Combating *Aedes*

Researchers have discovered that a common bacteria, *wolbachia*, can inhibit virus infections in mosquitoes

TECH-ENABLED

DEVANGSHU DATTA

One of the more interesting ways to combat mosquito-borne diseases is by infecting the mosquitoes with a parasite. The *Aedes aegypti* mosquito hosts the viruses responsible for dengue, zika, yellow fever and chikungunya. Female mosquitoes bite infected humans and pick up those viruses, which flourish within the mosquitoes' cells. These diseases are passed on when the infected mosquito bites somebody else.

Dengue causes 50-100 million infections every year while zika epidemics in the Latin America have had terrible effects on new-born babies. Yellow fever affects Brazil and Africa and chikungunya has caused epidemics across continents.

Researchers have discovered that a common bacteria, *wolbachia*, can inhibit virus infections in mosquitoes. The wolbachia bacteria is a parasite that comes in multiple strains. It is naturally present in 60 per cent of insect species, as well as in some nematodes (worms). But aedes is not a normal host for *wolbachia*.

The bacteria works in two ways to inhibit virus infections. It seems to boost the mosquito immune system, which makes it harder for viruses to infect the insect. It also competes with viruses for key molecules like cholesterol. Viruses need cholesterol to survive and *wolbachia* is more efficient at consuming cholesterol. Hence it starves any virus that does infect the mosquito.

Some strains of *wolbachia* present in nematodes are dangerous. They can cause inflammation that results in filaria and other diseases. But the strains used by researchers in the anti-mosquito experiments don't harm human beings, or large animals. This makes the introduction of the bacteria to the mosquito (the bacteria is present everywhere, anyhow) safe and environmentally sustainable.

Researchers at Universities in Melbourne and Glasgow and the Institute for Medical Research in Malaysia have worked with the World Mosquito Program (WMP) to experiment with the introduction of wolbachia to aedes populations.

In 2011, researchers led by Scott O'Neill, a professor at the Monash University in Melbourne, Australia, started injecting *wolbachia* into *aedes* eggs, after harvesting the bacteria from fruit flies where it is naturally present. After hatching, the *wolbachia*-infected aedes were released into pilot areas in Queensland to mate with wild aedes populations. Over time, the disease incidences of these pilot zones were compared to nearby control areas where *wolbachia*-mosquitoes were not present.

The mating of a *wolbachia*–infected male mosquito with an uninfected female mosquito results in sterile eggs. But *wolbachia*-infected female mosquitoes can breed with uninfected males, and produce offspring born carrying *wolbachia*. These *wolbachia* carrying mosquitoes spread through the population in successive generations. Over time, this brings down infection rates for endemic viral diseases.

This method could be more effective in the long run than insecticide sprays and less likely to cause health and environmental hazards. It is also cost effective since the bacteria propagates by itself, generation by generation.

There is statistical evidence that these experiments are working. The researchers claim Northern Queensland is almost disease-free due to this treatment. The WMP has set up projects in 12 countries and carrying mosquitoes covered populations of over 4 million people by June 2019. In Yogyakarta, Indonesia, municipal records indicated 76 per cent reduction in dengue infections in the 30 months since the release of the first batch of treated mosquitoes in a pilot zone, compared to the rates in adjoining control areas. Similarly, pilot projects in Brazil have led to a 75 per cent drop in chikungunya cases compared to untreated control sites.

Early studies involved one strain of *wolbachia*, known as *w*Mel. But *w*Mel can't handle really high-temperatures. Another team discovered that a different strain of wolbachia has better results in high temperature regions. This second team is led by Steven Sinkins, a vector biologist at the University of Glasgow and it introduced the high-temperature strain, *w*AlbB, in six pilot neighbourhoods in Kuala Lumpur. A study published in Current Biology reports that the second strain seems to thrive even in peak daily temperatures exceeding 36°C.

The WMP claims three independent risk assessments have been conducted on the *wolbachia* method. It says there is negligible risk associated with the release of *wolbachia* carrying mosquitoes; the bacteria is safe for people, animals and the environment. Hence, the concept has regulatory approval from government bodies in all countries where WMP has worked.

Other biological methods of combating aedes carry more risks. Genetically modifying mosquitoes to prevent breeding takes a very long time to affect large populations. Wiping out a local mosquito population could also have negative environmental consequences — the insects are an important part of the food chain. The WMP may now be looking to scale up the *wolbachia* method.

