

Taxing Blockchain Staking Rewards

Executive Summary

1. Agree with the Australian Tax Offices' taxing of crypto currencies except for staking rewards.
2. Current taxing of staking rewards does not accurately reflect underlying mechanisms of a Proof of Stake blockchain, attitude and purpose of investors who stake, and can be detrimental to financial liquidity of investors.
3. Staking rewards are akin to creation of new assets, not proportional allocation of annual profit (as share dividends would be), therefore should be taxed on sale only, not distribution.

Blockchain stakeholders weather the storm of extreme volatility and risk

While many speculators buy and sell cryptocurrency for profit, another group of investors in blockchain assets enjoy the returns created through staking rewards. Staking rewards are part of the architecture of a Proof of Stake (PoS) blockchain and are designed to incentivise token holders and validators to secure PoS networks and promote good behaviour and decision making. From the perspective of blockchain technology, the main rationale behind staking rewards is not the short-term gain of stakeholders, but long-term capital appreciation resulting from good decisions and the value creation of a blockchain ecosystem.

A long-term investment strategy in blockchain assets, however, is not for the faint hearted. Long-term token holders are generally called "hodlers" because they endure the wild swings (of up to 90%) on the crypto market by 'holding on for dear life'. Furthermore, as the chairman of the Australian Security and Investment Commission (ASIC), Joe Longo, recently warned Australian citizens, cryptocurrencies are not defined as 'financial products' and therefore are not afforded the protections of ASIC laws. This means, according to Longo, that there are no reimbursements or insurance against scams, hacks, or artificial volatility risks to be guaranteed by the government as it is with the traditional financial market.¹

The ATO taxes staking rewards at the point of distribution

To add to the burden of high volatility and risk the Australian Taxation Office (ATO) has ruled that staking rewards are deemed income at the point of distribution for the purposes of s15.2 of the Australian Income Tax Assessment Act 1997. The assessment of taxable income is based on the market value of the tokens at the point of distribution, and if the market value of the asset is greater at the point of disposal, than at the point of distribution, it is also subject to a capital gains tax. As the implications of this ruling gradually impacts investors in blockchain assets, it is

¹ ASIC's warning to crypto investors: you're on your own ASIC's warning to crypto investors: you're on your own. (2021). Retrieved 9 March 2022, from <https://www.afr.com/policy/tax-and-super/asic-s-warning-to-crypto-investors-you-re-on-your-own-20211122-p59b0b>

clear a discussion needs to occur on whether this policy is having its intended effects, and whether, in fact, staking rewards are income at the point of distribution.

To anyone who is unfamiliar with the staking rewards system, the ATO's ruling might seem an obvious and fair conclusion. After all, isn't the crypto investor receiving a payment for staking their holdings on the blockchain? Isn't it a form of income derived from an investment? As is commonly recognised, such returns are deemed income whether payment is made in Australian dollars or another form of property, such as crypto tokens. This conclusion is only partially correct. It is true that staking rewards are a form of income and are linked both to an investment and to a service, however, as a question of fact, staking rewards are not generated out of profits, and do not represent a payment of interest on an investment, nor are they strictly speaking a 'distribution', staking rewards are generated from two sources that change in relevance depending on the stage a PoS blockchain is in its development life cycle.

Staking rewards come from two sources

To get a better understanding of the different sources of staking rewards and the role these sources play at different stages in the development cycle of a blockchain it is necessary to provide an overall picture of a blockchain's funding model. This work will focus on the Cardano blockchain. According to a recent study conducted by Finders.au, Australia ranks number one for Cardano blockchain adoption in the world.²

As represented in Figure 1 below, staking rewards for both delegators and stake pool operators are taken from two sources: the Reserve and Transaction fees.

The Reserve is made up of 13.8B tokens. These tokens only come into existence when they are minted. Specifically, every epoch (a duration of 5 days), all the transaction fees from every transaction from all blocks produced during that epoch are put into a virtual 'pot'. Additionally, a fixed percentage, ρ , of the remaining ADA (ADA is the Cardano platform's native cryptocurrency) reserves is added to that pot. Then a certain percentage, τ , of the pot is sent to the treasury, the rest is used as epoch rewards.

