Opinion

MONDAY, FEBRUARY 11, 2019

INVESTING IN WB

Inustrialist Sajjan Jindal

"We are doubling the capacity of our cement plant in West Bengal. You don't have to think twice before investing in the state."

RationalExpectations

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UBI transfers are basically better

SEWA-INBI pilots in Madhya Pradesh showed how Universal Basic Income improved living standards in a sustained way

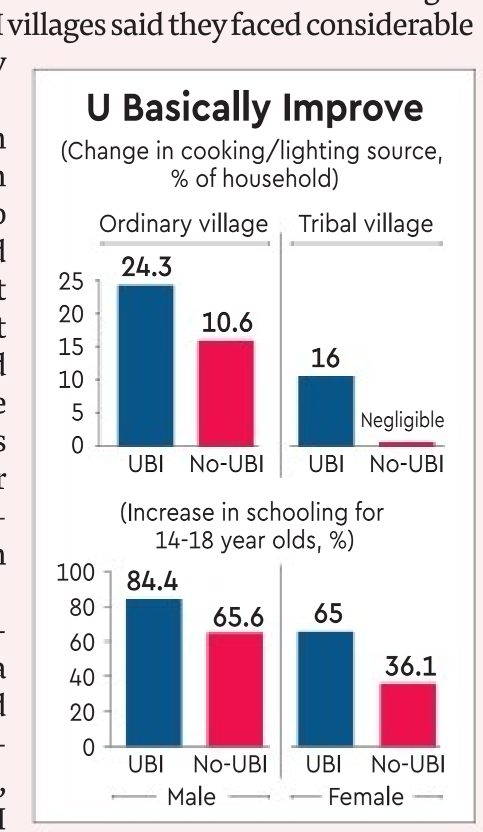
PRIME MINISTER NARENDRA Modi's ₹75,000 crore income top-up for small and marginal farmers is not, in the truest sense of the term, a Universal Basic Income (UBI), but it has revived interest in UBI or, in the context of making it affordable, a modified UBI for the bottom 20 or 30% of the population.

Many have argued that a UBI, or even a modified UBI which promises a reasonable sum of money, is unaffordable, and that it has unfortunate side effects in terms of the money being squandered, for instance. Going by the results of the Sewa Bharat-INBI pilot in Madhya Pradesh in 2012-13, and a follow up of it five years after it was over, suggests this may not be correct.

Sewa-INBI took up two types of villages in Madhya Pradesh for their pilot, one was a normal Indian village while the second was only inhabited by tribals. In each case, a set of 'control' villages was identified where no UBI was given while the other set got a UBI for 12 to 17 months. Over 6,000 people got the UBI of ₹200 per adult and ₹100 per child; after a year, this was raised to ₹300 and ₹150—respectively—in the normal villages. In the tribal villages, the sum was kept at ₹300 and ₹150 in the 12-month period.

Since the pilot was done in the pre-Modi period of 2012-13, there was no government-induced push to PSU banks to open Jan Dhan Yojana accounts for people. Even at that point, however, 70% of the women in the UBI villages said they had no problem opening a bank account as compared to 44% in non-UBI or 'control' villages. Similarly, while 61% of households in non-UBI villages said they faced considerable difficulty in withdrawing their money, only 27% in UBI villages faced difficulties.

And, though this was prior to the Swachh Bharat days, about 16% of the households in the UBI villages said they had made changes to their toilets by the end of the project, compared to only 10% in the control villages; amongst the households that had no toilet at the outset in the general pilot, more than 7% reported building a new toilet as compared to 4% in the control villages. Also, 24 of the UBI households had changed their main source of energy for cooking or lighting in the previous 12 months, compared to less than 11% in the non-UBI villages.



In the case of tribal villages, 16% of households in the recipient village reported using a better cooking fuel and 14.5% reported improving their lighting, compared with practically no change in the control village. Indeed, about 13 bicycles were purchased in the UBI villages in comparison to only two in the 'control' area.

Even more encouraging was the weight of female children in the UBI villages. Just 39% of the girl children in the UBI villages and 48% in the 'control' villages had a normal weight. By the end of the experiment, there was a 20 percentage point improvement in the UBI villages as compared to half that in the 'control' villages. Not surprisingly, UBI also had a salutary impact on the enrolment of both boys and girls, but the improvement was far greater for girls. As many as 84.4% of boys in the 14-18 age group were enrolled in schools in the UBI villages versus 65.6% in the 'control' villages; in the case of girls, it was 65% in UBI villages versus 36.1% in the 'control' villages. As a result of greater enrolment, there was a 20% reduction in child wage-labour in the UBI villages compared to a 5% drop in the 'control' villages. There are several more instances of the beneficial changes brought about by UBI; those interested in more should read the report (*goo.gl/xmAEGL*).

The question that comes to mind, needless to say, is whether the changes are temporary, driven by the greater income with people, or whether they are lasting. Sewa Bharat-INBI decided to revisit the tribal villages several years after the pilot was over, in 2017, and that survey found that, while there were some slippages, in most areas, the older trends either continued or had strengthened. In continuation of the trend towards using more electricity in the UBI villages during the pilot, the legacy survey found that 24% of the former UBI families had got electricity in their homes as compared to 13% in the 'control' villages. In the pilot, 66% of UBI homes got water from a private source versus 38% in the 'control' villages; in the legacy survey, 65% of UBI households got water from a private source versus 55% in the 'control' houses.

