To paraphrase Manish Sabharwal, the typical state agency has hostages, not customers. There is a fundamental arrogance about state organisations that private organisations do not suffer from. The puzzle of public policy lies in reining in employees who have the power to raid and imprison.

The third area of non-comparability lies in size and complexity. A big firm in India has 25,000 employees. Compared to this, state structures are vast. Indian Railways has 1.3 million employees. Even if the efficient staffing at Indian Railways is half this size, it is a vast and complex organisation when compared to what we see in the private sector.

The public policy process plays out not just through employees but through everyone. This further increases the complexity of decision making. Policy decisions have to take into account the internal behaviour of large complex government organisations, and then the responses of the general public, which in India's case is above a billion people. This is a scale of complexity that is just not found in private firms.

Finally, we turn to the essence of the policy process: Policy thinking and negotiation. What works in government is an approach of getting a policy right, and then letting it play out in a non-discretionary non-tactical fashion. A large number of people will engage with a policy and make their own choices, and a sensible government will not behave in a tactical way.

Government is the zone of general frameworks that give pretty good results in the large. In contrast, a private firm is a large number of contracts with different touch points, and potentially each contract can be different. There is no equal treatment clause that binds a private firm.

The management of a private firm is often quite autocratic, partly because its internal staff is all that it controls. In contrast, public policy requires dispersion of power. Successful governments feature an endless process of negotiation and compromise, partly because the essence of government is the coercion of persons outside government. The leadership in the world of public policy has to have the traits of listening, respecting and negotiating middle roads. This is a very different organisational culture when compared with what is found in most private firms.

It is interesting to see that the organisational DNA in some of the largest and most complex firms veers towards the strategies of government. The largest and most complex firms have reduced the power of the chief executive officer, dispersed decision-making structures, and put a greater emphasis on rules rather than discretion. The challenge of public administration lies in carrying this organisational evolution forward with a scale-up of 100 or 1,000 times.

We in India revere success and wealth, and there is a lot of respect for business folk. We tend to assume (say) that sound HR practices in TCS will work well in government. But we should be cautious when thinking about transferring expertise into the world of public policy. A country is not a company.

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

Global-Local and illegal

DOWN TO EARTH

SUNITA NARAIN

Some weeks ago, I had discussed how "illegal" industrial activities were flourishing in so-called illegal colonies of Delhi. This was the case of Shiv Vihar, where factories had come up in homes to dye and wash jeans in blue. The Delhi High Court had taken up the matter because of groundwater contamination from chemical effluents of these units and because it had been linked to increased cases of cancer.

This last fortnight I visited this colony. It is like all other unauthorised colonies — called so in the city master plan because these are not formally sanctioned by authorities. They have no plan; they have no existence. But exist they do. Shiv Vihar alone has some 100,000 inhabitants. The land was termed agricultural; but houses sprang up illegally under the watchful eyes of everyone. There is no water supply — but people depend on groundwater, which is ample because of its proximity to the Yamuna flood plain. In fact, dyeing units came up here because of this free water availability. There is no official sewage connection, and house effluents are discharged into open drains. These drains then discharge into a larger drain, which joins the Yamuna. So, all effluents — domestic and chemical — make their way into the river, destroying any chances of cleaning it up.

My trip was to check on the status of the "illegal" factories and to see if we should collect further samples of water for testing. You may recall I had explained that according to the master plan, industrial activity was banned in the "unauthorised/regularised or unregularised colonies". There is a list of household industries, which is allowed to operate. But using chemicals for textile dyeing is not on that list. The High Court had cracked down on these factories. The Central Bureau of Investigation (CBI) had been directed to track down officials who allowed these to function.

As expected, this crackdown had worked. I found factory after factory (or rather house after house) listed as an operating dyeing unit closed. There were seals on many doors, indicating official shut-down. All good, I thought.

