



Blockchain Assets

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Dear Investors,

The Merge of the Proof-of-Work (PoW) chain with the Proof-of-Stake (PoS) Ethereum chain is expected to happen on or around 4am (WST) on 15 September 2022. The Merge is one of the most important events in Ethereum's short history and is significant for three major reasons :

1. Ether becomes a Capital Asset (income producing) ;
2. The security of the network becomes powered by staked Ether, not electricity consumption ; and
3. The net supply supply of Ether will reach it's peak and become a deflationary asset.

The Merge (and EIP 1559 [see here](#)) is also about the economics of the Ethereum network. In this news bulletin I set out a summary of the economics and in so doing answer the questions, where does the Ether yield come from and what risks are associated with the yield.

Ethereum Economics

Overall what I am trying to do here is set out a simplified explanation of the supply and demand factors driving the price of Ether.

The Supply Side

There are a number of supply dynamics that came into place immediately after the introduction of EIP 1559 and the Merge (expected to occur on 14/15 September 2022).

Firstly the supply of Ether will be capped. It will cap out at circa 120m Ether. From here on there are 4 dynamics reducing the supply of Ether.

1. As a result of the Merge the [issuance rate](#) of Ether will reduce by about 90%. This is possible because with a PoS blockchain it is no longer necessary to pay miners to produce blocks.
2. A fairly large percentage of Ether (over 10% and growing) is [frozen in staking](#) contracts, this limits the amount of freeflow Ether available to buy and sell in the market.

3. Following EIP 1559 a part of every transaction fee (paid in Ether) is burnt ([see here](#)). This acts like a share buy back in terms of potential price impact.

4. A fairly large percentage of Ether is locked up as collateral in smart contracts, ([see here](#)) this also takes Ether out of circulation.

So the supply of Ether is now in reduction mode. The estimates are that an equilibrium between issuance rates and burn rates (#1 and #3 above) will be reached in the year 2222 ([see here](#)).

The Demand Side

There are three main uses for Ether.

1. Ether is needed to pay for Gas used to execute transactions on the Ethereum blockchain. The larger the Ethereum economy the more Gas fees needed.
2. Ether is paid to investors and validators who deposit up to 32 Ether in a staking contract. Locking up Ether this way drives demand.
3. Ether is used in smart contracts that may require a certain amount of Ether to

be locked up depending on the terms of the contract.

The potential demand from these uses is almost unlimited and I believe a positive feedback loop exists here at a few levels.

1. Firstly, as adoption increases so too does the demand for Ether for fee payments, but at the same time the amount of Ether burnt also increases.
2. Secondly, as the amount of fees increases so too does the staking rate, thus driving more Ether into staking contracts.
3. Thirdly, as more smart contracts are constructed more value gets locked up thus taking this Ether out of the liquid pool.

To put this another way. Increased demand for Ether drives down the supply of Ether. I cannot think of another asset on the planet where this is the case.

Ethereum as the Central Bank for Web 3.0

In this part of the newsletter I answer the questions : what determines the level of yield? and what are the associated risks?

Ether Yield Rate as the Risk Free Rate of the Ethereum Economy

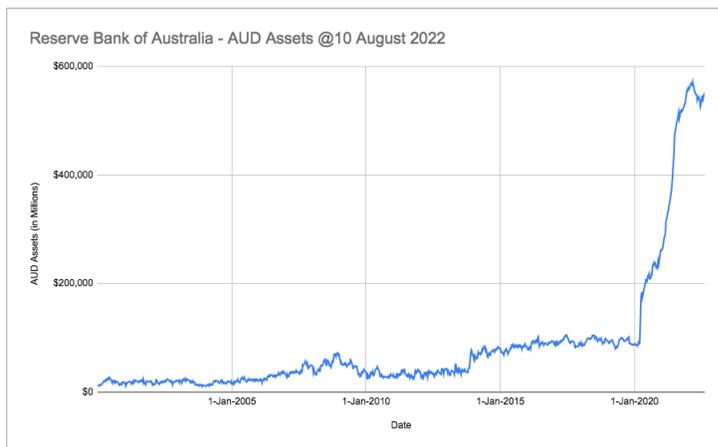
The best way to think about the yield on Ether is to compare it to the risk free 'cash rate' set by central banks.

The process used by the Reserve Bank of Australia (RBA) for setting the cash rate is manual and methodical. The full process is set out in [this document](#). The process involves the collection of various economic data points and independent assessment of whether the rate should be adjusted up or down depending on the level of economic activity, which is measured in part by reference to the inflation rate.

Money supply of course can have a significant impact on inflation and is an added complication when supply is

increased on a un-limited basis ([see Jerome Powell interview here](#)).