In which case, the next government, whether that of the BJP or some other party, must look at ways to extend UBI in the next budget. And while many, such as this newspaper, believe that the government must do away with other subsidies such as those on food and fertilisers—(see *goo.gl/tLwCeX* on some of the leakages, or Economic Survey 2016-17 for a fuller discussion)—one of Sewa's recommendations is that no subsidies be removed till the UBI is fully rolled out since low-income families could get hit if there is a problem/delay in the cash transfers as they will lose access to subsidised goods. That seems a reasonable caution, not an unsurmountable problem.

SchoolZONE

Myopic to say that only Delhi residents' children should be admitted to schools run by Delhi govt

DELHI DEPUTY CHIEF minister Manish Sisodia is in favour of allowing only the wards of Delhi residents to get admitted in state government schools. Sisodia believes that allowing students from states sharing borders with the national capital has meant the neighbouring states do little to improve the condition of government-run education in their jurisdictions. It is also true that allowing students from, say, Noida (Uttar Pradesh, or UP) or Faridabad (Haryana) to get admitted in Delhi government schools puts pressure on the school infrastructure funded by the government of the national capital territory. But, unmet education needs of the youth isn't a problem that can be contained within states—i.e., the lack high-quality education infrastructure in UP isn't just the state's problem. In the long run, unrealised productivity potential, surge in crime, the need for more welfare channels and other such consequences of a pervasive lack of high-quality education infrastructure mean the socioeconomic costs of a child in Noida denied admission in a Delhi government school are borne by the entire nation, including Delhi.

While an UP needs to improve its school ecosystem, the fact is that the Delhi government will be doing the national capital and the nation grave disservice by mandating that only children of Delhi residents can get into the schools it runs. In fact, a better way to ensure that a neighbouring state is penalised for its inaction on improving public-funded school education would be to publish a list of all students from UP/Haryana enrolled in Delhi schools and push for compensation via recalibrating central transfers. To this end, the Delhi government must collect relevant data from students and their families. The Delhi government must remember that federal principles also include duties to the federation.

CHLOROPHILE

WITH ITS BUDGET MERGED WITH THE MAIN BUDGET, THE RAILWAYS ESCAPES PUBLIC GAZE ON SLIPPAGES

Railways vision veering off track?

VIVIAN FERNANDES

Author blogs at smartindianagriculture.com

OF THE 98 paragraphs of finance minister Piyush Goyal's Interim Budget speech, two were about the Railways. In a relatively short speech meant to gladden various sections of voters, more was not expected. The details which a separate Railway budget provided were missing.

The practice of presenting a separate Railway budget was discontinued after 2016 as the event had become an occasion for grandstanding by ministers at the expense of the Railways. "Should commercial viability be the sole criterion to judge this need for connectivity," Mamata Banerjee asked in her 2011-12 speech, and stated that she preferred "social responsibility." There was something in that budget for everyone, including two Tagore museums. Banerjee represented a procession of railway ministers who regarded the Railways as also being in the business of bulk haulage.

The unintended consequence is that extensive public commentary on the state of the Railways, even if it were for a day or two, has got muted. Railway accounts are not easy to comprehend. This deprives lawmakers in the Parliamentary committee which scrutinises railway affairs an array of views which could have helped them hold the organisation accountable.

Goyal made laudatory references to the government's stewardship of the Railways. The investment next year would be "highest ever," he said, though a new railway minister in a new government will have to find the money. Similar claims were made by Banerjee in 2010-11 and 2011-12 and by Dinesh Trivedi the following year.

The operating ratio this year, or the share of expenditure (including appropriations for pensions and for replacement of worn-out assets) in revenue was 96.2%, Goyal said. This is a two percentage-point improvement over last year but 3.4 percentage point slip over the budget target of 92.8%. Even this improvement may have been achieved by pushing payments to the next year as the Railways does not keep accounts on accrual basis. When this government took over, the ratio was 94%—itself a terrible figure.

Total expenditure this year overshot the budget estimates by ₹3,100 cr while receipts fell short of them by ₹3,876 cr. The Railways increased the headcount this year in the lower grades. It had about 1.3 million on its rolls, each earning an average monthly salary of ₹73,625. Staff cost, including pension outgo, is 66% of total expenditure. It rose by ₹7,153 crore this year to ₹1,25,786 crore and has been budgeted to rise by nearly ₹12,000 crore next year. Staff cost hikes shaved off 55% of the incremental revenue this year and are anticipated to eat up 72% of it next year.

The Railways hauled 1,266 million tonnes of goods, which was 56 million tonnes more than last year. Though the total distance travelled by the goods hauled fell by 2,213 million kilometres, freight earnings were ₹12,695 cr ore-higher. The incremental haulage came mainly from coal and, to a lesser extent, from cement. The Railways expects to do 50 million tonnes more next year. Why the modest target, when Suresh Prabhu had said in his 2016 Railway budget speech that the two dedicated freight corridors were "scheduled to be commissioned by 2019"? Prabhu had lamented that the railway freight basket was dominated by 10 bulk commodities which had an 88% share by weight and value. The diversification to higher value goods has not happened.

