

# Opinion

SATURDAY, OCTOBER 26, 2019



## FAITH IN DEMOCRACY

Prime minister of India, Narendra Modi

I am delighted to share that the BDC polls in Jammu, Kashmir, Leh and Ladakh were conducted in a very peaceful manner. There was no violence. This shows the people's unwavering faith in democracy

## Quantum leap for computing

Even if it is not quantum supremacy, Google's findings can revolutionise computing

**I**N 2012, AMERICAN theoretical physicist John Preskill coined the term 'quantum supremacy', stating it meant a point where a quantum computer could do something that classical computers, including the most advanced super computer of the day, simply couldn't. Preskill may not have expected an announcement of quantum supremacy so soon—in his 2012 paper, he had wondered if controlling quantum systems could be achieved "after a few decades of hard work" or if we "might not succeed for centuries"—but, Google has just announced that its quantum machine Sycamore was able to perform a "target computation" in 200 seconds. This, Google researchers wrote in a blog-post, they had estimated would take the fastest super-computer 10,000 years. That is surely impressive, but is it quantum supremacy, as Google claims it is? IBM begs to differ, as does Preskill. While IBM maintains that an ideal simulation of the same task "can be performed on a classical system in 2.5 days and with far greater fidelity" in a conservative, worst-case scenario, Preskill, in a *Quanta* article, writes that what Google has is a "noisy intermediate-scale quantum" system, with 'intermediate-scale' emphasising that Sycamore is potentially "large enough to perform certain highly specialised tasks beyond the reach of today's supercomputers", and "noisy" emphasising that we have "imperfect control over the qubits (the currency of quantum computing), resulting in small errors that accumulate over time; if we attempt too long a computation, we're not likely to get the right answer." Google's Sycamore announcement, nevertheless, is a paradigm shift for computing.

While classical computing is based on bits—each bit represents either 0 or 1 of the binary system, and combinations are used to store more complex information—quantum computers use qubits; each qubit can simultaneously bear two states or levels of a binary system. Take, for instance, the two faces of a coin. In a stationary state, the coin represents a bit, in which only one side of the coin is visible. But, if the same coin is tossed, to the naked eye, it is impossible to tell if the coin is heads-side up or tails-side up because both sides seem to appear simultaneously, representing a qubit. Though very remote from being a perfect analogy, the coin example demonstrates that a qubit can coherently exhibit a superposition of two states of binary system. This makes quantum systems infinitesimally faster than classical systems—if a 2-bit system in an ordinary computer can represent only one of the four binary combinations possible for this system (00, 01, 10, 11) at a specific point in time, a 2-qubit register can store all four combination simultaneously. Values, thus, can be represented by protons and electrons, which may travel in waves, making them fluid. This also means these computers are challenging to make and maintain. That is the reason that despite being used in millions of experiment—IBM's machine alone has been used to design 17 million—not much has transpired on the physical front. Quantum experiments can change the face of predictions and forecasting, and can enable solving of harder problems. Cryptography and creating unbreakable protocols is just one of the uses. Quantum can help with space exploration, making calculations within a millisecond, predict hurricanes and other natural phenomena much more accurately and far ahead in time, run millions of scenarios, leading to the discovery of more efficient products like storage batteries. With Google having kicked off the quantum race in a meaningful manner, private and government sector companies will have to logarithmically increase efforts to yield the quantum advantage. While India announced quantum efforts last year, Google's announcement means stepping up support in an unprecedented scale.

## Punishing dissent

NCRB data shows why sedition must go

**C**ASES RECORDED AS offences against the state in the National Crime Records Bureau's (NCRB's) latest *Crime in India Statistics report* (for 2017)—such offences were separately recorded by NCRB only since 2014—saw a jump of 23%, from 6,986 cases registered in 2016 to 9,013 registered in 2017. Of the cases under offences against the state reported for 2017, 51 are sedition cases, 24 are cases related to imputations and assertions prejudicial to national integration—these would come under Section 121-123 of the IPC, which would cover offences such as questioning a community's allegiance to the nation—and 901 cases were registered under the Unlawful Activities (Prevention) Act. To put the import of the UAPA Act in perspective, lawyer-activist Sudha Bharadwaj, activist Gautam Bharadwaj and others accused of playing a role in the Bhima-Koregaon violence face charges under the Act that doesn't allow for bail, and Bharadwaj has been in jail for over a year now without trial.

