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EXECUTIVE SUMMARY

All eyes are on this week's FOMC meeting, where the near universal opinion is that we will see another 75 basis point increase in rates, taking the Fed Funds rate to over 3 percent. Last Tuesday's Consumer Price Inflation (CPI) report - coming in much higher than expected - was a harsh flashback to reality, with consumer prices not only failing to ease as was expected, but indicating that price pressure seems to be broadening. Even after this week's decision, we expect more rate rises to come.

All risk assets have taken a hit. In equities, the sell-off immediately following the CPI report represented the single most significant drop in equities since June 2020, with the S&P500 and NASDAQ down 4.3 percent and 5.1 percent on the day. "Safe haven" asset gold also saw a 1.5 percent drop.

In Europe there has also been significant pain and we continue our deep-dive into the continent's economy, where since the start of the Ukraine conflict, Russian President Vladimir Putin has continued to squeeze energy supply to Europe, resulting in the manufacturing sector being stalled and households facing higher utility bills.

The macro backdrop was so dramatic last week that it almost overshadowed the other major event of the week - the Ethereum Merge. The Merge being completed without any hitches is a significant achievement that should not be underestimated, however the after-effects are interesting. While the hash rate, as expected, went to zero for Ethereum, mining activity surged in Ethereum Classic and Ethereum PoW. Further, there was significant flow of ETH onto exchanges, hitting levels not seen since March and total flows not recorded since February 2019. This no doubt contributed to the sell-off in ETH post-Merge. On the upside however, there were also a growing number of addresses with 32 ETH - the amount required for solo staking of ETH to run an Ethereum node and act as a validator. Total ETH addresses are just below the all-time high for addresses reached in November 2020 - a potentially bullish long-term signal for the second largest cryptocurrency.

There were also significant Bitcoin on-chain moves following the CPI print, with BTC whale wallet transfers rising sharply, with one single giant transaction of 31,000 BTC being recorded.

Solana NFTs have also been making a strong comeback and reapproaching all-time highs. We shed light on complaints about ETH PoW that have emerged following the Merge, and more detail from the White House releasing its first-ever crypto regulatory framework and SEC's Gensler, signalling extra scrutiny for proof-of-stake cryptocurrencies.

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GENERAL MARKET UPDATE

September CPI Print

The Consumer Price Index (CPI) report was released on Tuesday, September 13. It was a harsh flashback to reality for some investors and economists who believe the current level of inflation to be transitory. The higher-than-expected inflation print emphasised its persistence.

Following the report, US stocks plummeted by 4 percent, marking the worst day for stocks so far in 2022. The headline CPI for August rose 8.3 percent year-on-year (YoY), down from 8.5 percent YoY in July. However, given that the consensus analyst estimate was 8.1 percent, the market reaction was not surprising.

The CPI measures the change in a fixed basket of consumer goods and services. Though each item has a different weighting, the following are the key items that pushed CPI north:

- Gas: up 25.6 percent
- Airline fares: up 33.4 percent
- Electricity: up 15.8 percent
- Food at home: up 13.5 percent
- New vehicles: up 10.1 percent
- Food away from home: up 8.0 percent
- Used cars and trucks: up 7.8 percent
- Shelter: up 6.2 percent
- Medical care services: up 5.6 percent
- Apparel: up 5.1 percent

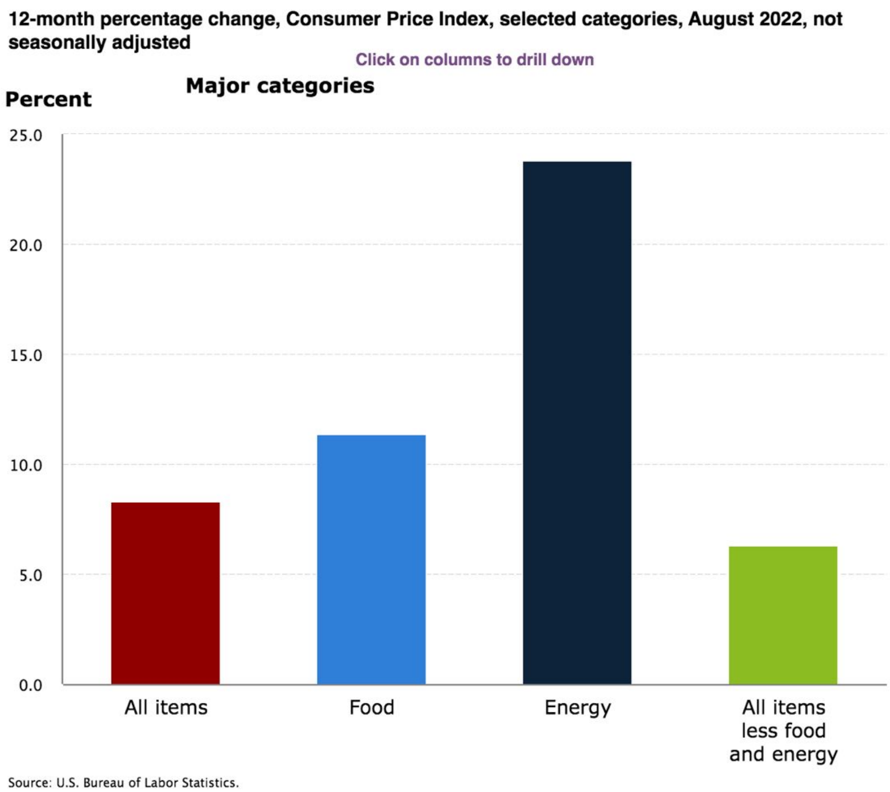


Figure 1. CPI breakdown.

In the figure above, we can see how energy costs still lead CPI inflation. Though the national average gas price is down by 25 percent from its peak in June this year, its YoY increase continues to hover around the 16.8 percent mark.

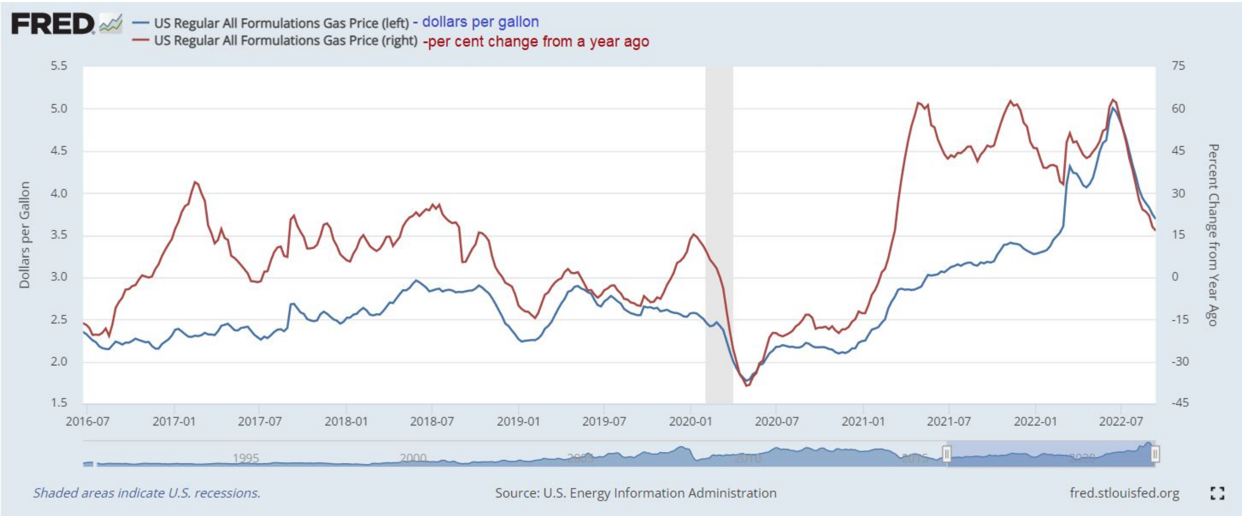


Figure 2. US Regular All Formulation Gas Price (Source: EIA)

What worries the market more is that Core CPI (CPI minus gasoline and food) has ticked up from last month. Though energy is not considered in the Core CPI index, we should remember that energy is a primary input to all industries producing goods and providing services. Hence, it will affect other components of core CPI like airfares, other transportation services, apparel and most services. Core CPI rose by 6.3 percent YoY in August, ending its 5-month decline. It is generally regarded as a reliable metric to forecast economic trends, because it strips out the volatility from CPI, brought on by the volatile nature of food and energy costs.

