Investment Management
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Lecture - 35
Cryptocurrencies (Contd.)

Hi there. So, we are talking about Cryptocurrencies as a potential asset for inclusion in a portfolio and earlier we have seen that cryptocurrencies has certain features that make it attractive for any investor big or small for the purpose of investment.

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In this session we will talk continue discussing about cryptocurrencies particularly we are going to talk about cryptos as an asset class and crypto when included in a portfolio makes it a difference for the investor. Essentially, we are going to talk about Bitcoins as one of the cryptocurrencies because Bitcoin has been seen as one of the emerging assets or emerging crypto assets for the purpose of investment.

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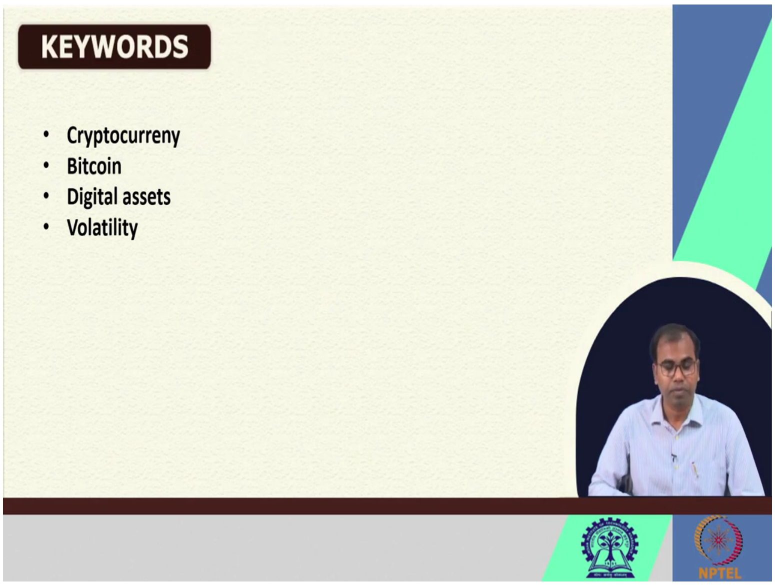

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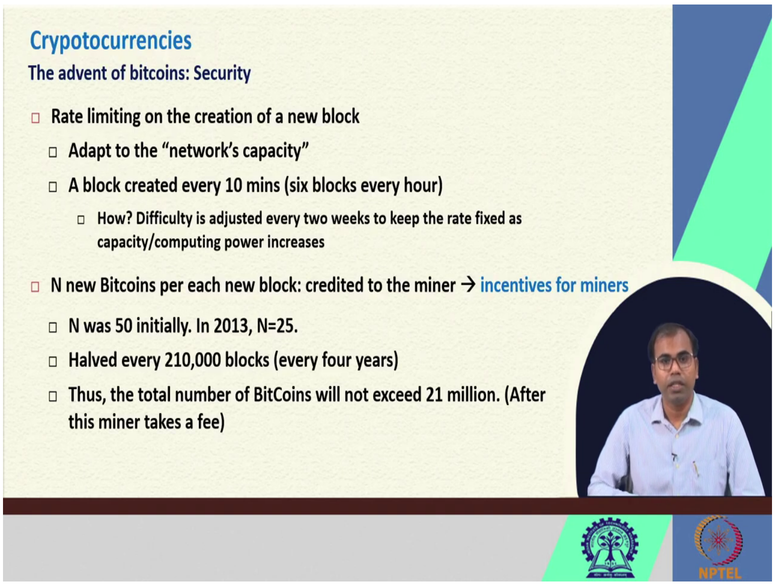

We have seen already that B Bitcoins has certain features and some of the features make it more attractive than any other cryptocurrencies. We know that the rate at which Bitcoins are created or the creation of Bitcoin is increasing has certain limitations unless they adopt to the networks capacity they can be created and that is puts certain limit.

Similarly, we have seen that every 10 minutes one block of Bitcoin transaction is created which means there will be six blocks every hour and it is going to be another limitation for creating more and more Bitcoins. It is going to be difficult in terms of adjustment of every 2 weeks to keep the rate fixed as capacity or computational power increases.