CHINESE WHISPERS

Cracking the whip

The Bahujan Samaj Party (BSP) has expelled some senior leaders, alleging indiscipline and working against the interests of the party. They include former state ministers and legislators. Many of these crestfallen leaders had contested the 2019 Lok Sabha polls and recent by-elections in Uttar Pradesh, but lost. Party chief Mayawati has also expelled C L Verma, a trusted colleague who had contested the Lok Sabha election from the Mohanlalganj (reserved) seat in Lucknow, but lost to Bharatiya Janata Party candidate Kaushal Kishore. Interestingly, Verma was a close confidant also of former UP minister Naseemuddin Siddiqui, who, in turn, was a true-blue follower of Mayawati before he fell out with her and joined the Congress.

Five enquiries not enough

The forest department of the Madhya Pradesh government is planning to conduct a record sixth enquiry into a plantation scam that supposedly took place when the Bharatiya Janata Party (BJP) was in power. The scam is of July 2017 vintage. The state government took a mammoth drive to plant 70 million saplings on a single day in the state. Forest Minister Umang Singhar, of the Congress, called it "systemic siphoning off of public funds". The forest department had reported that the plantation data was exaggerated. In the fresh enquiry, the government will also assess the capacity of the nurseries in the state.

Better safe than sorry

As onion prices touched ₹100 a kg in some parts of the country and as reports of consumers scrambling for the staple poured in, members of a co-operative society decided to take protection before distributing subsidised onions to consumers. Vendors of the Bihar State Cooperative Marketing Union were seen wearing helmets while unloading sacks of onions priced at ₹35 a kg for distribution. They had set up their stalls near Gandhi Maidan in Patna on Saturday. There were reports of onions being stolen from the stalls in the past couple of weeks. With no assurance of safety from the authorities, the vendors decided to make themselves safe.

Brace up for the sixth rate cut in a row

In his toughest policy, Shaktikanta Das, who completes his first year at RBI this month, must reassure the market that the fiscal slippage is priced in

BANKER'S TRUST

TAMAL BANDYOPADHYAY

Indian economy growing at 4.5 per cent in the September quarter, falling for the sixth quarter in a row, is no surprise. There will also be no surprise if the monetary policy committee (MPC), the policy making body of the Indian central bank, goes for yet another rate cut next week.

Will it be a 25 basis points (bps) cut to bring down the policy rate to 4.90 per cent? Or, a 15 bps cut to 5 per cent? One bps is a hundredth of a percentage point.

The historic low policy rate in Asia's third largest economy was 4.75 per cent when the Reserve Bank of India (RBI) cut it by 25 bps in April 2009, the last in a series of rate cuts in the aftermath of the fall of Lehman Brothers Holdings Inc. in September 2008, leading to deep recession in many parts of the world. The MPC was not in place then.

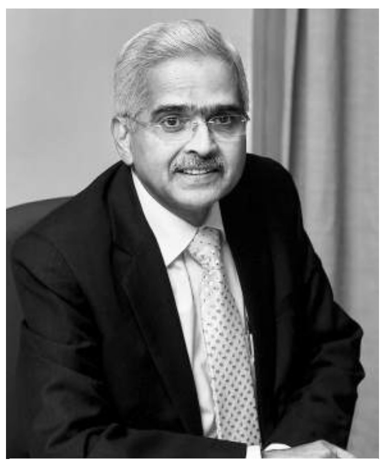
Between October 2008 and April 2009, the RBI cut the policy rate by 325 bps, from 9 per cent to 4.75 per cent. This time around, the policy rate has been pared by 135 bps in five phases since February 2019.

Since current Governor Shaktikanta Das took over in December 2018, every monetary policy has announced a rate cut. If the December policy does an encore, Das will equal D Subbarao's record of six rate cuts in a row in 2008-09, albeit in a different context. In 2009, the rate was cut to insulate the Indian economy from the impact of global recession; this time around, debates have been on to dissect the internal causes of a severe economic slowdown — structural or cyclical.

What has changed since the October policy? The external environment has improved. The US Federal Reserve seems to be done with rate cuts for the time being and the European Central Bank is expected to stay on hold. The Bank of England's action will depend on the fate of Brexit. In India, the pangs of slowdown have become more evident. The GDP, which grew at 5 per cent in the first quarter of the current fiscal year, has grown 4.5 per cent in the second quarter, the worst in six years.

It was not a shocker. Eight infrastructure sectors of the core sector contracted for the second consecutive month by 5.8 per cent in October, signalling the depth of the slowdown. The anaemic growth in bank credit corroborates the story.

The output gap is widening and the MPC's stated stance is "intensified efforts to restore the growth momentum". While paring the rate, the last policy statement conveyed the MPC decision to "continue with the accommodative stance as long as it is necessary to revive growth, while ensuring that inflation remains within the target".



