Market intelligence

Advance information on anticipated price behaviour of different crops is vital for farmers to take informed decisions

FARM VIEW

SURINDER SUD

One of the key deficiencies of agricultural marketing that has not received due attention is the dearth of advance information on anticipated price behaviour of different crops — technically called market intelligence. This knowledge is vital for farmers to take informed decisions about what and how much to grow and when and where to sell. The present market information services normally put out only the ruling prices in major *mandis*. These are of limited avail to the farmers given wide variations in rates at different places and different points of time. Price volatility is the most pronounced in high-value, perishable and semi-perishable crops such as vegetables and fruits which are grown by the farmers primarily to get better returns. But lack of reliable marketing counsel often thwarts this bid.

Marketing guidance is imperative also for various other reasons. The ways and means of price discovery and price risk-management in the agriculture sector are rather limited. Futures trading and, more importantly, options trading, which are the most common instruments of price discovery and price risk hedging the world over, are disallowed in India for most farm commodities. Besides, the existing price assurance schemes, such as official procurement at government-fixed prices and the price deficiency payment system, have failed to cover more than a fraction of the farmers. The others sell their produce in the nearest *mandis* at whatever prices are quoted by the exploitative traders. Though farmers are not unaware that the prices normally rise after the peak marketing season is over, they can ill-afford to take the risk of deferring the sale without having an idea about the likely extent of price spike. Withholding the produce can prove counterproductive if the incremental returns do not even cover the storage expenses, which happens quite often in the case of potato, onion, tomato and other spoilage-prone products.

The potential gains to farmers from credible market advice have been demonstrated in a few pilot projects ran by public sector farm research bodies. The most notable among these initiatives is the one carried out by the Indian Council of Agricultural Research and narrated in its 2017-18 annual report. Implemented through a network of 14 institutions across the country, this project involved issuing price forecasts for over 40 farm commodities twice a season — prior to crop sowing and at the time of its harvest. All possible means of communication, including personal contacts, SMSes, pamphlets, television, radio, websites of farm universities, Facebook, WhatsApp and YouTube, were used to convey these forecasts to the farmers.

The impact analysis of this service showed that potato growers of Uttar Pradesh, who followed the expert advice issued by the Varanasi-based Banaras Hindu University and sold their output in May, instead of the usual March-April, managed to realise 30 to 40 per cent higher prices. The average increase in earnings was between ₹100 and ₹150 a quintal. Similarly, the cotton growers of Gujarat, who went by the advisories circulated by the Junagarh centre of the state agricultural university, gained around ₹36,000, on an average.

If the public sector bodies can offer such gainful marketing advice to the farmers, the private companies, too, can do so and perhaps with greater efficiency. They can conceive innovative models to deliver relatively more diversified and value-enhanced information to the farmers to cater to their multiple needs. The IFFCO Kisan Sanchar service launched by the cooperative sector fertiliser giant, IFFCO, in collaboration with the telecom major Bharti Airtel and Star Global Resources Ltd., can be a case in point.

In 2017-18, the IFFCO Kisan Sanchar disseminated about 75,000 voice messages to nearly two million farmers in the local languages. Apart from market intelligence, vital information on other aspects of farming and animal husbandry, weather forecasts, government schemes and agricultural news, was also communicated through these messages-cum-advisories. If more companies, especially those engaged in agri-businesses, come forward to launch similar services, it would make farm marketing more remunerative and Indian agriculture more profitable.

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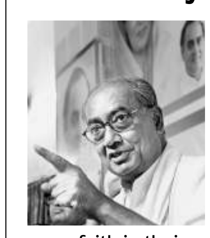
CHINESE WHISPERS

Food googly

Those flocking to Delhi's Feroz Shah Kotla ground to catch live action of the Indian Premier League (IPL) matches this season are left with a sour taste in the mouth, thanks to the administration's new diktat of not allowing food at some of the spectator stands. Viewers can sip beverages, but not carry snacks to their seats. Reason? The ground staff wants to keep the sitting area, "which used to be tainted with leftovers and packets earlier", clean. Until the last IPL season, food could be consumed while watching the match. Now one has to go to the counters, where they have to buy as well as polish off the food, losing a slice of the action during the home games of the Delhi Capitals. Many are ruefully chewing on the new arrangement but not before reminding that the Delhi & District Cricket Association, which is responsible for the stadium's upkeep, has important infrastructural issues and even internal politics to resolve first.

All in the family



When elections come, supporters and party workers are as important as voters. But in Madhya Pradesh, top leaders of the ruling Congress party are putting more faith in their sons than in other volunteers when it comes to election management. Former chief minister Digvijaya Singh (*pictured*) is contesting from Bhopal. The seat is a saffron citadel where the Bharatiya Janata Party has not lost since 1989. Singh's son and cabinet minister of Madhya Pradesh, Jaivardhan Singh, is working hard to map booths and devise political strategy for his father. It is the same with Jyotiraditya Scindia. The party has put him in charge of western Uttar Pradesh and he has to occasionally visit the region. His son Mahanaryaman Scindia is active in the Guna-Shivpuri constituency with his mother, Priyadarshini Raje.

