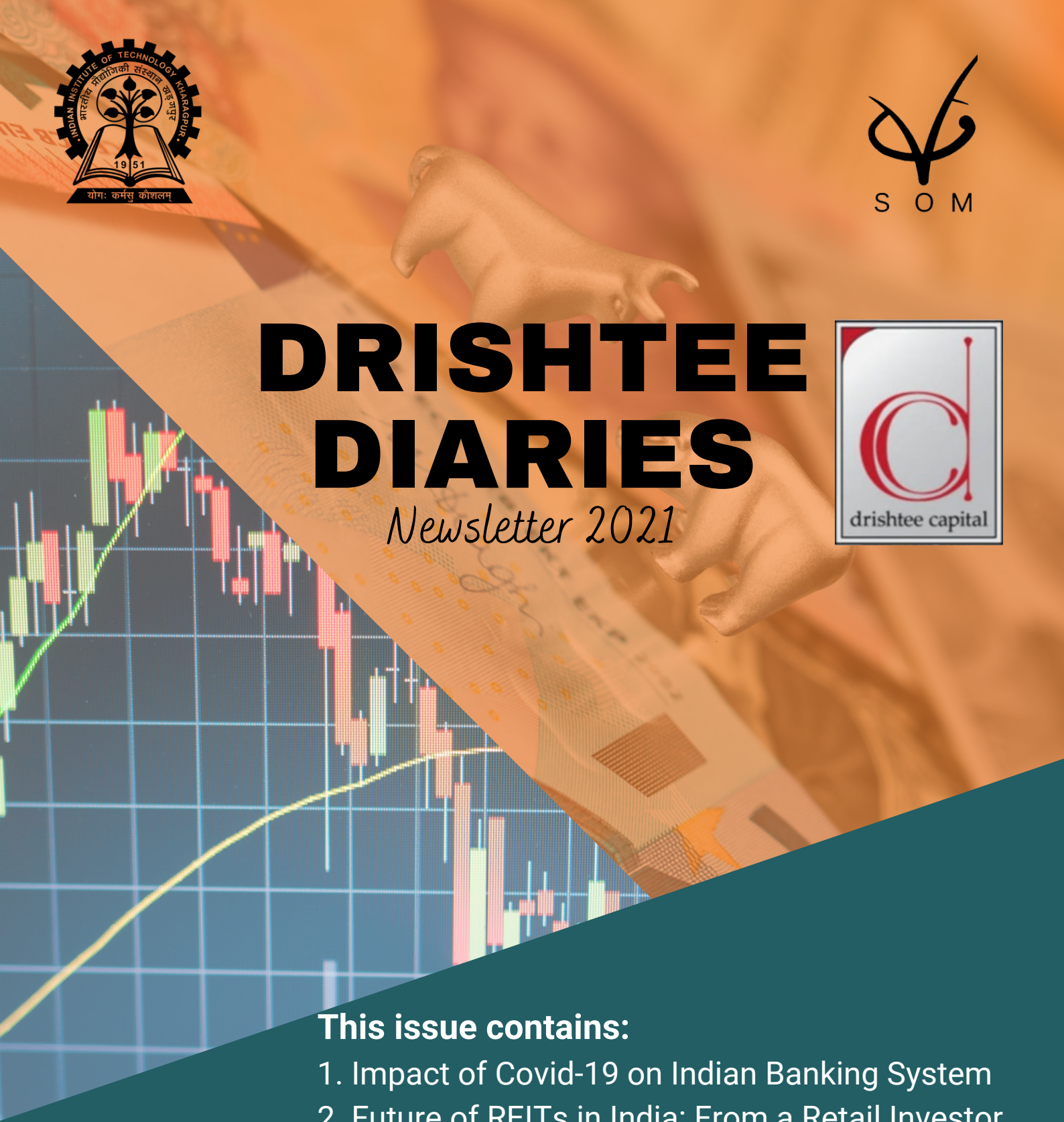


DRISHTEE DIARIES

Newsletter 2021

This issue contains:

Impact of Covid-19 on Indian Banking System

By Sougata Das Chakraborty

In today's economy, the role of banking system is extremely vital. Banks mobilize the savings of the people and make it available for productive purposes by lending the deposits to businesses and individuals. As a result, banks play a crucial role in the creation of new capital (also known as capital formation) in the system, aiding the growth process of the country.

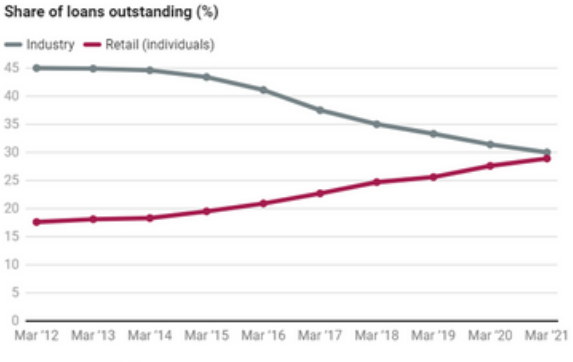
However, lending is one of the economy's most cyclical and risky sectors. The banking industry is extremely vulnerable in an economic downturn and credit crisis due to its reliance on the credit market for earnings growth. In case of a black swan event like the COVID-19 pandemic, the situation becomes much more dire. But the banking system showed better-than-anticipated resilience during the recent pandemic induced downturn.

What was different this time?

This time, Indian banks entered the pandemic with comparatively robust balance sheets, thanks to the reforms implemented following the global financial crisis. The banking system's pre-pandemic capital and liquidity buffers have provided resilience, with some banks seeking new capital from the market and public sector banks receiving budgetary recapitalization. Banks' financial performance and profitability have improved as a result of this protective protection.

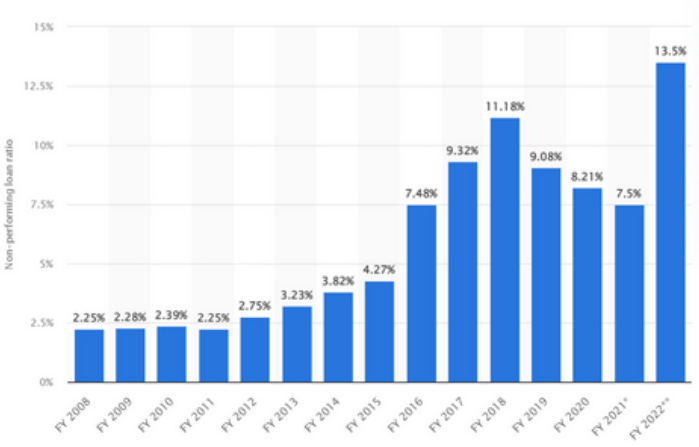
The shift from wholesale to retail lending:

Indian banking has undergone a quiet but significant transition during the last decade. The sector shifted from mostly providing credit to industry and enterprises to primarily providing credit to retail borrowers. The recurring issues that top Indian banks have had with their wholesale loan books have prompted this strategic shift. As of March 31, 2018, the top 100 bad loans held by the Indian banks totaled 4,98,790 crore, or slightly more than 48% of total bad loans. This effectively means that the majority of the bad loans are owed by larger corporate borrowers who took out industrial loans.



Impact on the banking system – higher stress in retail loan book:

The Indian economy has been rocked by two waves of the COVID-19 pandemic. In the years 2020–21, the economy declined by 7.3% in terms of gross domestic product (GDP). Growth is estimated to be 9-10% in 2021–22, less than the 12% or more that was widely forecasted before the second wave struck. The Reserve Bank of India (RBI) predicted that Gross Non-performing Assets (GNPA) of the banking system might surge to the level as high as 13.5% in FY22, the public sector banks being the worst hit.



[Gross non-performing loan ratio across India from financial year 2008 to 2021, with FY22 estimates]
[Source: https://www.statista.com/statistics/1013267/non-performing-loan-ratio-scheduled-commercial-banks-india/]

However, retail loans were the hardest hit this time due to Covid19-led lockdowns, as the restrictions resulted in significant job losses and a drop in loan repayments. According to the RBI's latest financial stability report, the median default rate in Indian banks' retail loan book was 2.17% at the end of the fourth quarter of CY20, up from 0.22% in Q4CY19. Secured real estate assets and unsecured exposure accounted for a large portion of the retail loan impairment. The retail loan book of the banks had the highest default rate, at 4.17% at the end of Q4CY20, compared to 4.63% in Q4CY19.

Experts believe that, compared to other advanced countries, Indian retail borrowers have been the hardest hit, owing to insufficient fiscal expenditure to support them in the aftermath of the pandemic. While India provided regulatory relief for borrowers, such as a six-month loan repayment moratorium, and launched credit-guarantee plans for small and medium businesses, experts say the country failed to put funds directly in the hands of consumers.

However, the jury is still out on whether other countries' short-term approaches would be more advantageous than Indian regulators' long-term conservative approach.