Since Governor Shaktikanta Das took over in December 2018, every monetary policy has announced a rate cut. If the December policy does an encore, Das will equal D Subbarao's record of six rate cuts in a row in 2008-09, albeit in a different context

Does the latest inflation figure queer the pitch? The retail inflation rose 4.6 per cent in October against 4 per cent in September, higher than consensus expectation. However, it was driven by food prices but the so-called core or non-food, non-oil inflation dropped.

Higher inflation should not come in the way of RBI cutting the policy rate yet again. However, the central bank may have to revise its inflation projection upwards and growth projection downwards. In October, the retail inflation projections were revised slightly upwards to 3.4 per cent for the second quarter of 2020 but projections for the second half of the year were retained at 3.5-3.7 per cent. Most analysts see retail inflation above 4 per cent by year-end but within 4 per cent one year ahead. The MPC's flexible inflation target is 4 per cent with a plus/minus 2 per cent band.

In October, the real GDP growth projection for 2019 was revised downwards — from 6.9 per cent to 6.1 per cent; 5.3 per cent in the second quarter of 2019-20 and in the 6.6-7.2 per cent range for the second half of the year. The GDP growth for the first quarter of 2020-21 was also revised downwards to 7.2 per cent. The September quarter growth figure will douse the central bank's optimism on economic growth.

Every successive rate cut diminishes its marginal utility but the current economic scenario does not leave the MPC with any choice — it will probably go for a cut now and one more in March. The question is: Will it be 25 bps or a token 15 bps for now with an assurance for continuing with the accommodative stance and further cuts in the future if the growth moment does not pick up?

This is the toughest policy for Das. Instead of keeping mum on the worries about fiscal deficit (and reiterating the central bank's faith in the government's ability to stick to the estimated 3.3 per cent deficit for 2020 when the deficit in the first seven months till October exceeded the target for the full year), he must spell out the RBI's take on it. The market does not trust the fiscal deficit figure. The proof of this is the spread between the policy rate and the 10-year government bond yield — around 135 bps.

We do not see often such a wide spread in the midst of a rate cutting cycle and abundant liquidity in the system. If the sovereign cannot reap the benefit of a low policy rate, how does the RBI ensure transmission of rate cuts in the real economy? The 10-year bond yield (of the old paper) remains at almost the same level when the policy rate was 6 per cent (and a liquidity deficit of around ₹25,000 crore).

Many want the RBI to start buying bonds from the market to bring down the yield or even launching an Indian version of quantitative easing. That's not done as there is at least ₹2 trillion excess liquidity in the system now — primarily driven by the central bank's dollar purchase from the market and higher government spending. The RBI can probably step in when the government announces additional borrowing from the market but the challenge before Das now is to reassure the market that the fiscal slippage is priced in.

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AS I SEE IT

Wrong R-Day chief guest?

On any other day the Brazilian President would be very welcome. On Republic Day, however, I would have preferred a person I can look up to

KARAN THAPAR

What is the difference between inviting a head of government on a state visit and inviting him or her as chief guest on Republic Day? I would say the first is an established practice for furthering diplomatic and political relations with key governments and countries. That's why Burmese military dictators, African tyrants and Islamic potentates are regularly welcomed. It's their country we're courting; their personality or character is of little concern.

The second invitation is very different. That's because Republic Day has special significance. It's an occasion when we re-affirm our commitment to the Constitution and the democracy it guarantees. And what makes our Constitution truly meaningful is its vision of liberty and rights.

So the chief guest on Republic Day should reflect the values and ideals our country upholds. That's why Nelson Mandela, in 1995, was the best possible choice. In contrast, is Jair Bolsonaro, the Brazilian President, the wrong one?

There's no doubt Mr Bolsonaro is a controversial personality, particularly in his own country. But are you aware why? If not, let me explain. It could determine his suitability as chief guest on January 26.

First, he doesn't consider women the equal of men and has often spoken derisively of them. In a 2015 interview, he said men and women should not receive equal salaries. In a 2017 speech, he said of his five children the first four were male and the fifth, a daughter, was born out of "a moment of weakness".

These, I accept, are flippant and silly remarks and not really incriminating. But what he said of Maria do Rosario, a former human rights minister, is very different. In a 2015 interview, where he claimed she had called him a rapist 12 years earlier, he said she's "not worth raping; she is very ugly". Then he added he wouldn't rape her because she doesn't "deserve it".

These comments were widely condemned leading to a federal court conviction in September 2015. In June 2016, the Federal Supreme Court opened criminal cases against him. It ruled he had potentially incited rape for which he could face six months jail and a fine. In August 2017, an appeal court upheld the lower court's conviction. It was only when he became president, earlier this year, that the lawsuit was dismissed because he had acquired immunity from prosecution.