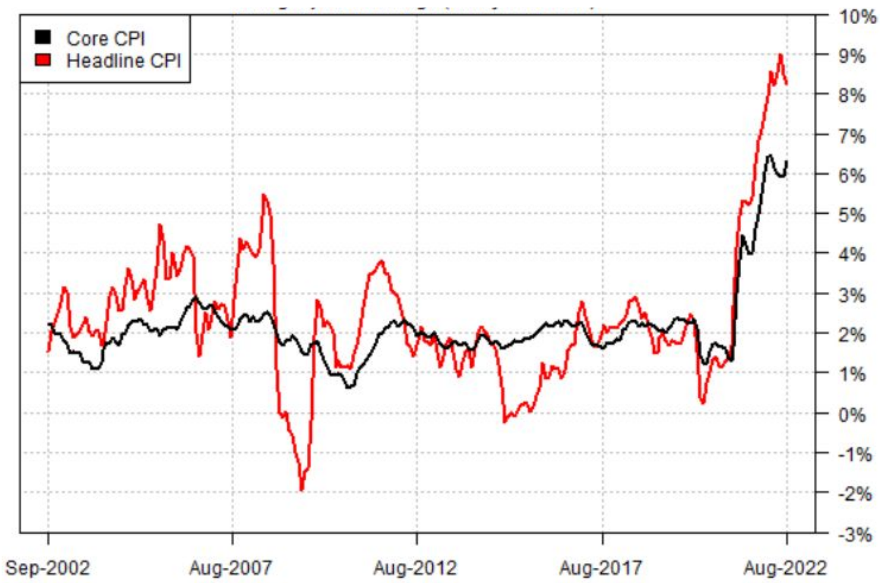


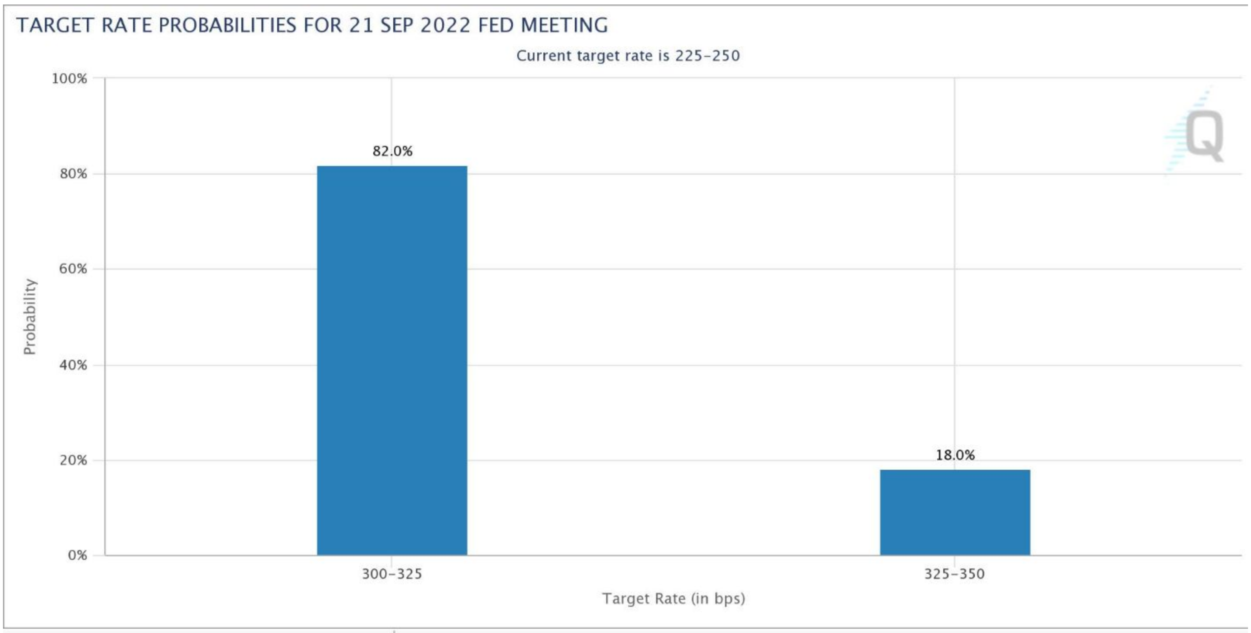
Figure 3. Consumer Price Index Inflation, Core CPI and Headline CPI (Source: Capitalspectator.com, St. Louis Fed)

On the brighter side, the Producer Price Index (PPI) fell for the second month in a row, from 9.8 percent in July to 8.7 percent in August. The latest PPI report was 10 basis points below the consensus analyst estimate of 8.8 percent.

Producer costs are a leading indicator of consumer costs. If PPI has decreased for two straight months, consumer goods will likely follow in the future, given all other factors affecting consumer prices hold constant.

What's Next for the Federal Funds Rate?

The hotter-than-expected CPI report prompted a new projection in the Fed Funds Rate. Fed Chair Jerome Powell and his colleagues have raised borrowing costs at the fastest rate since the 1980s to fight decades-high inflation.



TARGET RATE (BPS)	PROBABILITY(%)			
	NOW *	1 DAY 16 SEP 2022	1 WEEK 9 SEP 2022	1 MONTH 17 AUG 2022
275-300	0.0%	0.0%	9.0%	60.0%
300-325	82.0%	85.0%	91.0%	40.0%
325-350	18.0%	15.0%	0.0%	0.0%

* Data as of 17 Sep 2022 03:37:46 CT

Figure 4. Target Rate Probabilities for September 21, 2022, Fed Meeting

The Fed Open Market Committee is expected to meet on September 21, and *the CME Group's FedWatch Tool* predicts an 82 percent possibility of a 75 bps rise in Federal Funds Rate and an 18 percent possibility of a 100 bps hike based on Fed Funds futures data.

It is worth noting that earlier this month, the *CME Group* predicted zero probability of a 100 bps hike. This tells us that in a short space of time, market expectations are now that high inflation is more entrenched, triggering a forecast of larger-than-recently expected hikes.

If the Fed announces a 75-basis-point hike at the end of its September 21 meeting, its targeted policy rate will rise to the 3.00% -3.25% range. This range is above the level that most policymakers believe will start biting into economic growth and pushing up unemployment.

The concern here remains that as prices rise, workers demand higher wages to enable them to pay their bills and employers in turn raise prices to cover the higher wage costs.

Last Week's Economic Reports

Besides the recent CPI print, other important economic data was released last week that provides us with a bigger picture of the status of the economy.

Total Industrial Output

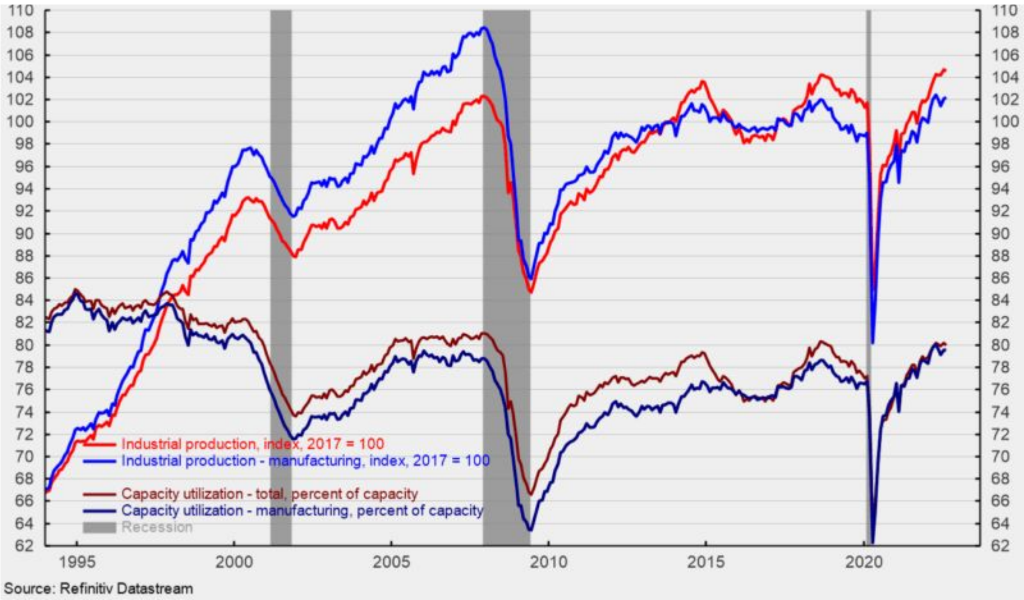


Figure 5. Industrial Production Index, Capacity Utilisation (Source: Refinitiv Datastream)

Total industrial output has increased by 3.7 percent in the last year. Total industrial capacity utilisation, or the extent to which production capabilities are used fell by 0.2 percent in August. Nonetheless, August capacity utilisation was higher than the long-term average of 79.6 percent.

Fed officials tend to look at these measures to signal how much "slack" remains in the economy - how far growth has room to run before it becomes inflationary.

Overall, industrial production remained stable in August. Manufacturing output, which accounts for 74 percent of overall output, has increased despite continued labour shortages and turnover, growing material costs and shortages, and logistical and transportation constraints.

Retail Sales

Total retail sales represent the monthly estimate of consumer expenditure, which increased by 0.2 percent in August (after adjusting for inflation). However, Real core retail sales, which exclude automobiles, fuel, building materials and food services, fell for the second consecutive month but are still on a moderate upward trend for the year.

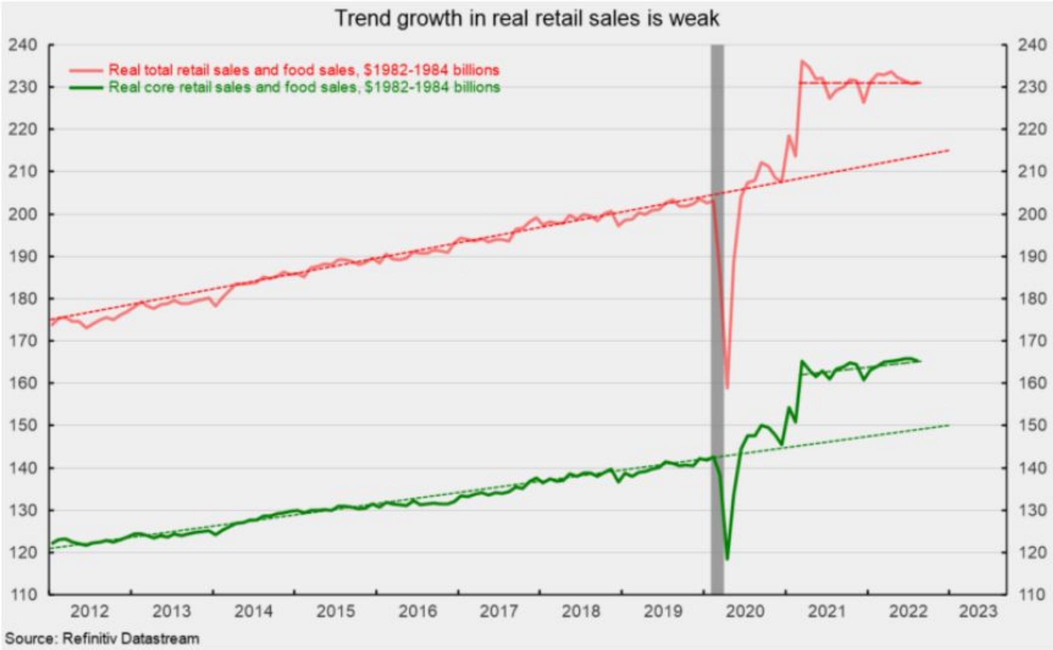


Figure 6. Growth in Real Retail Sales showing signs of weakness (Source: Refinitiv Datastream)

The increase in retail sales in August underlines the economy's flexibility to undertake expenditure despite increasing prices, but at the same time also demonstrates that consumers are struggling to keep up with inflation, as seen by the sluggish growth.

Sustained pressure on rising prices will likely impact consumer attitudes and spending habits. As more consumers experience the effects of inflation, real consumer spending shall bear more stress.