In 2014, NCRB had reported a total of 47 cases of sedition, and 58 people were arrested. In 2015 and 2016, the corresponding figures were 30 cases and 73 arrests, and 35 cases and 48 arrests, respectively—61 of the total sedition cases were still being investigated at the close of 2016, and roughly a third of the cases had been closed even before they reached the trial stage. In 2017, conviction was awarded in just one case of sedition. This shows how trigger-happy the government has been with the law that is a remnant of the colonial era and has no place in a modern democracy that allows space for dissent. A new class of "crimes by anti-national elements", where anti-national elements are broadly understood to be left-wing extremists, insurgents from the North East, and terrorists, including 'jihadi' terrorists, has been created against a backdrop of ready branding of those voicing dissenting against the government at the Centre, and even majoritarian ideological positions, as anti-national. While anti-national elements committed a total of 1,450 crimes under various sections of the IPC and special local laws (SLL) in 2017, the total number of IPC and SLL crimes in 2017 was a little over 50 lakh. Amongst the things (excluding 1,845 pieces of arms) seized from anti-nationals were 242 units of 'literature', and 222 mobiles from a total of 1,146 items seized. While the home minister has talked of the need to overhaul the IPC, to get rid of its "master and servant" spirit, given the IPC was meant to "maintain the stability of the British empire", if individuals keep getting slapped with sedition charges, it is hard to see such an intent finding fruition. Indeed, in a reply, in July this year, in the Rajya Sabha, the home ministry said "There is no proposal to scrap the sedition law. There is a need to retain the provision to effectively combat anti-national, secessionist and terrorist elements."

## GRAPGap

GRAP, to a limited extent, may help tackle air pollution in NCR, but a long-term pollution vision is required

**T**HE GRADED RESPONSE Action Plan (GRAP) to control air pollution in Delhi kicked in on October 15, but the air quality index (AQI) is predicted to remain 'very poor' or worsen to 'severe'. Under GRAP, are proactive measures like odd-even, use of diesel generators, shutting down brick kilns and stone crushers, etc. But, such action, no matter how necessary it seems, is just an episodic response. Thus, it means pollution is not addressed, merely mitigated to the extent these measures make possible—which is, as the AQI predictions show, nowhere nearly enough. Biomass burning, a seasonal phenomenon, will contribute to the NCR's air becoming noxious while the many exemptions in Delhi's odd-even plan mean it will hardly make a dent on reducing pollutant levels. The fact is practices like crop stubble burning continue despite the government's attempt to crack down on it, and even cajole farmers away from it. While there is a ban and steep fines, these have hardly deterred farmers in Punjab and Haryana. On top, a court-ordered stay on collection of fines slapped last year has meant a chilling effect on challaning this year. Despite the heavy subsidies for paddy-management equipment, and even government schemes to rent machinery, crop burning has seen a 25% increase in Punjab this year so far. Similarly, the sweeping efficiency of the mechanised road sweepers—based on fuel consumed and length of road swept—needs to vastly improve, as a Teri study has pointed out. The government must continue with GRAP, but also chart a long-term course for effectively fighting pollution. Else, it would just be administering homeopathic doses when urgent surgery is required.

## GAMIFYING EQUALITY

GAMES LIKE THIS ONE ATTEMPT TO HAVE PLAYERS RECKON WITH SOCIAL INEQUALITIES. BUT, THERE IS A FINE LINE BETWEEN TEACHING AND PANDERING

# Ms Monopoly creates a world where no one wins

**F**OR NEARLY AS long as people have been playing games, we've used them as tools of moral and political education. An Indian folk game, created to teach about the ups and downs of karma, morphed into Chutes & Ladders. In the 19th century Checkered Game of Life, virtues and vices like honesty and idleness became spaces on the board that could send you forward or backward on the path that eventually became The Game of Life.

Today there are so-called empathy games, a sub-genre designed to broaden players' imaginative and interpersonal horizons, such as 2013's popular video game Papers, Please, which asks you to play as a 1980s Eastern Bloc border control officer. Putting yourself in someone else's shoes is an increasingly popular—albeit contested—goal of virtual reality. And designers continue to make board games with a political bent, exploring issues ranging from anti-colonialism to India's elections.

Some games that attempt to impart the experience of another person succeed, and make us more complex and open in the process—like The Grizzled, a cooperative game about surviving the trenches of World War I. Others fail by pandering to their audience, inspiring smug satisfaction at engaging with "valuable" culture. In almost all cases, these games will ask you to play as someone of a different demographic from yourself.