Fewer non-suburban passengers travelled on the Railways this year. The number of the poorest of them—those travelling second-class—fell from a year ago by 62 million. They contributed ₹491 cr less to the Railways kitty. This is perhaps an indication of fewer job opportunities—and hence of lower migration. The numbers were also down in the comfort classes. Those travelling AC sleeper were 1.38 million less than last year but they paid ₹439 crore more—perhaps because of dynamic pricing.

> **The Railways' operating ratio, or the share of expenditure in revenue, this year was 96.2%—2 ppt better than the year before, but a 3.4 ppt slip over the target of 92.8%. When this govt took over, the ratio was 94%**

Suburban passengers made up for the shortfall and, overall, the Railways carried 68 million more passengers than last year and earned ₹3,357 crore more.

Over the past five years, the number of non-suburban passengers travelling by rail has fallen from 3.72 billion in 2014-15 to 3.58 billion. But earnings from them have increased from ₹39,696 cr to ₹48,918 cr during this period.

Those travelling in AC comfort—sleeper, chair and first class- have increased by 20% over the past five years while earnings from them have grown by 40%. Within this segment the number travelling by 2AC has remained flat at about 26 million while those travelling AC3 tier has increased by nearly a quarter to 96 million. Earnings from them have risen more than proportionately—by 44%.

There has been a sharp rise in railway investment under this government. It has grown nearly two-and-a-half fold to ₹1,38,858 cr this year, comprising ₹53,060 cr in budget support and ₹79,297 cr largely in borrowings. There has been a greater reliance on extra budgetary resources. Under the previous, UPA, investment in the Railways rose by 34% over a five-year-period, to ₹52,060 cr in 2013-14.

This government had a free hand than the previous one to restructure the Railways and make it competitive. The first minister, Sadananda Gowda, was a wrong choice for the position. Suresh Prabhu made many headline-grabbing announcements—mobility directorate, Mission Electrification, Mission Raftar—but achieved little. Finance minister Arun Jaitely said in his 2017-18 budget speech that 'accrual based financial statements will be rolled out by March 2019." Is that likely to happen? If railway traction is to be entirely electrified, will GE's diesel engine plant in Bihar become a wasted investment? In his February 2008 speech, railway minister Lalu Prasad said trials of green toilets were 'extremely encouraging.' He had provided ₹4,000 cr "to put a permanent end to the problem of discharge from train toilets by providing green toilets in all 36,000 coaches by end of the 11th plan,' that is, by 2012. Ministers may come and go, but the Railways is accountable to Parliament. Last year, Goyal told a newspaper that all railway coaches would stop discharging waste in the open by this year. We are waiting for another promise to be broken.

Banks' lending rates may not fall

Transmission of policy rate cuts by the MPC by banks to borrowers may not happen any time soon as banks remain constrained on many fronts

KARTHIK SRINIVASAN

Senior vice-president & group head, Financial Sector Ratings, ICRA Ltd

THE 4:2 VOTE in favour of a front-ended 25bps rate cut by the Monetary Policy Committee (MPC) of the Reserve Bank of India (RBI) accorded greater focus to growth in the last bimonthly MPC statement of FY19 as inflationary indicators continued to remain benign. While RBI expressed hope that banks would pass on the benefit to borrowers, which can boost investments and private consumption, we believe the transmission, as in the past, would happen only with some lag. The lending rates of banks are outcome of their own borrowing costs, primarily deposit costs, and unless their deposits become cheaper, it may be difficult for banks to reduce their lending rates. Accordingly, borrowers may need to wait for cuts in benchmark lending rates of banks and lower EMIs.

For the nine-months ending December 2018, the incremental growth in bank deposits stood at ₹3.43 lakh crore, as against an incremental credit growth of ₹6.75 lakh crore, and the credit-to-deposit ratio of the banking system touched a high of 78.7% as on December 2018 as against 74% in March 2018. The pace of deposit accretion with the banking system as on December 2018 has not kept pace with credit growth of 15.1% over the same period. To improve transmission of policy rates, competition among various lenders needs to be increased, which can happen when more PSBs exit the prompt corrective action (PCA) framework and non-banking financial companies (NBFCs) have access to adequate funding at competitive rates.

With some PSBs coming out of the PCA framework, and easing up of balance sheets of many other PSBs, the competition in both lending as well as deposit activity is expected to place an upward bias on deposit rates rather than a reduction, and a cut in lending rates will mean sacrificing profit margins.

Given the need and relevance of NBFCs for Indian credit markets and improving their access to funds, the measure to align the risk weights for bank exposures to NBFCs (excluding core investment companies) on their externals is a step in the right direction. We estimate banks' exposure to NBFCs at ₹5.7 lakh crore, of which exposure to asset finance companies, infrastructure finance companies and infrastructure debt funds is already risk-weighted based on their ratings. Based on our assessment, the revision in risk weights on exposure to NBFCs should help banks release capital of nearly ₹125 billion (estimated at around 0.125% of risk-weighted assets), which now can be used for incremental lending or bolster the existing capital ratios. While incremental credit supply for NBFCs is expected to improve, reduction in rates would depend on banks' willingness to do so. Accordingly, unless NBFCs can avail fresh funding at competitive rates, their ability to lower the lending rates for end-borrowers may remain constrained.