So, this makes creation of Bitcoins rather a limiting activities. Similarly, N new Bitcoins are added every new block and credited to the miner. There is some incentive for the miners. So, they keep on increasing this N in the beginning. So, initially N was 50, but since 2000 N became 50 and after that it halved every 201, 2,10,000 blocks every 4 years.

Thus total number of Bitcoins that can be created at max will never exceed 21 million. After this probably miner will start taking a fee for solving the proof of work puzzle and including at block of transactions in Bitcoin to the peer to peer network for validation; with these unique features we know that Bitcoins have been successfully considered as an asset. And that can be understood by looking at the correlation of Bitcoin with any other typical asset class.

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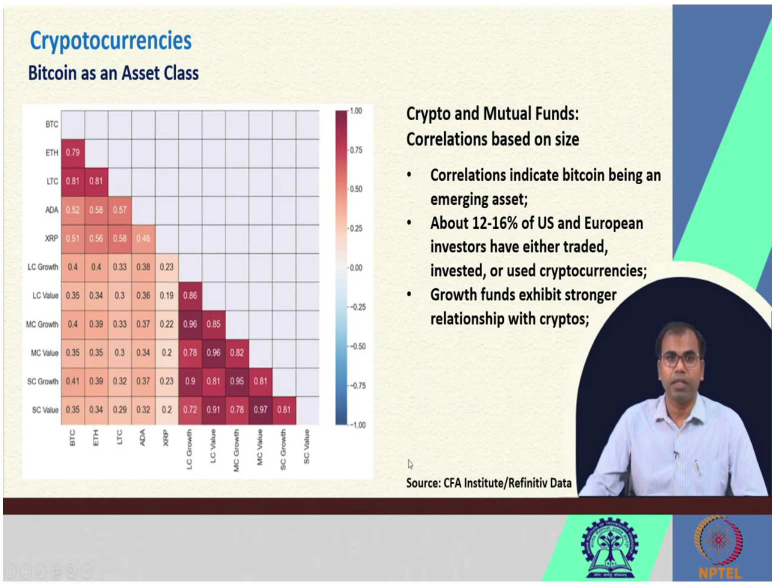

Here is the data which talks about the correlation between cryptocurrencies and mutual funds. We know that cryptocurrencies are attractive fascinating asset class and if we see the correlation between the cryptocurrencies and other mutual funds particularly based on size, then we see that correlation indicates Bitcoin being an emerging assets. About 12 to 16 percent of US and European investors have either heard or traded or invested or used cryptocurrencies.

If you look at the correlation, we see that there are 5 cryptocurrencies Bitcoin, Ethereum, LTC, ADN, and XRP and similarly we have 6 mutual funds based on large cap, mid cap and small cap. Among large cap we have growth and value similarly for mid cap we have low growth and value and small cap also we have growth and value.

And if you look at the correlation with correlation of Bitcoin with these mutual funds particularly when it comes to Bitcoin and correlation with large cap growth, mid cap growth and small cap growth correlation stands more or less similar, but there is less correlation for Bitcoin with large cap value portfolio or value mutual fund, mid cap value mutual fund and small cap value mutual fund.

In general growth funds whether it is large cap, mid cap or small cap exhibits stronger relationship with cryptos and thereby they can be considered as one of the tool to diversify portfolios for the purpose of investment. It goes without saying that in cryptos are strongly related to each other as we can see from the correlation, we can see the correlation between Bitcoin and Ethereum, we can see the correlation between Bitcoin and LTC and so on.

Similarly, mutual funds exhibit stronger correlation with each other, but the point here that we need to understand is there is some sort of positive correlation between certain type of funds and Bitcoins along with other cryptocurrencies and that makes it a stronger case for the purpose of inclusion in portfolio diversification.