If anything, Mr Bolsonaro's views on homosexuality are more disturbing. He told *Playboy* in a June 2011 interview, "I would be incapable of loving a gay son". In fact, he went on to say he would prefer such a son "die in an accident". A month later he told the magazine Época if such views "make me prejudiced, then I'm prejudiced and very proud of it". In 2013 he said to Stephen Fry in a BBC interview "no father is ever proud of having a gay son" and "we Brazilians do not like homosexuals".

In November 2017, the Court of Justice for the State of Rio de Janeiro convicted and fined Mr Bolsonaro for hate speech in a 2011 television programme where he said "there is no risk" of his family producing homosexual children because his children had received a "good education". At the time Judge Teixeira said: "You cannot deliberately attack and humiliate, ignoring the principles of equality, just because you invoke freedom of expression".

Now it's true that after launching his presidential campaign Mr Bolsonaro has moderated his views. Today he claims he has nothing against gays. In fact, after his election he told Jornal Nacional that "aggression against a fellow man has to be punished in the way of law". But does that wipe out — leave aside forgive — his earlier views? Or is electoral expediency the reason why he's singing a different tune?

I don't know and I'm not sure anyone else does either. Equally, I don't want to cast the first stone. None of us has a right to do so. But does Mr Bolsonaro as chief guest add to our veneration of the Constitution? Or does it suggest we're forgetting our values as Krishnan Srinivasan, a former foreign secretary and author of *Values in Foreign Policy*, believes?

On any other day Mr Bolsonaro would be very welcome. On Republic Day, however, I would have preferred a person I can look up to.

LETTERS

Structural issues

This refers to "GDP growth slips to 4.5%" (November 30). That the country's GDP growth is at a 26-quarter low and eight core sectors including manufacturing, construction and mining have contracted by 8 per cent is a matter of serious concern. It is a clear indication that the measures unleashed by the Union government have not yielded any result on the ground. While the growth in the second quarter is largely driven by government spending, the prospect of government persisting with its higher spending remains low in the backdrop of a fall in its revenues. If the government decides to stick to its fiscal deficit target, it would further intensify the slowdown.

Given the present circumstances, the monetary policy committee (MPC) might continue with its accommodative stance and cut the interest rates further. While sector-specific interventions can alleviate some pain in the core sectors of the economy, what is imperative at present is concrete steps towards addressing structural issues plaguing the economy. That holds the key to arresting the slowdown.

M Jeyaram Tamil Nadu

All is not lost

Compliments for your editorial "Signals from Hong Kong" (November 29) beautifully analysing the ground realities in the country. Hope the authoritarian Chinese regime is listening. Hong Kong's unique attributes, which have been honed over centuries just can't be replicated in a year or two — as indeed the Chinese government has learnt through their efforts in Macao and Shanghai. Macao's beautiful casinos have managed to attract gamblers — especially from the sub-continent — but that, as you say, means only "limited success"; not even a small fraction of what Hong Kong has been doing.

During the 22 years since the UK returned the territory to China, the Chinese government must've earned billions in taxes from businesses and people in Hong Kong. It has also enjoyed tremendous gains from Hong Kong being the financial window to the world and a critical transshipment hub for exports and imports. The unique one-country-two-systems template has indeed worked beautifully with both China and Hong Kong gaining hugely. Being ranked, the world's freest economy for 24 consecutive years is a great badge of honour.

It is only because the government of China decided to deepen its control on the erstwhile city-state that all hell broke loose. They should've realised that the culture that prevailed there for almost two centuries cannot be changed by a police or military crackdown. Naturally, people rebelled and it has got so bad that, secretly, Chinese authorities must be regretting the steps taken by them. Suddenly, they

can see this big window closing and businesses from Hong Kong moving to Singapore or Tokyo. Even for a strong economy like China, this loss could be unbearable.

All is not lost. The results of Hong Kong's district council elections -- in which pro-democracy candidates won over 90 per cent of the seats -- show that the Chinese regime did not extend their power to control these elections. On one hand, it has created a new set of challenges for the government. I feel, it is also an indication that things haven't yet gone beyond redemption. The Chinese government will do well to go easy and let things in Hong Kong return to how they were before June. Let the very astute Xi Jinping not worry about a loss of face.

Krishan Kalra Gurugram

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HAMBONE

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A new low for growth

The picture is much worse than the 4.5% headline number

It is an ironic indication of how sentiment has become negative about the immediate future of the Indian economy that even a 26-quarter low figure is being seen by some observers as something of a relief. India's gross domestic product (GDP) growth for the second quarter of the ongoing fiscal year is only 4.5 per cent — the lowest it has been in at least six years. Even growth at current prices is only 6.1 per cent. There is little doubt that the Indian economy is in the midst of a slowdown, one that appears to be driven by both supply- and demand-side factors. Nor is there much immediate hope of a sustainable recovery.