> **Attracting foreign flows and easing liquidity conditions are some factors that can support lower cost of funds for banks and NBFCs, and support their abilities to reduce their benchmark lending rates. In the absence of this, even another rate cut may not result in reduced borrowing costs**

To ease out liquidity deficits and preventing sharp rise in interest rates amid the overhang of high borrowing programme of central and state governments, RBI has been doing large-scale open market operations and has been purchasing government securities worth ₹2.75 lakh crore during April-February 2019, but liquidity conditions have continued to remain in deficit mode since June 2018. Attracting foreign flows and easing liquidity conditions are some factors that can support lower cost of funds for banks and NBFCs, and support their abilities to reduce their benchmark lending rates. In the absence of this, even another rate cut may not result in reduced borrowing costs.

With India entering an uncertain election cycle, foreign investor demand will also remain muted until there is clarity on the next government and its likely macroeconomic policies. So, despite a general wave of bullishness towards emerging market assets on the softening stance of the US Federal Reserve, India is unlikely to be a key beneficiary till at least May 2019. Nonetheless, the change in stance to "neutral" from "calibrated tightening" would aid RBI to cut rates again next fiscal if inflation estimates for FY20 remain under 4%. However, given a divided vote and impending general elections, we expect the MPC to adopt a wait-and-watch approach and assess the data related to agricultural output from rabi harvest, monsoon forecast and fiscal policies adopted by the new government before any further rate action.

LETTERS TO THE EDITOR

Centre's bluster reveals poll insecurity?

In his 'big, explosive' Parliament speech, Prime Minister Narendra Modi has come out with a brilliant linguistic innovation 'BC= Before Congress, AD= after Dynasty'. Perhaps it was his way of taking a swipe at the Congress. His description of 'Mahaganabandan' as 'Mahamilaawat' took the cake. His supporters hailed it as the best part of his speech. But then by equating the coming together of Opposition parties to 'adulteration', he showed his scant regard for democracy. Perhaps he was driven by a sense of unease and even panic that the 'grand alliance' might unseat him and deny him another term. The SP's description of BJP as Banawati Janata Party (Banawati means 'spurious') too should be taken in jolly spirit. Dismissing 'no jobs' taunt by the Opposition, Modi has sought to establish that there was an increase in jobs in the unorganized sector. But the only problem is that it had no basis in fact. It should pain the jobless youth that the Prime Minister does not recognize the worsening 'job crisis'. To his credit, the PM did not claim that he mitigated the distress of farmers. BJP must be pleased with the TV anchors' assessment of Modi's speech. Despite Modi's attack on the Opposition and its endorsement by sections of the media, the likelihood is that we may have an Opposition candidate as the next Prime Minister.
— G David Milton, Maruthancode

The Musk way

Elon Musk must be lauded for endorsing open source when the world of business wants to maximise profits through patents—even if it comes at the cost of knowledge remaining in the hands of a few and slower progress.
— Sumona Pal, Kolkata

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CASTE IN A DIFFERENT MOULD

Inter-caste inequality is falling, and education levels rising

As in the past, even upper-caste families in poor-growth states fared worse than SC/ST in high-growth states, and vice versa

B.1: Caste matters less than location, high-growth states
(Ratio of FY16 income to FY05 income)

High-growth states

States	SC	ST	OBC	Others	Total
Kerala	6.26	3.08	4.83	4.10	**4.62**
Andhra Pradesh	5.37	8.55	4.45	3.67	**4.40**
Tamil Nadu	4.57	8.40	3.35	2.92	**3.53**

B.2: Caste matters less than location, low-growth states
(Ratio of FY16 income to FY05 income)

Low-growth states

States	SC	ST	OBC	Others	Total
Uttar Pradesh	3.65	3.63	3.10	2.91	**2.97**
Odisha	3.38	3.35	2.39	2.68	**2.53**
West Bengal	2.90	2.62	2.73	1.85	**2.15**

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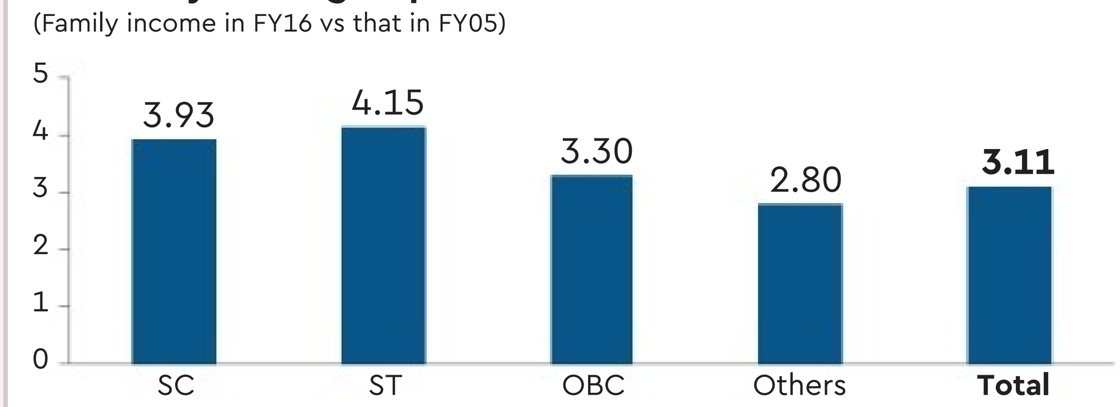
NOW THAT ELECTIONS are round the corner, though some caste-based parties like the Bahujan Samaj Party (BSP) and the Samajwadi Party (SP) are trying to sink in their differences to take on the BJP, there is little doubt that caste divides will be exaggerated and exploited in order to get votes by each political party. Indeed, caste rivalries will be accentuated since many are trying to show—and the BJP is trying to show that this is not true—that the new 10% upper-caste quota is going to reduce reservations for the SC/ST/OBC groups.