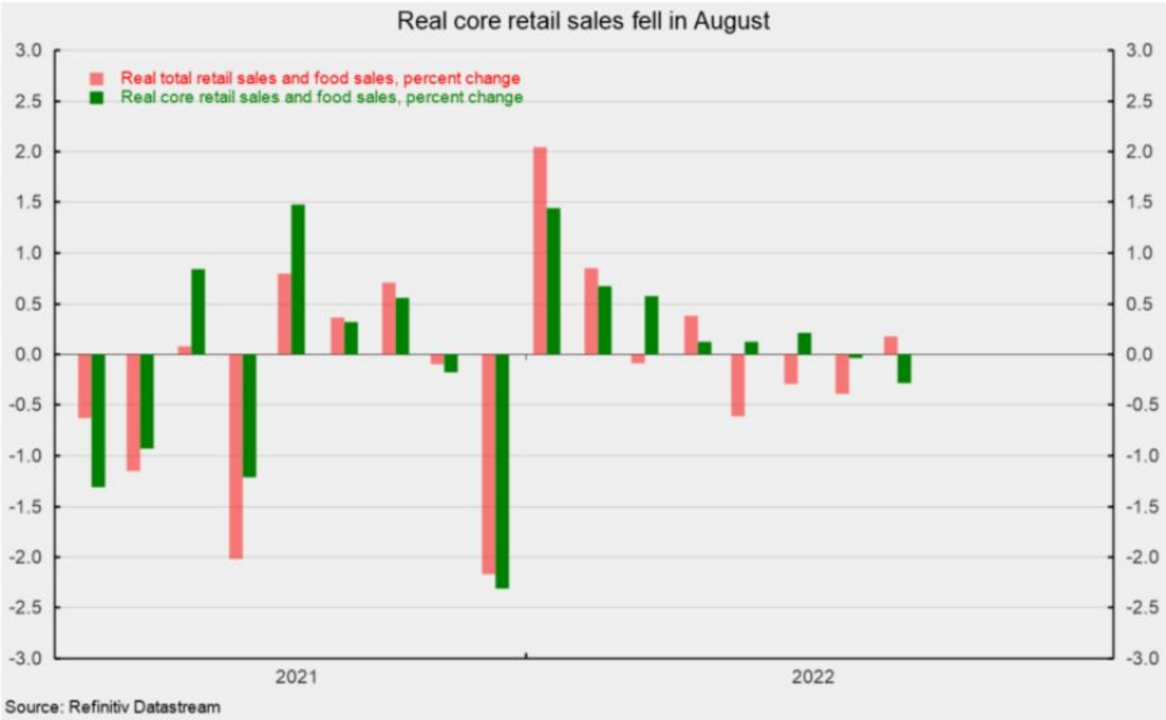


Figure 7 Real Core Retail Sales (Source: Refinitive Datastream)

Initial Jobs Claims

For the week ending September 10, initial claims for regular state unemployment insurance declined to 213,000. Claims have fallen for five weeks in a row and are now at their lowest level since May of this year. However, it continues to stay slightly higher than the pre-pandemic average of 212,000 for a sixteenth week in a row.

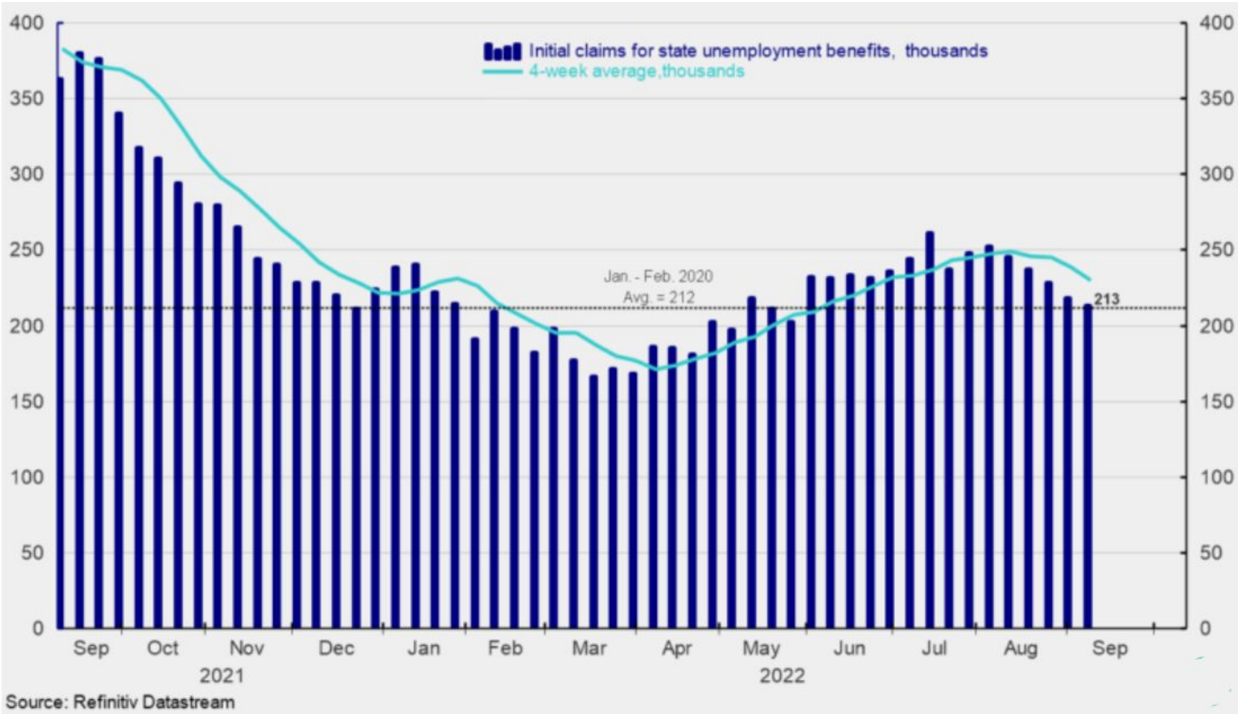


Figure 8. Initial claims for unemployment benefits continue to trend lower

The claims data continues to point to a tight labour market. The labour market is a crucial component in predicting consumer spending patterns.

Amidst soaring inflation and uncertainty, job security and job opportunities impact consumer spending habits massively. If customers lose confidence in the job market, they might limit spending dramatically.

The labour market is one aspect of the economy that remains ever resilient and allows the data to speak for itself. It will continue to influence the Fed’s data-driven decision-making policy.

Consumer Sentiment

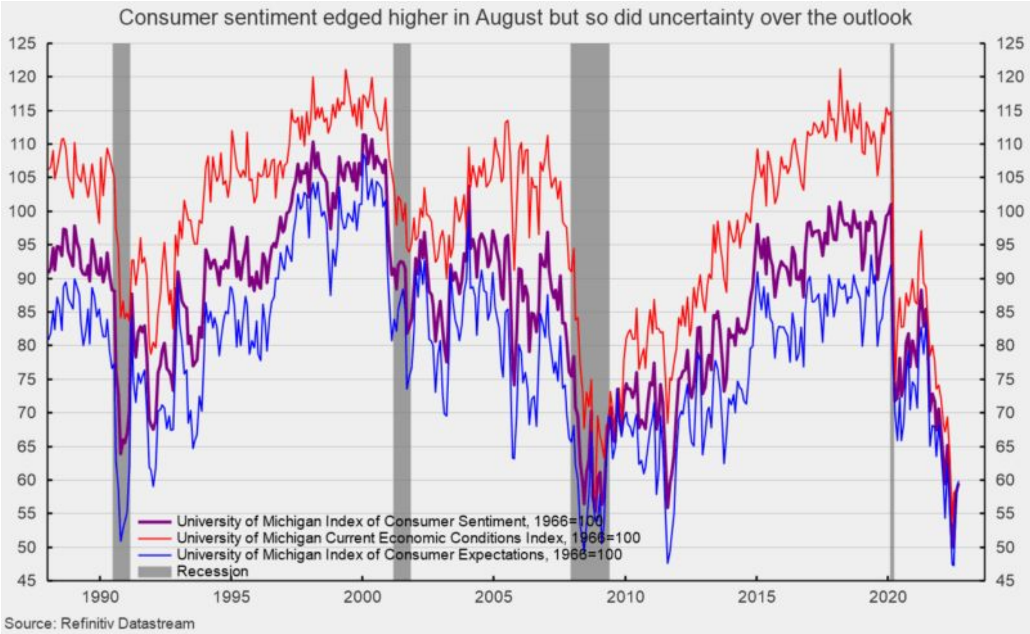


Figure 9. Consumer Sentiment edged Higher in August (Reference: Refinitiv Datastream)

According to preliminary September data from the University of Michigan Survey, overall consumer sentiment increased in early September but remains low by historical standards. In early September, the composite consumer sentiment increased to 59.5 from 58.2 in August. Composite consumer sentiment is drafted by aggregating multiple consumer sentiment indices.

Consumer expectations, one of the AIER's (American Institute for Economic Research) leading indicators, increased by 3.3 percent this month to 59.9. This component index has had the greatest rebound in the previous two months, although it remains consistent with pre-economic downturn levels.

Last week's economic data underscores the future decisions of the Fed's monetary policy. The pessimistic sentiment of consumers reflects a convergence of events, mainly due to inflation. Persistently elevated prices impact consumer decisions and can distort economic activity, as seen in the sluggish growth of retail sales. However, production output remains stable, and the job market remains strong, which will signal to the Fed that they have room to push for an interest rate hike. With mixed economic data, the remainder of this year is going to be an acid test for the resilience of the US economy.

Russia’s Economic War Hits Europe’s Factories and households

On Wednesday, September 7, the Group of Seven (G7) wealthy democracies announced plans to impose a price cap on Russian oil exports. This move could restrict Russia's ability to secure tankers and insurance from countries beyond the G7. Russian President Vladimir Putin said that Russia would walk away from its supply contracts if the West went ahead with its plans. Moscow’s choking of energy supplies to Europe has driven up production costs, making it considerably more challenging for some manufacturers to operate economically.

High energy costs are hurting manufacturing. Some industries, such as the energy-intensive metals sector, are shutting factories that analysts and executives say might never reopen, imperilling thousands of jobs.

Europe’s factories aren’t alone in seeing a surge in costs as a consequence of the war. European households are also facing sharply higher utility bills. Natural gas, which households use mainly for heating and power, has seen the sharpest rise lately.

Most analysts expect Europe’s economy to contract in the final three months of the year as well as in the first quarter of 2023, as energy usage rises because of low temperatures amid higher prices.

All Markets Fall in Anticipation of FOMC

As the markets reacted to the higher-than-expected CPI report, U.S. equities closed another weekly red candle last week.

Figure 10. CPI data causes a sell-off causes risk-on and risk-off assets to take a hit.

The Bureau of Labour Statistics' (BLS's) Consumer Price Index (CPI) print massively spooked the markets, with both risk-on and risk-off assets taking a hammering.

The sell-off was the single most significant drop in equities since June 2020, with the S&P500 and NASDAQ selling off 4.3 percent and 5.1 percent on the day. "Safe haven" asset gold also saw a 1.5 percent drop.

Fueling the recent stock downturn is also the steady climb in two-year US treasury rates, which reached a new 15-year high on Friday.

Figure 11. Two- and Ten-year US Treasury Yields

The increase in two-year yields solidifies the Fed's hawkishness. The ten-year Treasury rate in the United States is at 3.45 percent, with a 42-basis-point divergence between the two yield curves, maintaining the yield curve inversion we have seen for much of this year.