The credit uptick:

According to RBI's recent bulletin, from 2014 to 2021, the overall credit growth in the India decelerated, owing mostly to a reversal in credit growth in the industrial sector. The expansion of credit to non-industrial sectors, particularly the growth in retail loans, drove practically all non-food credit growth between FY2015 to FY2021. There is, however, a silver lining. Following a major decline in credit offtake due to Covid-19 in FY20 and in the first half of FY21, there has been an upswing in credit growth in recent months, despite the second Covid wave. This is an encouraging sign as it indicates the recovery in the economic activity. After the first Covid-19 wave subsided, total consumer credit demand has stabilized, following a strong rebound during the festive season in Q3 FY21.

Accelerated growth in digital banking:

Since the onset of the Covid-19 pandemic, with the rapid increase in customer reluctance to visit branches, banking and payments have seen a major uptick in digital offerings and adoption as the customer. While going digital is not a recent phenomenon in the industry, the pandemic has significantly accelerated the adoption of digital technologies. Even the banks which already offer online banking with some core functions are now focusing on a complete transition by digitizing most of their functions and processes. Legacy Indian banks and financial institutions will also look to collaborate with the new age fintech players. Such necessity-driven partnerships will drive innovation and jointly reap the benefits of the large customer base of the banks and the new technologies of the fintechs.

Future outlook:

The banking sector is in a better position to cushion shocks and absorb losses than in the past, thanks to higher levels and quality of capital, better liquidity, and more stable funding. Governments, central banks, and prudential regulators all took extensive measures to boost the economy, which helped to protect banks from the pandemic's initial effects and kept insolvencies low. As a result, the asset quality of banks has not deteriorated as much as the severe reduction in economic activity projected in 2020. Furthermore, banks significantly boosted provisions for expected losses during the early months of the crisis. The recovery would be more durable if the vaccination program was accelerated and scaled up, and cavities in the healthcare infrastructure were quickly filled in both urban and rural areas to be better prepared for any future Covid wave.

Domestically, supply-side restrictions, rising global commodity prices, huge fluctuations in capital flows, and global spillovers from financial market volatility, which is in turn dependent on policy attitudes of systemic economies, are all weighing on the near-term growth outlook. Withdrawing policy stimulus too soon to check the looming inflationary pressure before the economic growth has accelerated can weaken macro-financial resilience and can have unwanted repercussions.

Over the last few years, the banking sector has underperformed the broader market, afflicted by large nonperforming assets (NPAs) due to poor underwriting and questionable corporate governance. This is particularly magnified in case of the PSU banks. The government's actions in recent years, such as consolidation of various PSU banks, capital infusion through recapitalization bonds, improved governance, and the formation of a "bad bank" to clean up the banks' books of the NPAs, have begun to turn the tide in favour of the lending industry.

India's banking sector appears to be at a crossroads. The next few years will determine whether it returns to lending to industry and enterprises, or continues to focus majorly on consumer loans. If banking continues to be 'consumerized', it will have a significant impact on the economy in general and industrial growth in particular. Capital expenditure cycles will have to be renewed and supported if economic development is to be sustained. Companies in India will have to return to investing in growth assets, and they will require credit to do so. Bankers' preference for lending to consumers over businesses could result in a credit crunch, stifling the investment cycle and ultimately hampering the economic growth.

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Future of REITs in India: From a Retail Investor Perspective

By Arcot Reddy Chinmayaa

Real estate investment trust (REIT) is an entity or trust that owns, manages, or funds income-producing real estate. REITs operate similarly to mutual funds. Multiple investors can contribute money, which is subsequently transferred to a professionally managed REIT with underlying properties such as commercial office buildings, retail malls, server rooms, industrial parks, warehouses, hotels, and so on. Dividends are paid to investors in the form of rents or profits gained on the purchase and sale of these assets.

Income from REITs is derived from regular Income (Rent) or capital appreciation from the property. It allows a small investor to be a property owner without investing an entire amount in the property.

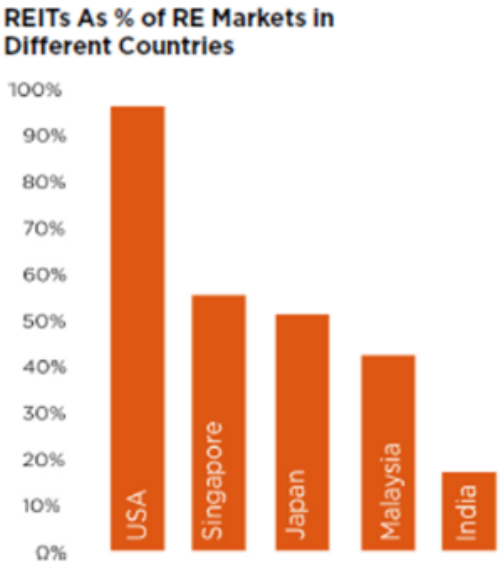
As a mandate, SEBI has ordered that 80% of the underlying assets in a REIT must be operational. Income-generating REITs are expected to give over 90% of their earnings from assets produced to their investors. These characteristics make this a secure investment option in these trying times. Besides dividends, investors receive monthly interest payments, which makes them even more appealing to retail buyers.

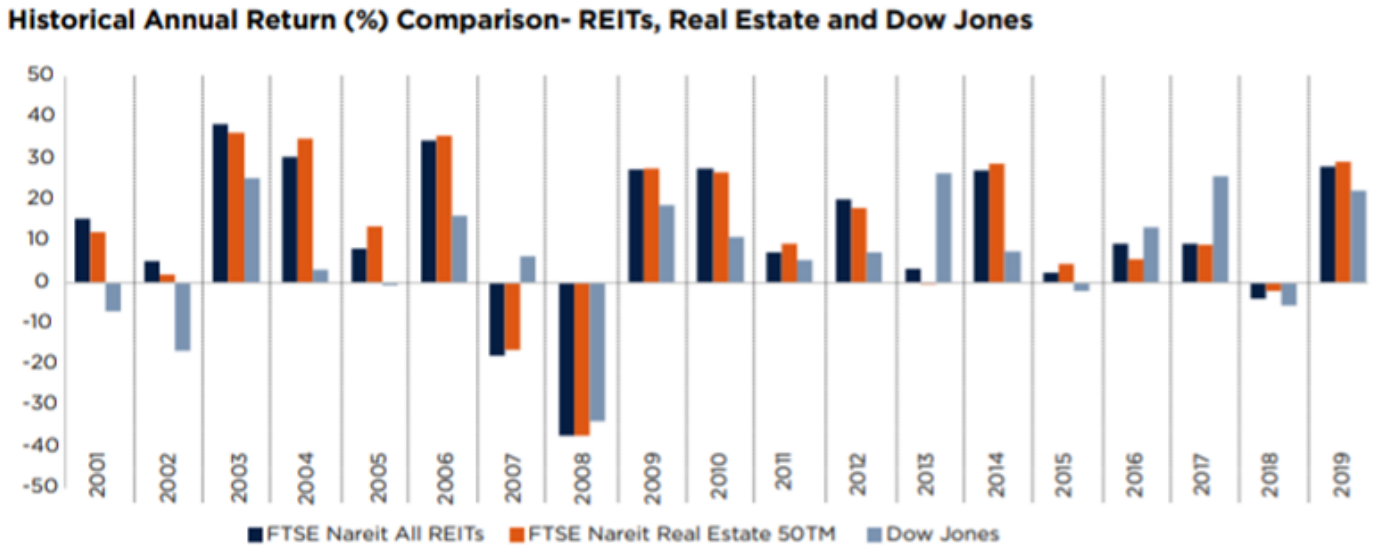
REITs account for a sizable portion of overall real estate market capitalisation globally. The market capitalization of US REITs in 2020 was 96 percent of the overall real-estate market capitalization. The percentages in Japan, Singapore, and Malaysia were 55 percent, 51 percent, and 42 percent, respectively. In India, REITS accounted for just 17 percent of the market, with listed REITs including Embassy, Mindspace, and Brookfield.