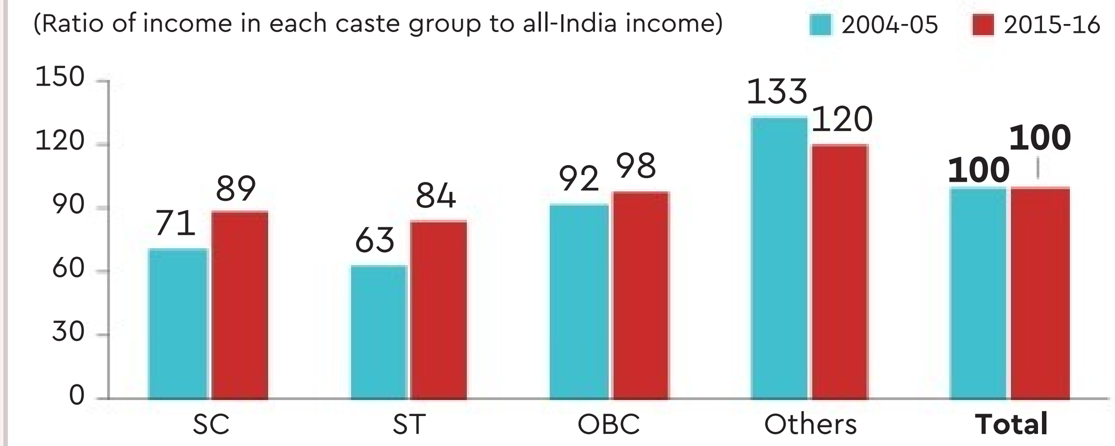
And while it is not clear whether the BJP will be able to ensure this happens before the elections, its plan to sub-categorise the OBCs, to allow non-powerful castes to also get the benefit of reservations—instead of mostly the Yadavs and the Kurmis in, for instance, Uttar Pradesh— will also accentuate caste rivalry. The Justice Kumar committee in Uttar Pradesh, according to a report in The Times of India, has suggested that the 27% quota meant for OBCs be split up and, of this, just 7 percentage points (roughly a fourth) be given to powerful backward castes like Yadavs and Kurmis—Yadavs are the core base of the Samajwadi Party while Kurmis are the support base of BJP ally Apna Dal. While there is a valid case for the sub-categorisation—the Justice Kumar committee says both Yadavs and Kurmis are culturally, economically and politically powerful—the immediate issue is whether groups like the Yadavs and Kurmis will just roll over and let this happen or whether this will snowball into a larger conflict.

Data sourced from People Research on India's Consumer Economy (PRICE), an independent not-for-profit research centre, shows that while there were, as expected, differences in the incomes of families in each caste group in 2015-16, this matters less than, say, the industries in which these families are occupied, economic growth in the states that they live in, their education, whether they live in rural or urban areas, small towns or big towns, etc. While this is something the NCAER survey also showed in 2004-05 (see 'Caste in a different mould', *goo.gl/fPrmhe*), as the PRICE survey for 2015-16 shows—both surveys were conducted by Rajesh Shukla who now heads PRICE—this is even more true today.

A.1: Every caste group is better off
(Family income in FY16 vs that in FY05)



A.2: Differences across castes are a lot less
(Ratio of income in each caste group to all-India income)



Over the next few weeks, this newspaper will try and bring different aspects of PRICE's 2015-16 survey that relate to caste dynamics.

The first and most important trend shown up by juxtaposing the findings of both surveys is that inter-caste inequalities, at least when it comes to incomes, have reduced dramatically over time. This is very positive and augurs well for the removal of caste-based quotas, provided the political class wants to remove them. A PhD thesis by Ishan Bakshi (*goo.gl/vMNSPd*), for instance, used NSS data and finds that, over time, educational inequality reduces across generations. It finds that if a parent in rural India had studied till just Class V—this includes illiterates—there was a 58% chance his child also studied till this level in 1983; this fell to just 29% by 2009-10. Even better, while there was a 1% chance the child of such a parent could have passed Class XII in 1983, this rose to 14% by 2009-10. And this trend holds true whether a parent is poor or rich.

In 2004-05, the NCAER data showed that, on average, SC households earned around 71% of the average earned across all caste groups (see graphic A.2). In the case of ST households, they earned a lower 63%; that is, if the average household earned ₹100, the SC household earned ₹71 while the ST one earned ₹63, the OBC earned ₹92 and the Upper Caste (UC) earned ₹133. While the average household income in 2004-05 was ₹65,041, an SC household earned₹45,889, ₹40,753 in the case of ST, ₹59,741 for OBC and ₹86,689 for UCs.

This, by the way, is hardly representative of the deep discrimination that people talk about; more so since, as we will see, caste is not the main deciding factor for income levels. But even this has reduced dramatically. In 2015-16, while household incomes had risen 3.11 times on average across all caste groups (see graphic A.1), the average SC household was earning 89% of what the average Indian was while the average ST household was earning 84% and the OBC 98%; the UC was still earning more than the average, but less so than that in the past.