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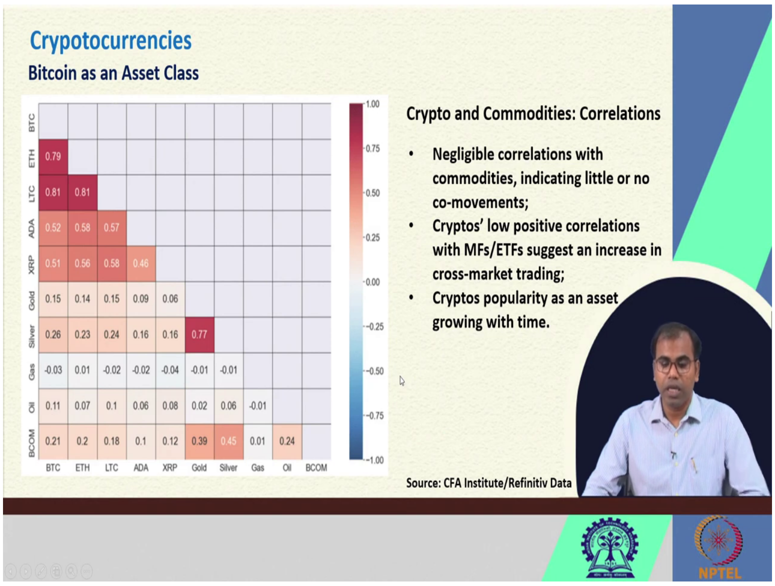

If you look at the cryptocurrency and commodities and check their correlation, we observe that there is negligible correlation with commodities. Particularly when we look at the correlation of cryptocurrencies with commodities, we find very low very negligible correlation. It indicates little or no co-movement.

However, cryptos low positive correlation with mutual funds and ETFs suggest that there is an increased cross-market trading and with this we can also conclude that cryptos are considered popularly as an asset that is growing with time. Here we can look at the correlation of cryptos with popular commodities such as oils, gas, silver, gold and we see that there is hardly any significant positive correlation, but it also indicates some sort of cross-market trading in a way or the other.

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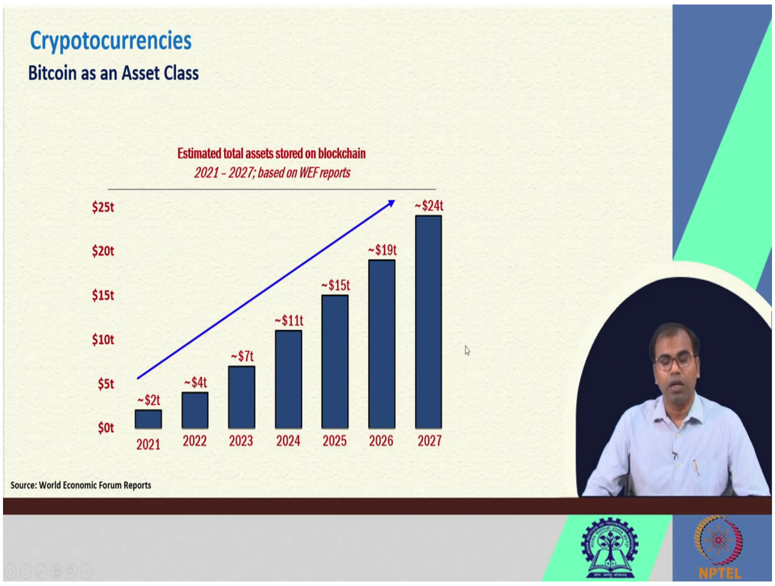

If you look at the historical data and make, try to make cents out of it, we know that using reports from world economic forum, we have seen and can be forecasted that the total assets that can be stored on blockchain in terms of cryptocurrencies or any other digital asset for that matter has been exponentially increasing.

In 2021 it was about 2 trillion dollar and into by 2027 it is supposed to be reaching to the extent to the tune of 24 trillion dollar in terms of digital assets stored on blockchain. With such a growth poised to happen in next 5 years, we can believe that cryptos are serving as an alternative investment avenues and particularly Bitcoin has been acting as one of the instruments or one of the assets where investors are looking up to for diversifying their investment portfolio.