This mechanism ensures that in the beginning, when the number of transactions is low, because users are just starting to build their business on Cardano, the portion of rewards taken from the reserves is high. This provides a great incentive for early adopters to move quickly and benefit from the initial rewards. Over time, as transaction volume increases, the additional fees compensate for dwindling reserves. This mechanism ensures that available rewards are predictable and change gradually. There will be no sudden 'jumps' comparable to bitcoin halving

² Report: 26.4% of Australian crypto owners hold Cardano, while Dogecoin remains U.S. bet *Report: 26.4% of Australian crypto owners hold Cardano, while Dogecoin remains U.S. bet. (2021). Retrieved 9 March 2022, from <https://cryptoslate.com/report-26-4-of-australian-crypto-owners-hold-cardano-while-dogecoin-remains-us-bet/>*

events every four years. Instead, the fixed percentage taken from remaining reserves every epoch guarantees a smooth exponential decline.³

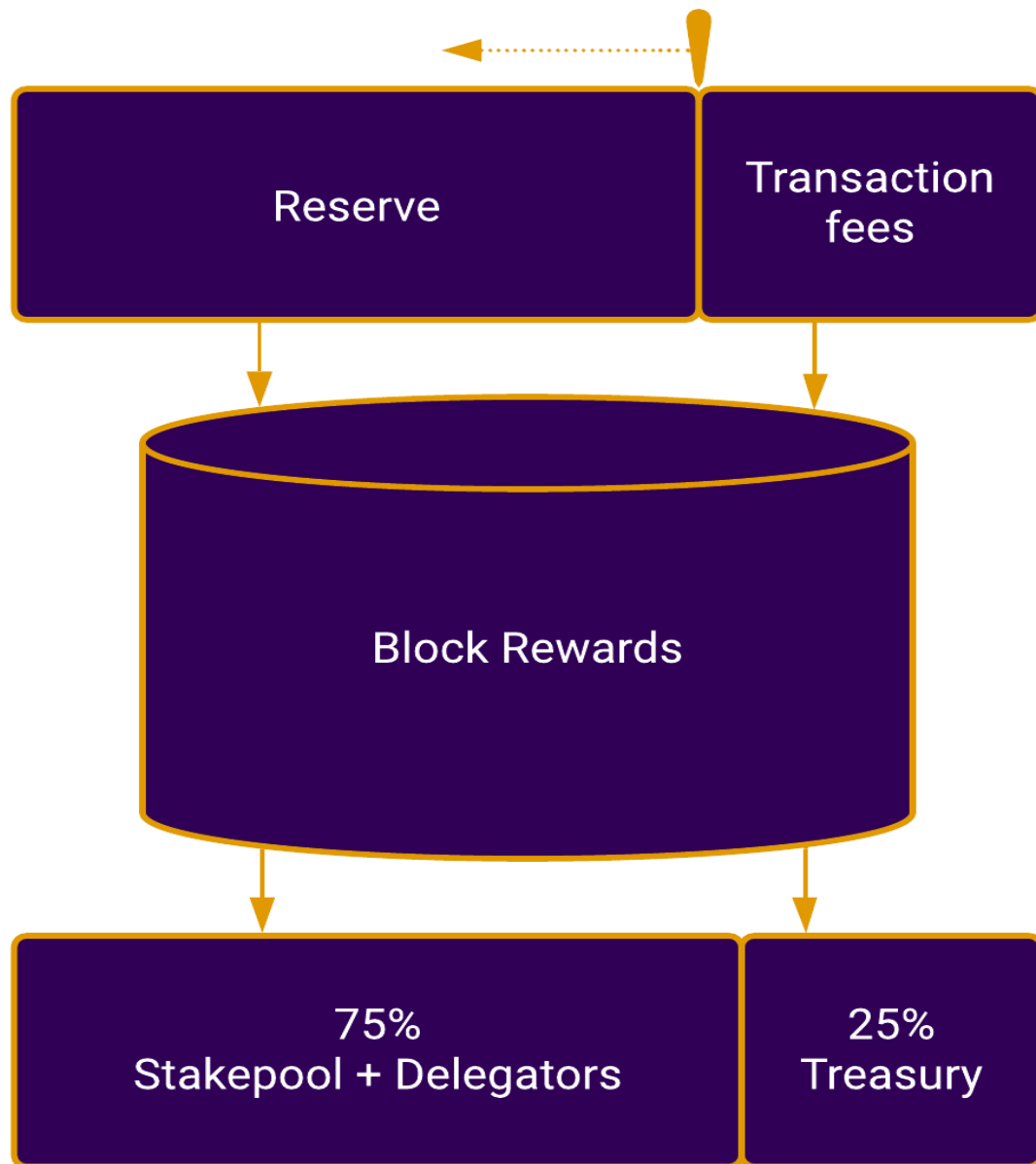


Figure 1: The Cardano Funding Model

³ Iterating for growth with IOHK research - IOHK Blog Iterating for growth with IOHK research - IOHK Blog. (2022). Retrieved 9 March 2022, from <https://iohk.io/en/blog/posts/2020/06/25/iterating-for-growth-with-iohk/>

The rate of monetary expansion that results from minting new tokens from the reserve is set as one of the parameters of the Cardano protocol. Higher values of monetary expansion mean higher rewards for everybody and a treasury that fills faster. But higher values of monetary expansion also result in faster reserve depletion and the dilution of a token's value relative to the value of the underlying asset (the issue of dilution is dealt with in the next section). It is certainly important, especially at the beginning, to pay high rewards and incentivise early adopters. But it is also important to provide a long-term perspective for all stakeholders incentivising their commitment to growing the network and its capital appreciation.⁴

Cardano will never run out of reserves, instead there will be an exponential decay. Currently, however, approximately 0.22% of the reserve goes into the virtual pot and a 100% of these minted tokens are distributed as staking rewards. The treasury, which provides funding for the development of Layer 2 decentralised applications is funded entirely from transaction fees and taxes on block production. This funding distribution has now been in place for almost two years. Based on the current rate of monetary expansion, it is expected that the reserve will reach its 'half-life' in a little more than two to three years. In other words, every four to five years, half of the remaining reserve will be used. This is close to the 'bitcoin half-life' of circa four years, so Cardano reserves will deplete at about the same rate as bitcoin reserves.