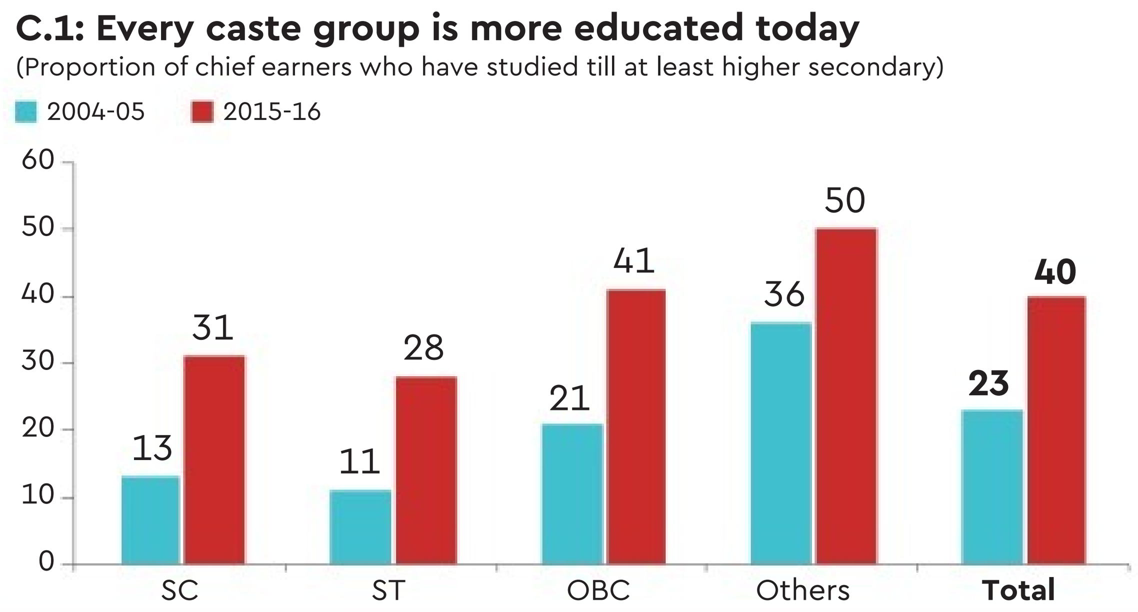
Not surprising, since caste in itself is not as important a determining factor as various caste-warriors make out to be, one of the biggest differences in incomes emanates from the state in which families are located, and that holds true for all caste groups. Take the case of Kerala where the 2015-16 household incomes were, on average, 4.62 times of what they were in 2004-05. Even SC households here saw their incomes rise 6.26 times over that in 2004-05; in the case of the low-growth Uttar Pradesh, by contrast, UC households saw their average incomes rise by just 2.91 times in the same period (see graphics B.1 and B.2).

Equally interesting, is the big improvement in education qualifications across all caste groups (see graphic C.1). So, in the case of SC households, while just 13% were headed by people who had studied till at least higher secondary in 2004-05—as compared to a much higher 36% for upper caste households—this rose to as much as 31% in 2015-16. While around half of upper caste households in 20150-16 were headed by people who had studied till at least higher secondary by then, the gap has steadily fallen—2.8 times as high a proportion of upper caste households were headed by at least someone with a higher secondary degree as compared to SC households in 2004-05, but by 2015-16, this had fallen to 1.6 times.

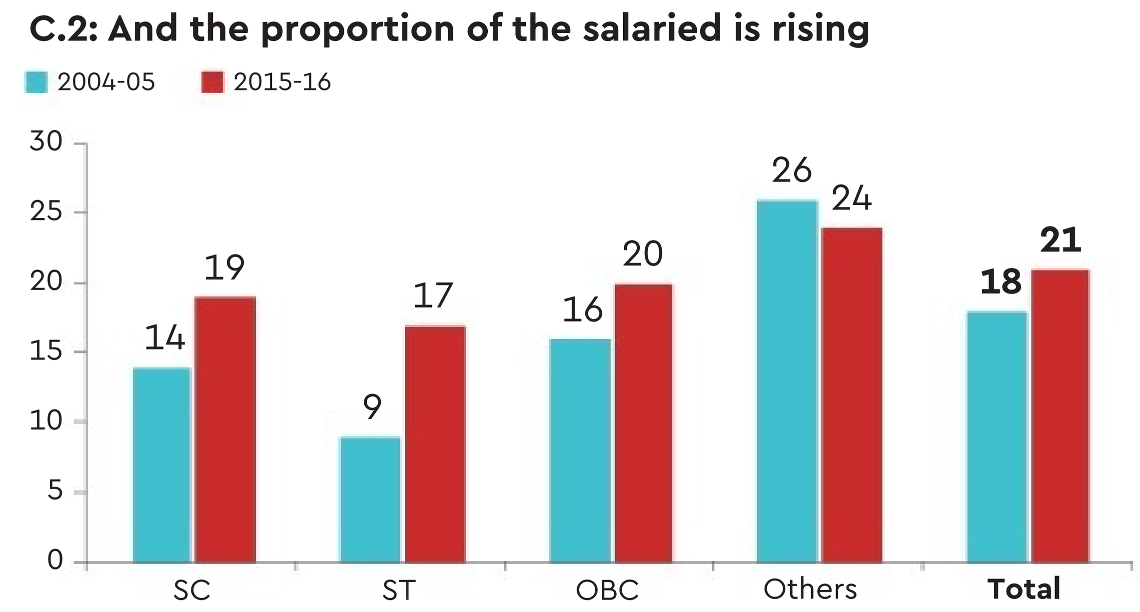
The change in household incomes due to education is the best indicator of the fact that caste is not as important as is made out. In 2015-16, incomes for households headed by illiterates were ₹90,285 for SCs and not to different at ₹93,756 for UCs. But when an SC household was headed by a graduate or above, the income rose to ₹303,680, or 3.36 times.