Summary

- September's CPI, representing August 2022 inflation, was 8.3 percent, which was higher than the consensus forecast.
- The hotter-than-expected result prompted new predictions that the Federal Reserve's policy tightening would continue and maybe accelerate. A 75-bps Fed rate hike is seen as the most likely outcome from this week' FOMC meeting, and as indicated by the Fed funds rate.
- After falling by less than 0.1 percent in July, real core retail sales fell by 0.3 percent in August. Core retail sales continue to be considerably above trend.
- Regular state unemployment insurance claims declined by 5,000 for the week ending September 10. Claims have declined for five weeks and are at their lowest level since May 28 but remain slightly above the pre-pandemic average.
- Total industrial production decreased 0.2 percent in August after increasing 0.5 percent in July. Overall, industrial production remained stable in August.
- The preliminary September results show that overall consumer sentiment edged higher in early September but remained historically low.
- U.S. equities closed lower in heavy trading volume on Friday, September 16, registering another weekly fall, as markets remained cautious amid inflationary concerns.

WHAT’S ON-CHAIN THIS WEEK?

The Ethereum network hashrate is disappearing:

ne hash rate is the primary parameter to assess miner activity for blockchains based on the roof-of-Work protocol, determining the speed at which new blocks are mined.

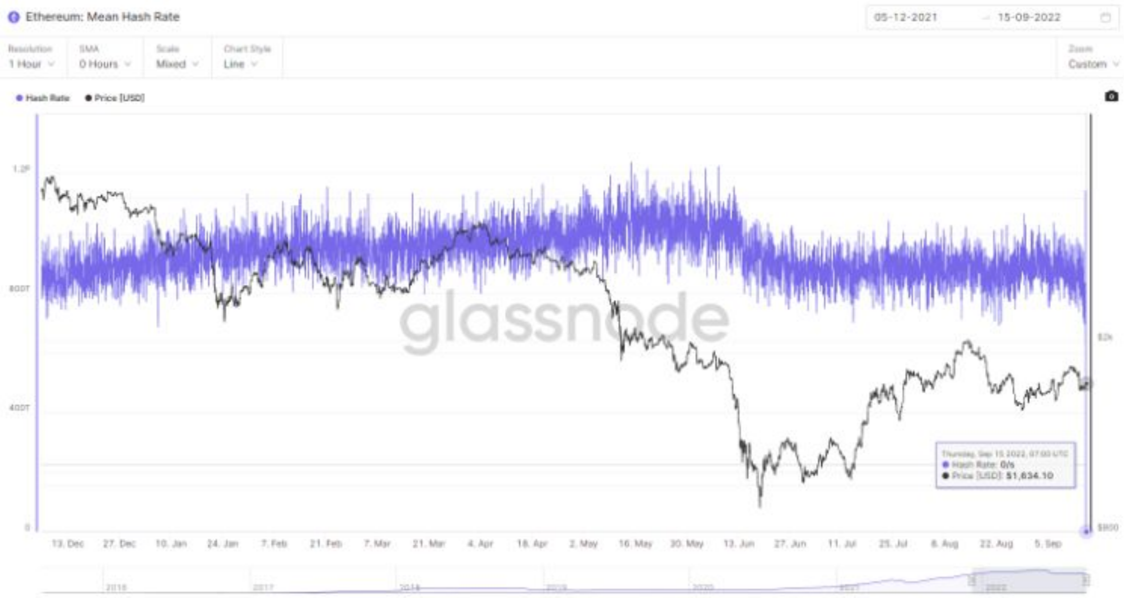
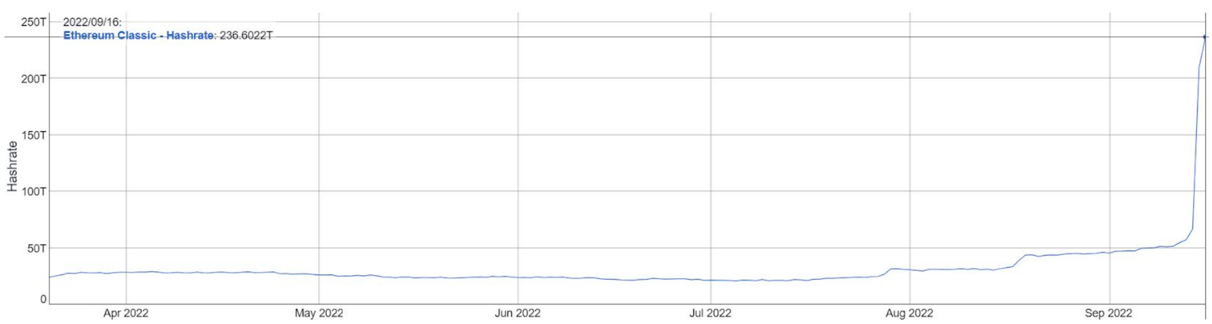


Figure 12. Ethereum Mean Hash Rate

ith Ethereum's transition to the Proof-of-Stake protocol, on September 15 at 7:00 UTC, the hash rate ummeted to 0/s. This means that currently no computer equipment is producing hashes and no miner receiving rewards in the form of new ETH.

ne Merge transitioned Ethereum completely to a POS (proof-of-stake) consensus mechanism. However, vo new POW (proof-of-work) chains were born in the process, ETHPoW and Ethereum Fair. The revious Ethereum fork, ETC (Ethereum Classic), also experienced a newfound resurgence in hash rate s miners dissipated over these revenue generation mining opportunities after the Merge.



igure 13. Ethereum Classic Hash Rate reached an All-Time High of 304.52 TH/S. (source: bitinfocharts)

After the launch of its mainnet on 16 September, ETHPoW reached a hash rate of 70^{TH}/s.

Regardless of the significant appreciation in the hash rates of the various forks, these sum up to less than 30 percent of the total Ether hash rate before the Merge, which was already a deprecated value given the bearish market conditions and the miner capitulation effect that we discussed in detail in our previous issues. (link - https://bit.ly/3LpTSNU)

Regardless of the aforementioned miner migration, the Merge increases the security aspect of the Ethereum network significantly, helps reduce supply over an extended timeframe and also contributes to reducing the overall electricity consumption of the entire planet by 0.3 percent (approximately).

ETH Inflows to Exchanges after Merge

As the Merge update went into effect, a record amount of ETH flowed onto exchanges. According to data from *Glassnode*, nearly 1.5 million USD worth of Ether was transferred to exchanges in just 24 hours – 1,469,379 ETH, to be exact. The last time ETH inflows of this magnitude were recorded was three and a half years ago, in February 2019.

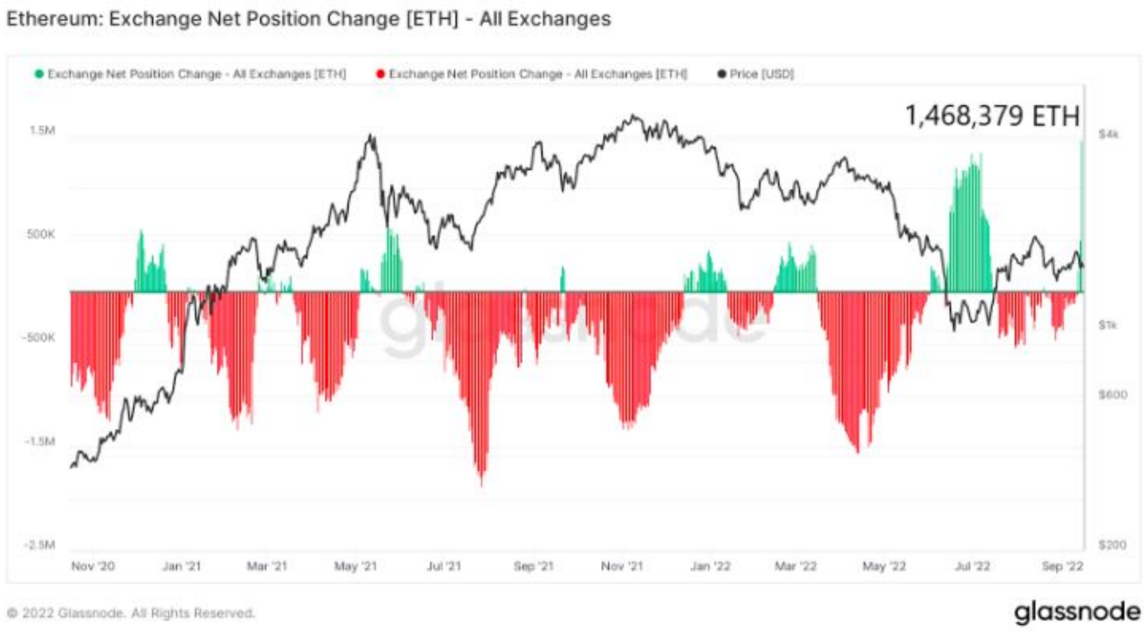


Figure 14. Ethereum: Exchange Net Position Change on all Exchanges

Naturally, this led to a surge in ETH balances on exchanges. It quickly returned to March 2022 levels and currently stands at 22,614,536 ETH.

There has been widespread speculation about the reason for such a sharp increase in ETH on exchanges. Usually, increased inflows of an asset are a signal that investors intend to sell it. This proved to be the case with a rapid decline in Ether price post the Merge as discussed in the General Market Update.

Figure 15. Ethereum Balance on All Exchanges

The Number of Addresses with 32 ETH is Growing.

32 ETH is the threshold amount of the asset to stake on Ethereum independently. The peak in the number of these addresses was reached in November 2020, a few months after the announcement of the staking requirements for ETH 2.0. Back then, the indicator peaked at 127,255 addresses, with at least 32 ETH. This week it reached 121,732, which is only 4.3 percent below the ATH.

This shows not only the dynamic development of validators of the new Ethereum network but also the progressive accumulation, which may lead to an increase in the price of ETH in the long term.