Among the most worrying factors in this GDP print are its estimates of gross fixed capital formation (GFCF). At current prices, it is 27.3 per cent of GDP and at constant prices, 30.1 per cent of GDP — in each case, about two percentage points lower than the figure for the same quarter of the previous year. The auguries for the current quarter, between October and December, are not good. The core sector output data, also released on Friday, indicated a shrinkage of almost 6 per cent. It is hard to see growth for the full fiscal year crossing 5 per cent.

The government has attempted to revive demand by ensuring that welfare spending grows and seeking to expand other aspects of its own spending. But that strategy is reaching the end of its usefulness. Government final consumption expenditure, or GFCE, has grown at over 15 per cent year on year, and is about 12.4 per cent of GDP. In other words, it contributes almost 2 percentage points of the 4.5 per cent overall growth in GDP. The non-government sector, therefore, may be growing only at about 3 per cent. Clearly, therefore, the picture is much worse than the headline number of 4.5 per cent and government spending is sucking dynamism out of the private sector.

The government will have to accept that this is a problem that cannot continue to be tackled by its own spending. It has already sought to revive some animal spirits in corporate India through tax cuts, and announced an ambitious disinvestment agenda. However, more is needed. Long-pending structural reforms will have to be given some impetus. Labour and land reform, of course, is at the top of that list. India is too high-cost and risky an economy to attract investment at the moment. Risk must be reduced through administrative, regulatory, and judicial reform. Goods and services tax (GST) needs urgent attention — it will have to be simplified to reduce the burden on taxpayers, and made more efficient so that government revenues can recover.

But various blockages in the economy's arteries must also be cleared. These blockages are not limited to the banking sector or real estate, though those are two obvious culprits. The government and public sector must also start disbursing funds on time. The only way out of this hole for the economy is private investment reviving. That will require more than pep talk from the government. It will require a genuine effort to increase the fund flow to productive sectors of the economy.

Alibaba's stellar HK debut

Asian businesses now have access to large, new capital

The listing of e-commerce giant Alibaba in Hong Kong (HK) in a secondary offer last week has many implications. Alibaba listed on the New York Stock Exchange (NYSE) in 2014, raising a record $25 billion. The offer in HK raised over $11 billion, by selling 2.8 per cent of stock. It is the largest initial public offering (IPO) of 2019 and can get even bigger, swelling to over $13 billion, if institutions exercise all their greenshoe options. The IPO is an endorsement of the relaxation of rules by HK's market regulator. Alibaba has a complex corporate structure with dual-class equity; shares controlled by the founders have more votes. This was not permissible under HK's earlier rules, by which all listed firms had to have the "one share-one vote" structure.

The Alibaba prospectus says it will use the funds to move into consumer-focused services like travel booking and video streaming, as well as making investments to improve its supply chain, logistics, and payment ecosystems. It is also ramping up its presence in cloud computing and machine learning. Alibaba claims it has 730 million annual active e-commerce consumers in Mainland China alone, and its mobile payment platform, Alipay, has 900 million active users. The company will qualify for HK's Stock Connect scheme in June 2020. Then Mainland investors in Shanghai and Shenzhen will be able to buy the stock in Hong Kong. While the stock has gained 13 per cent in the first week of listing, another boost to market capitalisation is very likely once that happens. As it is, at least a third of the HK offer has been picked up Mainland funds, while Taiwanese investors have also made substantial bids.

Alibaba's successful debut in HK might lead to other major Asia-based businesses seeking to list in that country under the new relaxed rules. It could even lead to more dual listings from firms seeking to tap different pools of capital across Asia and the US.

Such initial public offers may be attractive especially for Chinese concerns. The Stock Connect scheme allows them to access HK capital (the HK dollar is convertible) as well as the yuan (not convertible). There are at least 12 Chinese companies listed in the US, with market caps of above $10 billion (Alibaba is over $500 billion). But trade war hawks in the Trump Administration have suggested the US restrict access to American capital for Chinese firms. This could happen if the US-China trade war escalates further. HK could offer an alternative avenue to tap capital if it becomes harder for Chinese concerns to access US exchanges.

Investors in HK, or Singapore, may also be more receptive to listings by Indian technology companies, as well as other Asian technology businesses. Investors in HK have a better feel for conditions in Asian economies and, hence, more confidence in potential unicorns in Bengaluru, Manila, or Jakarta. Traders will respond positively to dual listings, or multiple listings, since they offer them chances to arbitrage and hedge price volatility. The success of Alibaba's IPO could, therefore, lift sentiment in the troubled HK economy and might encourage entrepreneurs across the entire continent by offering them access to a large, new pool of capital.