Temple run

Since its beginning, Dravidian politics has been known for its atheistic views on policy and life. In tune with this legacy, the Dravida Munnetra Kazhagam (DMK) is seen as an atheist party and its former president, the late M. Karunanidhi, was known to be a staunch and vocal atheist. His son and the current DMK president M K Stalin is also not known as a believer and has made several remarks against the Brahmins and their customs from time to time. However, ahead of the Lok Sabha elections his wife, Durga Stalin, is busy visiting temples such as the Murugan temple in Palani and the Meenakshi temple in Madurai to seek the blessings of these deities for the political future of Stalin. She, however, is not the only family member of a Dravidian leader to be visiting temples this poll season. Also going to these places of worship are the respective spouses of Chief Minister Edappadi Palaniswami and his deputy O Panneerselvam, who are both spiritual themselves. Meanwhile, Thirumavalavan, the president of Viduthalai Chiruthaigal Katchi (Liberation Leopard Party) — who is often alleged by the right wing as somebody who opposes Hinduism — was seen visiting a Nataraja temple.

Great leap back for forest rights

The government has introduced a law that is more regressive than the colonial-era Indian Forest Act, 1927 which it seeks to replace

NITIN SETHI

TAKE TWO

The National Democratic Alliance (NDA) has proposed a law to put around a fifth of India's geographic area — about 708,273 square kilometres of forested lands — under a policing regime akin to the Armed Forces (Special Powers) Act. The draft law, which has been circulated to the states for comment, is called the Indian Forest Act, 2019. Under it, the forest department gains enhanced powers to shoot at citizens, search and seize property and arrest people even on mere suspicion of committing a crime. People depending on these lands — by government's last estimate in 2009, around 400 million of India's most marginalised and poor, largely tribals — would not enjoy the same civil liberties as the rest of India's citizens, the law provides.

To underline the ultra-draconian nature of the law, the Union government has helpfully prepared a table demonstrating how the new law is more stringent than the earlier one (see chart).

In a sense, the proposed law represents a continuum of two laws: A British-era one and the other enacted 33 years after independence. The 1927 Indian Forest Act (IFA) summarily extinguished all rights of tribals and other forest-dependent communities and gave the colonial power command over the forests (principally to secure timber). The law enabled the state to legally treat the country's tribals as encroachers. Then in 1980 came the Forest Conservation Act, which was used to regulate where and for what reasons (such as mining and industries) forests could be cleared.

With the pace of industrialisation picking up after 1991, these laws accelerated the usurpation of forest lands and resources by the powerful mining and industrial groups. Data from the past 15 years shows that more than 90 per cent of the forest patches that industry demanded were cleared for its needs. In parallel, the high-handed management of forests tracts that had not been felled led to the deep alienation of forest-dwellers. By the start of the 21st century, brutal and mass-scale evictions were carried out in Indian forests, the principal cause of the law and order problems in central and eastern India.

Under pressure from civil society, the United Progressive Alliance (UPA) enacted the Forest Rights Act (FRA) in 2006. The new Act did not break down the colonial architecture of the 1927 IFA but bypassed it in parts. On paper, it moderated the powers of the top political executive and the forest bureaucracy by vesting in village councils statutory power to govern a part of the forests over which rights were restored to the forest-dwellers. On paper, the village councils got a veto over the Union environment minister in deciding if the forests would be cleared for industrial purposes.

By the end of UPA's second tenure, however, the political executive and the bureaucracy clawed back their powers -- the veto for clearing forests was diluted in several cases, and paperwork was made so onerous that tribals struggled to prove rights over the lands they had inhabited for generations. When the NDA government came to power it tried to undercut the Forest Rights Act, but after its failure to amend the Land Acquisition Act, which would have diluted the rights of land-losers, it backed off.

That was a temporary move. In 2018, the FRA was challenged before Supreme Court by some animal rights groups, but the Union government initially sat out the crucial hearings. Then, earlier this year, the apex court's ruling raised the prospect of evicting more than 2 million households. With elections looming and the Opposition ringing the alarm bells, the government sought a review petition to defuse the crisis.

A month later, came IFA 2019, which legally provides the political executive and the forest bureaucracy absolute discretion to open any forestland to commercial plantations — either by the government or the private sector — in the name of increasing forest productivity or reducing greenhouse gas emissions. This is a first.