⁵ It is worth noting here that it took Bitcoin around eight years to reach its peak of maximum adoption and price. Likewise, it makes sense to expect Cardano adoption and capital growth, along with transaction volume and exchange rate, to increase sufficiently over the next 5-6 years to more than make up for the decrease of monetary expansion during that time. It is also expected, contingent on the growth of the blockchain industry, that resulting tax from the capital appreciation will also provide a large revenue stream for Governments.

Minted staking rewards dilute ownership in the underlying blockchain technology

As set out above, during the early stages of blockchain development, the main source of staking rewards is a token reserve that forms the basis of an incentive mechanism crucial to the development and operation of a decentralised PoS blockchain. Without this incentive a decentralised blockchain most likely would not exist. It is wrong however to think of staking rewards that have as their source newly minted tokens resulting from inflationary monetary policy as taxable income at the point of distribution. To do so results in systematic overtaxation and in some cases impossible accounting burdens. In the context of staking rewards, overtaxation is defined as the excess of income under a strict income realisation approach that does not include a dilution component, compared to true economic income inclusive of dilution.

Perhaps this point is justifiably misunderstood because of the way in which staking rewards have been represented to provide a passive income. However, this is not the case. Or, if it is the case then this must be established as a question of fact based on an analysis of the source of the token rewards. When one looks more closely at the sources of staking rewards during the development period that tokens

⁴ Ibid.

⁵ Ibid.

are minted from a token reserve, then this is as much a dilution of one's holdings in the underlying technology as it is an income realisation event. In short, it is never a strict income realisation event, it also has the impact of generating a loss due to the addition of new tokens (ownership units) to the total supply.

Cryptocurrencies consist of several tokens (units of accounting) in a network. If one accepts the uncontroversial premise that the value of a cryptocurrency network does not depend on the exact number of tokens it contains, then the creation of new cryptocurrency units results in dilution. Unlike random fluctuations in network value, which can give rise to both capital gains and losses, this dilution is sure to happen and sure to be detrimental to a taxpayer's wealth.