Take 1971's Woman & Man: The Classic Confrontation, where players could choose to be a female or a male character, each with a specific professional objective—a woman might, for example, try to get promoted from kindergarten teacher to school superintendent. Players can also choose whether or not to play as women in Ms Monopoly, a new variant on the world's best-known board game, released last month. Ostensibly, Ms Monopoly is meant to depict the inequality women face in society, but every player has the same objective: to make the most money.

Ms Monopoly has been touted by

ERIC THURM

New York Times



Hasbro as the first game "where women make more than men." As with Woman & Man, players can choose whether their character is a man or a woman. (As the rules put it, "who you are is up to you.") But here, women start with more money and earn more each time they pass "GO," thanks to the character of Ms Monopoly, a young "self-made investment guru" and the niece of Mr Monopoly (previously known as Rich Uncle Pennybags). That is good news for any man looking to benefit from an arbitrary shift in rules: In the first game of Ms Monopoly I played, I was the lone person playing as a man—my other male friend chose to play as a woman for purposes of gaming the system.

Accordingly, I only acquired a few of the game's "projects," Ms Monopoly's replacement for classic Monopoly properties like Park Place or Boardwalk. Each project represents a woman's invention, ranging from scientific marvels like space station batteries to domestic innovations created by women trying to improve their day-to-day lives, like dishwashers.

Placed together on the board, these projects are framed as part of a single legacy of women's innovation and empowerment. It is all part of Ms Monopoly's goal, as laid out in the game rules: "To support up-and-coming entrepreneurs—especially women!"

This canon of invention is a testament to the way games can expand the horizon of the possible. But the limits of a game's rules also create limits to our imagination. Both Woman & Man and Ms Monopoly have something to say about sexism, but both games are wearing blinders. Everyone illustrated in Woman & Man and Ms Monopoly is

white, and the problems described in the games are disproportionately those affecting young professionals in monogamous, heterosexual relationships. The chance cards in Ms Monopoly include such universal opportunities for women as getting 100,000 subscribers for your podcast, or winning a baseball championship because you threw "like a girl."

Aversion of Ms Monopoly that takes into consideration the pay gap between, say women from different racial backgrounds, would be far more complicated, and also create additional roles to choose. Maybe the game would accomplish its goal better if we could add in differences for queer and transgender women, and for the class upbringing of the player. Maybe specific sets of rules by age? Hair colour? The game would get ever more accurate, and harder to play.

Playing this kind of political board game does make an individual system—like, say, underrepresentation of women entrepreneurs—more digestible. That is why The Landlord's Game, the original version of Monopoly, was designed to teach people about a single, specific policy: socialist economist Henry George's proposed land tax. A game flattens the world into cardboard—easier to understand, but simplified.

Ms Monopoly has a point: Women are at a disadvantage in entrepreneurial and inventive settings. But the game of Monopoly's success itself reinforces the systems that make that inequality possible: Though Charles Darrow is cred-

ited as the creator of Monopoly, the patent for the game was stolen from Elizabeth Magie, the inventor of The Landlord's Game.

Rather than model the discrimination faced by women in the workplace or investigate what might improve working conditions, Ms Monopoly has created a surface-level fantasy world where women succeed merely by virtue of being women, and where all players are incentivised to be women in order to win. (There are a few cards that disproportionately reward men, including one where the player attends a women's rally. It is not enough to outweigh the benefits of playing as a woman.)

Who wins in that world? Darrow, a cheater in the game of the American market, was the one ultimately rewarded by the rules.

My two friends playing as women ended our first game of Ms Monopoly with \$4,140 and \$4,100, only a \$40 difference between them. I, the lone man, finished with \$2,645—about \$1,500 behind. Games teach you how to respond to them, nestling values in the guise of rules and conditions for victory. In this case, the lesson I learned was "lie about your identity for personal gain."

The closest high-tech analogues of Ms Monopoly aren't empathy games, or any virtual reality attempt to inhabit another identity—they are gamified gig economy apps. Whether they create "challenges" for ride share drivers or reward Amazon workers for efficiency, these games create the illusion of player victory while an external party reaps all the benefits.

Games can be effective political tools, but they're also created by people (and companies) with their own particular motives—motives that may or may not be explicit in the rules. It is possible to be the winner in your game, and a mere piece in someone else's.