So far, despite an outcry by civil society, the Congress, too, has kept silent. On their part, forest officials justify the Bill saying it updates the legislation to incorporate judicial interpretations altering forest governance, address the challenges of climate change, meet the needs of a more people-friendly approach to the issue and empower bureaucracy to deal with the political pulls and pressures that impact the integrity of country's forests. But as Shomona Khanna, a former legal advisor to the tribal affairs ministry, points out, "A close analysis of its provisions demonstrate that the draft crosses the boundaries of legislative competence of Parliament, making huge inroads into the legislative and executive powers of state governments over the forest lands."

She adds, "In my view, therefore, quite apart from the violation of the FRA and basic principles of criminal justice, the Draft Bill needs to be rejected in its entirety because it makes a complete mockery of the basic constitutional principle of federalism and decentralisation of power."

The states are expected to respond to the draft by early June. The political dispensation in power will have then have an opportunity to decide if forest governance should be overhauled to go back in time or move forward.

FORCES OF NATURE

(CONTENTIOUS PROVISIONS IN THE PROPOSED INDIAN FORESTS ACT 2019)

New provisions are to "Provide indemnity to Forest-officer using arms etc, to prevent forest offence. This indemnity shall be in addition to the immunity provided under Section 197 of Code of Criminal Procedure 1973 for certain categories of public servant."

THESE INCLUDE:

- No prosecution without sanction from state government. Government to conduct inquiry by executive magistrate before giving sanction.
- Search and seize property even in case the officer believes there is a likelihood of an offence being committed.
- Anyone who is believed to have attempted to contravene or abet the contravention of the law to be deemed to be in violation of law.
- Burden on proof of innocence to be on accused in several instances. Accused to be presumed guilty till proven otherwise.

ON THE JOB

NYAY works against jobs

MAHESH VYAS

Jobs has taken centre-stage in this election. While the government is on the defence (no pun intended), the Opposition is gunning hard on the jobs front. The Congress, which was the main opposition party in the state elections of November 2018, made several promises to provide some relief to select unemployed in its campaigns and reaped benefits.

But, such promises cannot go very far. No political party can really promise jobs because this is mistakenly construed as a promise for government jobs and the government is not very enthusiastic in offering jobs itself. Of course, no party can explicitly promise jobs in the private sector. But, they need to do something about this elephant in the room.

Unlike inflation, which has proven political power, the unemployment rate has historically not been a macro-economic indicator with similar electoral potency in India. It is worth wondering if it was a political conspiracy to never measure the unemployment rate as a fast-frequency indicator so far. If there are no measurements then there are no arguments. But, fast-frequency measurement of the unemployment rate and a host of other labour market indicators are now well established. CMIE has started this and the government will eventually produce its own fast-frequency measures of employment/unemployment. Hopefully, we will start debating the problem and not just its measurement. Because, the issue of jobs will not leave centre-stage in a hurry.

Politicians need not promise jobs. They should, however, promise to keep the unemployment rate in control. This is practical and it is also a sensible macroeconomic objective.

In February 2015, the government of India and the Reserve Bank of India signed the Monetary Policy Framework which formally adopted flexible inflation targeting in India. Since then, inflation has declined and remained in control. The RBI can claim success. But, this success may have come at the cost of high unemployment.

The monthly unemployment series from CMIE is young as it starts only in 2016. Further, the series was disrupted by demonetisation which crashed the labour force participation rate in the months following demonetisation in November 2016. Data from November 2017, a full year after demonetisation suggests that the Philips curve seems to be at work in the short run in India. i.e. low inflation is accompanied with high unemployment.

This is of course, very preliminary. But, if there is indeed a relationship between inflation and unemployment at play in India then law makers need to take a stance on the combination of inflation and unemployment they prefer, and not just inflation.

Government apologists are busy counting the creation of jobs. But, the problem is not the creation of jobs — jobs are always created. The current problem is that on a net basis these are not enough. The important macroeconomic metrics are the prevalence of a high unemployment rate and in the case of India also the low and falling labour force participation rate.

Political parties need to think through and make promises to the electorate about their stance on the tradeoff between inflation and unemployment that they hope to achieve.

The Congress has probably assumed that there is no solution to the jobs challenge. And so it may have deduced that if jobs cannot be provided, it may at least provide the poor with assured incomes. This is a defeatist approach. It is more important to provide jobs to those who seek jobs than to provide income as doles. Give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime — goes the old adage.

Governments do find the resources to fund their pet projects. The biggest problem with NYAY (Nyuntam Aay Yojana) is not the resources or the administrative nightmares of identifying the poor or the perverse impact of preservation of the scheme.

The biggest problem with the scheme is that it will worsen India's biggest problem on the labour front. It will keep the labour force participation rate low or it may even depress it further. We need more hands to the till, not less. Feeding them without work will keep them away from work. This would be a structural damage to the economy and to society. India already has among the lowest labour force participation rate in the world. NYAY will make it worse.

NYAY is the outcome of India's neglect of the severe jobs challenge that it has been facing. It is best used as a temporary reprieve before we start using the unemployment rate and the labour force participation rate as macro-economic indicators of economic and political relevance along with the inflation rate.