But then I looked at the drain. It was full of blue colour — the pigment of our jeans. Let's track down the drain, I said. Find where the colour is coming from. So, we walked through the narrow lanes, congested and full of human life. We came upon a closed door; we could hear the machines and see blue dye flowing into the drain.

I asked. I was told the factory was closed in Delhi. So, where is this coming from? This is Uttar Pradesh (UP). The lanes of the two states merge here. The gate of the factory used to open in Delhi; now the unit uses its backdoor and this opens in UP. Then another factory. Same story. This lane is in UP, not Delhi, I was told again.

The story spilled out. When the court cracked down, factories officially closed down and then shifted. Not far. Just a few houses away. But they moved from Delhi to UP. Another state, another court's jurisdiction. But the fact is that the factories still spew their effluents into the same drain, which connects to the Yamuna. No change here. The fact is that these effluents still contaminate groundwater and injure lives and wellbeing. No change here as well.

Why was I flabbergasted, I asked myself. Is this not the story of our globalised world? The fact is that as the cost of environmental regulations increased, the cost of production went up in the now rich world. It could afford to care about the quality of its water and its air. Its health concerns were non-negotiable. So, governments cracked down on pollution. It moved. It went to countries like China, Indonesia, Bangladesh or India. Our comparative advantage was that we could keep costs low — labour and environmental concerns were discounted. We all continued to wear jeans; these in fact became cheaper and more disposable; but they just came from somewhere else.

Then of course, global consumers rose in anguish against the factories of the third world. They could not bear to see crass abuse of workers. Simultaneously, in our world, where the factories had moved and started polluting, there was crackdown — this time led by environmental concerns. In Delhi, for instance, almost 10 years ago, the Supreme Court banned all polluting industries. The regulators cracked down on the "legal" industries. These then went underground — literally moved from the legal areas to illegal areas, like Shiv Vihar. In these areas, the pollution regulator cannot operate. The reasoning is simple. "These factories do not exist because they are illegal. If we give them notice then we will have to first legalise them, which we cannot do." Logically. But deadly for pollution.

So, where do we go now? Shiv Vihar has moved further into Shanti Nagar — the unauthorised and unregularised colony in UP, where the court is far away and the gaze of the regulator even further. In the factories I found poor migrants working in deplorable conditions; handling chemicals with bare hands; exposed to the toxins more than anyone else. In the colony I found everyone dependent on the same polluted groundwater. But they are poor. They do this because they have no option.

The option is with us. We have to change this cycle of destruction, where we shift our consumption to poorer regions where pollution does not matter. Livelihoods do. Clearly, the answer is to improve wellbeing through employment. But this employment cannot ask people to choose between livelihoods and death. This cannot be the way ahead. I will keep writing on this as I learn more and find more answers. Bear with me.

The writer is at the Centre for Science and Environment
sunita@cseindia.org
Twitter: @sunitanar

Anatomy of a nuclear disaster

BOOK REVIEW

JENNIFER SZALAI

The word "Chernobyl" has long been synonymous with the catastrophic reactor explosion of 1986 — grim shorthand for what still qualifies, more than three decades later, as the world's worst nuclear disaster.

As infamous as it is now, it's easy to forget that the calamity seemed to drift to international attention as if by accident. A full two days after the meltdown began in Ukraine, with winds carrying radioactive fallout into Europe, alarms went off at a nuclear power station in faraway Sweden. Only then did Soviet officials deign to release a terse statement acknowledging "an accident has taken place," while studiously neglecting to mention the specifics of what had happened or when.

In his chilling new book, *Midnight in Chernobyl*, the journalist Adam Higginbotham shows how an almost fanatical compulsion for secrecy among the Soviet Union's governing elite was part of what made the accident not just cataclysmic but so likely in the first place. Interviewing eyewitnesses and consulting declassified archives — an official record that was frustratingly meager when it came to certain details and, Higginbotham says, couldn't always be trusted — he reconstructs the disaster from the ground up. The result is superb, enthralling and necessarily terrifying.