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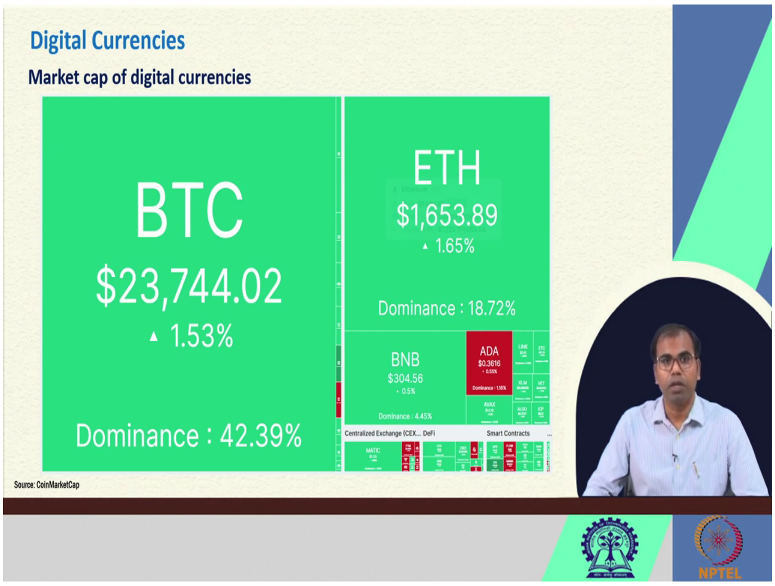

If you look at the price of Bitcoins, it has been changing over a period of time, it goes up and down and we can trace the real-time price of Bitcoins or any other asset or cryptocurrencies or digital assets for that matter and this can serve as the reference for the purpose of comparing it with any other asset class in general.

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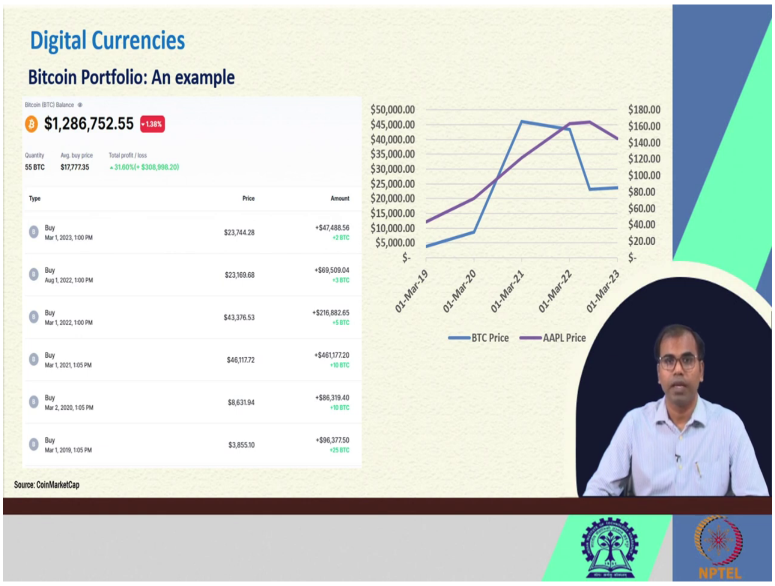

Here let us take a look at a hypothetical portfolio imagine that an investor has certain amount of money at some point of time in the past and he had invested some amount of money in Bitcoin for that matter. In cryptocurrency, we know that Bitcoin has been one of the forerunner and if we believe that an investor had invested certain amount of money in a investment in Bitcoins on 1st March 2019 assuming that 25 Bitcoins were purchased on 1st March 2019 at a price of 3,855 dollar per Bitcoin.

Next year, the same investor purchased 10 Bitcoins at a price of 8,631.94 dollar. Next year, that is 1st March 2021, the same investor purchased 10 more Bitcoins at a price of 46,117.72 dollars. If we keeps on doing that, on March 1st, the investor purchased 5 more Bitcoins at the rate of 43,376.53 dollar per Bitcoin.

So far, the investor has accumulated 25 plus 10 plus 10 plus 5 that is 50 Bitcoins, but at varying price starting from 3,855.10 dollar per Bitcoin to 43,376.53 Bitcoin a dollar per Bitcoin, even in 2021 when the prices were really high, it was 46,117.72 dollar per Bitcoin. But then the prices started falling and we see that if the investor bought 3 Bitcoins on 1st August 2022 at a at the rate of 23,169.68 dollars per Bitcoin and as latest as 1st March 2023, she added two more to the portfolio of at the rate of 23,744.28 dollars per Bitcoin.

So, the average buying price in all these 6 transactions stands up to 17,777.3 dollar per Bitcoin and at the moment the investor would have 55 Bitcoins in her portfolio. The value of the portfolio would be this much and if you look at the profitability of the portfolio, it would be close to 31.6 percent. Now, this is possible only because the investor has started investing in this asset, this bit, the instrument that is Bitcoin at a very low price in 2019 when the price was as low as Bitcoins 3855.10 dollar per Bitcoin.