Equally interesting, the proportion of households that are salaried has increased across the board for all caste groups, but the increase is the highest for STs where this rose from 9% to 17% between 2004-05 and 2015-16(see C.2). It is also ST households where (see C.3) where the sharpest fall has taken place in households that are engaged in farming; from 39% in 2004-05, this fell to 22% in 2015-16.

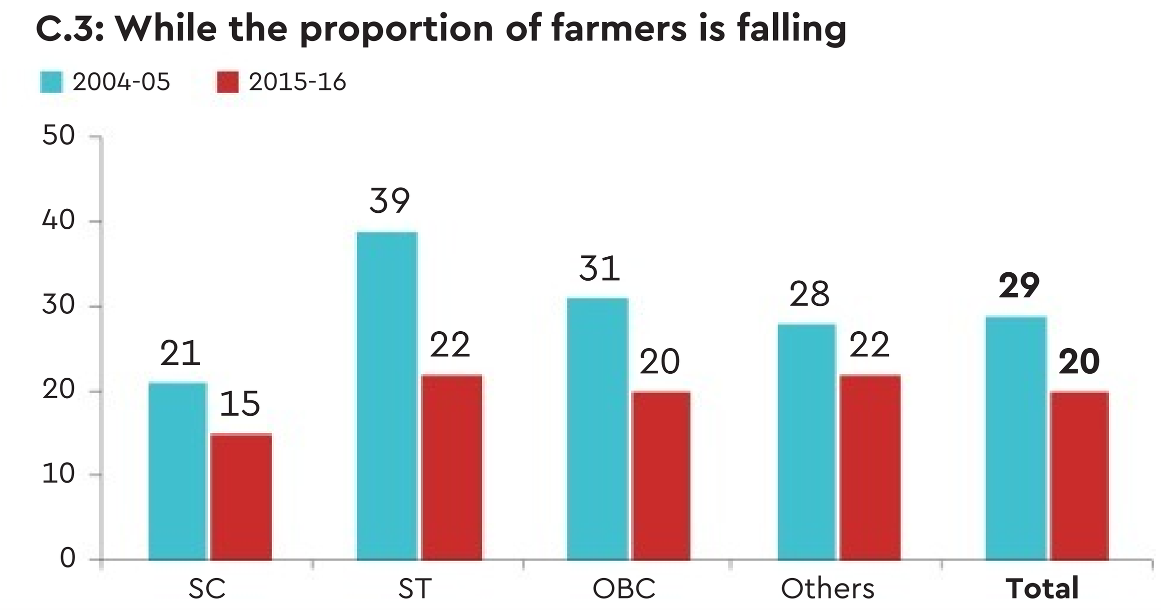
C.1: Every caste group is more educated today
(Proportion of chief earners who have studied till at least higher secondary)



C.2: And the proportion of the salaried is rising



C.3: While the proportion of farmers is falling



Six Sigma for precise business processes

It develops key metrics that first define the problem, then measure the defects, and finally give actual results

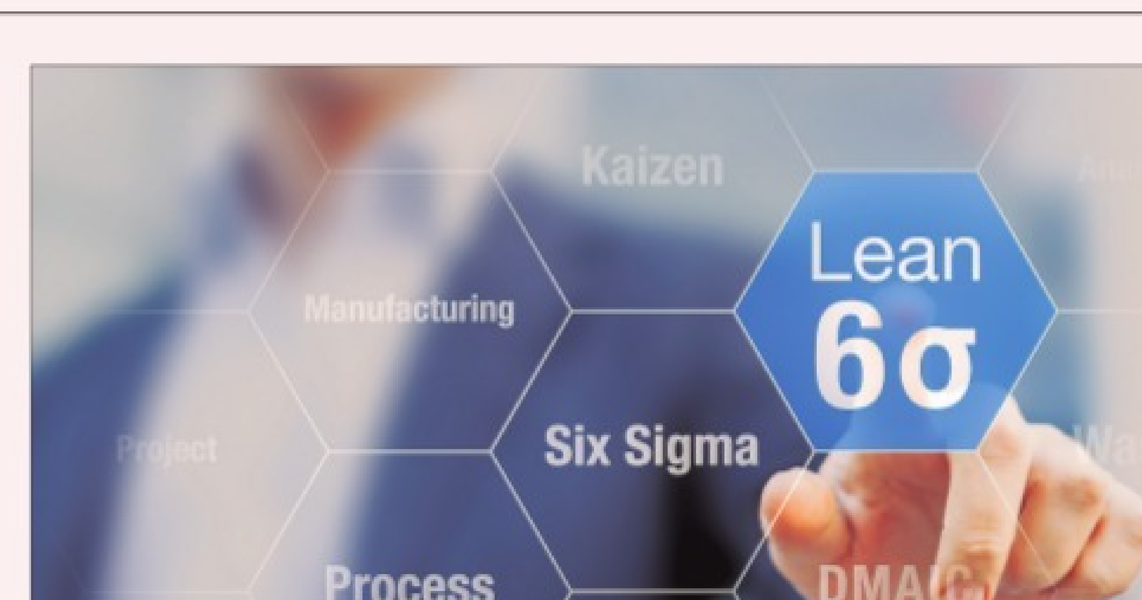
VIDYA HATTANGADI
The author is a management thinker and blogger