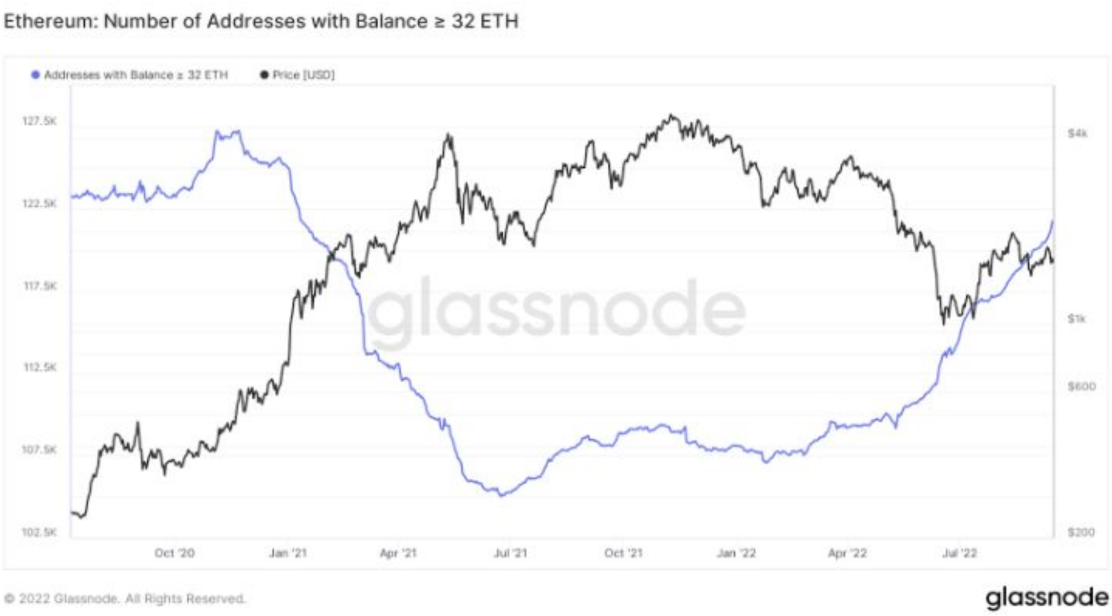


Figure 16. Addresses with Balance of at least 32 ETH

Meanwhile, investors who do not own 32 ETH have been delegating their Ether to centralised and decentralised staking pools, since the end of 2020. Currently, four entities are leading the way, collectively holding as much as 59.3 percent of the total supply of staked ETH.

These are Lido (4.17 million ETH), a decentralised platform and three sizeable centralised cryptocurrency exchanges: Coinbase (1.92 million ETH), Kraken (1.14 million ETH), and Binance (905,000 ETH). In total, 13.7 million ETH has been staked.

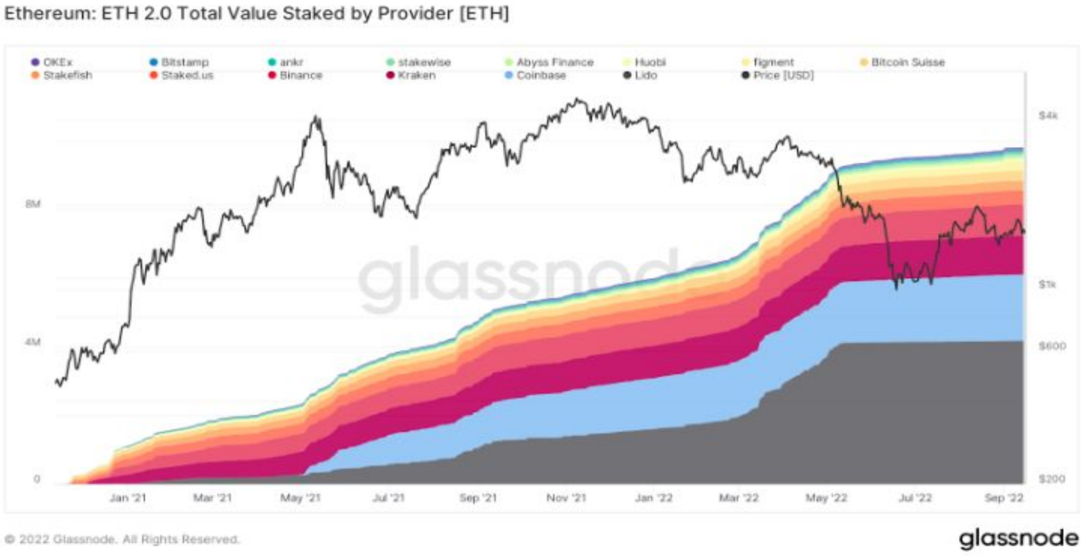


Figure 17. ETH 2.0 Total Value Staked by Provider

CPI Print Unleashed a Wave of Large Wallet Outflows

On-chain analytics revealed that there was a noticeable uptick in whale wallet transfers following the release of the CPI data compared to the previous day. The steady ramp-up of outflows on September 12 – 13 resulted in a sharp rejection of the price at $22,781. This included a 31,000 BTC transaction valued at $964.3 million which accelerated the downdraft. It is no surprise that this sharp sell-off caused more than $110 million in liquidations in a single hour across crypto derivatives exchanges.

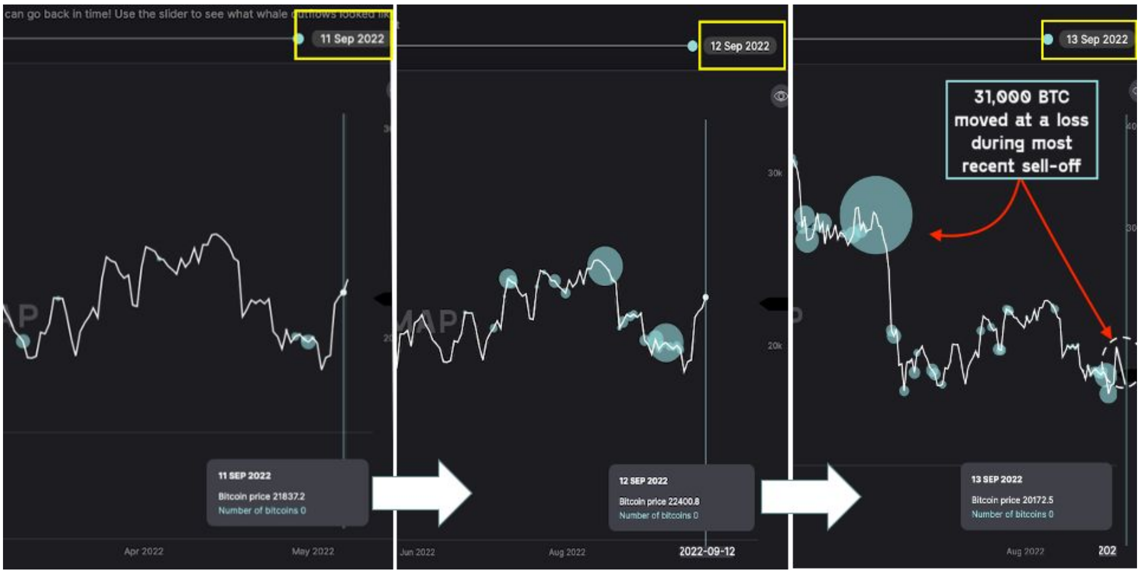


Figure 18. Large wallet outflows from the September 13 sell-off. (source: Whalemap)

Similar to the previous correction, the sell-off was also accompanied by purchasing at the same time. We can see that 78,800 BTC were transferred at a price of $20,163 on the chart of major wallet inflows, and these significant purchases will serve to strengthen Bitcoin's $19 - $20K support zone in the short run.

Figure 19. Large Wallet Inflows (source: Whalemap)

NEWS FROM THE CRYPTO-SPHERE

Solana NFTs Comeback:

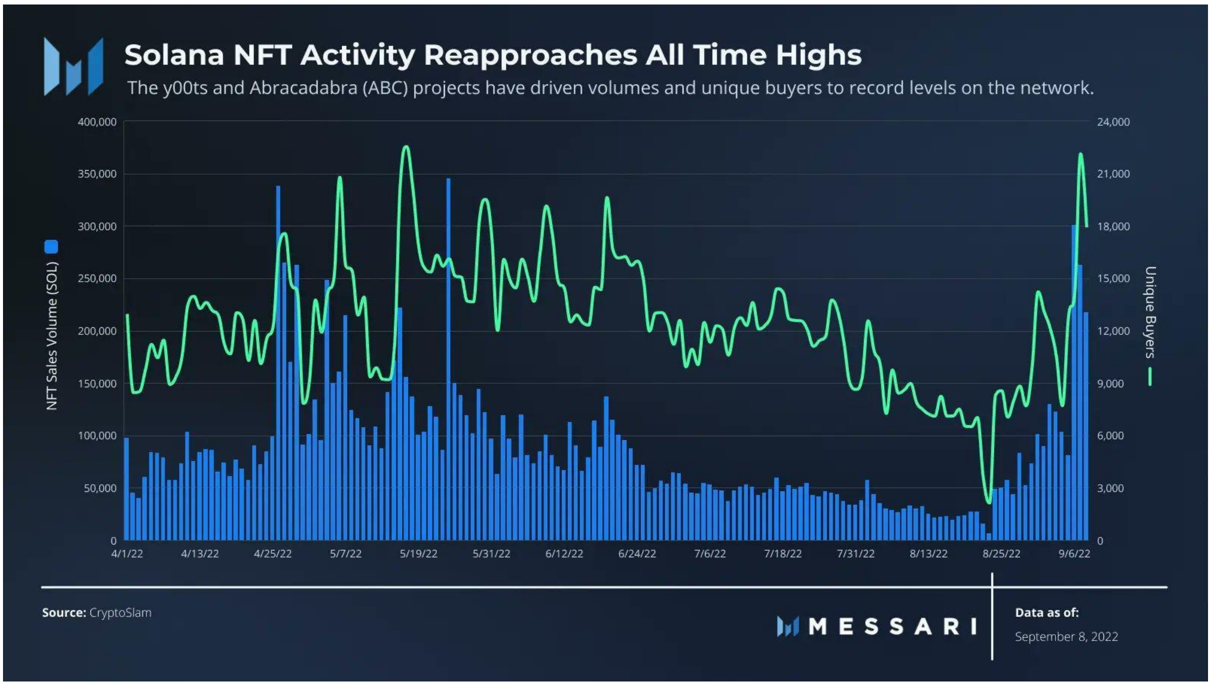


Figure 20. Solana NFT Activity Reapproaches All Time Highs

Solana NFTs have made a strong comeback over the last two weeks following a summer of low interest in the NFTs. Daily sales volume and unique buyers recently spiked back to all-time-high levels set in May, following the y00ts NFT mint.

The y00ts NFT collection's total volume has reached 340k SOL, representing 20 percent of the network's NFT volume since the collection was launched.

Over the last 30 days, the y00ts collection ranks first in volume on Magic Eden, followed by other popular collections on Solana – Abracadabra (ABC) and DeGods. ABC also ranks second in transaction count at 42k, just behind GMers at 47k.