Higginbotham spends the first part of the book narrating a pre-disaster idyll filled with technological optimism, glowing with possibility. Named for a nearby medieval town, the Chernobyl nuclear station was built in the 1970s, intended as "the new power plant that would one day make the USSR's nuclear engineering famous across the globe."

An "atomic city" called Pripyat was erected, a mere 10-minute drive from the plant, to house the influx of nuclear scientists and support staff. In a Soviet Union beset by economic stagnation and deprivation, Pripyat was an "oasis of plenty" — "a true workers' paradise."

Underneath it all, however, was the creaking foundation of a Soviet empire whose nuclear programme was governed by a combination of "ruthless expedience" and a perpetual fear of humiliation. Nuclear power was pursued as an economic panacea and a source of prestige, with Politburo officials imposing preposterous timetables and equally preposterous cost-cutting measures.

Higginbotham describes young workers who were promoted swiftly to positions of terrific responsibility. In an especially glaring example of entrenched cronyism, the Communist Party elevated an ideologically copacetic electrical engineer to the position of deputy plant director at Chernobyl: To make up for a total lack of experience with atomic energy, he took a correspondence course in nuclear physics.

Even more egregious than some personnel decisions were the structural problems built into the plant itself. Most fateful for Chernobyl was the baffling design of a crucial safety feature: control rods that could be lowered into the reactor core to slow down the process of nuclear fission. The rods contained boron carbide, which hampered reactivity, but the Soviets decided to tip them in graphite, which *facilitated* reactivity; it was a bid to save energy, and therefore money, by lessening the rods' moderating effect. Higginbotham calls it "an absurd and chilling inversion in the role of a safety device," likening it to wiring a car so that slamming the brakes would make it accelerate.

the book arrives at the early hours of April 26, 1986, the accident unfurls with a horrible inevitability. Weaving together the experiences of those who were there that night, Higginbotham marshals the details so meticulously that every step feels spring-loaded with tension. What started as a long overdue safety test of Chernobyl's Reactor No. 4 slipped quickly into a full-scale meltdown. An attempted shutdown using the graphite-tipped control rods of course had the opposite effect; the core grew hotter and hotter, and the reactor started to destroy itself.

Higginbotham describes an excruciating aftermath, as Pripyat's residents were coaxed into a "temporary" evacuation and middle-aged reservists were drafted into a haphazard cleanup process — though "cleanup" doesn't convey the perilous, Sisyphean ordeal they faced.

"Radionuclides," Higginbotham writes, "could be neither broken down nor destroyed — only relocated, entombed or interred." The protective gloves given to the reservists turned out to be so cumbersome that some of the men cleared radioactive debris with their bare hands.

Amid so much rich reporting and scrupulous analysis, some major themes emerge. One has to do with how Chernobyl exposed the untenable fissures in the Soviet system and hastened its collapse; the accident also encouraged Mikhail Gorbachev to pursue drastic reforms with even more zeal.

The accident also decimated international confidence in nuclear power, and a number of countries halted their own programmes — for a time, that is. Global warming has made the awesome potential of the atom a source of hope again and, according to some advocates, an urgent necessity; besides, as Higginbotham points out, nuclear power, from a statistical standpoint, is safer than the competing alternatives, including wind.

As for the remains of Chernobyl itself, they're now situated within an "exclusion zone" of 1,000 square miles, where wildlife flourishes in what Higginbotham calls "a radioactive Eden." Soviet obfuscation combined with the unpredictable course of radioactivity means that the true extent of the disaster may never be fully known. Joining a body of Chernobyl literature Higginbotham's extraordinary book is another advance in the long struggle to fill in some of the gaps, bringing much of what was hidden into the light.

MIDNIGHT IN CHERNOBYL
The Untold Story of the World's Greatest Nuclear Disaster
Adam Higginbotham
Simon & Schuster
538 pages; $29.95