If you look at other conventional asset in that sense, then we realize that the investor would have had more or less similar returns if not much more than this particular portfolio. So, this is typically the value of the portfolio of Bitcoins where investor has invested in different numbers of Bitcoins at different points of time in the past.

Suppose the investor would have invested the same amount of money in a conventional asset for example, a stock of a company and if you look at one of the most valuable companies in the world that is Apple and look at the price movement, we see that the price of the asset price of the stock of Apple Inc has also gone up significantly from 2019 to 2023.

So, if you look at the price of the stock of Apple, it has gone from about 42 dollars to 140 dollars in last four five years. So, this purple line graph shows the price trend of Apple stock and blue line graph shows the price trend of Bitcoin and we can see that there has been significant upward change in Apple prices, but there has been certain drop in prices of Bitcoins and that can be the reason why the Bitcoin has not outperformed as an asset, the conventional asset conventional equity investment.

But wait, let us take a look at the hypothetical scenario where an investor invest in Bitcoins at different points of time in the past and the investor also invests same amount of money in stock of Apple and then let us see what outperforms in terms of the absolute returns.

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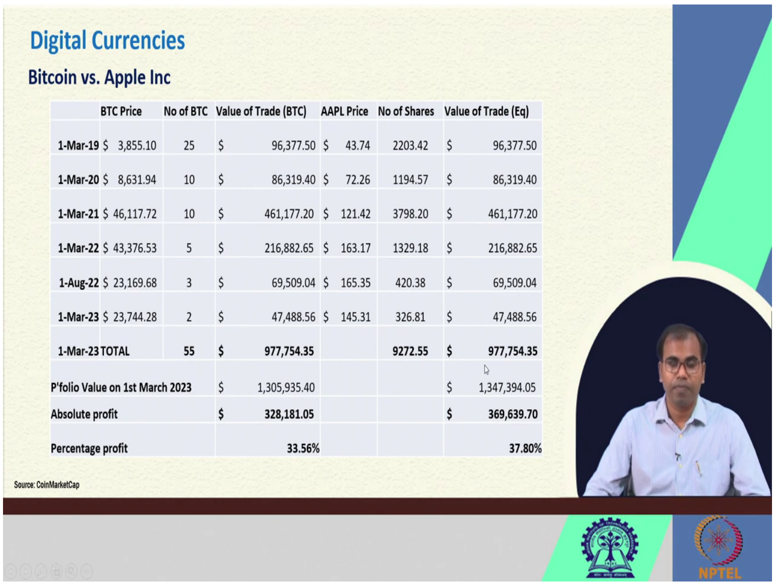

If you look at this table, this table shows the value of portfolio at different points of time for the investor. Imagine we start on 1st March 2019 when the Bitcoin prices were 3,855 dollar 10 cents and investor buys 25 Bitcoins to the tune of a total value of 96,377.5 dollars. Now, if investor would not have invested in Bitcoin rather invested in Apple stocks that was priced at around 43 dollars 74 cents. He would have got 2,203.42 shares at the same for the same value.

Similarly, if the investor would buy 10 Bitcoins on 1st March 2020 at a price of 8,631.94 bit dollar per Bitcoin that is the total value of trade would have been 86,319.40. Apple price, Apple shares were trading at 72 dollar 26 cents per share and for this value, for the same value of 86,319.40, the investor would have got 1,194.57 shares of Apple.

Next year when the investor would invest 46,117.72 to buy 10 Bitcoins at the value for the value of 461,177.20 dollars. For the same value, investor could have bought 3,798.2 stocks of Apple at the rate of 121.42. If the investor would keep on doing that for next year on 1st March 2022 when he buys 5 more Bitcoins at the rate of 43,376.53 and the trade value will be 216,882.65.

For the same value, the investor would have got 1,329.18 stocks of Apple at the rate of 163.17. On August 1st 2022, the investor would have investor buy 3 Bitcoins at the rate 23,169.68 for the trade value of 69,509.04. And For the same value, the investor would have bought 420.38 shares of Apple Inc at the rate 165.35.

And finally, on 1st March 2023, the Bitcoins were trading at 23,744.28 dollar per Bitcoin. So, investor would buy 2 Bitcoins for the value of 47,488.56. But if investor would have chosen not to buy Bitcoin rather invested that money in Apple stock, she would have got 326.81 shares of Apple at the rate 145.31.