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Ethereum PoW Network Sees Complaints Day 1 Amid Data Goof-Up:

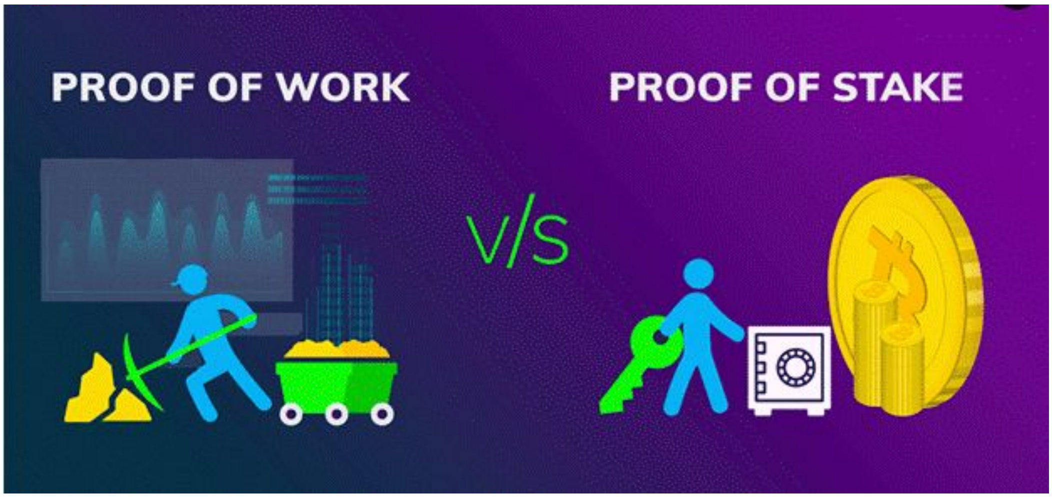


Figure 21. Ethereum Transition from PoW to PoS

Ethereum PoW, the version of the Ethereum blockchain that continues to run on a proof of work (PoW) consensus mechanism, experienced quite dismal performance on the first day as it ran into problems.

Some Twitter users complained that they weren't able to access the network using the information provided by the Ethereum PoW Twitter channel, while some reported problems accessing the network's web servers.

The blockchain was established as a fork of the Ethereum network, which switched to a proof-of-stake (PoS) consensus mechanism on Thursday. The PoS network now continues as Ethereum.

SEC's Gensler Signals Extra Scrutiny for Proof-of-Stake Cryptocurrencies:

Figure 22. SEC's Gensler Signals Extra Scrutiny for PoS Cryptocurrencies

Speaking after the Merge (but not specifically about Ethereum), SEC Chair Gary Gensler said proof-of-stake cryptos could be investment contracts that subject them to securities regulations.

According to the *Wall Street Journal*, Gensler said that proof-of-stake (PoS) blockchains, which generate new coins for inventors who pool their holdings, take on investment contract-like attributes that could bring them under his agency's purview. He emphasised that he wasn't talking about a specific coin, according to the Journal.

Still, the comments, which came hours after Ethereum completed its PoS transition via the Merge, indicate that the milestone tech upgrade may carry greater ramifications for the second-most popular blockchain than simply cutting its energy usage. As a proof-of-work chain, its native ether token was one of only two cryptos – the other being Bitcoin – clearly defined as commodities by federal regulators.

Crypto Lending Company Celsius Files for Permission to Sell Its Stablecoin Holdings

Figure 23. Alex Mashinsky- founder and CEO of Celsius Network

Celsius filed for bankruptcy in July and is currently before the U.S. Bankruptcy Court for the Southern District of New York.

The bankrupt lending firm Celsius is now seeking authorisation to sell its stablecoin holdings to generate liquidity to help fund its operations.

Celsius currently owns 11 kinds of stablecoins totalling approximately $23 million, according to disclosures.

The White House has released its first-ever framework for crypto regulation:

Figure 24. Biden White house release its first framework regulation for cryptocurrencies

The Biden White House has just released its first-ever framework on what crypto regulation in the U.S. should look like — including ways in which the financial services industry should evolve to make borderless transactions easier and how to crack down on fraud in the digital asset space.

The framework follows an executive order issued in March, in which President Joe Biden called on federal agencies to examine the risks and benefits of cryptocurrencies and issue official reports on their findings.

Here are some of the key takeaways from the White House's new crypto framework:

- One section of the White House's new framework on crypto regulation focuses on eliminating illegal activity in the industry
- The president is also looking into whether to push Congress to raise the penalties for unlicensed money transmitting, as well as potentially amending certain federal statutes to allow the Department of Justice to prosecute digital asset crimes in any jurisdiction where a victim of those crimes is found

- The framework also points to the potential for “significant benefits” from a U.S. central bank digital currency, or CBDC, which you can think of as a digital form of the U.S. dollar.
- The framework goes on to single out stablecoins, warning that they could create disruptive runs if not paired with appropriate regulation.
  To make stablecoins “safer,” the administration says that “the Treasury will work with financial institutions to bolster their capacity to identify and mitigate cyber vulnerabilities by sharing information and promoting a wide range of data sets and analytical tools.”

FTX Is in the Lead to Buy Crypto Lender Voyager Digital's Assets Out of Bankruptcy:

Figure 25. The Biden administration encourages cryptocurrency miners to look int greener alternatives.

Major Crypto exchange FTX is in the lead to buy the assets of Voyager Digital, the cryptocurrency lender whose collapse shocked crypto markets earlier this year. Higher offers could still be proposed in the days ahead.

Sam Bankman-Fried's FTX exchange and Wave Financial, a digital-asset investment firm, are currently competing for the bid at the final stage of an auction for Voyager's assets.

LEARNING SECTION

Decentralised Finance (DeFi)

Cryptocurrency 101 educates you first about Bitcoin. Anyone who starts learning about cryptocurrency is introduced to how Bitcoin works and how it makes transferring money to any part of the world cheap and fast without intermediaries. It is "decentralised" and open to everyone; even the millions of bankless people around the globe can enjoy its convenience.

However, sending and receiving money are not the only services in our financial system. There are loans, insurance and savings to name a few. In our traditional system, all these services rely on centralised regulatory authorities and jurisdictions, colloquially referred to as centralised finance. Though the current system works from a functional perspective and has been around for decades, it has its flaws like mismanagement, fraud and corruption.

Financial Services	Traditional Finance	Decentralised Finance
Lending & Borrowing	Banking	Smart Contract-facilitated lending & borrowing. Example DeFi Protocols: Compound, Aave
Trading	Brokers, stock exchanges, OTC markets	Decentralised Exchanges Example DeFi Protocols: Uniswap, Curve
Medium of Exchange	Fiat	Stablecoins Example: DAI, USDT, USDC
Insurance	Lloyds of London Insurance Market, insurance firms	Insurance for Digital-asset-related risks Example: Armor, Nexus Mutual
Assets and Derivatives	Investment Funds Investment Firms	Protocols replicating asset management functions and creating asset indices and derivatives including synthetic assets, options and perpetual futures Example: Yearn Finance. dYdX

Figure 26. Services Under Traditional Vs Decentralised Finance

Several factors, like accessibility to banks, high fees, and verification requirements create financial exclusion that leaves millions worldwide without bank accounts.

Decentralised finance or DeFi aims to implement decentralisation to the financial system as a whole. It aims to offer financial services without any central authority. It is an umbrella term for various financial services that rely on automated, trustless protocols that use blockchain technology and smart contracts.

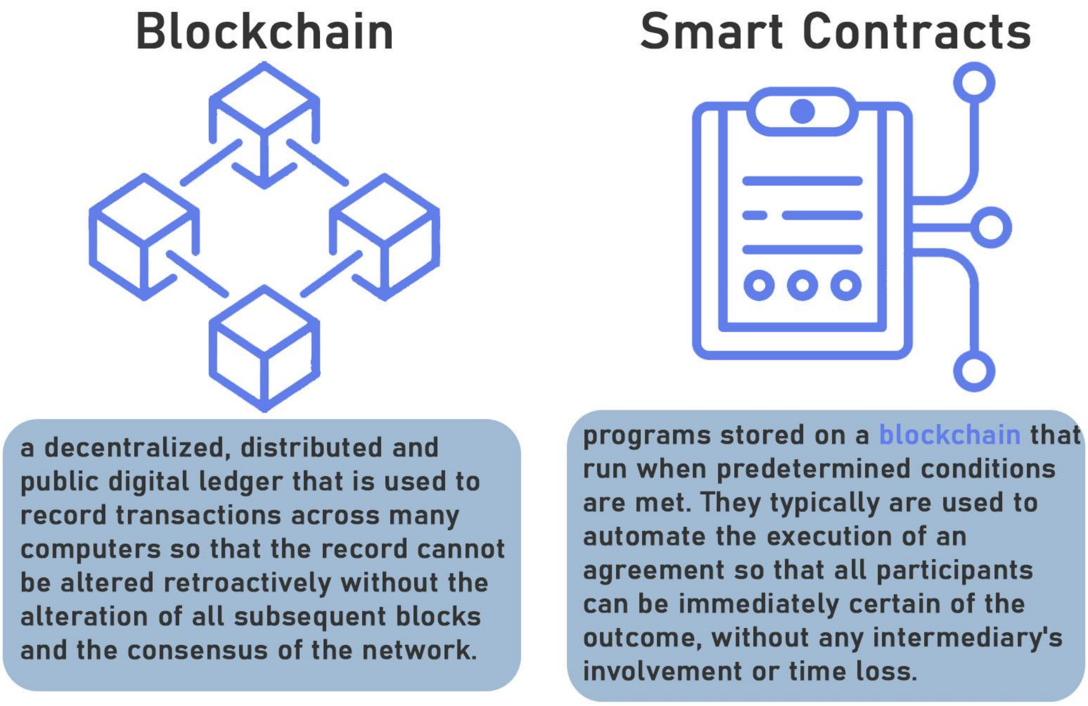


Figure 27. Blockchain and Smart Contract Definition

DeFi is built on the premise of a peer-to-peer network on the blockchain where transactions are executed automatically through smart contracts. DeFi requires a decentralised infrastructure to create programs that run decentralised services. Most popular DeFi applications are built on the Ethereum blockchain, making it a gold standard for decentralised applications or DApps. Under the DeFi umbrella are different applications and services that mimic the services offered by the current financial system. In this learning section, let's go over the popular ones:

Stable Coins

Money has a crucial role in facilitating the exchange of assets in the economy and also is the medium of valuing assets. The DeFi ecosystem also needs it as a medium of exchange. Ethereum has Ether, but its volatility prevents it from performing vital functions in DeFi and hence this has led to the birth of stablecoins. Stablecoins bridge the gap between fiat currencies, like the US dollar, and cryptocurrencies. These digital assets function like fiat but maintain cryptocurrency's flexibility and utility. They are classified according to the method of collateralisation: fiat-backed, commodity-backed, crypto-backed and algorithmic:

1. Fiat-Backed - Fiat-backed stablecoins are backed in a one-to-one ratio with real-world money.
Example: USDT, Gemini Dollar and Paxos Standard