The author is the MD & CEO of CMIE

LETTERS

Connect opportunities

This refers to "It's about jobs" (April 1). I appreciate the write up. As far as data of employment is concerned, I feel it can be captured in steps or in parts. A problem cannot be solved immediately but can be handled in phases. To start with, the industrial training institutes across India are doing a marvellous job through trainers, technical faculties and teachers who are making painstaking efforts to skill youngsters.

We have the data of all industrial training institutes (ITIs) pan-India. Secondly, data of all the students who graduated last year and are still in touch with teachers and friends still in these ITIs can be accessed through the institutes.

Thirdly, information about those who are studying in the final semester and will pass in due course will be readily available. These data can be captured and in WhatsApp, we have a great tool to connect students with the industrial belts and factories. By the time, the last batch graduates, they would also get engaged and the process can be replicated next year. As skill management trainees are needed in nearby industries and factories, WhatsApp groups on smartphones can do wonders. Now various vacancies opening up in industrial belts can be linked with WhatsApp group of all ITIs. This new knowledge will enhance their confidence level and focus them to be ready for future demands. Smartphones changed the way masses conduct banking, make all kinds of payments and even manage their funds. Similarly, getting ITI students connected with employers would be very convenient. One victory will pave the way for another.

N K Bakshi Vadodara

Deciphering NYAY

This refers to "Congress' NYAY: Unanswered questions" (April 1). The minimum income guarantee scheme" is an idea worth pursuing and the debate on NYAY may survive this election irrespective of the Congress' fortunes. In India, the system is apparently comfortable to retain a target catchment area of people below the poverty line poor and illiterate, to ensure availability of cheap labour (now rechristened as outsourced work) in different sectors.

It is in this context that we are prepared to dole out a portion of taxpayers' money to keep a "reserve" of illiterate and idle people who will be available on call at starvation wages to do unskilled work without any demand for fair wages.

The arithmetic which is making the author Karan Thapar uncomfortable may be ignored by the common man and any word uttered against NYAY is likely to be interpreted as a criticism of the proposal for minimum income guarantee which is a "noble" concept.

Like the employment guarantee schemes already in operation, there is a case for a comprehensive scheme, if possible outside the government budgets, having a few crucial features. First, the target beneficiaries should be from outside those covered by existing statutory schemes for social security, and those who are in the employable age group, say the 20-60 bracket considering all skilled/unskilled jobs for which they will be available on call. The prospective beneficiaries can be asked to register with employment registers or special desks created for the purpose in offices of the municipal corporations or other authorities.

Second, the payment should be to unemployed members of families which have no earning members with income over a pre-decided threshold limit and limited to the real gap between the threshold level and the actual. Third, the funding could be from a corpus created by contributions from prospective employers who will benefit from the skill development initiatives.

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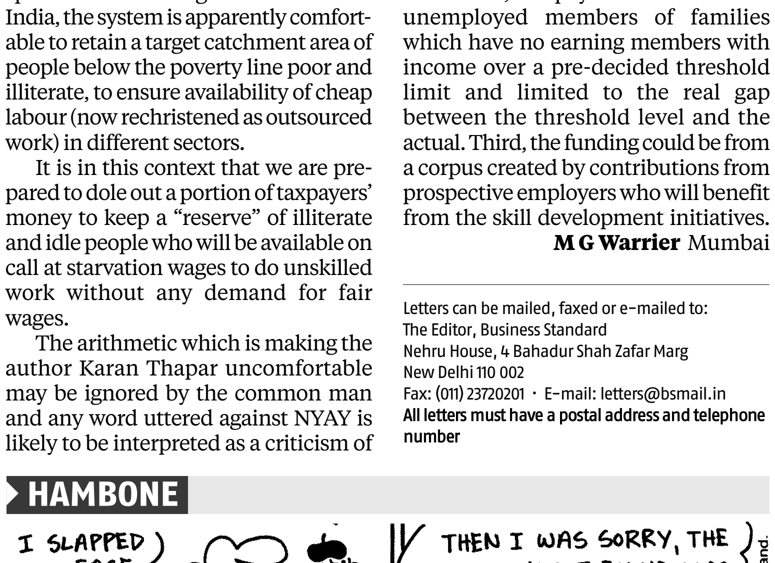
HAMBONE



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External stress returns

Financing current account deficit becomes a problem

The official data is now available for India's external account in the third quarter of the financial year 2018-19, between October and December 2018. According to the statistics, the current account deficit stood at 2.5 per cent of gross domestic product, or GDP. A lower price of crude oil flattered the balance of payments, allowing the current account deficit to come down from the dangerously high 2.9 per cent of GDP, which was recorded for the second quarter of 2018-19, between July and September 2018. The overall current account deficit for the period between April and December 2018 stood at 2.6 per cent of GDP, a big step up from the 1.8 per cent of GDP recorded in the same period of the previous year.