**The closest high-tech analogues of Ms Monopoly aren't empathy games, or any VR attempt to inhabit another identity but gamified gig economy apps**

## Integrating nutrition mission with PDS

Expanding the food basket under the Public Distribution System can be effective in combating undernutrition and malnutrition in India

BAL KRISHAN NEGI & SEEMA BATHLA

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**AS PER THE** latest National Family Health Survey (NFHS-4) (2015-16), the nutritional status of children and adults has shown improvement over the preceding survey (2005-06). Ironically, the proportion of children who are underweight and are suffering from stunting/wasting continues to be high at 35.8%, 38.4% and 21%, respectively. While there is an increasing evidence of a shift away from cereals to high-value products, including milk in India, the puzzling issue is that the dietary diversification is not associated with an increase in the nutrient intake. The nutritional outcome of a person depends on micro and macronutrient intake such as mineral, vitamins, calorie and protein besides safe drinking water, sanitation, health and environment. As per the NSSO consumption surveys, the per capita per day calorie intake has declined both in urban and rural areas since 1970s, except during 2011-12 (68th round) when some improvement was reported over the previous survey. Two divergent arguments are given to explain this. The first is that, due to growing income levels, a dietary diversification has taken place, and the second is, people are not able to access cereals due to agrarian distress and inflationary pressure.

Consumption is still a major source of calorie and protein by the households (HHs), especially among the poor ones. The pace of shift towards high-value food items tends to be slow in rural areas as compared to the urban areas. Moreover, the calorie and protein intake of poor people is much lower

than the stipulated level proposed by the ICMR-NIN (2010). This is despite their high dependence on the subsidised foodgrain available under PDS.

Research shows that cereal may not be a constant source of nutrition. Qualitative dietary improvements under the government's flagship programme—National Nutrition Mission (NNM), also known as the Rashtriya Poshan Mission—is also an imperative. We feel that the programme can be made successful if it is integrated with the PDS. In doing so, the PDS has to expand its food basket by adding and distributing quality proteins such as pulses, milk, meat and eggs. The latest NSS survey (2011-12) shows that pulse consumption barely contributes 10% of protein intake in rural areas and the share of other suggested commodities in energy intake is way below 10%.

Results from our primary survey done in district Kullu in Himachal Pradesh where pulses, edible oil and salt are distributed to people through the PDS show positive outcomes. Based on a pilot survey of 50 households, we find that the proportion of population suffering from undernutrition and malnutrition, based on age, sex and work adjusted ICMR-NIN (2010) recommended dietary allowance, have significantly declined over time. A comparison of nutritional standards of HHs taking pulses from

PDS with those who don't avail shows higher nutrient value (calorie and protein) of the former category of HHs and hence reduction in their level of undernutrition (calorie deficiency). The undernutrition among HHs above poverty line (APL) is much higher, at 66.66% against 47.33% who take pulses. Similarly, the difference is higher at 39.02% for below poverty line households (BPL) HHs, 16.28% for priority households (PH) and 20.75% for all card holders. Similarly, malnutrition (i.e. protein deficiency) among HHs taking pulses from PDS is lower by 24.67% for APL households, 12.19% for BPL households, 13.95% for priority households and 19.37% for all card holders.

We reiterate that pulses play an important role in reducing the undernutrition and malnutrition in the surveyed region. Furthermore, the share of all items available through PDS in calorie and protein intake is 31.03% and 28.33% respectively. Out of this, the contribution of pulses in calorie intake is 11.71%, and protein intake is much higher at 22.79%. Besides Himachal Pradesh, the pulses are distributed under the PDS in Tamil Nadu and Chhattisgarh in addition to cereals. This can be an effective way to combat the problem of undernourishment among the poor, particularly in poor districts where the problem of deficiency of calorie and protein is relentless.

**Research shows that cereal may not be a constant source of nutrition. Qualitative dietary improvements under the government's flagship programme is also an imperative**