2. Commodity-backed - Backed by interchangeable assets such as precious metals, the most common is gold.
Example: DGZ

3. Algorithmic stablecoin - Price stability is achieved by utilising algorithms and smart contracts that manage the minting and burning of tokens in circulation.
Example: UST, MIM, Frax

4. Crypto-backed - Backed by another cryptocurrency facilitated by smart contracts. Because of the volatility of cryptocurrencies, this category of stablecoins is often over-collaterised.
Example: MakerDAO

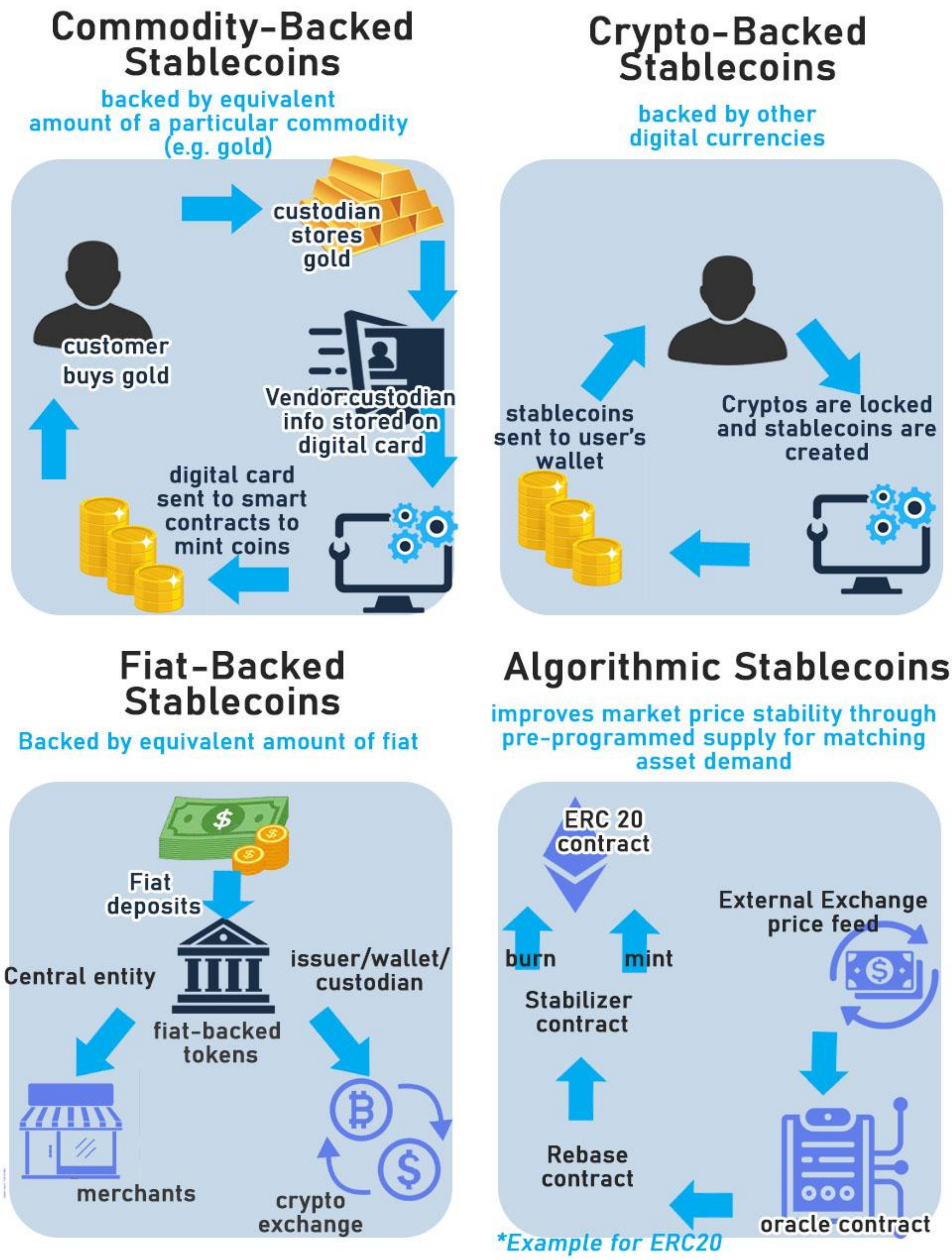


Figure 28. How Stablecoins Work

Lending & Borrowing

DeFi lending resembles a traditional cash deposit or investment that earns interest over time. DeFi loans enable users to lend their crypto to someone else and earn interest.

Aave, Compound and Maker are the popular DeFi Lending & Borrowing platforms. This money market emerges due to the perpetual, symbiotic relationship between borrowers and lenders.

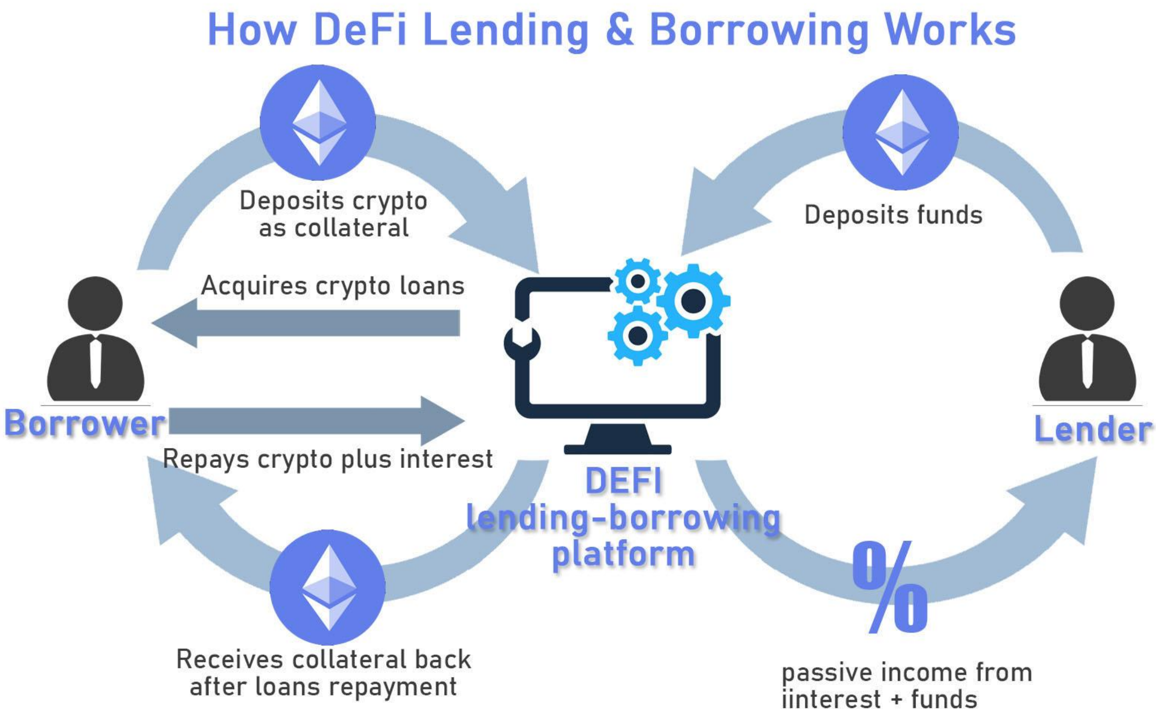


Figure 29. Decentralised Lending and Borrowing Functioning

Decentralised Exchanges

A decentralised exchange is a peer-to-peer marketplace where transactions are settled directly on the blockchain. Automated Market Maker (AMM) is the underlying protocol used by most decentralised exchanges using smart contracts. These trading mechanisms do not require market intermediaries, which are standard in centralised exchanges but rely on self-executing computer programs to determine the price of crypto assets and provide liquidity. Traders are trading against liquidity locked in the smart contract instead of counterparties.

Trading pairs on decentralised exchanges exist as individual liquidity pools. A liquidity pool is a pile of cryptocurrency locked in a smart contract provided by anyone who participates in the network. Anyone who wants to trade, for example, Ether for DAI must find an ETH/DAI liquidity pool. AMMs use mathematical equations to set the relationship between particular assets held in liquidity pools.

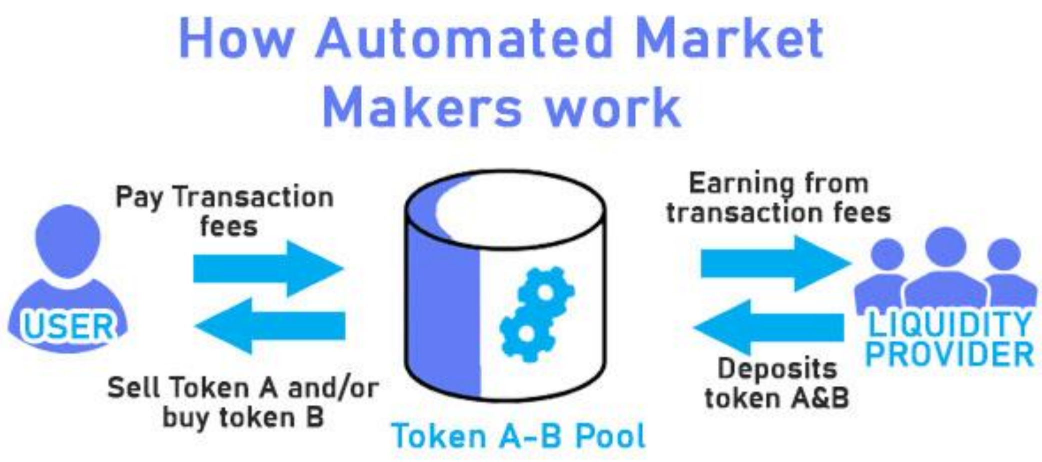


Figure 30. How Decentralised Exchanges Work (Automated market maker)

Derivatives

Derivatives are contracts whose value is 'derived' from an underlying financial asset (such as securities) or collection of assets (like an index). Bonds, commodities, currencies, interest rates, indices, and stocks are standard underlying instruments.

Derivatives are secondary securities since their value comes from the linked primary security. Futures, forwards, options, swaps, and warrants are derivatives. Smart contracts make tokenised derivatives possible without a third party. This trend has allowed regular investors to access opportunities that traditional finance reserved for individuals with brokerage accounts or specialist knowledge.

Figure 31. How DeFi Derivatives Work

Insurance

DeFi insurance services are primarily concerned with the DeFi-specific risks from smart contract failures, successful hacking of DeFi protocols, and similar failures.

DeFi insurance pools are collateralised with digital assets that offer protocol capital in exchange for tokens granting premium shares. These funds reimburse premium-paying users after a hack or other failures. Capital suppliers or governance token holders usually get investment returns.