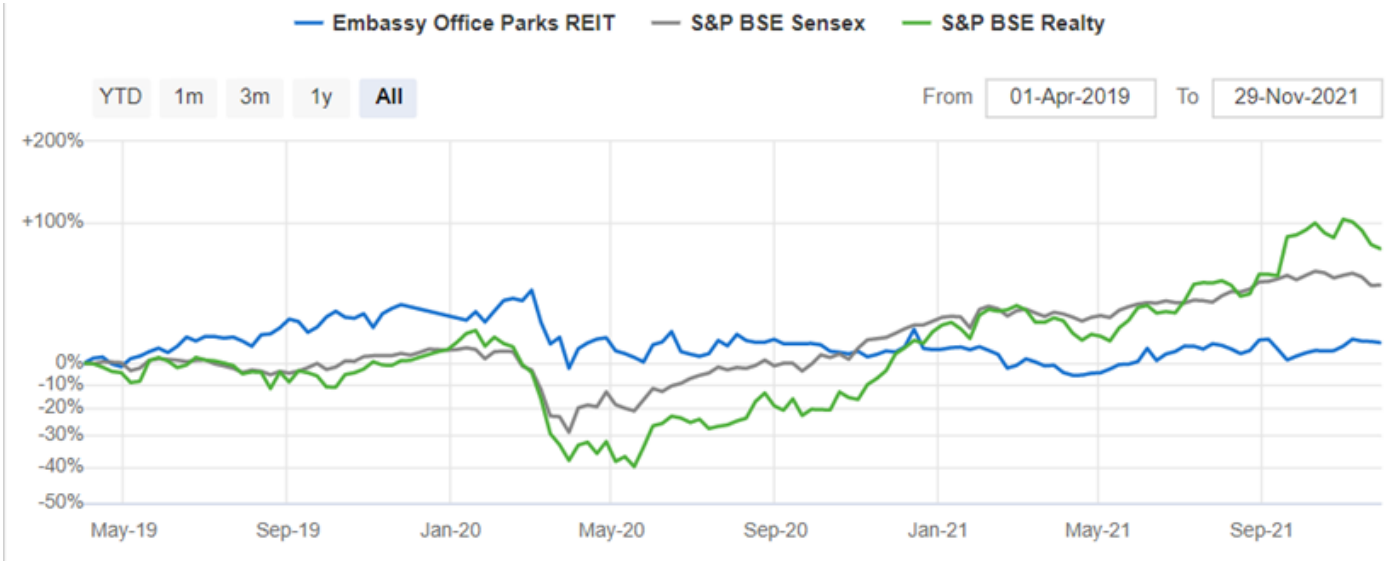
Before we discuss India's Nascent REIT market, it is logical to analyze mature REIT markets like the USA with nearly six decades of their creation and market capitalization of 1.3 trillion, corresponding to 70% of the worldwide share. US real estate investment trusts (REITs) have an established track record of reliable returns and have emerged stronger from challenging times such as the global financial crisis. As a result, REITs are projected to continue to be inflation-hedged investment possibilities in the post-COVID world as well.

The fact that the dividend part of REIT income is tax-free provides a considerable advantage to a retail investor. REITs outperform fixed deposits and government bonds in terms of post-tax returns. Provident funds, on the other hand, generate better returns and are not taxed, but the lock-in period is a barrier to investors. The long trend of decreasing returns from all the secured investments like PPF and fixed deposits makes REITs an attractive avenue that has ease of entry and exit for investors, especially of younger age brackets.

Now comparing REITS with equity and mutual funds, here Embassy office park REIT has outperformed the sectoral indices such as the S&P BSE realty index and BSE Sensex, which registered -8% and -5% returns, respectively. In contrast, Embassy REIT has appreciated by 8% during the ongoing pandemic.







The emergence of REITs in India has been both swift and transformative for the real estate sector. For REITs to succeed, a framework for improved liquidity, transparency, and corporate governance has been built. The REIT journey should certainly accelerate further with considerable improvements in World Bank Ease of Doing Business rankings and good rental performance in commercial real estate. It is only the beginning for REITs in India, and comparisons with other significant markets lead us to assume that it will grow further, despite the present COVID-driven market slowdown.

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Bitcoin: An Introduction

By Jaison Joy

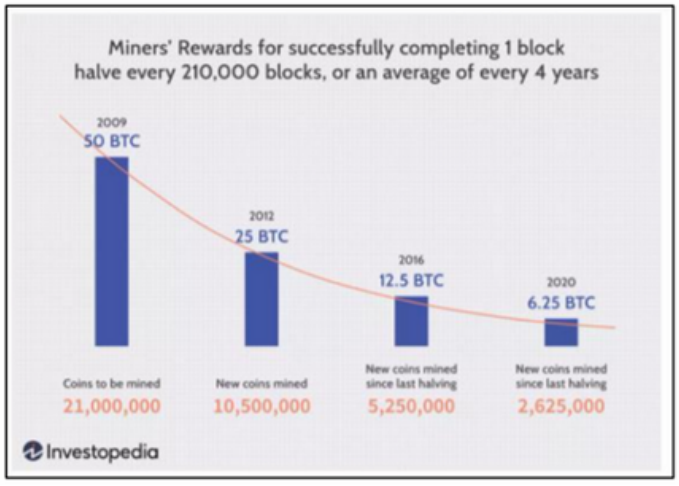
Bitcoin is distributed and decentralized money built on a peer-to-peer network. Bitcoin is a distributed peer-to-peer timestamp server that generates computational evidence of transaction order. Simply explained, bitcoins are data blocks that are sent from the owner node to the receiver node after being signed with a digital signature. The recipient node is able to validate the digital signature. Rather than relying on a third party, such as a bank, to ensure that no coins are double-spent, the bitcoin system relies on all transactions being publicly announced.

1.Quantity demand of bitcoin

Bitcoin mining is the method of solving a computational puzzle to generate a new bitcoin. The digital miners solve complex computational puzzles to earn new bitcoins as rewards. Bitcoin, like gold, cannot be mined forever. Its supply is capped at 21 million. As of 1st May 2021, there are a total of 18.695 million bitcoin in circulation.

The cost of production is generally equal to the total of the cryptocurrency's direct fixed expenses for infrastructure and power, as well as an indirect cost due to the algorithm's difficulty level. Bitcoin mining also comes with high electrical expenditures, which account for 90 to 95 percent of total costs, according to some estimates.

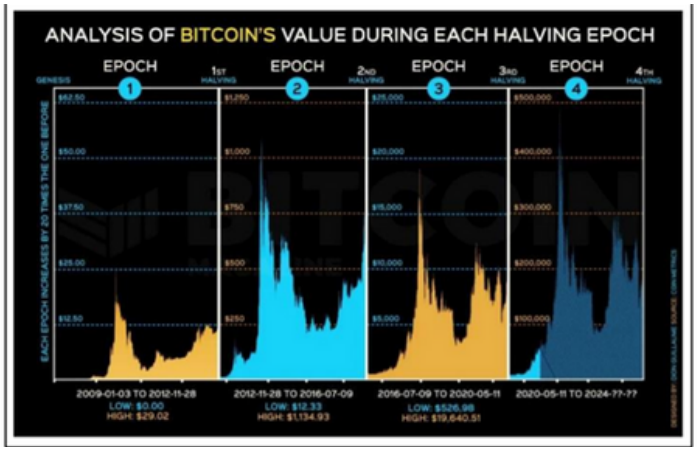
The system also ensures that the incentives for solving the complex mathematical puzzle reduces over the years. This is known as halving of bitcoins, wherein the reward for mining a block reduces to half nearly every 4 years. The time period in between each halving is known as epochs. While mining 1 block was rewarded with 50 BTC in 2009, the same amount of computational processing is rewarded with 6.25 BTC in 2021.



3. Price movements of bitcoin.

3.1 The current exchange rate depends on (1) the current adoption (i.e., number of merchants accepting the currency, and the number of users playing with it), (2) future adoption, (3) speculators' decision to hold the currency, and (4) Google search trends volume. It, therefore, becomes a function of the demand for bitcoin over these cryptocurrency exchanges.

3.2 On analysis of price trends of different epochs (refer sec. 2.2), it is noticed that they tend to follow a similar price range. See fig.5.



3.4 The speculation about bitcoin is also fuelled by different sources, including social media, in various epochs. Social media has a stronger impact on Bitcoin prices than traditional media.

3.5 Hard and soft forks, which alter the number of bitcoins in existence, can also change investor perception of the cryptocurrency. For example, the forking of Bitcoin's blockchain into Bitcoin Cash in August 2017 resulted in price volatility and spurred the valuation of both coins to new highs.

3.6 Investors' propensity to spend capital on riskier assets, such as Bitcoin, grows as both financial market confidence and attention to Bitcoin rise. Finally, we find that Bitcoin price variations are linked to investing ideas like The Greater Fool and Momentum theory.

3.7 Bitcoin supply appears to have at least one similarity with that of energy and metals. Just as metals and energy producers find ways to reduce cost after bear markets, the bitcoin mining community appears to do the same.

3.8 However, various factors such as speculations are common in individual epochs. In view of this, each epoch may be considered as the unit for price demand analysis of bitcoin, with the passage of time not being considered a factor.

4. Price elasticity of bitcoin

4.1 Price and quantity demanded bitcoins are analyzed using historical data from the previous 12 years to determine price elasticity. Each epoch is used as the unit for price-demand analysis of bitcoin, as mentioned in section 3.5, and the passage of time is not considered a factor for demand change. Furthermore, owing to early adoption jitters and other bitcoin controversies, the first epoch is not considered for the sake of price-demand research.

4.2 The second epoch (2012 to 2016) saw price variations with the low of around $10 and highs of around $1,100 (refer Sec.4.3). The data from price-demand analysis for epoch 2 shows that the demand for bitcoin generally remained inelastic. See Table 1.