So, the total investment of 977,754.35 that is the worth of the portfolio as on date. The money that that the investor has invested till now that can be calculate that can be represented in terms of the current worth or current value of the portfolio on 1st March 2023.

As of now, if the investor would buy Bitcoins, he would have 55 Bitcoins at the rate 23,744 on the last trading day. So, the value of portfolio of Bitcoin will be 1,305,935.40. Whereas, if investor would have invested in Apple stocks, he would have received 9,272.55 Apple shares and since it was trading on 1st March 23 at the rate 145.31, the portfolio worth, the value of the portfolio of Apple shares would be 1,347,395.05 dollars.

So, if you look at the return particularly in terms of absolute profit, in case of Bitcoin portfolio, the absolute profit is 328,181.05; whereas, in case of Apple stocks, absolute profit is 369.639. And if you represent this percent is this profit in percentage term, it is 33.56

percent of total investment value in case of Bitcoin portfolio; whereas in case of Apple portfolio, the absolute percentage profit would have been 37.80 percentage on the investment value. Now, we look if you look compare these two portfolios, we see that Apple stock portfolio or equity portfolio has outperform the Bitcoin portfolio in this particular period, in this particular example.

But the difference is not very significant. Apparently, we cannot say that 33.56 percent is statistically different from 37.80 percent given a very small period of time. Also, mind it that we are considering one of the most valuable companies in the world that is Apple Inc. So, maybe the value of the shares of Apple company has been increasing over a period of time and that is why maybe it is able to outperform the Bitcoin portfolio.

But if we compare this with any other large cap stock or for that matter any other portfolio, probably the difference might be lesser or even Bitcoin might have outperformed. The point here I am trying to make is Bitcoin has been doing really well in terms of mode of investment.

Although because of certain regulations and apprehensions from investors as well as regulators point of view, it has not been considered as a mainstream investment which it could have and might have given opportunity for investors to diversify their portfolio further. Apart from digital cryptocurrencies, there are other form of digital currencies that are available for investment or that might soon be available for investment.

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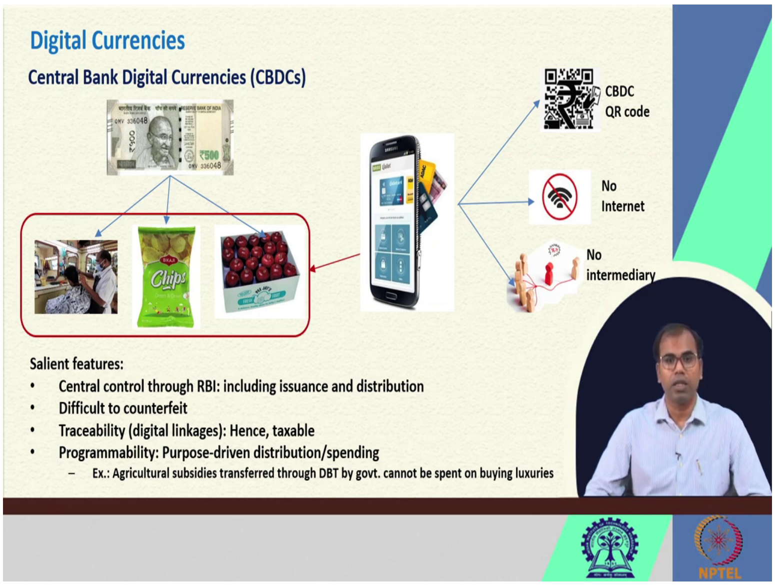

And one of these currencies are one of these currencies can be know can be considered to be Central Bank Digital Currencies. In recent times we have read a lot about Central Bank Digital Currencies which are basically the currencies or digital currencies issued by the central banks of different countries.

In India for example, RBI that is Reserve Bank of India is experimenting with issuing Central Bank Digital Currencies that is CBDC and trying to have its own digital currency for the purpose of transaction as well as investment. If you look at the comparative understanding of physical currency that we have and digital currencies, typically what we do with physical currencies is we can have some goods or services or commodities.