India's long-term vulnerability to fluctuations in the price of oil and gas thus continues to be on display. Unfortunately, Indian exports have continued to be relatively stagnant, meaning that the current account deficit is dependent almost entirely on global commodity prices. This dependence on external energy can only be considered to be a manageable problem if there is solid and sustainable financing of the current account deficit. However, another structural problem appears to be developing in the Indian economy, one which enhances the already problematic vulnerability on the external account. Attracting stable capital flows has become increasingly difficult. Net foreign direct investment has not seen an appreciable increase. In the period between April and December 2018, net FDI was just under $25 billion; in the equivalent period of the previous year, it had been just under $24 billion.

NRI deposits have also largely stagnated. India is thus dependent on hot money flows — portfolio investment, which is subject to the vagaries of international finance. Between April and December 2018, this hot money largely left India. It appears that portfolio investment registered a net drain of capital of almost $12 billion in the period; in the equivalent period of the previous year, there had been a net inflow of almost $20 billion. It is possible that portfolio investment has again reversed in the period since December, but that only underlines the unmanageable and unpredictable nature of such flows. The balance of payments has been in deficit for the third quarter in a row as of December 2018. This indicates that, while the earlier danger zone for the current account deficit, because of strong capital inflows, was at around 3 per cent of GDP, that danger zone has now been lowered. Even a current account deficit of 2.5 per cent of GDP is sufficient to stress the external account in a scenario in which net FDI has stagnated.

It is clear that these structural problems need to be more carefully addressed. The fact that India is nowhere near a crisis at the moment does not mean that there are no signs on the horizon that a crisis has become more probable if conditions were to turn adverse. The next government will have to focus on increasing exports and on creating more attractive conditions for long-term investment in India.

RBI's challenges

High core inflation and weak transmission key hurdles

The main takeaway from the last monetary policy review of the Reserve Bank of India in February was a growing realignment between the financial stability concerns of the central bank and the economic growth concerns of the Central government. In that sense, the first policy review under RBI Governor Shaktikanta Das was a significant milestone after several months of rather acrimonious interaction between the two sides. The Monetary Policy Committee's (MPC's) decision in February had two key elements: The repo rate was cut by 25 basis points; and the MPC altered the RBI's policy stance from "calibrated tightening" to "neutral" — a move that led many market participants to start expecting another rate cut in the April policy review, due to be announced on Thursday.

To a great extent, a rate cut, especially of another 25 basis points, is likely. That's because the headline retail inflation rate has remained well within the RBI's target of 4 per cent, even though it has moved up a tad. It is quite possible that the sharp downward revision of the retail inflation rate and inflation expectation that marked the February policy may continue to hold steady. Beyond inflation worries, a rate cut is also likely for reasons for poor growth. Fitch Ratings has recently cut India's growth forecast for 2020 to 6.8 per cent from 7 per cent; and Japanese brokerage Nomura says the likelihood of the Indian economy's growth dropping below 7 per cent in 2020 is very high. The key indicators paint a worrying picture. For instance, the index of industrial production (IIP) fell by 1.7 per cent in January, as against a 2.6 per cent rise in December. Especially disappointing is the weak performance of the manufacturing and electricity sectors. Similarly, consumer demand across urban and rural areas is weakening. Brokerage houses suggest that consumption across sectors — from cement to steel and from power to automobile — has been faltering. Given the dovish policy stance of the US Federal Reserve and the overall softening of global growth momentum, the MPC is widely expected to push for another cut this time.

However, there are a couple of worrying details that spoil this clear policy prescription. One, while headline inflation remains under control, there has been a growing divergence between the headline numbers, which are lower thanks to extremely low food inflation, and core inflation (that is, headline minus food and fuel), which has stayed persistently high. In fact, according to the latest reading, there is a whopping 6 percentage point gap between the food inflation rate and the core inflation rate. Efficacy of any decision on the repo rate would depend essentially on whether core inflation is expected to lower to the headline inflation level or the other way round. Clearly, there are no easy answers in this regard. The other key concern is the weak monetary transmission in the banking system as is evident from the fact that the last rate cut in February is yet to reflect in loan and bond rates. Banks say monetary transmission will remain partial and delayed due to a wide gap between credit and deposit growth. The MPC needs to take a stand on these two issues when it announces its decision later this week.

ILLUSTRATION: AJAYA MOHANTY

Fighting for space

The A-SAT test would require two years of preparation, making it hard to argue that it was an impulsive government decision

BROADSWORD

AJAI SHUKLA

Last Wednesday's anti-satellite (A-SAT) test, in which a Defence Research & Development Organisation (DRDO) interceptor missile destroyed a satellite 300 kilometres (km) above the earth, raises several questions. There are allegations that the test was politically motivated and conducted with an eye on the coming general elections rather than by any real need to validate and demonstrate India's A-SAT capability. Others have argued this underscores the government's commitment to military R&D. To grasp the technicalities of the debate, one must understand three interlinked technologies — ballistic missiles, ballistic missile defence (BMD) and A-SAT interception.