Price (P)	Quantity in demand (Q)	Delta Q /Q	Delta P/ P	Price elasticity
(a)	(b)	(c)	(d)	(e) = (c) / (d)
250	4097480	11.71	40.00	0.29
350	4577157	19.54	28.57	0.68
450	5471588	-34.45	22.22	1.55
550	3586826	72.95	18.18	4.01
650	6203441			

Table 1: Price elasticity for supply of demand curve during epoch 2

The rise of substitutes, also known as altcoins such as Ethereum (launched in 2015), may be considered as a factor for increasing elasticity at high prices.

4.3 With lows of approximately $500 and highs of around $20,000, the third epoch (2016 to 2020) experienced a lot of variety (refer Sec.4.3). The data from the epoch's price-demand study demonstrates that as adoption increased, demand grew inelastic, or unaffected by price swings. See Table 2 for further information.

Price (P)	Quantity in demand (Q)	Delta Q /Q	Delta P/ P	Price elasticity
(a)	(b)	(c)	(d)	(e) = (c) / (d)
1500	10791019	111.65	133.33	0.84
3500	22839461	0.57	57.14	0.01
5500	22969199	17.99	36.36	0.49
7500	27102018	-3.89	26.67	0.15
9500	26048072	-2.08	21.05	0.10
11500	25506193			

Table 2: Price elasticity for supply of demand curve during epoch 3

4.4 Bitcoin reached historic highs of almost $62,000 in the fourth period (2020-2021). The rising acceptance of bitcoins as a mainstream financial tool is reflected in the general opinion expressed on social media. The inelastic price elasticity of bitcoins in the current period reflects this. Table 4 shows the results.

Price (P)	Quantity in demand (Q)	Delta Q /Q	Delta P/ P	Price elasticity
(a)	(b)	(c)	(d)	(e) = (c) / (d)
15000	32863232	-14.27	66.67	0.21
25000	28174466	-17.67	40.00	0.44
35000	23197043	13.80	28.57	0.48
45000	26397496			

Table 4: Price elasticity for supply of demand curve during epoch 4

5. Conclusion:

5.1 The examination of price elasticity throughout several epochs (refer to sec. 4) suggests that bitcoin demand has been inelastic, and that bitcoin demand is not responsive to changes in bitcoin prices. Other factors in an era are assumed to be constant in this study. Despite prices reaching historic highs, Bitcoin has witnessed an increase in demand recently.

5.2 This unfettered surge in price and demand has caused some bitcoin detractors to compare the bitcoin bubble to the 16th century's iconic tulip bubble. The pro-bit coiners, on the other hand, claim that bitcoin has previously defied all odds of a bubble collapse at numerous times and will continue to do so in the future.

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Digital Currencies- Risk and Regulation

By Mandar Rundekar

Overview of Digital Currencies

Technology and innovation are disrupting the most fundamental aspects of society and currencies are not an exception. With time we are witnessing rapid changes in the payments space with digital payments replacing fiat currency.

A cryptocurrency is a form of digital currency that is based on a decentralized network based on blockchain technology. A blockchain is a family of decentralized record-keeping systems which has a collection of consensus mechanisms to ensure a unified record and tokens that facilitate value transfer. To upload data on a blockchain the user-generated data is broadcasted on a peer-to-peer(P2P) network which receives and processes the data using a consensus algorithm after which the data is stored in the blockchain database in the unique "chained" data format.

In the coming years, we might find the financial domain disrupted with cryptocurrencies and central bank digital currencies taking the center stage. Thus, it is important to understand the risk involved with these innovative instruments and also find ways to seek profit from the same.

Major types of digital currencies are:

1. Bitcoin (BTC): It is the world's largest cryptocurrency by market capitalization and it is operated by a decentralized authority where there are no physical bitcoins, only balances kept on a public ledger. The bitcoin transactions are verified by the process of mining through which verified transactions are added to the network.

2. Ethereum (ETH): It is a decentralized software platform that enables smart contracts and decentralized applications to be built and run without a central authority, it has a decentralized public ledger on which users can create and publish the application on the platform and use the Ether cryptocurrency for payments. The decentralized applications are often called "DApps".

3. Litecoin (LTC): It is based on an open-source decentralized global payment network in which the proof of work algorithm can be decoded with low-capacity CPUs. It has a lower transaction confirmation time than bitcoin due to a faster block generation rate.

4. Polkadot (DOT): With a market capitalization of $51 billion, Polkadot is one of the unique cryptocurrencies that use and exchange information across blockchains. It is designed to connect permission and permission-less networks to allow simultaneous functioning of the system under one roof.

Advantages and Disadvantages of Cryptocurrencies

There is a lot of excitement around Bitcoin and other cryptocurrencies currently however, it is unlikely that it will completely replace the traditional fiat currencies in the near future. The major reason is the decentralized nature the digital currencies. Central Banks and Governments have absolute control over deciding the mode of payments. That said, cryptocurrency would not experience a decline in popularity as long as the community of crypto users and speculators continue to believe that the currency has value and will continue to grow in the future. With the cryptocurrency market set at $2 trillion, managers must assess the risk and opportunities of the cryptocurrency era. The strengths of use of digital currencies are that they are transparent, convenient and have lower transaction cost. This helps in acquiring a larger consumer base for this currency who are seeking an alternative to traditional currencies. Also, Cryptocurrency help in better traceability since the entire transaction is stored in a blockchain. A potential weakness for digital currencies is that they lack privacy as anyone who has access to the private key of an individual can access all the transactions made. Also, there is a need for a lot of technology support for the consensus algorithm which increases the investment requirement. Digital currencies can help in greater inclusion of the consumers due to their decentralized nature. Also, the availability of a large amount of data can help in making data-driven decision-making with analytics. Digital currencies also have the potential to disrupt the payments industry. A switch to digital currencies will have a huge effect on the relationship between payments like revolving credit as in the case of credit cards. Every time the consumer swipes their credit card the credit card issuer receives transaction fees which will be lost in case cryptocurrency is used for payments. Consumers are looking for alternative lending platforms that offer attractive offers for making payments.

How other Countries are regulating digital currencies

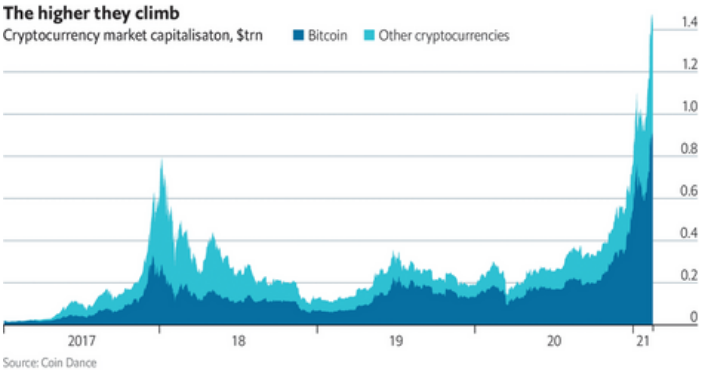
Considering the opportunities and potential threats to users from cryptocurrency, it is essential to have a set of regulations to govern the transactions from digital currency. El Salvador is the only country to recognize Bitcoin as a legal tender. According to the law of the country, any goods and services previously paid in dollars can also be paid in bitcoin.

In the United States, different states have different regulations for digital currencies. Though the federal government does not recognize cryptocurrency as a digital tender, few states recognize the decentralized nature of digital currencies.

How India can regulate digital currencies

Looking forward as India drafts its regulation for digital currencies, it has to carefully take into consideration the different aspects with respect to the same. Technology think tank policy 4.0 has suggested a wallet-based solution to tackle the regulatory risk with cryptocurrency through which India will build its own "India Wallet" to tackle know your customer (KYC), inflow and outflow of cryptocurrency and monetary concerns.

According to the report, the first step should be the management of public and private keys which has the potential to cover the entire digital currency spectrum. A public key is used to identify the sender while receiving the digital currency and a private key allows the user to use the cryptocurrency. In the next step, regulations can define the nature of tokens in the context of their usage. India Wallet can be used to monitor all cryptocurrency-related activities such as trading and can also store tokens used as a medium of exchange. To set up a digital wallet a one-time KYC will be required which will be used to collect the identity of the user. Further, whatever crypto assets are managed through citizens' wallets will be recognized and will be protected under legislation. Other activities would be considered illegal and will be dealt with accordingly. The report also suggests the enforcement of a maximum limit to the amount of investment in cryptocurrency by user. This limit will be decided by the government and will help in ensuring financial stability.