Similarly, we can store that physical currency in the form of digital currencies in our mobile wallet and we can use the same we can use the same for having transactions with respect to digital currencies. What advantage we have here is Central Bank Digital Currency will have its own QR code which we can use for making transactions.

It will not require internet for the purpose of making transaction which means it can be held, it can be stored in offline mode in your mobile wallet and can be spent whenever we want to make a transaction without the help of internet at that moment. And there is no intermediary which essentially is required for the purpose of any other digital form of payment that we have. For example, in case of payment through UPI in India, we see that there is always going to be an intermediary which typically is a banking or non-banking financial services company.

So, for example, if I am making a payment by Google Pay, this payment is passing through a bank which where I can I might be holding certain deposits. But in case of central bank digital currencies, we do not require any such intermediary. Here the money is stored in the digital form in my mobile wallet and I am just transacting offline from that wallet for making payment or making any transaction for buying goods or services or any other commodity.

So, with these features, we know that digital currencies particularly central bank, digital currencies typically will be controlled by central bank of the particular country. For example, in India it will be RBI, in this the this monitoring and control will be including issuance and distribution. It goes without saying that it is going to be difficult to counterfeit.

However, it is going to be traceable which means if we transact in CBDC in through CBDC mode, that transaction will be traceable because of its digital linkages and that is why it is also going to be taxable. And finally, because of its programmability that is purpose driven distribution and spending is possible which implies that if government is giving certain person as a direct benefit transfer and the payment is made in the form of digital currency that is central bank digital currency.

And this payment is this direct benefit transfer is given by the government for let us say agricultural subsidies for the purpose of buying agricultural goods or commodities or using it for agriculture purposes. It cannot be spent on buying something else, it cannot be spent on let us say buying luxuries.

So, because of programmability, the purpose driven distribution of digital currency or spending of digital currency is possible and that might also help the government or the regulators to take care of the counterfeit as well as un irrelevant spending or distribution of digital currencies in that case.

With these features, we know that central bank digital currencies are in very naive stage where many central banks across the world including India are experimenting with their own digital currencies in order to avoid experiencing or exposure towards Bitcoin or cryptocurrencies. And once this digital currencies will become more popular or more commonly used, then probably it will have better mode of transaction in place of physical currencies.

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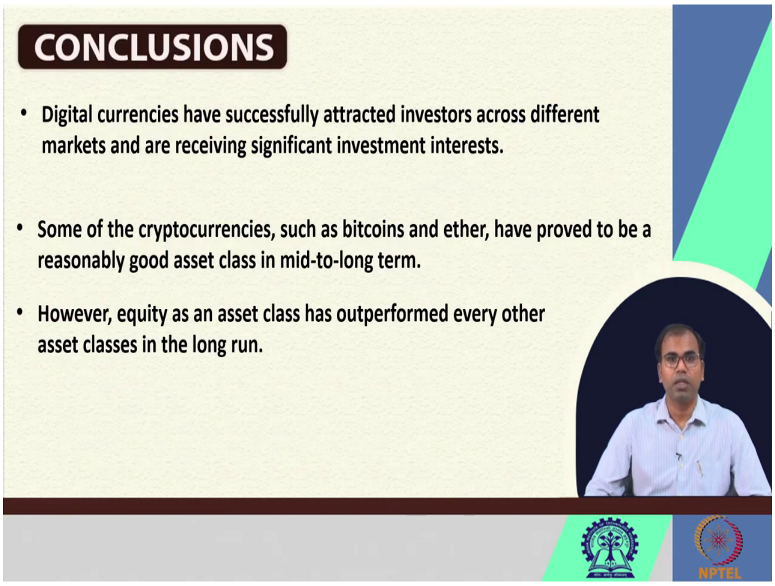

With this, I would like to conclude by saying that digital currencies have successfully attracted investors across different markets; different genres and they have also been receiving significant investment interest from investors big or small.

Some of the cryptocurrencies particularly Bitcoins and ether have proved to be a reasonably good asset class in mid to long run as we have seen in our portfolio example. However, it goes without saying that equity as an asset class has outperform every other asset class in the long run.

And if we look at a stable sustainable investment, we typically prefer equity instruments or shares in general for a long term investment because over the years we have observed that equity has been outperforming any other asset class including fixed income such as bonds or mutual funds or any other alternative investment as well. With this, I conclude this session.

Thank you.