The below chart showing the growth in AUD assets on the RBA Balance Sheet is one indication of 'printing money' as the assets have essentially been bought with newly created money.



The Ethereum network uses a similar adjustment method to set a staking return rate. The calculation methodology is complicated (see a spreadsheet [here](#) setting out the calculation method) but it boils down to two main factors. The numerator being the amount of fees paid on the network (this is an indication of the level of economic activity, the GDP if you like of the Ethereum ecosystem) and the

denominator being the amount of Ether staked. This is the fundamental incentive mechanism of Ethereum. Those that secure the network by putting at risk and locking up their Ether receive the fees generated by the network. This is where the idea of the staking rate being the equivalent of the cash rate plays out. So

for example, if the economic activity on the Ethereum network increases so too will the staking rate as more fees are earned, this increases the numerator in the formula. But then, as staking rates increase there is an incentive for people to stake more of their Ether, this will drive down the staking yield because staked ether is the denominator in the formula. The numerator (economic activity) and the denominator (amount of staked Ether) work against each other to arrive at a risk free rate equivalent for the Web 3.0 economy.

Risk Analysis

In the case of the central bank risk free rate, the risk is that of the sovereign. That is to say if there is default at the sovereign

level the entire financial and economic system is at risk of failure. Similarly, it is the case that if there is a failure of the Ethereum blockchain, the applications built on top will suffer catastrophically as well. That is to say, the financial soundness of the sovereign and the security of the blockchain are systemic type risks.

The risk to the sovereign model is poor financial management of national income and expenditures leading to excessive foreign debt and a default on that debt ([see here](#)). The risk to the Ethereum blockchain (or indeed any blockchain) is a Sybil or a so called 51% attack. These risks, failed state finances and a 51% attack are quite different.

Throughout human history we have seen the centralised state financial model in practice. It has always ended in corruption of the system and failure of the state. Arguably the best systems we have are the ones we see today. The most decentralised form of government we have ever had, the democratic states, seem to be the most robust and provide the greatest good for the greatest number of people. But they

are under stress and certainly need improvement.

By comparison the 51% attack risk (in the context of computer software) is relatively new. Sataoshi Nakamoto's invention of Sybil resistant distributed consensus essentially mitigates this risk and this is why Nakamoto-style consensus is such an important computer science breakthrough. The subsequent adaptation of the invention by others for general purpose public blockchains like Ethereum offers the opportunity to widen adoption of the technology. Bitcoin is only 13 years old so is still a very early stage experiment, yet the experiment is working as planned. There has never been a successful 51% attack on the network. Although not as old as Bitcoin the Ethereum network is also working as it should. The change to Proof of Stake in September 2022 is an incredibly important test of the Ethereum system.

Rating the [risk of sovereigns](#) is a well established activity. The same cannot be said for rating the security risks of the Bitcoin or Ethereum blockchain (in terms of the probability of a successful 51% attack).

However, instead of subjective human based sovereign risk assessments, blockchains are tested everyday in the field as attackers constantly seek a way to penetrate the systems. Public blockchain systems have trust built into their code, they are battle hardened by relentless attacks in a live hostile environment. It could be said that public blockchain security is not rated by subjective human trust models, instead it is rated objectively in live operating environments.

Valuation Methodologies for Ether

What does the Merge mean for the valuation of Ether? It becomes a 'triple point' asset ([refer here](#)) and we have a number of ways to think about how it can be valued.

Fundamental Analysis

Because we have cash flow Ether is a Capital Asset and as such we can do a fundamental intrinsic valuation of Ether. [Ryan Allis](#) has made public his Discounted Cash Flow (DCF) model, it is updated automatically and can be found [here](#). An

excellent explanation of the model is at [this link](#). Interestingly it can be seen from the current version of the model and the 'frozen' one in the video that the price of Ether will vary significantly based on the revenue of Ethereum. This of course is the basis of DCF models.

Supply and Demand Dynamics

Because Ether is burnt as part of the transaction process it has some characteristics of a Commodity Asset. I have set out the supply v demand aspects (which is how commodities are valued) earlier.

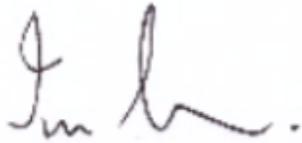
Store of Value

The money premium or Store of Value Asset aspects of Ether are harder to quantify. The implications of the capped supply and reducing issuance rate are yet to be reflected in the current price. As the knowledge and use of Ethereum spreads the store of value aspect will inevitably become reflected in the price.

That's all for now, our 30 September Newsletter will cover staking in some detail including our Fund's approach to staking.

As always, please do not hesitate to contact me on 04 5090 0151 or at ian@bca.fund if you have any questions.

Best Regards



Ian Love
Founder and CEO

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