A ballistic missile works on the simplest of principles, akin to the country fair game of ringing a duck. Where a ballistic missile lands depends largely upon the direction and force with which it is thrown.

Typically, a long-range ballistic missile like the Agni-V is stored in, and fired from, a hermetically sealed canister. At launch, a gas generator inside the canister ejects the 50-tonne missile upwards at 20-25 metres per second. Once outside, its massive first-stage rocket motor ignites, propelling the missile upwards. Within 30 seconds, it goes supersonic and, a minute later, when the first stage finishes and the second stage ignites, the missile is travelling at five times the speed of sound. By the time the third stage burns out and the "boost phase" finishes, the missile is 1,200-1,400 km above the earth, moving purely on momentum at six times the speed of sound.

That momentum carries the warhead 5,000 km towards the target during its "mid-course phase", with gravity progressively pulling it down towards the earth. While re-entering the atmosphere, intense friction heats the missile's nose cone to 3000-4000 degrees centigrade. During the 45 seconds of re-entry, the missile's carbon-resin nose cone sacrifices itself, burning off layer after layer and absorbing the heat without passing it on to the warhead inside.

During this "terminal stage", to make the missile's trajectory unpredictable and difficult to intercept, the warhead starts manoeuvring. At the same time, a guidance system homes the missile onto the strike point, compensating for variations in launch and during the mid-course phase. At the end of its 5,000-km journey, the Agni-V lands within "a few hundred metres" of its intended strike point, says the DRDO.

A ballistic missile's actions are all pre-programmed to make it fully autonomous after launch. Receives commands during its flight would make the missile vulnerable to enemy disruption.

Anti-ballistic missile (ABM)

An ABM system is geared to shoot down ballistic missiles and is deployed around high-value targets like cities or national command posts. Detecting, identifying, profiling and then shooting down an incoming ballistic missile is highly complex, especially since the enemy might have fired several missiles to assure himself of successfully striking the target.

A missile can theoretically be shot down anytime in its trajectory: During its boost, mid-course or terminal phases. It is most vulnerable during its boost phase, when it is travelling relatively slowly and cannot manoeuvre or deploy countermeasures. But the boost phase lasts for barely 300 seconds (5 minutes), giving an interceptor insufficient time to reach a launch area that could be thousands of km away.

The mid-course phase, which could last 1,200 seconds (20 minutes), provides a longer window for engaging the incoming missile. However, it would still be far away, travelling extremely fast and possibly deploying decoys. The ABM system must distinguish the decoys from the mother vehicle and also identify the missile, its target and its terminal velocity — parameters essential for engaging the missile.

The terminal phase, therefore, provides the most realistic opportunity for engagement. The computerised ABM command system would have calculated engagement parameters and the interceptor missile must now travel less distance. Further, atmospheric drag would have slowed down the incoming missile significantly.

Since any error might result in a city being reduced to smoking rubble, ABM systems engage incoming ballistic missiles at two levels. An exo-atmospheric interceptor engages the enemy missile 150 km above the earth. Meanwhile, an endo-atmospheric interceptor provides back-up, engaging the aggressor at 30-40 km altitude. For further assurance, two interceptors of each kind are launched, increasing the chances of a kill.

With every second critical, the key to a successful ABM engagement is to detect the enemy missile early, giving oneself more time to identify, profile and intercept it. Ideally, surveillance satellites should monitor enemy territory to pick up the "plume" of the missile when it is fired, with detection automatically activating the ABM system. While the DRDO is working on such satellites, the current ABM system relies on the so-called Long Range Tracking Radar (LRTR), derived from the Israeli Green Pine radar, which detects aggressor ballistic missiles 1,000 kilometres away.

The crucial endgame is the exquisitely precise business of interception. The incoming ballistic missile would have slowed down to about 2 km/second, while the interceptor, which has less than two minutes to reach 150 km altitude, would be accelerating to the same hypersonic velocity. Given their relative velocity of 4 km/second, ensuring that the ABM "kill vehicle" explodes within 10 metres of the incoming missile requires an accuracy of about one-thousandth of a second.

This has been actually achieved. As the interceptor thunders up towards the incoming missile, an ABM uplink station beams it the target data — its position, velocity and manoeuvres. Powered by its first two solid-fuel stages, the interceptor guides itself towards the target. Once the "kill vehicle" radar seeker locks onto the incoming missile, its liquid fuel "divert thrusters" manoeuvre it towards it. At the precise millisecond it is closest to the aggressor missile, a proximity fuse detonates the kill vehicle, destroying or disrupting the ballistic missile.