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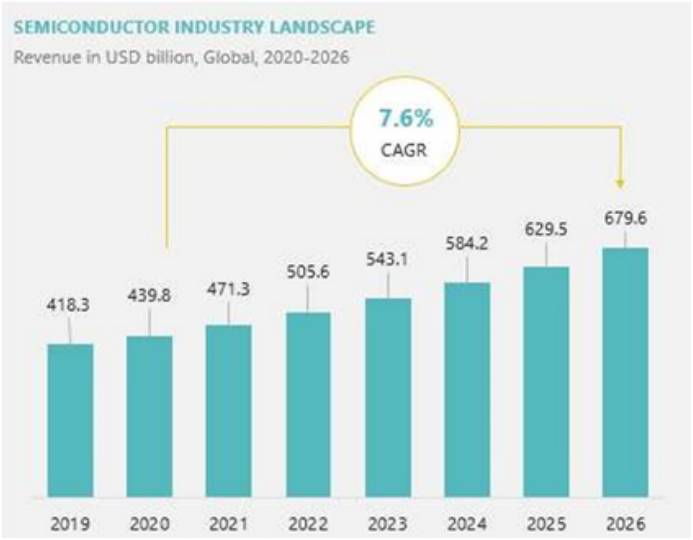
Chip Shortage and its Effect on Various Industries

By Manas Pagar

Semiconductors, aka microchips or chips — breathe life into the gadgets that make the modern world possible. From toasters to Tesla, chips are nearly universal components in everything with a plug or a battery. Taiwan dominates the industry so thoroughly that just one company controls more than half the global market share.

Revenue in USD billion, Global, 2020-2026



The shortage emerged after the Covid-19 pandemic devastated most countries in the world in 2020, leading to widespread restrictions. Although the impact wasn't felt because of lower demand for goods during the pandemic, the situation changed drastically. While demand for electronic goods across various segments catapulted, companies have not been able to deliver due to the chip shortage.

Some critical reasons behind the global chip shortage include
i.Supply chain disruptions due to the pandemic
ii.A rise in demand for electronic goods as more people are now working from home
iii. And a lack of investment in chip-building capacities.

But COVID-19 is not the only reason for the shortage. Manufacturing cannot be increased on short notice. A chip typically takes three months and involves giant factories, dust-free rooms, multi-million-dollar machines, molten tin, and lasers. Taiwan Semiconductor Manufacturing Corporation (TSMC), the world's largest contract chipmaker, whose customers are Qualcomm, Nvidia and Apple. It holds 56 percent of the business of manufacturing chips.

Unfortunately, some of the economic sectors are taking the brunt of the problem, and the implications can be staggering and devastating. Here are the four sectors which are hit hardest by the worldwide chip shortage:

1.Auto
While the global chip shortage hurt many industries, the effect is not same. It has hit the vehicle industry the hardest. The initial forecast is that the direct losses attributed to the global problem would reach about $73 billion by 2021. Even before the year is over, losses have climbed by 33% and could potentially balloon to nearly $110 billion for the automotive industry alone. The lack of enough sensors and other electronic parts is now forcing many automakers to halt, slow down, or delay production temporarily. Even the most essential new cars rely on specialized microchips to function. Even the key fobs that vehicles need to operate cannot work without chips.

All these can mean three things:
i.A possibly higher unemployment rate tempered
ii.Slower economic recovery following the pandemic
iii.Lower vehicle production

The scale of the problem is reflected in India's largest carmaker Maruti Suzuki, as it moderated its expectations for sales and profits in the current financial year. Other Indian car manufacturers like Tata Motors, have warned of the impact of the chip crunch on their businesses.

2.Consumer Electronics
Some experts have blamed the chip shortage in the automotive industry on the rapidly increasing demand for consumer electronics, particularly during the pandemic. Desktop PCs were previously experiencing a slow death with sales of laptops and mobile devices declining. In a recent report citing Canalys, it showed an increase of 55% in just the first quarter of this year which was the highest over the last 10 years. This is after the pandemic forced students to move to virtual learning and employees to work from home. Nonetheless, along with their popularity comes the higher need for semiconductors and sensors. Unfortunately, the chips intended for cars are not suitable for consumer electronics and vice versa.

Companies have predicted that it may take not months but years before the shortage can be addressed. In the meantime, the shortage could also lead to lower profit for

the companies or raise prices, which means more people may not afford the goods. According to a report by research company Counterpoint, smartphone shipments to India declined 2 percent in the third quarter of this year to 52 million units. Prices of electronic goods like mobile phones, laptops, and televisions, have also increased due to the chip shortage. It is becoming more difficult for companies to launch the usual deep festive discounts without hitting their bottom line.

3. LEDs & Lighting Fixtures

The chip shortage has also affected LED supply. The pandemic has slowed or even stopped construction, remodelling, and improvement for residential as well as commercial properties. This means that the demand for smarthomes has also declined slightly. Along with it, there is not much demand for LED lights, which are considered to be a more sustainable option than halogen, and fluorescent. For this market, there's less likely to be a chip shortage. Instead, the prices for this raw material might go down, making the product more cost-effective and competitive. However, it is different for mini LED lights, which are used in many appliances and electronics like televisions and smartphones. Many manufacturers that use these materials are already stockpiling it. In turn, prices for the commodity have gone up by as much as 10%. It devasted many companies' inventories, which in turn, hurt their LED supply chain. At the start of the year, companies like Samsung and apple were preparing to launch their latest laptops, tablets and TVs. But they had one thing in common that is they are all equipped with mini LED backlights powered by chips that are increasingly hard to find. While manufacturers are scrambling to scoop up what was left of the chips that make LED possible, prices rose and contributed to the inflation that defined the springtime economy. The three biggest LED chipmakers in Taiwan have predicted that demand for LED chips would continue to outpace supply for at least another year.

4. Power - Turbines, and Solar

While most options of renewable energy are made of aluminium or steel, a part of their inner workings is managed or controlled by electronic components, like semiconductors. As expected, the chip shortage mean a big blow for this industry. Companies reported in February constraints in their semiconductor supply chain. The chip shortage does not have an exact timeline on its end, which may delay renewable energy goals and stall prices and, hence, the adoption by consumers and businesses.

Conclusion:

Companies try to solve the ongoing saga of the lacking semiconductors and sensors by stockpiling as much as possible, but doing so may leave other businesses, especially smaller ones, with nothing. The best solution will be a combination of approaches that range from better diplomatic ties, a resilient supply chain, better inventory planning, stronger relationships with vendors, and even sound economic and trade policies.

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Retail and Wholesale Inflation Trading Up

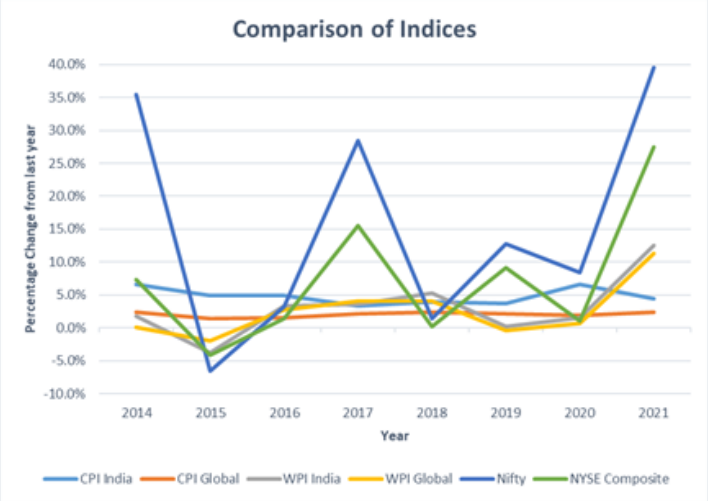
By Bhushan Zade

Scenario

At the point when the economy is staggering from the impacts of a lethal influx of COVID-19, pay levels have dropped and territorial lockdowns have added to joblessness, an ascent in inflation is the last thing the government needs to manage.

Let's see the past 8-year variation in CPI India, CPI Global, WPI India, WPI Global, Nifty and NYSE Composite

Year	2014	2015	2016	2017	2018	2019	2020	2021
CPI India	6.6%	4.9%	4.9%	3.3%	3.9%	3.7%	6.6%	4.5%
CPI Global	2.4%	1.4%	1.6%	2.2%	2.4%	2.2%	1.9%	2.4%
WPI India	1.8%	-3.8%	3.4%	3.6%	5.3%	0.2%	1.5%	12.5%
WPI Global	0.1%	-2.0%	2.8%	4.0%	4.1%	-0.4%	0.6%	11.4%
Nifty	35.5%	-6.5%	3.2%	28.4%	1.4%	12.8%	8.4%	39.5%
NYSE Composite	7.4%	-4.1%	1.4%	15.5%	0.2%	9.2%	1.1%	27.5%



After calculating correlation between above indices, we got the following result:

Correlation Matrix	CPI India	CPI Global	WPI India	WPI Global	Nifty	NYSE Composite
CPI India	100%	-17%	-21%	-31%	6%	-30%
CPI Global	-17%	100%	61%	50%	68%	60%
WPI India	-21%	61%	100%	98%	61%	77%
WPI Global	-31%	50%	98%	100%	56%	79%
Nifty	6%	68%	61%	56%	100%	86%
NYSE Composite	-30%	60%	77%	79%	86%	100%

We found out that there is moderate correlation between Nifty and CPI Global, WPI India and WPI Global. The constituents of CPI Global continuously changes hence it is difficult to track it. As WPI India and WPI Global are highly correlated, we will discuss the effects of WPI India on stock market.