ILLUSTRATION: AJAY MOHANTY

Monetary policy that stabilises

When expected inflation drops, the policy rate should drop even more

SNAKES & LADDERS

AJAY SHAH

The lever of monetary policy can be a force for destabilisation. When the economy faces new difficulties, the forecasted inflation rate declines. If the policy rate does not also commensurately decline, the real rate goes up. When times become hard, and monetary policy does not respond, it makes things worse by raising the real rate. For monetary policy to be a force for good, two features are required. First, the monetary policy committee (MPC) has to be able to peer into the future and forecast inflation. Second, it must respond strongly to changes in forecasted inflation, both on the way up and on the way down. This diverges from the bureaucratic instinct that prizes being non-controversial.

The first lesson in economics is that only real rates matter. If forecasted inflation is 15% and if you are paying 15% interest, then effectively, it is a zero interest loan. When inflation is 4% and you are paying 12%, this is a very high real rate of 8%. The dynamics of the household or firm balance sheet is shaped by the real rate, and decision-makers respond to real rates.

Suppose we start at a situation where forecasted inflation is at the target, of 4%, and the policy rate is at 6%. This means that the real rate is 2%. Now suppose there are adverse economic shocks. When hard times come along, forecasted inflation goes down. Suppose the forecasted inflation goes down from 4% to 2%.

In this situation, if monetary policy does nothing, then the real rate just goes up from 2% to 4%. To do nothing, when adverse shocks arise, is tantamount to monetary policy tightening. This is destabilising: When times are tough, the inactive monetary policy makes it worse.

This same story works in reverse. Suppose there are positive shocks, and things are going to get better. Forecasted inflation goes up from 4% to 6%. Suppose monetary policy does not respond, and the policy rate stays at 6%. In this case, the real rate has declined, from 2% to 0%. This is destabilising. When a boom is starting up, the inactive monetary policy makes it bigger.

The solution lies in a monetary policy strategy that responds to changes in forecasted inflation. At the minimum, the response must be one-on-one. Let's think about the scenario with bad news. There are adverse economic shocks, forecasted inflation comes down from 4% to 2%, monetary policy responds one-on-one by cutting the policy rate from 6% to 4%, and the real rate stays at 2% all through. This is neutral, it is better than inaction, monetary policy is no longer destabilising.

But we can do better. Monetary policy can respond more strongly. As an example, suppose we plan that the response of monetary policy to changed inflation forecasts will be 1.5 times (x) larger. For a decline in forecasted inflation of 2 percentage points, we will cut the rate by 3 percentage points. How will this play out?

We start out at forecasted inflation of 4%, a policy rate of 6%, which is 2% in real terms. Now forecasted inflation drops by 2 percentage points. Using the 1.5x rule, we cut the policy rate by 3 percentage points, to 3%. It becomes 1% in real terms. Monetary policy has responded to bad times by cutting the real rate. Now, monetary policy is stabilising.

These concepts were developed by the economist John Taylor, and this requirement of a more-than-one-on-one response is called "The Taylor Principle". All the major central banks in the world have an amplification factor of between 1.5 and 2, as a consequence of this insight.

Before inflation targeting, the RBI used to look at multiple instruments and pursue multiple objectives, and more or less did what it felt like. There was a lack of response to changes in inflation, the real rate used to jump around quite dramatically. Monetary policy was a source of macroeconomic instability. The formal inflation-targeting system puts us in roughly the right place: It forces the RBI to respond to inflation to stabilise the real rate.

In the Indian policy discourse, inflation targeting was seen as an accountability mechanism for the RBI, to rule out high inflation and the immense damage that goes with it, and to increase trust in the Indian rupee on multi-decade horizons. All of these considerations are important. In addition, there is this additional powerful idea: That without inflation targeting, monetary policy is actually a source of macroeconomic volatility. With a well-implemented inflation targeting system, monetary policy is shifted from being part of the problem to being part of the solution.

While the mere enactment of the inflation-targeting law puts us in roughly the right place, the point of this article is to go closer to the fine structure. It is not enough to roughly get it right, we should think more formally about forecasted inflation, estimates of the real rate, and how the real rate is changing alongside changing conditions in the economy.

By this reasoning, cautiously making small changes in the policy rate is not sufficient. There is a conflict between the desire to stabilise the macroeconomy and the desire to avoid controversy. If inflation in India is more volatile than is the case in developed economies, the changes in the policy rate here must be larger than those seen in developed economies. The MPC must organise its thinking and communication around the impact of changing economic conditions upon forecasted inflation, articulate its inflation forecast, its estimate of the real rate, and show how its actions are stabilising.