Anti-satellite (A-SAT)

Shooting down a satellite requires technologies almost identical to those that have driven the DRDO's ABM tests since 2008. One key difference is that a satellite is engaged at a higher altitude — at 300 km, rather than 30-150 km in the ABM tests. An upgraded propulsion system is required to take the kill vehicle up to that altitude.

Further, striking a satellite requires more stringent accuracy, since the target moves significantly faster (about 27,000 km per hour) than the incoming ballistic missiles simulated in ABM tests. On the other hand, engaging a satellite is easier because it moves along a well-known flight path and behaves in an entirely predictable manner without engaging in evasive manoeuvres like an incoming ballistic missile.

The timing of the A-SAT test raises other questions. On the one hand, a decision to demonstrate A-SAT capability would require at least two years of DRDO preparation to translate into a test, making it hard to argue that this was an impulsive government decision directed towards electoral benefits. However, it is also hard to argue, as many do, that India was driven to test for fear of being left out of a space security regime, being discussed in Geneva. As Christopher Clary of the University at Albany tweeted: "Isro (Indian Space Research Organisation) is a space superstar and India is a nuclear power. There was a zero per cent probability that a space security regime was going to be negotiated without India's buy-in."

The political economy of justice

RATHIN ROY

The second theorem of welfare economics posits that any desired income distribution can be achieved when an economy is at full potential by taxing those who earn more than society wishes and transferring these to those who earn less. I have previously argued that universal basic income proposals essentially genuflect to this theorem. In this column, I address the political economy underlying the transfers recently proposed by the national political parties.

The political economy argument for transfers rests on the case for justice. John Rawls distinguishes between "justice as fairness" and "distributive justice". The first requires that economic arrangements are consistent with equal liberties and equality of opportunity. In a growing market economy, the more inclusive the growth process — the more people participate in, and derive benefits from participating in delivering economic growth — the more "justice as fairness" is secured.

"Distributive justice" is about correcting for inherited advantages that some may enjoy. Thus, different intellectual or physical capabilities, and differing inheritances of all types of capital can result in unequal distributions of the gains from different investments designed to foster capabilities. This needs to be corrected. This is what motivates affirmative action, Piketty's argument for asset and wealth taxation, and the case for a universal basic income.

Rawls argues that the first principle takes priority over the second. If the first is not secured then the task of dealing with the second is only compounded. Growth without inclusion exacerbates the advantages endowed by unequal access to capital and to inheritance.

Interestingly, Rawls expresses this in public finance terms. Following Musgrave, he specifies four branches of public finance, each intimately concerned with delivering justice in different dimensions.

The allocation branch seeks to intervene so that the price system does not militate against the delivery of justice. Relative prices regulate both incomes and affordability, and these must be consistent with securing both types of justice.

The stabilisation branch ensures that macroeconomic conditions secure "justice as fairness" and do not exacerbate distributive injustice.

The transfer branch secures a minimum level of income and/or universal access to public and merit goods that would not be secured by relying solely on the market mechanism, thus securing "justice as fairness."

The distribution branch is concerned with securing justice in distributive shares.

The motivation behind the desire to maximise growth is simply to increase the economic commonwealth such that the size of the economic pie is not a barrier to "justice as fairness". Recognising that the market will not secure such justice even if the pie grows, a just government uses the public finances such that the allocation of resources, the affordability of goods that all consume, and overall macroeconomic management increase "justice as fairness". Since the development of human capabilities is a collective endeavour, the State uses public finances to provide public and merit goods like health and education. This secures inclusive growth and, therefore, "justice as fairness". Taxes on assets, occupations, and wealth are used to finance transfers secure "distributive justice" by alleviating the unfair advantages that unequal capital and intellectual endowments bring to some.

Let us look at the recent debate on transfers proposed by both national parties using this lens. Farmers face injustice due to a variety of causes that do not permit them to earn a stable and adequate income from their occupations, even while there has been a quantum expansion in agriculture output. Clearly, there has been a failure to deliver "justice as fairness" in the agriculture space. Income transfers to compensate for the lack of "justice as fairness" will not solve the problem. Interventions like the elimination of middlemen, land reforms and equal access to agricultural services are important to secure both types of justice. Income transfers can play a positive role if, and only if, these allocative interventions work.

The problem of poverty has been addressed in a substantial manner, though not fully, in the course of India's development transformation. However, the contemporary recognition that the Indian population vulnerable to falling into poverty is a multiple of those actually in that condition points clearly to a failure to deliver justice as fairness. There can be no dispute that this is the case when the leading indicators of the Indian economy are about things consumed by the top 10 per cent. Income transfers to the excluded poor can only compensate for the lack of "justice as fairness" in the growth process, not address it.

In both cases, an instrument appropriate to secure "distributive justice" is being used to compensate for the failure to deliver "justice as fairness." This is the crux of my concern about these proposals, not their practicability or affordability which, though important, are procedural matters.