WPI India

In India, the wholesale price index (WPI) is the main measure of inflation. The WPI measures the price of a representative basket of wholesale goods. In India, wholesale price index is divided into three groups: Fuel and Power (13.2 percent), Primary Articles (22.6 percent of total weight) and Manufactured Products (64.2 percent). Food Articles from the Primary Articles Group account for 15.2 percent of the total weight. The most important components of the Manufactured Products Group are Basic Metals (9.7 percent of total weight); Food products (9.1 percent); Chemicals and Chemical products (6.5 percent) and Textiles (4.9 percent).

The annual wholesale price inflation rate in India rose to 12.54 percent in October 2021 from 10.66 percent in the previous month, exceeding market forecasts of 10.9 percent. This marked the highest figure since December 1998, as cost accelerated for fuel and power (37.18 percent vs 24.81 percent in September), primary articles (5.20 percent vs 4.1 percent), manufactured products (12.04 percent vs 11.41 percent), basic metals (29.93 percent vs 26.71 percent) and food (3.06 percent vs 1.14 percent). On a monthly basis, wholesale prices increased by 2.28 percent in October, reversing from a 0.15 percent drop in September.

Increase in WPI data indicates that Inflation will increase. As a result, the price of Wholesale item will increase. It also increases spending and reduces the saving of people each month. At that time the consumer cuts back spending because basic expenses are too high, a recession usually follows. It means lower earnings for public companies and lower prices for their stocks. Ultimately this will show a negative impact on the stock market.

But the effects we observed above showing that with the rise in WPI India, Nifty is also rising. Normally, rising inflation is synonymous with improved growth in GDP. If you look at the last 1 year from the beginning of 2017, inflation has been on an uptick. During the same period, the GDP growth has shown signs of bottoming out, the corporate results have shown green shoots of recovery and the stock market indices are up by over 20% during the year. The positive takeaway from inflation is that it is an indicator of GDP growth. Even in the US and Japan, the big economic battle is all about reviving inflation back to the 2% level. That is supposed to be the cut-off level which will spur growth. In fact, if you look at world growth and even at India's growth in the last 20 years, GDP has never grown substantially when the inflation was low. While obscenely high inflation can play havoc with purchasing power, certain threshold inflation is required to incentivize producers and businesses. So inflation, beyond an acceptable limit is the

real problem. Rising inflation has certain downside risks but it is also essential for growth. It is this balance that holds the macroeconomic key.

Conclusion
What are the key causes of inflation?
1- Demand-Supply
2- Increase in the cost of production
How does rising inflation impact you?
Rising inflation decreases the purchasing power of investors
How does rising inflation impact the Stock Markets?
1- For dividend-paying stocks: An increase in the rate of inflation can cause a drop in their market price. This is because, with rising inflation rates, dividends can fail to beat inflation making such stock less attractive to investors.
2- For metal stocks: As inflation rises, the price of raw materials also go up and this helps scrips in increasing profit, while metal users as components, their profits decrease.
3- Stocks with high debts will be impacted more as RBI increases rates of interest
Value stocks vs Growth Stocks: Impact of inflation
In a nutshell, we can say that the market value stocks prices are usually directly proportional to the rate of inflation. Therefore, when the inflation rate rises, value stocks tend to perform better.

On the other hand, growth stocks have minimal cash flows. Therefore, they have a negative correlation with the rate of inflation. The market price of these stocks drops when the inflation rate rises.
Long-term investors must consider the fact that the government constantly takes measures to keep inflation in check. Hence, during the times when inflation goes up, investors must not panic so as to avoid emotion-based decisions. Moreover, investors must look for fundamentally strong stocks that can brave any economic storms with ease.

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National Monetisation Pipeline Project

By Gokul SP

In the budget speech of February 2021, Our Honourable Union Finance Minister announced the ambitious National Monetisation Pipeline (NMP), in which 13 sectors have been identified by the Government of India (GoI) to privatize brownfield projects and generate revenue to fund the creation of greenfield projects. This plan gives shape and structure to the aim of divestment of public assets and provides a vision with and sets targets to be achieved by GoI. GoI plans to raise a total of 6 trillion rupees by this process for the period of 4 years till 2024-2025.

The National Monetisation Pipeline is not a new concept invented in India. It has been followed in many parts of the world. For example, Australia enacted its Asset Recycling Initiative (ARI) in 2014-2015, which helped unlock $17 billion in infrastructure development across the country. The same can be achieved in India once the plan is put into motion by clear directives as it is an alternative to an outright sale of assets which will create value to both the Government and private players.

Brownfield projects

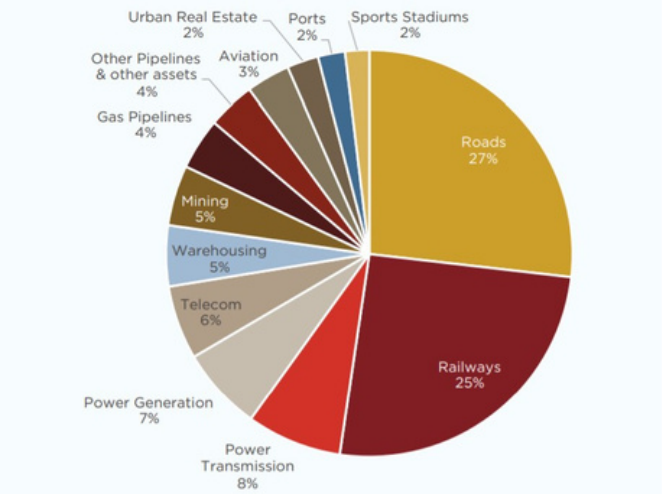
Brownfield project refers to projects where some or most of the work is already done and a functional product is available. This can be a site that is already developed with infrastructure and is ready to be taken over. This is not only limited to infrastructure projects but also can be seen in other areas such as software development, manufacturing, etc. Adding a new feature in an existing application and building a new portion in an existing apartment complex can also be considered brownfield projects.

Greenfield projects

Greenfield projects start from scratch, which may require substantial initial investments. This usually involves reconnaissance, site exploration, planning, designing, and execution. Creating an entirely new application or developing a new area into residential or industrial areas falls under greenfield projects.

Different from privatization

NMP involves leasing major government assets to private players instead of outright selling the assets. In this scheme, the Government will lease out the under-utilized operational Brownfield projects, where the expected revenue is not gained through regular operations. Even after monetization, the ownership of the assets remains completely with the Government, with the private players only focusing on the operations of the assets. The three major sectors which are identified for this purpose are roads (27%), railways (25%), and energy (15%), and other sectors such as telecom, mining, aviation, and warehousing contribute the rest of 33%.



This plan is processed through transferring revenue rights to private parties either for upfront money, revenue sharing, or commitment of investment in future assets. Real estate investment trusts (REITs) and infrastructure investment trusts (InvITs), for instance, are the critical structures used to monetize assets in the roads and power sectors. Other monetization models on PPP (Public Private Partnership) basis include:

- Operate Maintain Transfer (OMT)
- Toll Operate Transfer (TOT)
- Operations, Maintenance & Development (OMD)

An example of this is roads can be leased in Toll Operate Transfer (TOT) model where the Government will lease the roads under operation will be given at a concession to private institutions, and they will be allowed to collect tolls until an agreed period where the operational costs have to be borne by the lessee.

Significance and rationale behind NMP

- NMP is an ambitious plan in the sense that it plans to generate a revenue of 6 trillion rupees over four years which is 1/6th of the total budget of India.
- GoI has a good track record of building infrastructure around the country but performs poorly when maintaining them. GoI is the largest holder of dead assets, i.e., non-revenue generating assets. Therefore, leasing these assets to private firms will help the government focus on better assets by freeing its hands.

- The onset of the pandemic has induced a severe cash crunch owing to the loss of revenue in various taxes and a slowdown in the economy. GoI needs resources to jump-start the infrastructure building, and this plan will provide the much-needed impetus.
- Resources obtained from NMP will help the government focus on building greenfield projects in building infrastructure for the future, such as electric vehicle charging grids and green energy initiatives.
- This plan will also encourage states to monetize their underutilized resources and help ease their liquidity woes.

Challenges

- Attracting private firms for NMP may prove difficult if the assets are not deemed profitable by the firms. Since GoI retains ownership, there will be oversight frameworks that will restrict private players' operational flexibilities.
- The policy clearances, adoption of clear guidelines and frameworks will require time which will impede the pace of monetization.
- The assets have to be leased in a transparent and viable manner so that Government should avoid monopolization of assets by any private firms.
- The operations of the assets have to be planned so that risks and rewards are shared proportionally, and the end-user has to be kept in mind while making decisions so that the public is not fleeced a lot of money for the utilities provided to them.