ELEVEN MILLION CHECKS: Few years ago, a Bank of America ad on TV typified the Six Sigma belief. The ad had a slogan: "We don't process eleven million checks a day. We process one check just right, and then do it eleven million times." The process is charted out just once, but it is so accurately modelled that it is reproduced to achieve the highest success rate. This tag line personifies Six Sigma. How high is this success rate? It is less than 3.4 errors per million opportunities for error ...this is Six Sigma, which is a quality management term. Six Sigma is a set of techniques and tools for process improvement. A Six Sigma process is a statistical tool in which 99.99966% perfection is achieved.

It was introduced by engineer Bill Smith while working at Motorola in 1980. The term Six Sigma got registered as a Motorola trademark on December 28, 1993. It originated from terminology associated with statistical modelling of manufacturing processes. The maturity of a manufacturing process can be described by a sigma rating indicating its yield or the percentage of defect-free products it creates—specifically, within how many standard deviations of a normal distribution the fraction of defect-free outcomes corresponds to. Motorola set a goal of 'six sigma' for all of its manufacturing.

Smith generated billions of dollars for Motorola; he introduced his statistical approach aimed at increasing profitability by reducing defects. Smith, in the later part of his life, earned the title 'Father of Six Sigma'. It has become a mainstream operation term in the business world. As a fact of life, the creator rarely gets rewarded for his creativity, and as a Motorola employee, Smith did not get a share directly in the profits generated by the company's Six Sigma applications. However, over the years, he and Motorola garnered numerous awards and recognitions for his vital work to improve profitability in the American manufacturing sector. Smith was proud of his role in Motorola winning the prestigious Malcolm Baldrige National Quality Award—which is given for the best practices in quality management in the US. The Baldrige Award came in 1988, two years after Motorola implemented Smith's Six Sigma principles.

In 1995, Jack Welch included Six Sigma fundamentally in all his business strategies at General Electric (GE). He decided to give a thorough overhaul to GE; he was guided by engineers and consultants, and he realised that something needed to be done to reduce the operational defects throughout the company. Do you know that Welch's appointment came with the mandate to change the company for the better; the GE board told him that, in whatever way necessary, Welch had to bring the changes. That's where Six Sigma was brought into the processes at GE. Over the course of five years of Six Sigma implementation, GE reported savings of $12 billion. That is a gigantic improvement, isn't it? Welch became a promoter of Six Sigma and championed its use in not just his own company, but also in others around the world, even in small businesses.



What are the strengths of Six Sigma? It addresses quality problems; errors and defects and costing in terms of waste and delays. It helps in diagnosing and solving problems for getting solutions to problems with its dozens of tools. Once the diagnosis is complete, the right tool can be chosen for a rapid solution. It develops key metrics that first define the problem, then measures the defects, and gives desired and actual results. It can benchmark the methods at the backdrop of industry's best practices. With an appropriate investment, a company that adopts Six Sigma can be a centre of excellence developing its own best practices through continuous improvement. Another feature of Six Sigma is that it works well with other cutting-edge management tools, such as continuous improvement (Kaizen), lean manufacturing and agile development.

Features that set Six Sigma apart from previous quality-improvement initiatives include: a focus on achieving measurable and quantifiable financial returns from any Six Sigma project, increased emphasis on strong and passionate management leadership and support, and a clear commitment to making decisions on the basis of verifiable data and statistical methods, rather than assumptions and guesswork.

In recent times, some practitioners have combined Six Sigma ideas with lean manufacturing to create a methodology called Lean Six Sigma. This methodology views the lean manufacturing process, which addresses process flow and waste issues, and Six Sigma, with its focus on variation and design, as complementary disciplines aims at promoting business and operational excellence. Companies such as GE, Accenture, Verizon, Genpact, 3M, Xerox, Allied, Conseco, Tata Steel and IBM use Lean Six Sigma to focus transformation efforts not just on efficiency, but also on growth. It serves as a foundation for innovation throughout the organisation, from manufacturing and software development to sales and service delivery functions. The International Organisation for Standardisation (ISO) had published, in 2011, the first standard 'ISO 13053-1:2011' defining a Six Sigma process. Other 'standards' are created mostly by universities or companies that have the so-called first-party certification programs for Six Sigma.

Implementation of Six Sigma ensures accuracy to specification. Six Sigma takes care of 99.73% of the process deviation. Organisations cannot afford to set a very loose specification, and also they cannot chip away the high assurance point as set in the Six Sigma model.

This means that Six Sigma itself is pretty difficult to achieve, therefore Seven Sigma and above is beyond belief.