This will require improvements in intellectual capacity on macroeconomics in India. At present, we have weaknesses in data and a limited body of knowledge. There is a very small pool of capable scholars in the country, who are able to discuss these issues and engage in policy-relevant debates. Broad capacity building is required, feeding into each member of the MPC, so as to ultimately obtain better voting and better writing by the MPC.

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

Smoke and mirrors

DOWN TO EARTH

SUNITA NARAIN

This is the third in my series on the National Capital Region's (NCR's) air pollution emergency. I first discussed what had been done to reduce emission to date. Then I wrote on the "nature" of the crisis — why we choke in winter and why we need to do more. This time, I want to talk about what needs to be done with urgency and at scale befitting the crisis. I want to write about this, otherwise the smoke will be deflected off the mirrors — we will be angry, indeed outraged, about the air we breathe; but we will not get our right to a blue sky and clear lungs.

The bottom line is we need tough action and at scale — it must be transformative enough so that it can beat the galloping pollution. When Delhi moved to compressed natural gas (CNG), it did so within one-two years. All the public transport vehicles — over 100,000 — were converted to the clean fuel. So, the drastic action, however inconvenient, showed up in our pollution figures. We saw the stars in the sky. In these past three years, critical steps have been taken — from a ban on coal usage in Delhi to moving towards cleaner fuel for vehicles and reducing gross-polluting truck traffic — and it is bending the pollution curve. But it is not enough.

So, what do we do next? We know the key sources of pollution — vehicles, factories, thermal power plants, diesel generators, garbage burning in the open and in landfills, and dust and more dust. In addition, there is the month-long pollution due to the burning of crop residue, which hits us just as the weather turns adverse — no wind, moisture, and inversion. We also know that action is always contested — any steps to control pollution from any source are always faced with the position that we are only 1 per cent. In other words, why us? Every contributor to air pollution says we are not the problem; act elsewhere. So, what do we do?

First, we need a clean fuel transformation — no ifs and buts on this. Everybody mentions that Beijing has cleaned up its air; and, this is how they did it. They forced homes and factories to shift from dirty coal to cleaner natural gas. This is what we need to do, not just in Delhi but across the neighbouring states — all affected by adverse weather and pollution.

It is time for the second gas transition in the region — first it was CNG for vehicles, now we need it to completely take over combustion in industries, power plants, and homes. But this will not be easy. The fact is the price of gas is much more than that of coal, the fuel that is now preferred in the region after the ban on the even more polluting pet coke. Industries say if they switch to gas, they will not be able to compete with others outside the region. They will have to shut down. So, how will this work? Either the price of gas is brought down or industries are asked to move, irrespective of the price. One way or the other, the way ahead is tough. There are no easy options.

The second solution is to move from individual power generation (diesel generators) — in industries or in commercial areas of homes — to electricity. The third solution is to simultaneously make sure that power generation is as clean as it can be. Large parts of the region — and you will be shocked to know the numbers — still operate on diesel generators and this goes even for swanky apartments of the rich. This has to change, and fast. Not convenient. Not easy. But absolutely necessary for clean air.

But then we also need power plants to be clean. Delhi has already shut down its coal-based power plants; now we have to ensure that all plants in the NCR — the airshed — move to the much more stringent 2015 emission standards; move to gas; or, simply shut down. Again, not convenient. In addition, vehicle sales need to be restrained and reduced, and they must be clean. We know that. Again, we are doing too little on this.

Stubble burning — remember, stubble, not burnt, benefits the farmer and the soil — needs solutions. The ideal solution would be to provide a market for rice residue so that farmers have an incentive not to burn, but to sell. In addition, there is the option to provide machines for putting the stubble back into the ground. Solutions exist. The challenge now is to get it done.

With all this, we also need to reduce local sources of pollution — from garbage burning to dust management. This requires enforcement, and also systemic reform — we have to segregate and process the garbage. We know this.

Most important, we need concerted and year-long action on all these fronts. Not sound and fury that blasts us in the high-pollution season and then dies into a whimper till the next winter comes along. Cleaning Delhi's air must not become an annual exercise in smoke and mirrors. Because it concerns our health; our right to breathe.

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Myanmar's convulsions and hope

BOOK REVIEW

JENNIFER SZALAI

Thant Myint-U has titled his reflective and illuminating new book *The Hidden History of Burma*, even though he gently suggests that the country's past wasn't so much obscured as it was hiding in plain sight. For decades, especially after a ruthless crackdown on pro-democracy protestors in 1988, Burma had drawn international ire for the brutal rule of its military junta, which for a time went by the grotesque-sounding acronym SLORC (State Law and Order Restoration Council). Against the depredations of the dictatorship stood the charismatic Aung San Suu Kyi: A tireless civilian advocate for democracy who spoke consistently of hope, enduring years of detention and house arrest with a serene smile and a flower in her hair.