## LETTERS TO THE EDITOR

### The future of Indian wicket-keeping

The Board of Control for Cricket in India Chairman of Selectors has recently opined about how it is 'moving on' with respect to the selection of Mahendra Singh Dhoni into the squad after the successful stint at the recently concluded World Cup tournament. The statement comes at a time when Indian cricket team is now well equipped with three wicket-keeping talents, namely Wridhaman Saha, Rishab Pant, and Sanju Samson. The squad, as announced for the upcoming India Bangladesh series, consists of wicket-keepers selectively for Tests, ODIs, and T20s only, revealing abundant talent choice, and indicating a full platter in BCCI's hands. The decision to leave the matter of retirement to MS Dhoni is a mature and humble move and gives due respect to the player's stature. Such a practice has been followed by the selectors for many years while expecting a clear formal intent from the senior players either to continue or retire early. However, as there are a lot of opportunities arising across all levels of Indian cricket, including Zonal Cricket and IPL, BCCI now has more choices while selecting a wicket-keeper to the squad under current situations. The announcement of the Indian squad for the upcoming Indo-Bangla series has enabled a wide spectrum of opportunities in different formats for all the three wicket-keepers selected by BCCI. Thus, BCCI has now a platter full of opportunities regarding the choice of wicket-keeping and number 4/5 position in the Indian team. — Varun Dambal, Bengaluru

Write to us at feletters@expressindia.com



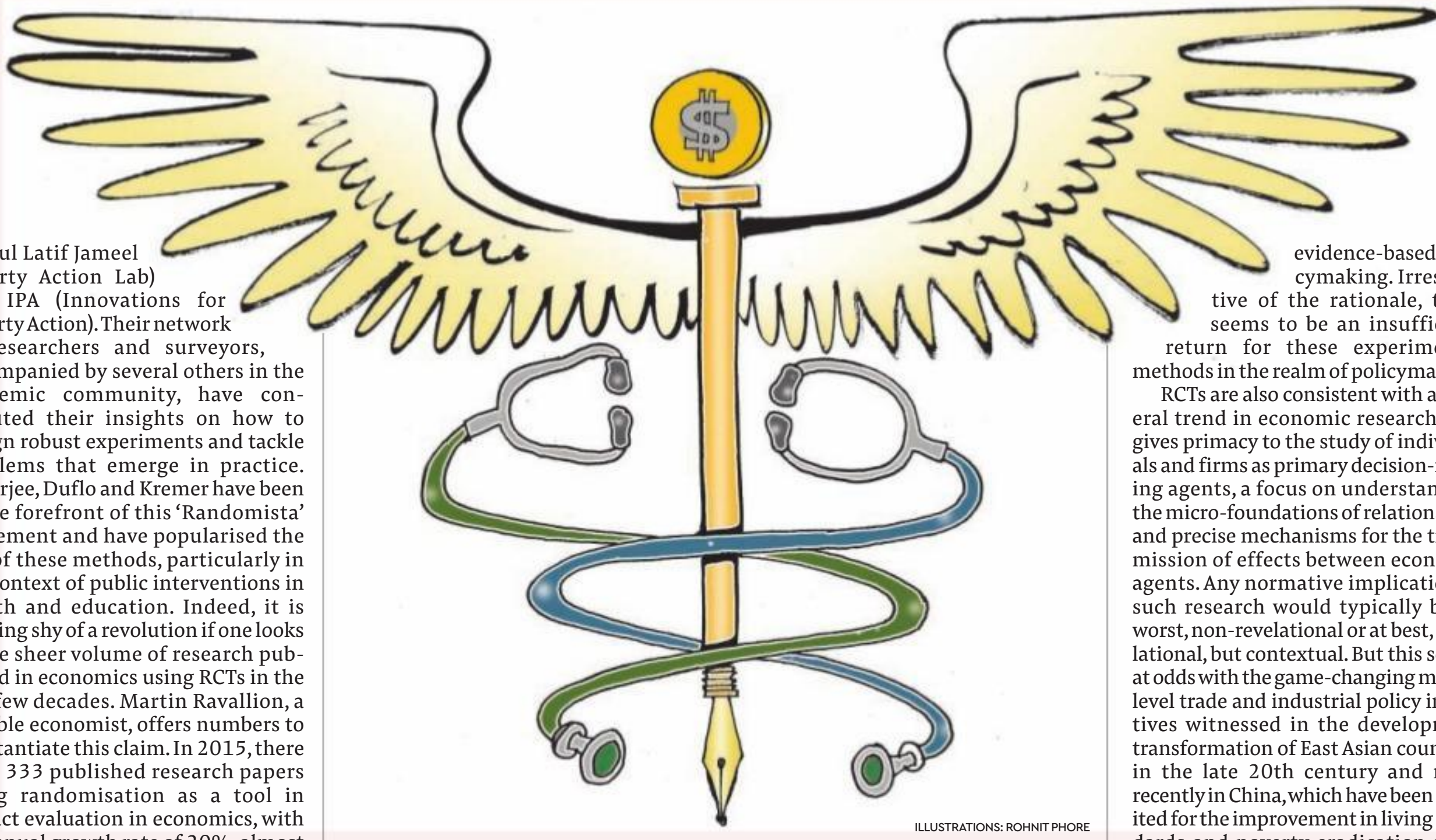
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● RANDOMISED CONTROLLED TRIALS