I would not be as concerned if the eminence and quantum of attention given to the design of these transfers were accompanied by attention as to why, after 30-plus years of high growth, India, now a giant economy, is unable to deliver "justice as fairness" through productive inclusion. The fact that the only political response is to compensate those who bear the brunt of this failure is, in my view, an abdication of political responsibility.

The writer is director, National Institute of Public Finance and Policy. Views are personal

EU's single-currency disaster

BOOK REVIEW

ANITA INDER SINGH

Anyone wanting to understand why the European Union's single currency area — the Eurozone — has failed to bridge political divisions within the EU or disappointed many of the 19 EU countries that opted for the euro after its launch in 1999 – should read Ashoka Mody's clearly written and meticulously referenced *Euro Tragedy*. Dr Mody's account of the series of problems faced by Italy, a Eurozone member, indirectly throws light on why it recently became the first West European and G7 country to join China's Belt and Road Initiative.

By 1968, when the euro was proposed, West Europe's post-war economic boom had passed into history. The idea of one currency across the EU appeared reasonable enough: It would cut international transaction costs for euro-countries. And despite strong popular opposition to the replacement of national currencies, of which citizens were proud, Chancellor Helmut Kohl, the architect of German reunification in 1990, pushed the euro through on the grounds that countries sharing a single currency would never go to war. He also assured German voters that they would never have to pay for bailing out inefficient euro-economies.

Those favouring the euro had no idea where the common currency would take the Union. To its opponents, the very idea was economically unsound, because the mix of fixed exchange rates and central planning would never work. At no time were leaders of EU countries willing to surrender control over their own tax revenues, or their right to decide how much to spend at home. Rich countries like Germany refused to "rescue" unfortunate countries from economic hardship. Conflicts of interest over economic issues often triggered political conflicts. But "groupthink" resulted in any one opposing the Euro being branded chauvinist and anti-European. Every risk was downplayed by those favouring the euro. The result: The euro has driven deeper the rifts within the EU rather than strengthened unity.

Most EU member-states have adopted the euro as their national currency. The European Central Bank is the single monetary authority with a single monetary policy for the whole euro area. Its primary aim is to maintain price stability. Although economic policy remains largely the responsibility of individual euro countries, national governments must coordinate their respective economic policies in order to achieve the common objectives of stability, growth and employment.

From the outset, the main flaw of a single currency was that a country facing recession could not devalue to help its companies selling abroad or tackle unemployment. A euro-country-in-recession did not have a central bank to revise its interest rates to stimulate growth.

The interest rates set by the European Central Bank were too high for those of the ailing Italian economy; too low for Germany. There were no fiscal safeguards to tackle recessions or booms.

Germany reformed its labour market and overcame the hardships caused by reunification. Its exports rose. In contrast, Italy was plagued by low productivity, high government spending and declining job opportunities. Its GDP per person has stagnated since the euro became the official currency in 1999. Rome and Brussels have often wrangled over budget targets. Admittedly, Italy's low growth rates predated the euro. Even so, once Europe's second-largest manufacturing hub, euro-Italy saw the competitive edge of its companies shrink. Its leaders were unable to intervene by devaluing the lira to make exports cheaper.

As for Greece – which raised the spectre of "Grexit" barely two years ago -- euro membership allowed Athens to borrow heavily at low interest rates. But when problems arose, it could not devalue its drachma to get out of trouble. The country's Eurozone partners, along with the International Monetary Fund, simultaneously offered more low-interest loans and demanded steep cuts in public spending. The austerity pushed Greece into a deep recession, and over the past eight years, the economy has contracted by a quarter.

Moreover, the EU's lack of political legitimacy has undermined its institutions. For instance, to whom would an EU finance minister be accountable – to governments or to members of the European Parliament? This absence of accountability has been exploited by Europe's far-right parties, raising question marks over the future of the Eurozone — and of the relevance of Brussels itself.

The popularity of the elected European Parliament has also declined. Sixty-two per cent of voters cast their ballots in the parliament's first election in 1979; a mere 43 per cent in 2014. East Europeans have engaged less with the European parliament than West European ones. A mere 13 per cent of Slovak voters cast their ballots in the 2014 parliamentary elections.

That monetary union could depress growth, undermine the EU's legitimacy and exacerbate inequality was known by "pro-Euro" leaders decades ago. But they ignored warnings that the euro could do little good and colluded to whitewash or conceal bad economic data.

What does the future hold for the eurozone? No matter how inefficient, the monetary union cannot be undone. But there is little chance of making it work better. Dr Mody foresees the eurozone continuing to move from crisis to crisis, with perhaps the most indebted nations eventually opting out of the single currency.

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EURO TRAGEDY
A drama in nine acts
Ashoka Mody
Oxford University Press, 651 pages; $34.95