Her public image weighed heavily in the international community's imagination, which was decidedly more familiar with the morality play of "The Lady Versus the Generals" than with the longer history of Burma. That history proved to be stubborn and consequential — its effects only aggravated by how much its convolutions were simplified or ignored.

"In the early 2010s," Thant Myint-U writes, "Burma was the toast of the world." (The junta had changed the country's name in English to "Myanmar" in 1989; a prefatory note explains why this was an "ethnonationalist" move — the equivalent of Germany demanding that English speakers refer to it as "Deutschland.") The generals seemed to be ceding power, the country seemed to be ending its long isolation, tourism seemed to be on the rise; a number of rebel groups signed cease-fires, and in 2015 the National League for Democracy, led by Aung San Suu Kyi, won enough seats in the country's first free elections in a generation to form a government.

By 2018, that hopefulness had all but vanished. The year before, the Burmese military had unleashed a scorched-earth campaign against the Rohingya Muslim minority, with more than 700,000 refugees fleeing across the border to Bangladesh. During the military dictatorship, the world had grown accustomed to looking to Aung San Suu Kyi for moral guidance, but once in government as Burma's de facto leader she sprang to the defence of the military that had previously detained her. What Thant Myint-U argues is that the conditions for the current situation were already in place — less a flipped switch than a lit fuse.

He writes briskly about Burma's history as part of the British Raj, when colonial officials were flummoxed by what one of them called the "racial instability" of the region, where distinctions, the official complained, were "neither definite, nor logical, nor permanent, nor easy to detect." Under colonialism, classifications cleaved and hardened, as British administrators insisted on dividing the regional people into "native" (or "indigenous") and "alien" types.

The book's focus is on the convulsions of the last 15 years, from a seemingly unshakable military dictatorship to the beginnings of democratic rule, but examining the legacy of Burma's colonial past is crucial to grasping what's happened more recently. Aung San Suu Kyi may have been venerated as a democracy activist and a human rights icon, but Thant Myint-U suggests she's better understood as a Burmese nationalist. He cites an essay she wrote in the 1980s, before she became involved in politics, in which she described Indian and Chinese immigrants acquiring "a stranglehold on the Burmese economy" and "striking at the very roots of Burmese manhood and racial purity."

Thant Myint-U has long studied the country, as both an insider and an outsider; his grandfather, U Thant, was born in colonial Burma and later became the secretary general of the United Nations. After the military crushed the pro-democracy uprising of 1988, Thant Myint-U supported aggressive sanctions against the junta regime, only to reverse himself when he realised that boycotts and aid restrictions were harming the ordinary people they were supposed to help.

He tries to nudge readers away from getting too fixated on messianic solutions. Democracy was a preoccupation among the junta's critics, but the country wasn't quite prepared for how a competitive political system might work — especially one where the peace process itself entrenched a belief in the existence of fixed ethnic groups. Protecting minority rights, such as those of the Rohingya Muslims, has proved to be an unpopular proposition among the Buddhist majority; it's been much easier to rile up voters with rank appeals to identity. As Thant Myint-U puts it, "fear and intolerance" offer convenient cover for opportunists seeking to hide a "failure of the imagination."

Combined with this whipping up of virulent nativist sentiment has been a headlong plunge into free markets, as Burma lurched from being one of the poorest and most isolated countries in Asia to another aspirant on the capitalist world stage. Thant Myint-U acknowledges the real economic gains that have been made over the past decade — a growing middle class, a new kind of self-made entrepreneur unconnected to the cronyism of the old regime — but he also notes that Burma is still a very poor country where extreme inequality and attendant anxieties have flourished.

The Hidden History of Burma is an urgent book about a heavy subject, but Thant Myint-U, whose previous work includes the marvellous "The River of Lost Footsteps," a mixture of memoir and history, is a writer with a humane sensibility and a delicate yet pointed touch. He observes that for all of Aung San Suu Kyi's soaring rhetoric before she ascended to power, "her instincts were deeply conservative." A telling anecdote has her conducting a discussion with a group of university graduates in 2018, in which she elected to talk not about the Rohingya, or the peace process, or democracy, but about novels. She asked the group what was more important: Plot or character?

THE HIDDEN HISTORY OF BURMA
Race, Capitalism and the Crisis of Democracy in the 21st Century
Thant Myint-U
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