# A non-random approach to policymaking

Observational and experimental research approaches need to be seen as complementary and their use in policy formulation non-negotiable. Where experimental methods are infeasible or highly contextualised, the use of large observational datasets is vital for decision-making and priority-setting, particularly at national and sub-national levels



(Abdul Latif Jameel Poverty Action Lab) and IPA (Innovations for Poverty Action). Their network of researchers and surveyors, accompanied by several others in the academic community, have contributed their insights on how to design robust experiments and tackle problems that emerge in practice. Banerjee, Duflo and Kremer have been at the forefront of this 'Randomista' movement and have popularised the use of these methods, particularly in the context of public interventions in health and education. Indeed, it is nothing shy of a revolution if one looks at the sheer volume of research published in economics using RCTs in the last few decades. Martin Ravallion, a notable economist, offers numbers to substantiate this claim. In 2015, there were 333 published research papers using randomisation as a tool in impact evaluation in economics, with an annual growth rate of 20%, almost double of that for all scientific publishing post World War II (Ravallion, CGD Working Paper 492, 2018).

The use of these methods in economics helps respond to a classic criticism of the discipline—that economic policies are often shaped by outdated theoretical models or thumb rules, and not founded in empirical reality. By importing from the discipline of medicine, economists have been able to develop tools that approximate scientific experiments and obtain informed answers to specific policy questions.

As an academic exercise, this is right on the mark in the applied economist's never-ending pursuit to identify exact causal relationships in an otherwise complex world. It would also not be surprising to observe an exponential rise in the use of these methods in other social sciences in the coming years. As Banerjee put it himself, it allows the researcher to design an experiment and tailor the questions she wants to ask to the relevant context, rather than be restricted by the available data. However, RCTs are extremely costly

to run, often millions of dollars, even in the narrow context that they are usually administered in. That many, if not most, RCTs are not scaled up and do not translate into policy at the national or sub-national levels of operation, begs the question whether this really is a worthwhile exercise? Critics argue that the latter is often due to issues of external validity, i.e. the effect of an intervention may be context-specific and inapplicable for a broader setting. Another reason, closer to home, is possibly the lack of political will to deal in

evidence-based policymaking. Irrespective of the rationale, there seems to be an insufficient return for these experimental methods in the realm of policymaking. RCTs are also consistent with a general trend in economic research that gives primacy to the study of individuals and firms as primary decision-making agents, a focus on understanding the micro-foundations of relationships and precise mechanisms for the transmission of effects between economic agents. Any normative implication of such research would typically be, at best, non-revelational or at best, revelational, but contextual. But this seems at odds with the game-changing macro-level trade and industrial policy initiatives witnessed in the development transformation of East Asian countries in the late 20th century and more recently in China, which have been credited for the improvement in living standards and poverty eradication at an unprecedented scale and pace. This apparent disconnect has been acknowledged by this year's Nobel awardees. In a paper prepared for the World Bank's 'The State of Economics, The State of the World' conference in 2016, they admit "The view is that the 'academic' desire to come up with the cleverest research design may not line up with the practitioners need to identify scalable innovations (the next cellphone), or 'change systems' (healthcare) or reform institutions (democracy)." The question then is where does the