Recommendations

- A committee containing experts from both the Government and industry can be formulated to identify attractive assets and set the standard operating procedure to expedite the tender process.
- Inter-departmental task force containing secretaries from finance, telecom, power, and transport ministries and other ministries where assets are identified should be constituted to focus on NMP as this will require close co-operation.

Effect on the economy and share market

The large-scale mobilization of resources is expected to create an uptick in the growth of infrastructure companies. Matured players such as L&T, Tata Power, Adani Ports, and SEZ are expected to benefit directly from NMP as they will handle such large-scale infrastructure projects, which can be seen in Nifty infra's recent rally index by August. Although the markets are undergoing correction right now, in the long term, infra stocks will gain if the NMP is executed as per the schedule. While the large players will benefit from acquiring the assets, the allied players such as steel and cement manufacturers are expected to gain once GoI starts spending on its planned building of greenfield projects.

This capital expenditure will have far-reaching effects on the economy and help in the overall GDP growth after a steep decline in FY2020-21.

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Impact of Union Budget 2021-22

By Avinash Kumar

Boom in the stock market after Union Budget 2021 presented by Finance Minister on 1st February, 2021. BSE Sensex jumped 2,265 points or 4.89 per cent to 48,550, while the Nifty 50 was nearing the 14,300-mark. Whereas Bank nifty surge from around 8.5% from 30500 to 33100 on same day. Budget has definitely created a huge euphoria in the stock market. So, let's see the analysis of Union budget 2021-2022.

Budget Highlights:

- Expenditure: The government proposes to spend Rs 34,83,236 crore in 2021-22. As per the revised estimates, the government spent Rs 34,50,305 crore in 2020-21, 13% higher than the budget estimate.
- Receipts: The receipts (other than borrowings) are expected to be Rs 19,76,424 crore in 2021-22, which is 23% higher than the revised estimates of 2020-21. In 2020-21, revised estimates for receipts were 29% lower than budget estimates. Given the impact due to COVID-19, it is useful to see the growth from 20219-20, an annual average of 6.2%.
- GDP growth: Nominal GDP is expected to grow at of 14.4% (i.e., real growth plus inflation) in 2021-22.
- Deficits: Revenue deficit is targeted at 5.1% of GDP in 2021-22, which is lower than the revised estimate of 7.5% in 2020-21 (3.3% in 2019-20). Fiscal deficit is targeted at 6.8% of GDP in 2021-22, down from the revised estimate of 9.5% in 2020-21 (4.6% in 2019-20). The government aims to steadily reduce fiscal deficit to 4.5% of GDP by 2025-26.
- Ministry allocations: Among the top 13 ministries with the highest allocations, the highest annual increase over 2019- 20 is observed in the Ministry of Jal Shakti (64%), followed by the Ministry of Consumer Affairs, Food and Public Distribution (48%) and the Ministry of Communications (31%).

Main tax proposals in the Finance Bill:

- No changes in income tax rates for individuals and corporations.
- Limit on tax-free Income from provident funds: Tax exemption on the interest income on the employees' contributions to provident funds will be limited up to Rs 2.5 lakh.
- Extensions on tax incentives by a year up to the end of fiscal 2021-22. This includes tax deduction up to Rs 1.5 lakh on interest on housing loan, and tax holiday for affordable housing projects, profits of startups, and investing capital gains in start-ups.
- Agriculture and Infrastructure Development Cess: The cess will be levied on some imported items including gold, silver, alcoholic beverages, coal, and cotton, and basic customs duty will be reduced by an equal amount. The cess will be levied on petrol and diesel at the rate of Rs 2.5 and Rs 4 per liter respectively, with equivalent cuts in excise duty. As the cess is not part of the divisible pool of revenue shared with states, their revenue receipts will be adversely affected.
- Changes in customs duty: The duty has been increased on some items such as cotton, silk, some auto and mobile parts.
- "Mini-budget" announcements made earlier: The safe harbor threshold for real estate transactions above the circle rate increased from 10% to 20%. Encashment of leave travel concession will be exempt from tax if the amount is used for purchasing certain goods.
- Reduction in time for income tax proceedings: Time limit for the re-opening of income tax assessment will be reduced from 6 years presently to 3 years.
- Exemption from audit: Businesses which carry 95% of their transactions digitally and whose turnover is less than five crore rupees, are exempted from keeping audited accounts. The threshold will be increased to Rs 10 crore.

Non-Tax proposals in the Finance Bill:

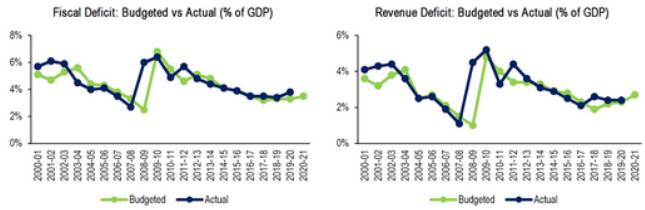
- There are some items that may not meet the Money Bill definition. These are listed below.
- LIC Act, 1956 amended to create a board of directors, issue shares, reduce government shareholding upto 51% of equity (minimum 75% in the first five years), cap voting rights at 5% to shareholders other than central government.
- Securities Contracts (Regulations) Act, 1956 amended to allow pooled investment fund which collects money from investors. They may borrow money or issue debt securities. Consequential amendments made in the SARFAESI Act, 2002 and in the Recovery of Debts due to Banks and Financial Institutions Act, 1993.
- SEBI Act, 1992 amended to require registration by Alternative Investment Trusts and Business Trusts.

Deficits, Debt and FRBM:

The Fiscal Responsibility and Budget Management (FRBM) Act, 2003 requires the central government to progressively reduce its outstanding debt, revenue deficit and fiscal deficit. The central government gives three-year rolling targets for these indicators when it presents the Union

Budget each year. The government was supposed to achieve fiscal deficit of 3% of GDP by March 31, 2021. In Budget 2020-21, the fiscal deficit target was relaxed to 3.5% (as permitted by the FRBM Act) and it was estimated that fiscal deficit of 3.1% will be achieved by 2022-23. In 2021-22, the government has not provided target for the next three years, and will amend the FRBM Act to accommodate the higher fiscal deficit.

Fiscal deficit is an indicator of borrowings by the government for financing its expenditure. The estimated fiscal deficit for 2021-22 is 6.8% of GDP. For 2020-21, fiscal deficit is estimated at 9.5% of GDP, higher than the budget estimate of 3.5%. This was primarily due to higher spending, and lower revenue collection on account of COVID-19. The government intends to reach fiscal deficit of 4.5% by 2025-26.



Recommendations by the 15th Finance Commission:

The 15th Finance Commission for 2021-26 suggested a path for fiscal consolidation for the centre by reducing fiscal deficit to 4% of GDP, and outstanding liabilities to 56.6% by 2025-26.

- Extra annual borrowing worth 0.5% of GSDP will be allowed to states during first four years (2021-25) upon undertaking power sector reforms including: (i) reduction in operational losses, (ii) reduction in revenue gap, (iii) reduction in payment of cash subsidy by adopting direct benefit transfer, and (iv) reduction in tariff subsidy as a percentage of revenue.
- Revenue mobilization: Income and asset-based taxation should be strengthened. To reduce excessive dependence on income tax on salaried incomes, the coverage of provisions related to tax deduction and collection at source (TDS/TCS) should be expanded.
- GST: The inverted duty structure between intermediate inputs and final outputs present in GST needs to be resolved. Revenue neutrality of GST rate should be restored which has been compromised by multiple rate structure and several downward adjustments. Rate structure should be rationalized by merging the rates of 12% and 18%.

Suggested path for fiscal consolidation (as % of GDP)

	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Fiscal Deficit	7.4%	6.0%	5.5%	5.0%	4.5%	4.0%
Revenue Deficit	5.9%	4.9%	4.5%	3.9%	3.3%	2.8%
Outstanding liabilities	62.9%	61.0%	61.0%	60.1%	58.6%	56.6%

Expectation from Union Budget 2022-23:

- Finance minister Nirmala Sitharaman had announced a Rs 6 lakh crore National Monetization Pipeline (NMP) that would look to unlock value in infrastructure assets across sectors ranging from power to road and railways. She had also said that asset monetization would not involve the selling of land and would entail monetizing brownfield assets. Projects have been identified across sectors, with roads, railways and power being the top segments. So, next year budget focus would to plan for infrastructure.
- Focus would be more to grow MSME's sector in India which second-largest employment creator after agriculture, providing jobs to an estimated 11 crore people. It contributes 30 percent of the GDP and accounts for 48 percent of the exports. There might be reduction of tax burden and GST relaxation.
- As current scenario as not up to recommendation by the 15th Finance Commission due to pandemic lockdown and decrease in GDP, in next budget their maybe increase in tax for Foreign Portfolio Investors and changes in cooperate taxations.