To state the issue of 'dilution' as it relates to the minting of new coins in more technical terms, the capital appreciation of a stakeholder's stake in the underlying asset (i.e., the blockchain technology) needs to be split into two components:

- the change in the whole value of the asset proportional to the stakeholder's initial share and
- the dilution component, defined in terms of the current asset value multiplied by the change in the fraction owned because of the minting of new coins - independent of any purchases or sales by the stakeholder.

To treat the minting of new tokens as only an income event and not to also include the impact of dilution is to systematically overstate the net income of the stakeholder. In some cases, the overtaxation of stakeholders in PoS blockchains is having a detrimental effect on the adoption of this ground-breaking technology. In others, pegging a calculation of income derived from such tokens to their market value at the point they are minted results in a tax on a token whose value is mostly speculative and subject to extreme swings of market value. In some cases, this can lead to the liquidation of an investor's capital in order to pay the assessed income on staking rewards.

It will be appreciated that the issue of dilution as it relates to minted staking rewards raises several accounting questions for which there is no one simple answer on the best method for resolving this problem.

Work has been conducted in the United States jurisdiction on the issue of dilution as it relates to staking rewards.⁶ This work provides a summary of the possible different accounting methods that deal with

- the dilution of a crypto tokens aggregate network value
- the taxpayer's ownership balance and

⁶ Landoni, Mattia and Sutherland, Abraham, Dilution and True Economic Gain from Cryptocurrency Block Rewards (2020). 168 Tax Notes 1189, 2020, Available at SSRN: <https://ssrn.com/abstract=3672461>

- the rate at which dilution happens - all of which vary over time.

This is not the place to provide an analysis of each of these methods, suffice it to say that while it is concluded that any one of the methods proposed is preferable to an approach of strict income realisation that ignores dilution entirely, the approach that is said to make the most accounting and legal sense is that the acquisition of minted reward tokens should not be treated as an income realisation event. Rather, such an event should be postponed until the minted token is disposed. Where this is done the taxable income would include both the value of the minted token at the point of distribution plus the capital appreciation or depreciation. Under this approach the impact of dilution would be priced into the change in capital value.

Minted token rewards are new property and taxable on disposal

To conclude this article, the only amendment recommended to the ATO's current taxation of blockchain assets is its policy as it relates to staking rewards. It is accepted that for tax purposes, blockchain tokens are property and not currency and that the sale of a token may be a taxable event, just like the sale of any other property. It is also accepted that a purchased token will result in a taxable gain if and when it is sold at a higher price, and like the sale of a token, a taxpayer's receipt of an existing token may also be a taxable event. Likewise, a token sent from one person to another as a payment or compensation for services will be that recipient's taxable income, at its proper dollar valuation. As is the case with other forms of existing property (e.g., an ounce of gold, or a bushel of wheat) a digital token can be taxable income, just like dollars.⁷

However, the question raised by this article, and one which goes to the root of the incentive structures that underwrite the security and long-term growth of PoS protocols, is the tax treatment of newly minted tokens, in particular the tokens commonly called staking rewards. As has been pointed out, the use of newly minted tokens as a basis of rewards is not only crucial to incentivising early adoption of the technology but also the good behaviours necessary to building a blockchain ecosystem.

Understood as new property, essentially property not received from someone else as payment or compensation, or as payment of interest or profits, but newly created or discovered by the taxpayer, staking rewards that are the result of an inflationary monetary policy are never immediate income to its first owner. Understood as new property, minted tokens should give rise to taxable income when they are disposed. At that point the calculation of the tax does not need to carry forward the dilution of ownership as it is built into the market price at disposal. Property in this sense comes into existence all the time: when crops are grown, livestock born, minerals mined, canvases painted, truffles unearthed, widgets manufactured, books written.

⁷ Sutherland, Abraham, Tax Treatment of Block Rewards: A Primer (December 18, 2020). Available at

SSRN: <https://ssrn.com/abstract=3780102> or <http://dx.doi.org/10.2139/ssrn.3780102>

As new property minted staking rewards gives rise to taxable income when disposed, not when created.⁸

⁸ Ibid.