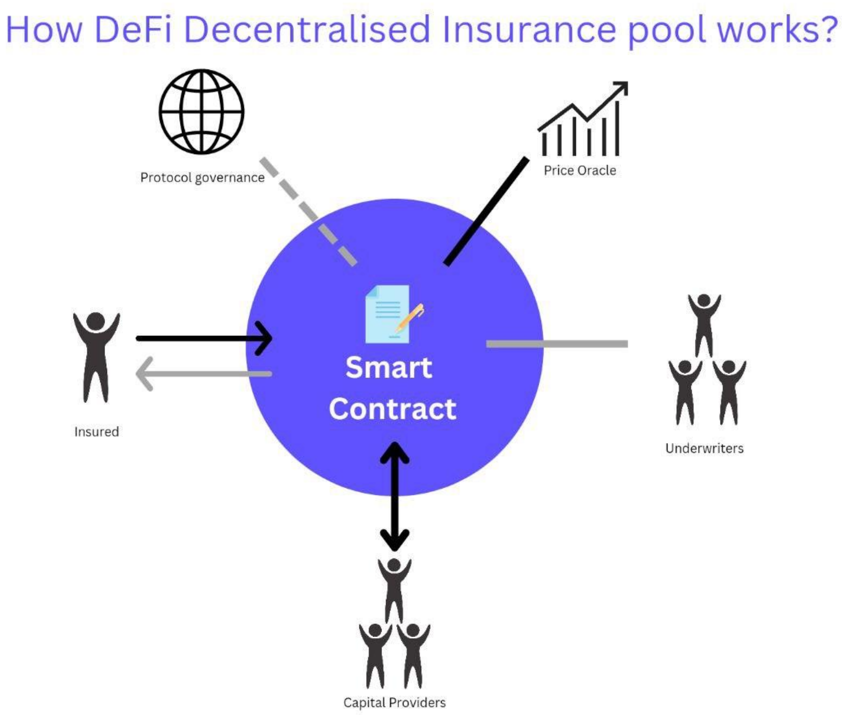


Figure 32. How Decentralised Insurance Works

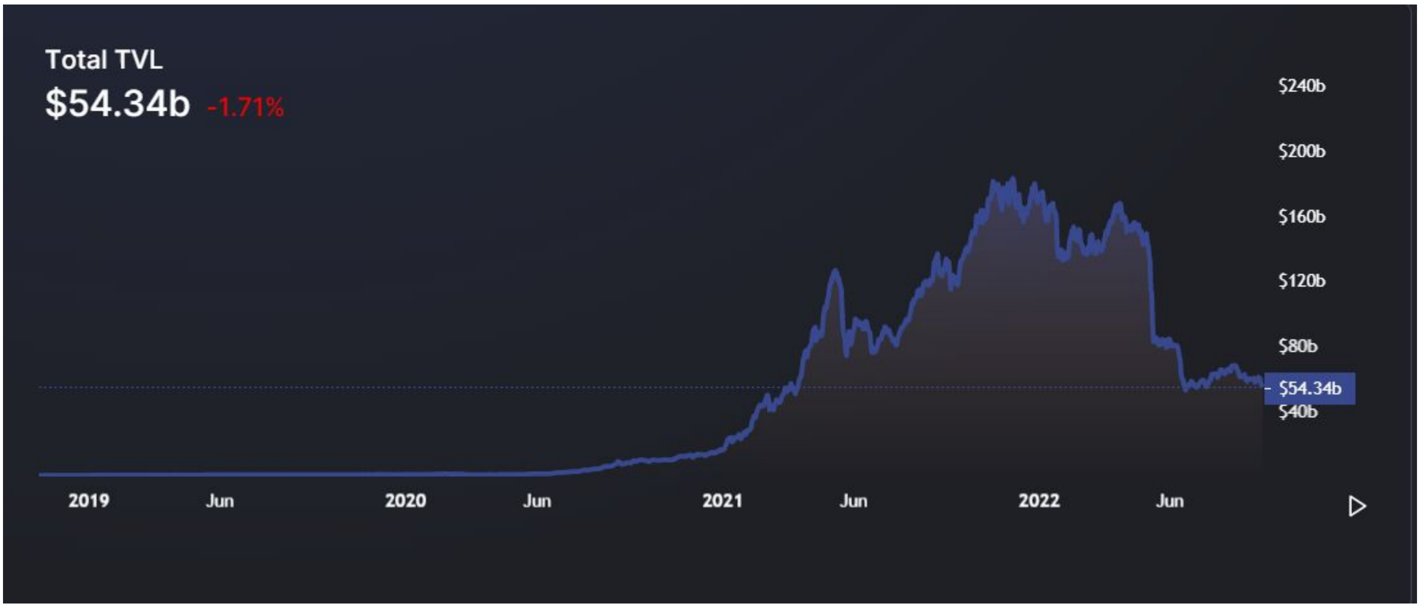


Figure 33. Total Value Locked in DeFi , All blockchains (Source: DeFiLlama)

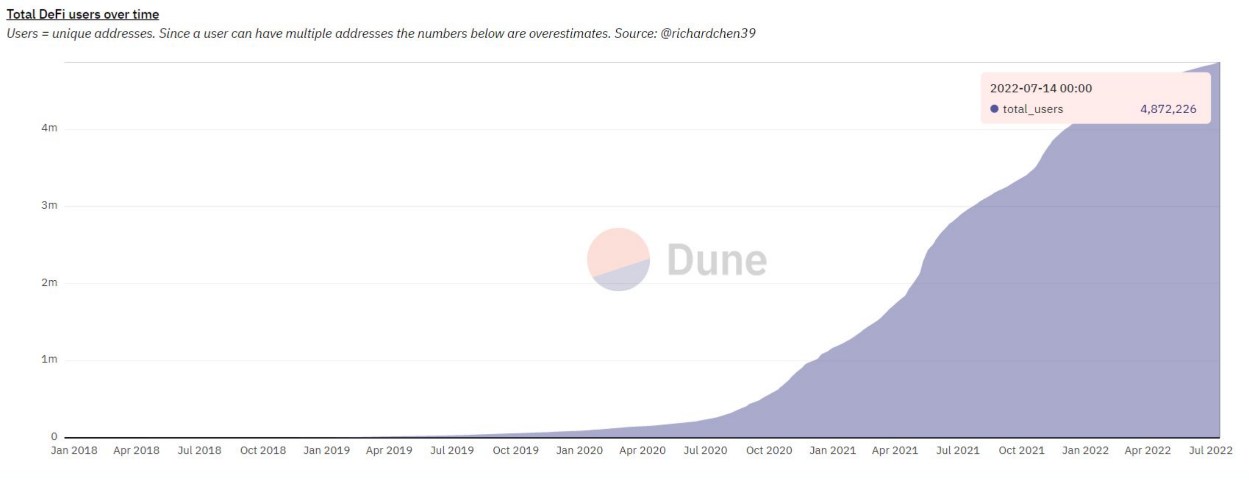
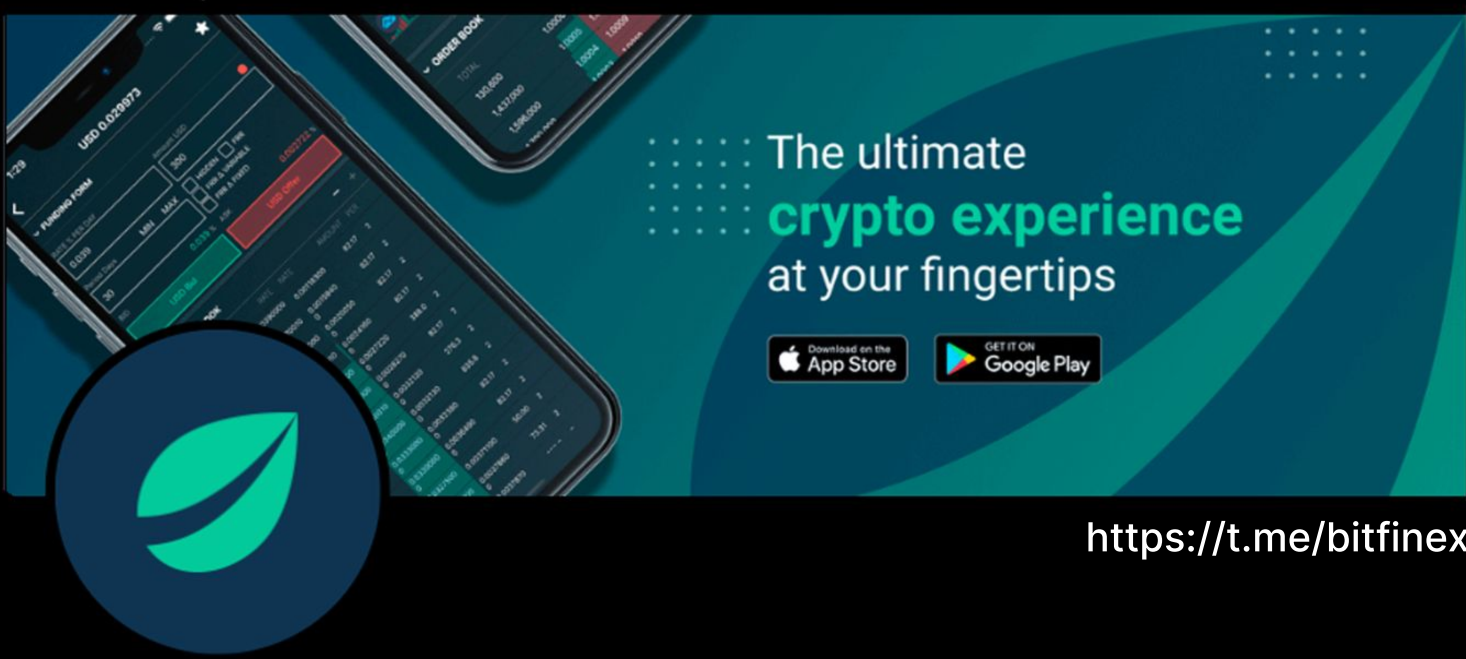


Figure 34. Total Defi Users over Time (Source: Dune Analytics)

DeFi is relatively new, and these are just a few of the popular financial services users enjoy with DeFi. However, there's a bright future for its countless possibilities. DeFi services are often coined "money legos" due to the interconnectivity of the various services. This broadens the scope of Defi and enhances its capabilities.

It is still in its early adoption stage, and only the future can tell if it crosses into mainstream adoption. Undoubtedly, innovation in DeFi has grown exponentially over the years. Besides DeFi, nothing comes this close to revolutionising the global financial landscape.



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