middle ground lie in the debate on the role of RCT in policymaking? The answer may depend on the camp that one is a part of academics or policy practitioners, and how these groups envision their role in society. The privilege awarded to academics in running the experiments they do bestows upon them a responsibility to generate returns beyond the incentives given to the sample of participants involved in their studies. Such considerations should feature significantly in the determination of their research agenda and research design. At the same time, practitioners should be subject to stricter 'perform or perish' standards, not unlike their academic counterparts. They must think of causality as the gold standard to aspire for, but need not be beholden to strict adherence to that objective. Indeed, collectively, they need to provide the *best possible* answers, with *best* signifying proximity to causal identification and *possible* the need to be as close as feasible to the relevant context. There is also a stockpile of existing research (both experimental and observational), which is often ignored in the formulation of new policies. With it, an equally large supply of young researchers and graduate students in economics, and closely related fields, who can be hired to aid in the process of consulting this overlooked material. Importantly, even if research in development economics veers towards randomisation, the collective approach must move beyond trial-and-error, and involve a *non-random* process of policy formulation and implementation. Observational and experimental research approaches need to be seen as complementary and their use in policy formulation non-negotiable. Indeed, where experimental methods are infeasible or highly contextualised, the use of large observational datasets is vital for decision-making and priority-setting, particularly at national and sub-national levels. This contention rests on two underlying requirements. First, practitioners in the government should have the requisite analytical expertise and a workpiece environment conducive to consult rigorous evidence in taking policies from the drawing board to the real world. Second, the integrity of grant-making institutions in the arena of policy-oriented research should be uncompromised by ideological considerations and dedicated to the goal of encouraging academic research that responds to what developing countries actually need. If these institutions cooperate in their pursuit of 'truth' and help bridge this gap between policymaking and academia, it will make the former more effective, and give the latter a better name.

**DATA DRIVE**

## Building business confidence

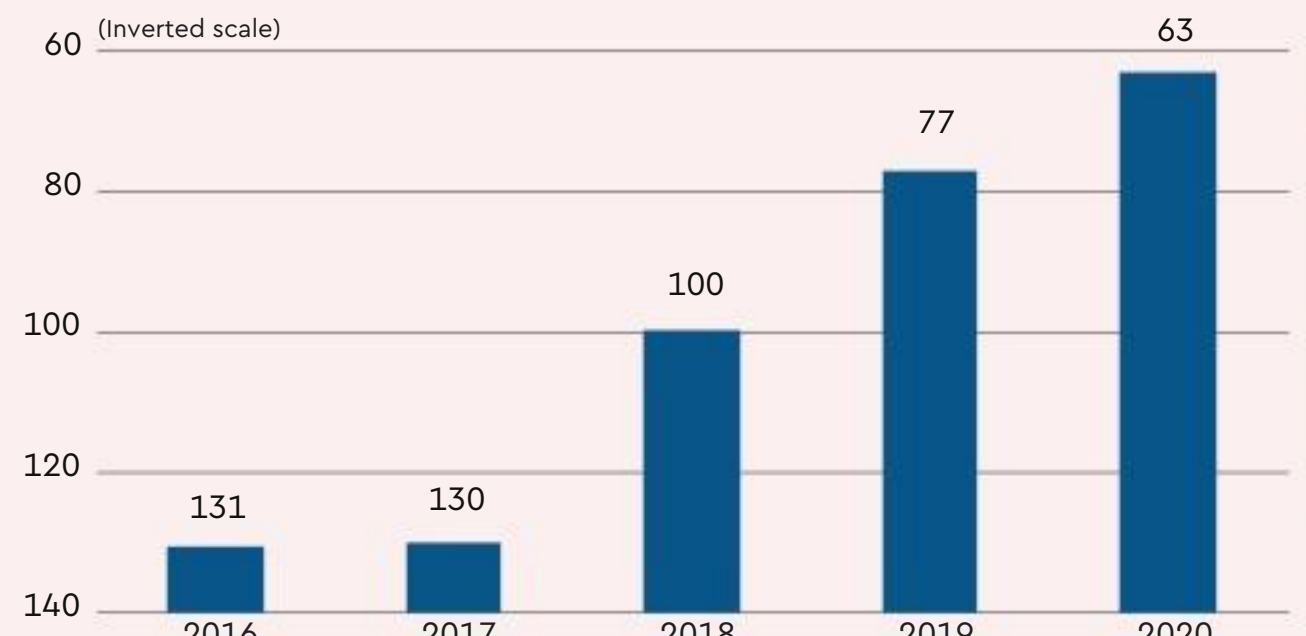
**INDIA CLIMBING UP** 14 positions in the latest ease-of-doing business (EoDB) rankings—the 2020 report was released on Thursday—is good news for the country, which is struggling with a slowdown. While the report lauds the government's efforts in implementing taxation reforms (GST), the real change has been in resolving insolvency. India's score has improved to 62.0 from 40.8, a 21.2 jump from last year. The report highlights that the recovery rate is now 71.6 cents against a dollar, and time has

gone down to 1.6 years. But, there is still scope for improvement. The country is ranked 136th on starting a business, 154th on registering property, 115th on paying taxes and 163rd on enforcing contracts. Increased reliance on technology may help with these reforms; the difficulty lies in transforming the judicial process in the country. Although India ranks better

than its South Asian counterparts, enforcement of contracts is one indicator where it lags countries like Bangladesh. The average time taken for a case is 1,445 days, while the cost, calculated as a percentage of claim value, is 31%. China, on the other hand, takes 496 days for case resolution, and costs stand at 16.2%. The high-income OECD economies do so in 589.6 days. Further jumps, thus, would depend on the willingness of the government to carry out judicial reforms.