Conclusion:

Budget 2021 clearly focuses on boosting capital spending to promote robust growth and revival of the economy. It has created a positive buzz in the market with tactical outlay to realize the Government's vision of an Atmanirbhar Bharat. It remains to be seen if the measures introduced can help the economy to bounce back. Nominal GDP is expected to grow at 14.4%. Revenue deficit is targeted at 5.1% of GDP. For reduction in fiscal deficit, in next union budget we expect new Taxation's reform and the focus would to grow MSME's and agriculture sectors.

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Ethanol Blending in India

By Sandeep Yadav

Introduction

Our country's energy demand is increasing as a result of a growing economy, population, urbanization, changing lifestyles, and more purchasing power. Fossil fuels currently meet 98 percent of the fuel requirement in the road transportation sector, with biofuels accounting for the remaining 2%. India currently imports 85 percent of its oil needs. The number of vehicles on the road will continue to rise, increasing demand for transportation fuels.

Domestic biofuels offer the government a strategic advantage by lowering the country's reliance on imported fossil fuels. Furthermore, when used properly, biofuels can be environmentally benign and long-term energy sources. They can also aid in the creation of jobs, the promotion of Make in India, Swachh Bharat, double farmer incomes, and waste to wealth generation.

Ethanol is a major biofuel that is created naturally by yeasts fermenting sugars or through petrochemical processes such as ethylene hydration.

According to the National Policy on Biofuels - 2018, the Ethanol Blended Petrol (EBP) Program will blend 20 percent ethanol by 2030. Various Oil Marketing Companies (OMCs) in India are currently selling petrol with a 10% ethanol blend (E10) wherever it is available.

The country's current level of average ethanol blending is 5% (Ethanol Supply Year 2019-20). Due to several interventions in the supply side of ethanol, the Ministry of Petroleum aims to achieve 10% ethanol blending levels in the Ethanol Supply Year (ESY) – 2021-22, i.e., April 2022

Fuel Ethanol Demand in India

Demand for ethanol as a fuel is primarily driven by blending mandates, widespread availability of fuel and compatible vehicles, and fulfillment of other infrastructural requirements

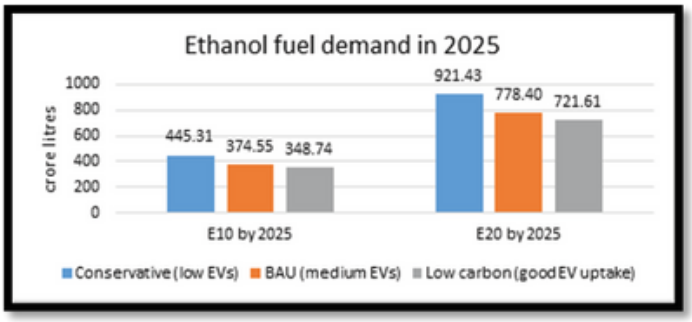
Different scenarios have been evaluated, given the inherent uncertainty in future estimates and the impending electric car revolution.

For the demand for gasoline and ethanol, three scenarios for electric transportation adoption have been evaluated.

Conservative (low EVs) – Electric mobility adoption will be negligible until 2030.

Business-As-Usual (BAU, medium EVs) – Electric mobility adoption is expected to be moderate by 2030, with roughly 15% of automobile passenger kilometres (pkms) and 30% of two-wheeler and three-wheeler pkms expected to be electric.

Low Carbon (high EV uptake) – By 2030, it is expected that 30% of automobile pkms and 80% of two-wheeler and three-wheeler pkms would be electric.



The graph depicts ethanol demand in 2025. According to this forecast, ethanol demand in 2025 will be in the range of 722-921 crore litres to satisfy E20 standards. But as per the NITI Aayog report, ethanol demand would be 1016 crore liters based on expected growth in the vehicle population.

Ethanol demand Projection

Ethanol Supply Year	Projected Petrol Sale (MMT)	Projected Petrol Sale (Cr. litres)	Blending (in %)	Requirement of ethanol for blending in Petrol (Cr. litres)**
A	B	B1=B X 141.1	C	D=B1*C %
2019-20	24.1 (Actual)	3413 (Actual)	5	173
2020-21	27.7	3908	8.5	332
2021-22	31	4374	10	437
2022-23	32	4515	12	542
2023-24	33	4656	15	698
2024-25*	35	4939	20	988
2025-26*	36	5080	20	1016

Fuel Ethanol Supply

Molasses-based distilleries had an installed capacity of roughly 278 crore litres in 2017-18.

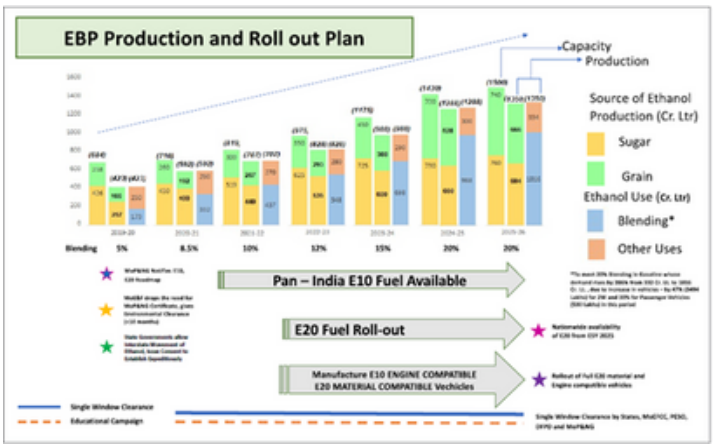
Molasses-based distilleries are anticipated to boost their capacity from 426 million litres to 730 million litres and 760 million litres by 2024-25 and 2025-26, respectively. Existing grain-based distilleries are adding 75 million litres of capacity, while OMCs are intending to build 10-15 additional grain-based distilleries, bringing the total capacity to 100-150 million litres.

As a result, grain-based distilleries' capacity is predicted to rise from 258 crore litres to 350, 450, 700, and 740 crore litres in 2022-23, 2023-24, 2024-25, and 2025-26, respectively.

During the Committee of Secretaries on 13.11.2020, DFPD informed that the fuel 20% ethanol requirement by 2025 will be met from sugar and grains sectors.
The below table provides the Year-wise and Sector-wise Ethanol Production Projections as per increasing Blending Percentages

Ethanol Production Projections										
ESY	For Blending			Blending (in %)	For other uses			Total		
	Grain	Sugar	Total		Grain	Sugar	Total	Grain	Sugar	Total
2019-20	16	157	173	5	150	100	250	166	257	423
2020-21	42	290	332	8.5	150	110	260	192	400	592
2021-22	107	330	437	10	160	110	270	267	440	707
2022-23	123	425	542	12	170	110	280	293	535	828
2023-24	208	490	698	15	180	110	290	388	600	988
2024-25	438	550	988	20	190	110	300	628	660	1288
2025-26	466	550	1016	20	200	134	334	666	684	1350

The Ethanol Roll-out plan has been summarized in the below figure.



Impact of Ethanol Blending on Different Industries:

1. Sugar companies
Alcohol consumption in gasoline is on the rise, which is excellent news for the sugar industry. To fulfil the government's aim of 20% gasoline blending, sugar industries' ethanol storage capacity will need to be tripled from its current level of roughly 300 crore litres.
To reach the 20% ethanol-blended fuel mandate by 2025, about 10 billion litres of ethanol would be required each year.

Sugar producers have already begun to invest in expanding their ethanol storage capacity. Shree Renuka Sugars declared in June of this year that it would invest Rs 450 crore to boost its ethanol capacity.

The sugar sector in India is seen favourably by most brokerage houses, since it is well positioned to benefit from both global and domestic considerations. Lower output from nations like as Brazil, Thailand, and the EU would keep global supply tight and prices stable, allowing India to boost exports.ICICI Securities believe this would encourage sugar companies to add sugarcane juice and grain-based ethanol capacities further

1. Oil Marketing Companies
Oil marketing companies would also need to establish up ethanol distillation plants and provide dates for making mixed fuel available across the country.

GAIL India Ltd and Hindustan Petroleum Corp aim to establish grain-based refineries to help enhance India's ethanol supply by 2025.

In Himachal Pradesh, HPCL would invest Rs 4 billion in a grain-based ethanol plant with a capacity of 125,000 litres per day, while GAIL is constructing a grain-based ethanol facility with a capacity of 500,000 litres per day.

2. Automobile Companies
Although TVS and Bajaj have created two-wheelers that run exclusively on ethanol, numerous businesses continue to make two-wheelers and passenger vehicles that are optimised for a 5% ethanol blend with gasoline.

Automobile firms will be required to supply rubberized parts, plastic components, and elastomers suitable with a 20% ethanol blend with fuel as the government's Ethanol Blended Petrol Program takes effect.

The industry body Society of Indian Automotive Manufacturers had assured that automobile firms would gear up to deliver compatible automobiles in line with the roadmap, according to NITI Aayog's study document titled "Roadmap for Ethanol Blending in India 2020-25."

All of the components needed to produce engines compatible with 20% ethanol-blended gasoline can be found in India, according to NITI Aayog, and "no significant changes in the assembly line are foreseen."

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Thank
you!