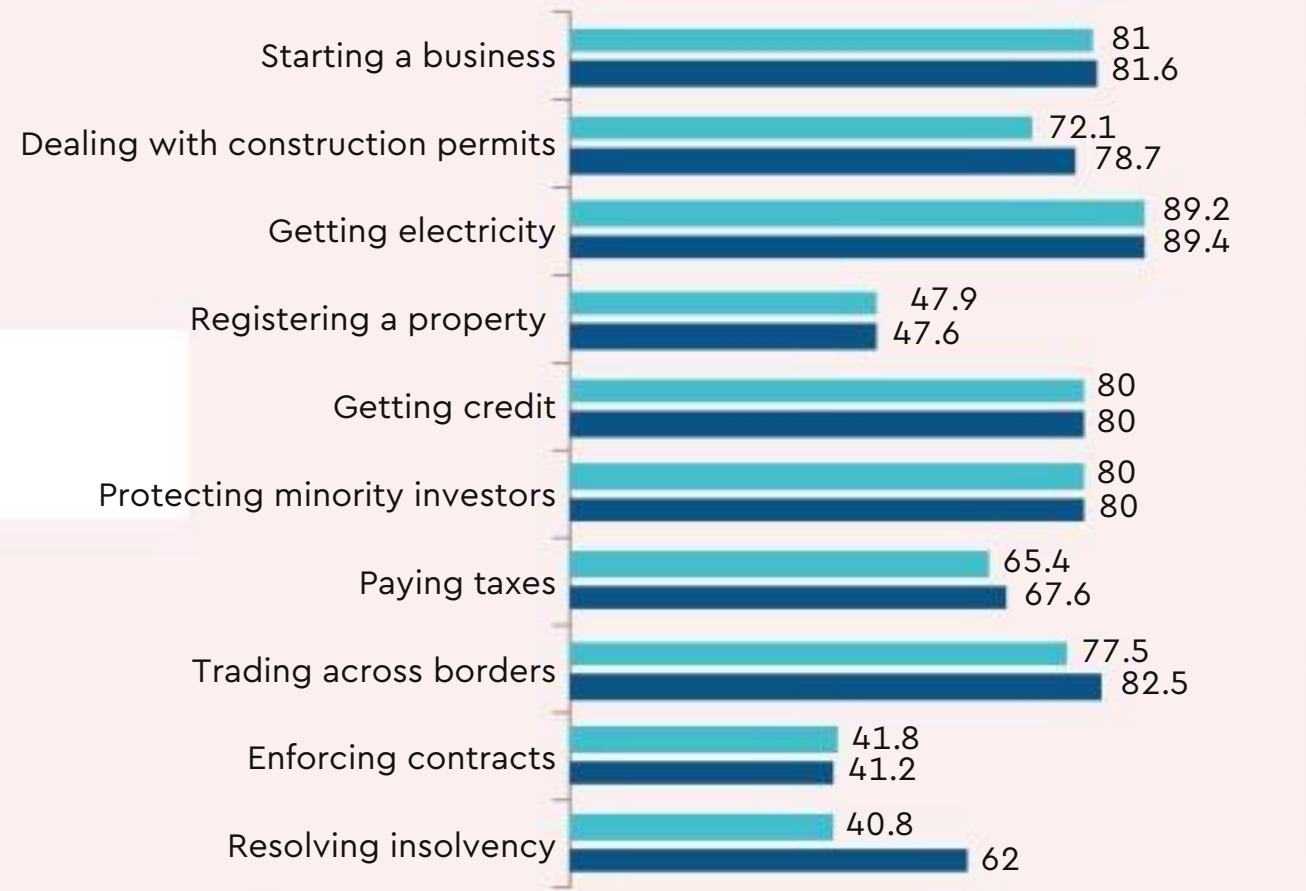
### India moves up 14 ranks



### Major improvements on most counts



### But on certain indices India has barely moved



### Judicial delays and costs are hampering growth

